Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector

GEF Project ID: 5843

UNDP PIMS ID: 4900

TERMINAL EVALUATION REPORT

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Acronyms and Abbreviations

AA	Administrative Assistant
APR	Annual Progress Report
CARICOM	Caribbean Community
CEO	Chief Executive Officer
CTA	Chief Technical Advisor
DBJ	Development Bank of Jamaica
EE	Energy Efficiency
EOP	End of Project
EU	European Union
GEF	Global Environment Facility
GHG	Greenhouse Gases
GoJ	Government of Jamaica
IGA	Investment Grade Audit
IRENA	International Renewable Energy Agency
kWh	Kilowatt hours
LTA	Long-Term Agreement
MEP	Mechanical, electrical and plumbing
MOFPS	Ministry of Finance and the Public Service
M&E	Monitoring and Evaluation
MW	Megawatt
MWh	Megawatt – hour
NBL	Net Billing License
NGOs	Non-Government Organizations
NPD	National Project Director
NPM	National Project Manager
NWS	National Water Commission
PCJ	Petroleum Corporation of Jamaica
PIOJ	Planning Institute of Jamaica
PIR	Project Implementation Review
PMU	Project Management Unit
PPP	Public private partnership
PSOJ	Private Sector Organization of Jamaica
ProDoc	Project Document
PSC	Project Steering Committee
PV	Photovoltaic
RE	Renewable Energy
SE	Sustainable Energy
TE	Terminal Evaluation
TOE	Tons of oil equivalent
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNDAF	United Nations Development Assistance Framework
UNFCCC	United Nations Framework Convention on Climate Change
UN MSDF	UN Multi-country Sustainable Development Framework

Glossary of Evaluation-related Terms

Term	Definition
Baseline data	Data that describe the situation to be addressed by an intervention and serve as the starting point for measuring the performance of the intervention
Beneficiaries	The specific individuals or organizations for whose benefit an intervention is undertaken
Capacity development	The process by which individuals, organizations, institutions and societies develop their abilities individually and collectively to perform functions, solve problems and set and achieve objectives
Conclusion	A reasoned judgement based on a synthesis of empirical findings or factual statements corresponding to a specific circumstance
Effect	Intended or unintended change due directly or indirectly to an intervention
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results
Finding	A factual statement about the programme or project based on empirical evidence gathered through monitoring and evaluation activities
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations
Logframe (logical framework approach)	Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles
Outcome	The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs
Output	The product, capital goods and/or service which results from an intervention; may also include a change resulting from the intervention which is relevant to the achievement of an outcome
Rating	An instrument for forming and validating a judgement on the relevance, performance and success of a programme or project through the use of a scale with numeric, alphabetic and/or descriptive codes
Recommendation	A proposal for action to be taken in a specific circumstance, including the parties responsible for that action
Relevance	The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies
Risk	Factor, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed
Stakeholders	The specific individuals or organizations that have a role and interest in the objectives and implementation of a programme or project
Theory of Change	A set of assumptions, risks and external factors that describes how and why an intervention is intended to work.

Acknowledgement

The TE consultant would like to express his gratitude to all project stakeholders interviewed during the course of the TE data collection for their candid opinions and insights on the project implementation and valuable suggestions on reinforcement of the project results and sustainability. Special appreciation is extended to the Project Manager Mr. Tenny Daley for his assistance with organization of the virtual interviews and for timely provision of all project-related documents and information. The sharing of opinions and information was crucial for smooth conduct and successful completion of the TE.

The consultant hopes that this report will contribute to the planning, formulation, implementation and monitoring of future RE/EE interventions in Jamaica.

EXECUTIVE SUMMARY

Project Information Table

Project Title	Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector		
ATLAS Business Unit, Award # Proj. ID:	00087974	**Project Document (ProDoc) Signature Date (date project began):**	28 July 2016
Country(ies):	Jamaica	**Date project manager hired:**	October 2016
Region:	Latin America and the Caribbean	**Inception Workshop date:**	24 March 2017
Focal Area:	GEF-5 Climate Change	**Midterm Review completion date:**	N.A.
GEF Focal Area Strategic Objective:	Objectives 1 and 2	**Planned closing date:**	28 July 2020
Trust Fund [indicate GEF TF, LDCF, SCCF, NPIF]:	GEF TF	**If revised, proposed op. closing date:**	26 March 2021
Executing Agency/Implementing Partner:	UNDP (DIM) Petroleum Corporation of Jamaica (Responsible Party for Component 3)		
Other execution partners:	N.A.		
Project Financing	**at CEO endorsement (US$)**	**At Terminal Evaluation (US$)**	
GEF financing:	1, 254,987	1,002,131.88[1]	
Government	1,546,240	48,569	
Other partners	9,202,514	5,500,000	
Total co-financing	10,748,754	5,548,569	
PROJECT TOTAL COSTS	**12,003,741**	**6,550,701**	

[1] As of 11 June 2021

Project Description

The objective of the project was to advance a low carbon development path that would enable Jamaica to be less reliant on fossil fuels and thereby contribute to the reduction of the energy bill in the Jamaican public sector. The project was designed to build relevant capacity in the public sector by increasing the knowledge base of its operatives on matters pertinent to RE and EE as well as developing the appropriate technical skills necessary to support investments in the sector. These interventions have potential for strengthening the regulatory framework that governs the development and deployment of RE and EE technologies. Moreover, the project aimed at establishment of a mechanism involving public private partnership (PPP) for a greater uptake of RE and EE.

The project has 3 components each consisting of a number of complementary activities designed to achieve the project objective. The major components of the project are listed below.

Component 1: Individual and institutional RE and EE knowledge and capacity strengthening in Jamaica's public sector

Component 2: Regulatory development for the deployment of RE and EE promotion in Jamaica's public sector

Component 3: Economic and fiscal instruments to facilitate the uptake of RE and EE technologies in the Jamaica's public sector

The project was approved for implementation on 23 March 2016. The signature of the Project Document by the Government on 28 July 2016 has officially marked the start of the project implementation.

The GEF project grant approved for the project amounts to US$ 1,254,987 complemented with US$ 9,493,767 expected total co-financing composed of contributions from the Government and private sector. The total resources committed to the project at inception was thus US$ 10,748,754.

Summary of project results

Component 1: The project assisted the Government in sensitization of more than 80 health sector operators on importance of energy management and RE technologies. Through specific training of more than 30 solar PV technicians, it also contributed to improved standards of installation and maintenance of the solar PV systems in the country. Further training on financing and investment for RE/EE projects was provided for 4 persons from financial intermediaries and 40 representatives of energy service provides and project developers.

The project supported assessment of the post-secondary education on sustainable energy that helped to establish the minimum expected standards for post-secondary SE education programmes. The study was well accepted by the Jamaica Tertiary Education Commission (JTEC) that took it for discussion with leading national universities about preparation of post-secondary education curricula framework for RE/EE and promotion of quality standards in post-secondary education programmes. The project thus contributed to restructuring of the tertiary education system in Jamaica. The institutional support also included procurement of a

power generator for energy efficiency testing laboratory of the Bureau of Standards Jamaica (BSJ).

Component 2: The project extended further support to the BSJ for essential revision and update of parts of the of the Building Code and supported preparation and review of the Energy Efficiency and Conservation Standards Guide for the Public Sector, based on the Jamaica Application Document for the International Energy Conservation Code (JS 309). The Guide serves as an information source for office and facility managers for procurement and management of energy efficient goods and services in the public sector and provides for increasing the knowledge and awareness of public sector employees on energy efficiency and conservation standards.

The project assisted in development of the National Guidelines for Solar PV Operations and Maintenance that was submitted for approval and adoption by the BSJ. The document serves as a reference manual for installers, users, and maintenance staff of the PV systems. The project also assisted with the development of the energy efficiency/energy conservation standards guide for the public sector and the qualitative assessment of the energy service companies' (ESCOs) market in Jamaica.

Component 3: The project commissioned investment grade energy audits in six health care facilities (HCFs), Based on completion of the audits, the six HCFs were retrofitted with more than 6,000 high-quality energy efficient LED bulbs. Moreover, the project supported procurement, installation and commissioning of rooftop solar PV systems for three health care facilities.

The total installed solar PV capacity of 172 kW is expected to produce 211 MWh electricity per annum while the EE retrofits will save 851 MWh of electricity per annum. The total direct post-project GHG emission reduction are estimated at 3,320 t CO_{2eq} for the solar PV systems and 4,749 t CO_{2eq} for the EE retrofits, respectively. However, due to implementation delays the actual scale of the RE/EE interventions was less than planned hence the total realized energy savings and GHG emission reductions will not meet the planned targets.

The project advanced national discussion on energy service companies and energy performance contracting (EPC) but did not achieve the target of establishing a functional ESCO/EPC model for the public sector due to the fact that the Petroleum Corporation of Jamaica (PCJ) that served as the Responsible Party for Component 3 of project and the main champion of the ESCO/EPC business model was dissolved in late 2019 and was not able to fulfil the implementation duties.

Sustainability

The evaluation found institutional and governance frameworks for RE/EE interventions strong and did not find any major risks to socio-political and environmental sustainability of the project results. However, the financial sustainability depends fundamentally on the ability of using relevant financial mechanisms for maintenance costs of the RE/EE interventions. The failure to establish and advance the EPC model under the project poses the main risk to the financial sustainability of the project.

Summary of evaluation ratings

The summary of evaluation ratings[2] according to the required evaluation criteria is displayed in the Box 1 below.

Box 1: Summary of TE ratings

Evaluation Criteria	Evaluators' Rating
Monitoring and evaluation: design at entry	Satisfactory (S)
Monitoring and evaluation: implementation	Moderately Satisfactory (MS)
Overall quality of monitoring and evaluation	**Moderately Satisfactory (MS)**
Quality of UNDP Implementation	Moderately Satisfactory (MS)
Quality of Execution - Executing Agency	Moderately Satisfactory (MS)
Overall quality implementation / execution	**Moderately Satisfactory (MS)**
Relevance	**Relevant**
Effectiveness	
Outcome 1	Satisfactory (S)
Outcome 2	Moderately Satisfactory (MS)
Outcome 3	Moderately Satisfactory (MS)
Efficiency	**Moderately Satisfactory (MS)**
Overall Project Objective rating	**Moderately Satisfactory (MS)**
Overall likelihood of sustainability	**Moderately Likely (ML)**
Institutional framework and governance	Likely (L)
Financial	Moderately Likely (ML)
Socio-political	Moderately Likely (ML)
Environmental	Likely (L)

[2] Performance ratings of GEF projects are explained in Annex 7.

Summary of recommendations

Recommendations to follow-up and/or reinforce initial benefits from the project

No.	Recommendation
1.	The Government of Jamaica should consider adoption of a policy on the preferred ESCO/EPC model with energy service contracts for implementation of RE/EE interventions in the public sector using the institutional and human capacities developed under this project.
2.	UNDP MCO in cooperation with the Government of Jamaica and the Development Bank of Jamaica should consider further capacity building for local private ESCOs to learn the skills and concepts that they need to successfully carry out performance contracting.
3.	UNDP MCO should pursue engagement with the Ministry of Health and Wellness in order to secure funds for procurement and installation of solar water heaters for the project beneficiary HCFs.
4.	The Ministry of Health & Wellness in collaboration with the Regional Health Authorities should ensure that the project beneficiary health care facilities monitor the realized energy savings from the project EE/RE interventions and make this information available for other public sector stakeholders.
5.	The Ministry of Education in collaboration with the University Council of Jamaica (UCJ) and the Jamaica Tertiary Education Commission (JTEC) should advance development of a curriculum framework for sustainable energy that will include minimum education standards for post-secondary education and training curricula.
6	The Government of Jamaica should consider strengthening human and financial resources necessary for implementation of the national building codes and energy efficiency testing in the BSJ.
7.	The Government of Jamaica should consider inclusion of further development and implementation of the ESCO/EPC model for the public sector in programmes financed by the international development assistance, such as the partnership of the Green Climate Fund and the Caribbean Development Bank.

Recommendations to improve programming and preparation of projects

No.	Recommendation
8.	UNDP MCO should ensure that the RE/EE projects are based on a clear and explicit theory of change and coherent results framework.
9.	UNDP CO should ensure that indicators for the project results and their target values are correctly formulated to measure delivery at the project output and outcome levels and that progress towards achievement of results is regularly assessed at the level of project outputs.
10.	The UNDP MCO should consider creation of a database of national experts in RE and EE linked to national post-secondary educational institutions and professional associations in order to have a pool of national RE/EE experts at hand and shorten the recruitment of project personnel for RE/EE projects.
11.	For GEF-funded projects, UNDP MCO and the national implementing partners should track actual levels of co-financing during implementation and report the actually realized levels of co-financing in annual PIRs.

INTRODUCTION

In line with the GEF Evaluation Policy, a Terminal Evaluation (TE) is undertaken at completion of the GEF-funded projects to assess their performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. It is conducted to provide a comprehensive and systematic account of the performance of a completed project by assessing its design, implementation, and achievement of objectives. TE is also expected to promote accountability and transparency, facilitate synthesis of lessons learned, and provide feedback to allow the GEF to identify issues that are recurrent across the GEF portfolio.

This document presents results of the Terminal Evaluation of the UNDP/GEF project "Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector". As a standard requirement for all projects financed by GEF, this terminal evaluation has been initiated by the Lead Implementing Agency, in this case UNDP Multi-Country Office (MCO) in Jamaica. The evaluation was conducted in accordance with the GEF Monitoring and Evaluation Policy[3], the Guidelines for GEF Agencies in Conducting Terminal Evaluations[4], and the UNDP Evaluation Guidelines[5].

Purpose and objective of the evaluation

The objective of the evaluation is to provide the project partners i.e. GEF, UNDP and the Government of Jamaica with an independent assessment and comparison of planned *vis-à-vis* actually achieved outputs and outcomes, identify the causes and issues which contributed to the degree of achievement of the project targets, and draw lessons that can improve the sustainability of benefits from the project, as well as contribute to overall enhancement of UNDP programming.

The Terms of Reference for the Terminal Evaluation is provided as Annex 1 to this report.

Scope and methodology

The evaluation covers all activities undertaken in the framework of the project. The time scope of the evaluation is the implementation period of the project, namely from July 2016 to May 2021. The geographic scope of the evaluation is Jamaica.

The TE examined the project according to the following evaluation criteria:

- Relevance: the extent to which the project is suited to local and national development priorities and organizational policies, including changes over time;
- Effectiveness: the extent to which the planned project results have been achieved
- Efficiency: the extent to which results have been delivered with the least costly resources possible;

[3] The GEF Monitoring and Evaluation Policy, Global Environmental Facility, November 2010

[4] Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects, Global Environmental Facility, April 2017

[5] Evaluation Guidelines, UNDP, January 2019

- Sustainability: the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion.

The TE used a combination of approaches to assess the achievements of the project from several perspectives and a mix of quantitative and qualitative methods of data collection and analysis. Desk reviews, virtual (on-line) meetings, and follow up with key stakeholders were applied as necessary. The evaluation was conducted in three phases as follows:

Preparatory phase: The first step in the evaluation was a desk review of the most important documents covering project design and implementation progress that provided the basic information regarding the activities carried out to attain the desired outcomes and outputs and the actual achievements. The review was followed by preparation of questions and discussion points aiming at gathering information from chosen respondents about attitudes, preferences and factual information linked to the performance indicators in the evaluation matrix.

Evaluation Matrix: An evaluation matrix was constructed based on the evaluation scope presented in the TOR. The matrix is structured along the five GEF evaluation criteria for TEs and included principal evaluation questions. The matrix provided overall direction for the evaluation and was used as a basis for interviewing stakeholders and further review of the project implementation reports.

Apart from the evaluation criteria of relevance, efficiency, effectiveness, sustainability and progress to impact, the evaluation matrix also included evaluation questions on cross-cutting issues relating to the promotion of values from a human development perspective, namely questions on gender equality and on social inclusion. The Evaluation Matrix is provided as Annex 2 to this report.

Data collection: The main parts of the data collection phase were interviews with the Project Team, UNDP Regional Technical Advisor and representatives of key project stakeholders.

Due to the travel restrictions related to the COVID-19 pandemic, the TE was a home-based assignment. Following the recommendations provided by the UNDP Independent Evaluation Office[6], stakeholder meetings were carried out remotely with the assistance of the UNDP MCO.

The itinerary of the interviews and list of people interviewed are provided as respective Annexes 3 and 4 to this report.

The main purpose of the interviews was to validate the information and data already collected and fill the information gaps identified in the previous phase. In order to follow a collaborative and participatory approach, the interviews were conducted to solicit responses to predetermined questions aiming to obtain in-depth information about the key stakeholders' experiences from the project implementation and their opinions about achievement of the planned results. They were based on a semi-structured format in order to allow the respondents to express their perception and elaborate on main issues related to the project implementation.

[6] Evaluations during COVID-19, UNDP IEO, June 2020

The evaluation criteria and the related questions were used to raise eventual additional and/or more specific questions on the issues mentioned in the interviews. Triangulation of results, i.e. comparing information from different sources, such as documentation and interviews, or interviews on the same subject with different stakeholders, were used to corroborate reliability of the collected evidence. This approach ensured verification of the information obtained in the document review phase, addressing the information gaps and correct interpretation of information and opinions of the project stakeholders, participants and beneficiaries. The interviews also served for collecting additional documents to support the evidence base of the evaluation.

Assessment of Evidence: After the data collection phase, data analysis was conducted as the third and final phase of the evaluation through review of documents that were made available to the Evaluation Team (ET) by the project implementing partners as well as of other documents that the Evaluators obtained through web searches and contacts with relevant projects stakeholders and beneficiaries. This process involved organizing and classifying the information collected, tabulation, summarization and comparison of the results with other appropriate information to extract useful information that relates to the evaluation questions and fulfils the purposes of the evaluation. This analysis included assessing the level of contribution of the project to the achievement of SDGs and alignment of the project objectives with the CPD and the UN Multi-country Sustainable Development Framework (UNMSDF). Contextual information was also gathered to assess the significance and relevance of the recorded performance and results.

The list of documents reviewed is provided as Annex 5 to this report.

Structure of the evaluation report

The structure of the TE report follows the "Evaluation Report Outline" presented in Annex F of the ToR of the assignment (contained in Annex 1 to this report).

The 'Executive Summary' of the report is provided in the beginning of the report. The body of the report starts with introduction and development context of the project and continues with a short project description. This is followed by the chapter that sets out the evaluation findings presented as factual statements based on analysis of the collected data. The findings are structured around the five essential evaluation criteria and include assessment of the project performance against the performance indicators and their target values set out in the project results framework (as provided in the Project Document). This part further includes assessment of the project management arrangements, financing and co-financing inputs, partnership strategies and the project monitoring and evaluation systems.

The final part of the report contains conclusions and recommendations substantiated by the collected evidence and linked to the evaluation findings. While the conclusions provide insights into identification of solutions to important issues pertinent to the project beneficiaries, UNDP and GEF, the recommendations are directed to the intended users in terms of actions to be taken and/or decisions to be made. This part of the report concludes with lessons that can be taken from the evaluation, including best practices that can provide knowledge gained from the

particular project circumstances (such as programmatic methods used, partnerships, financial leveraging, etc.) that are applicable to similar UNDP interventions.

Evaluation ethics

The evaluation was conducted in compliance with the principles outlined in the United Nations Evaluation Group (UNEG) Ethical Guidelines for Evaluation and the four UNEG guiding ethical principles for evaluation, namely Integrity, Accountability, Respect, and Beneficence.

Limitations of the evaluation

The main limitation of the evaluation was the inability of the evaluator to conduct face-to-face meetings with the main project stakeholders. The interviews were conducted remotely through digital platforms and limited the ability of the evaluator to use direct observation at the stakeholder and beneficiary institutions for gathering additional information, triangulating previously obtained information, and getting a broader picture of the stakeholders' activities.

Due to the difficulties to arrange virtual meetings and limited time available for the data collection, it was not possible to interview a sample of ultimate beneficiaries (i.e. workers and clients of the beneficiary hospitals) and get their assessment of the project achievements.

As a result of several delays in implementation, project activities under Component 3, namely installations of rooftop solar systems at selected hospitals, were not fully completed at the time of the TE and full information about the deliverables was not available during the data collection period.

PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

Project start and duration

The project was approved for implementation on 23 March 2016. The signature of the Project Document by the Government on 28 July 2016 has officially marked the start of the project implementation.

The GEF project grant approved for the project amounts to US$ 1,254,987 complemented with US$ 9,493,767 expected total co-financing composed of contributions from the Government and private sector. The total resources committed to the project at inception was thus US$ 10,748,754.

Development context

Jamaica's energy sector had been characterized by high energy costs and high dependence on imported petroleum products for its energy needs with the electricity sector accounting for over one-third of its oil consumption. Like many island nations, Jamaica is highly dependent on imported fossil fuels—more than 94% of the island's electricity was generated from petroleum-based fuels (2015)[7]— leaving it vulnerable to oil price and currency exchange fluctuations that directly impact the cost of electricity. In addition, the energy sector was a mix of several private and public institutions, resulting in complicated decision-making processes and coordination challenges. The resulting high levels of inefficiency led to high electricity costs and tariffs.

Jamaica published its National Energy Policy in 2009 as the country's first comprehensive long-term energy plan. The policy set a number of targets in relation to renewable electricity generation, energy efficiency, and greenhouse gas emissions to be met by 2030. Of particular note is the country's target for energy intensity that calls for a reduction of more than 50% from 2015 to 2030.

Jamaica has taken a number of steps to advance energy efficiency on the island, such as tax exemptions for energy efficiency equipment, energy efficiency labelling for refrigerators, freezers and room air conditions, as well as utility-led energy audit programs. In addition, the government has targeted a 30% reduction in energy costs for public buildings.

Jamaica has significant potential to expand wind, hydro- electric, and solar generation resources, as well as biomass generation technologies, to utilize the byproducts of the island's significant agricultural operations. While the power system requires firm capacity and flexible operations, renewable energy (RE) and energy efficiency (EE) can significantly reduce Jamaica's reliance on imported oil. One of the overriding factors for the slow development of RE in Jamaica was its status as a small island with small energy markets, where electricity generation had originally been developed through the use of diesel fuels. Although the national power company made strides in modernizing its equipment and investing in RE, the overall system efficiency is still below the targets. The spikes in global oil prices accentuated the volatility and vulnerability of the Jamaican economy with higher oil price increases that have

[7] Energy Snapshot Jamaica, prepared by the NREL of the US DoE for the Energy Transition Initiative: Islands, 2015

adversely impacted the country's foreign currency reserves, balance of payments and availability of budgetary resources for the social sectors such as health, education, education and national security.

Brief description of the project

The objective of this project is to advance a low carbon development path that would enable Jamaica to be less reliant on fossil fuels and thereby contribute to the reduction of the energy bill in the Jamaican public sector. The public sector in general including specific sectors such as the health and education sectors have been impacted by the lack of trained technicians to maintain critical energy related equipment and thereby avoid regular breakdown. Moreover, these institutions had been unable to respond to the high energy consumption through targeted energy efficiency interventions because of a lack of resources and capacity. The project was designed to build relevant capacity in the public sector by increasing the knowledge base of its operatives on matters pertinent to RE and EE as well as developing the appropriate technical skills necessary to support investments in the sector. These interventions have potential for strengthening the regulatory framework that governs the development and deployment of RE and EE technologies. Moreover, the project aims at establishment of a mechanism involving public private partnership (PPP) for a greater uptake of RE and EE through advancement of the Energy Performance Contract (EPC) model implemented by an Energy Service Company (ESCO).

The project has 3 components each consisting of a number of complementary activities designed to achieve the project objective. The major components of the project are listed below.

Component 1: Individual and institutional RE and EE knowledge and capacity strengthening in Jamaica's public sector

Component 2: Regulatory development for the deployment of RE and EE promotion in Jamaica's public sector

Component 3: Economic and fiscal instruments to facilitate the uptake of RE and EE technologies in the Jamaica's public sector

Problems the project sought to address

Due to its historical high energy cost, the Government of Jamaica (GoJ) had taken the initiative to increase efficiency of public sector facilities. Under the Hospital Energy Auditing Programme (HEAP), conceived and developed by the Petroleum Corporation of Jamaica (PCJ), hospitals were priority targets for being amongst the most energy intensive public sector facilities. Energy audits identified and documented cost-effective opportunities for energy and water savings and established implementation cost and return on investment.

Energy audits performed in 22 hospitals confirmed that several public hospitals had low power factors that contributed to excessive and inefficient electricity consumption. Moreover, several hospitals faced lack of access to hot water that undermined service quality. The high energy cost was one of the factors responsible for the extent of Jamaica's public sector electricity bill

and posed a challenge for the GoJ to provide adequate and additional services and upgrades to public health facilities. The country's high debt burden and economic challenges thus limited its ability to provide satisfactory healthcare to its population. As a consequence, the GoJ focused on public sector energy reduction measures in the health sector.

In 2012, the health sector accounted for 6% of total public sector electricity bill at a cost of J$ 919.171 million (US$10.2 million)[8]. The annual energy consumption of the sector was 30 GWh and the overall expenditure on electricity in major hospitals was on an upwards trend.

There were a number of challenges and barriers hindering the scale up of RE and EE in Jamaica in general and solar photovoltaic (PV) in particular. These barriers can be categorized as regulatory barriers, policy and legal barriers, technical barriers, capacity and knowledge barriers and financial barriers. The project was designed to contribute to addressing these barriers and establish a framework for a viable PV sector complemented by an energy efficiency programme in selected public buildings.

Capacity and knowledge barriers

Jamaica has an extremely strong solar energy potential across the entire island as solar irradiance is relatively consistent throughout the year. Despite this enormous potential, Jamaica had very limited installed solar energy capacity at the project inception. There was approximately 16 MW of installed solar PV capacity that was used only for few specific applications, including rural electrification, street lighting and some stand-alone generation[9].

Accelerated growth in the RE market in general and solar PV in particular requires an increase in the skill sets for various components of the sector. Development of the RE market requires more investments in the areas of design, assembly, installation and maintenance of solar PV systems. Technical capacity building is necessary to support market growth to ensure provision of quality services. Lack of technical capacity to support the PV market negatively affects availability of job opportunities and slows down the PV market growth.

Legal and regulatory barriers

The Electricity Lighting Act and the Building Regulations are the key legal and regulatory frameworks governing the Jamaican power market. The Building Regulations include provisions for RE development in Jamaica and the former is being revised. However, there was lack of secondary legislation for implementation of the proposed measures. Due to absence of a modern Building Code, there were no obligations placed on the public sector for achievement of higher energy performance standards. The Electricity Lighting Act and the Building Regulation were to be repealed to incorporate new standards in building designs for promotion of energy efficiency.

Ineffective legislation and delayed repeal of older legislation frameworks was recognized as a barrier to be urgently removed. Updated legislation was needed to specify guaranteed quality

[8] Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector: UNDP/GEF Project Document, p.11
[9] Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector: UNDP/GEF Project Document, p.15

standards for solar hot water systems and provisions for net billing, interconnection standards as well as equipment performance standards for small-scale power generation.

Financial Barriers

A series of financial barriers restricted the public sector from making investments in RE and EE, including:

- Investments in RE or EE were not factored into public sector capital expenditure or operating budgets,
- IMF expenditure restrictions required 10% reduction of the public sector investments that limited investments from the public sector budget,
- Although investments in RE/EE reduce public sector electricity consumption and foreseeably reduce electricity bills, these effects are not immediately realized due to the high upfront cost of RE/EE investments. Investments in energy efficiency and renewable energy have long-term impacts and require thoughtful evaluation of the financial trade-offs, risks, and opportunities,
- RE and EE were outside of the core expertise area for many public sector entities and the time investment required deterred budget- and time-strapped public servants from considering investments,
- Although alternate public sector EE/RE financing vehicles, such as Energy Performance Contracting and Third-Party Ownership models existed but had been largely untested in Jamaica.

Information/Awareness and Perception Barriers

There was insufficient awareness of the benefits of RE and EE among the general public and the private sector, including financial institutions. Generally, people were unable to make sound and informed decisions on energy related products and services because of lack of information and insufficient education on the types of RE, their transaction costs, risk management, and the choices bringing optimum benefits.

Information about RE technologies was not readily available and such matters were not often discussed in the media with the aim of increasing public education. Lack of information in combination with the legislative barriers inhibited financial institutions from participating in the renewable energy market and deprived the opportunity for growth of the RE markets.

As the major end user of electricity, household appliances and buildings were identified as priority areas for energy efficiency and conservation related initiatives. The Project Document identified several barriers to promotion of energy efficiency in buildings and appliances in the country, including;

- Limited awareness among users on potential savings with application of measures towards energy conservation and efficiency;
- Limited knowledge of architects and builders on bioclimatic building practices and materials in the country;

• Limited capacity of relevant ministries and public institutions responsible for buildings to implement appropriate policy and legal frameworks;

• Insufficient institutional and regulatory mechanisms to promote energy efficiency in buildings and appliances;

• Insufficient financial incentives for construction companies, individual households and public institutions to invest in energy efficiency;

Theory of change

A project's theory of change provides a basis for evaluation of the project resources, activities and results. The terminal evaluation will assess description of the project's theory of change including description of the project's outputs, outcomes, intended long-term environmental impacts of the project, causal pathways for the long-term impacts as well as implicit and explicit assumptions.

There was no explicit Theory of Change developed for the project.

Expected results

The project results framework in the approved Project Document consists of 3 substantive Outcomes and total of 8 substantive Outputs.

Outcome 1 focuses on increasing knowledge in RE and EE for individuals in the public sector and development strong institutional capacity to support RE and EE development in Jamaica's public sector.

The purpose of Outcome 2 is to contribute to development of a supportive legal and regulatory framework to facilitate the deployment of small decentralised RE power generation (notably solar PV) and EE programmes in Jamaica's public sector.

Outcome 3 was designed for development of an operational Energy Performance Contracting mechanism to facilitate the development of ECSOs and their viability to support RE and EE scale-up in the public sector.

Table 1 below provides a list of the project outcomes and their specific outputs as defined in the approved Project Document.

Table 1: Project outcomes and outputs as per the approved Project Document

Outcome No. and Title	Specific Outputs
COMPONENT/OUTCOME 1: Increased knowledge in RE and EE for Individuals in the public sector and strong institutional capacity to support RE and EE development in Jamaica's public sector.	1.1: Technicians within the public sector trained and certified to acceptable industry standards in renewable energy technology and energy efficiency particularly in the solar photo-voltaic subsector 1.2: Selected staff from financial institutions, have increased knowledge in matters of RE, EE and Energy Performance Contracting 1.3: Awareness of senior management and maintenance staff at selected hospitals, other public institutions and NGOs and CBOs enhanced 1.4: Relevant institutional capacity within public institutions strengthened to facilitate an increase in the scale-up of RE
OUTCOME 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralized RE power generation (notably solar PV) and EE programs in Jamaica's public sector	2.1: The legal and regulatory regime to facilitate scale-up of RE and EE reviewed and strengthened
OUTCOME 3: An operational Energy Performance Contracting mechanism to facilitate the development of ECSOs and their viability to support RE and EE scale-up in the public sector of Jamaica	3.1: Uptake of renewable energy strengthened with the Energy Performance Contracting pilot program 3.2: Investments in Solar PV, solar water heaters and energy efficiency retrofits in the health sector encouraged 3.3: Other renewable energy sources (wind energy) piloted in the public sector on a small scale

Table 2 below provides the expected results at the level of the Project Objective.

Table 2: Expected results as per the approved Project Document

Result	Indicator	End-of-project Targets
Project Objective: To advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of RE and improvement in EE in the health sector	Cumulative amount of reduced/avoided CO_2 emissions as a direct and indirect result of the investments financed by the project	Lifetime Direct: 39,344 cumulative tonnes of CO_2eq reduced/avoided Indirect Bottoms up and Top Down: 33,838 tCO2 and 718,400 tCO2 respectively)[10] Approximate Total energy produced annually: 3,583 MWh

Main project stakeholders

Stakeholder engagement is an inclusive and continuous process between a project and those potentially impacted that encompasses a range of activities and approaches. It is arguably one of the most important ingredients for a successful project delivery and therefore an essential element of this project.

The work on project preparation identified a number of stakeholders including government agencies, regional organizations, professional associations, academia, private sector entities and NGOs. The Project Document contains a comprehensive analysis of the stakeholders and

[10] Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects, GEF/C.33/Inf.18

their respective roles and responsibilities. Key government agencies important for the project and their respective areas of responsibility are listed in Table 3 below.

Table 3: Key government stakeholders and their responsibilities

Stakeholder	Responsibility
Ministry of Science, Technology, Energy and Mining (MSTEM)	Overall portfolio responsibility for the energy sector with a role of formulating and promulgating the implementation of the Energy Policy and sub-policies
Petroleum Corporation of Jamaica (PCJ)	PCJ mandate includes the exclusive right to explore and develop in addition to petroleum all renewable and other existing energy resources
Office of Utilities Regulation (OUR)	Direct regulation of the electricity sector including the establishment of tariffs and service standards
Electricity Division (Government's Electrical Inspectorate - GEI)	Responsible for the inspection and certification of all electrical installations throughout the island in accordance with the Electric Lighting Law to ensure that they meet the required standards of safe electrical installations
Bureau of Standards Jamaica (BSJ)	Provides certification, inspection, testing and calibration as related to the energy sector and for appliances
Jamaica Energy Council (JEC)	Facilitates broad-based consultation among key energy sector stakeholders and expedites decision-making concerning the implementation of the Energy Policy
Planning Institute of Jamaica (PIOJ)	Initiates and coordinates the development of policies, plans and programmes for the sustainable development of Jamaica, including collaboration with external funding agencies for identification and implementation of external cooperation agreements and programmes

FINDINGS

This section provides a descriptive assessment of the achieved results. In addition, several evaluation criteria are marked in line with the requirements for GEF Terminal Evaluations.

Project design/formulation

This part of the TE report analyses several aspects of the project design for assessment whether the project design was appropriate for delivering the expected results.

Analysis of the project results framework

This section makes an assessment of the project results framework in terms of clarity, feasibility and logical sequence of the project outcomes/outputs and their links to the project objective. It also examines the specific indicators and their target values in terms of the SMART[11] criteria.

Table 1 in the previous section list the project outcomes and outputs from the RF in the approved Project Document. The original RF was subject to substantive revision during the UNDP RTA visit of Jamaica in October 2017. The revised outcomes and outputs are listed in Table 4 below.

Table 4: Project outcomes and outputs as per the RF revision in October 2017

Outcome No. and Title	Specific Outputs
COMPONENT/OUTCOME 1: Increased knowledge in RE and EE for individuals in the public sector and strong institutional capacity to support RE and EE development in Jamaica's public sector.	1.1: Recommendations for acceptable industry standards in RE technologies and EE training and education, particularly in the solar PV subsector, developed and capacity of selected training institutions within the RE/EE sector enhanced 1.2: Technicians within the public sector trained and certified to acceptable industry standards in RE and EE with a focus on the solar photo-voltaic subsector 1.3: Selected staff from financial institutions have increased knowledge in matters of RE, EE and Energy Performance Contracting
OUTCOME 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralised RE power generation (notably solar PV) and EE programmes in Jamaica's public sector	2.1: The legal and regulatory regime to facilitate scale-up of RE and EE reviewed and strengthened 2.2: Adoption of RE/EE technologies in the public sector has been strengthened by increased coordination with line ministries and public procurement 2.3: A project M&E Plan designed and implemented, including GEF Terminal Evaluation
OUTCOME 3: An operational Energy Performance Contracting mechanism to facilitate the development of ECSOs and their viability to support RE and EE scale-up in the public sector of Jamaica	3.1: Uptake of renewable energy strengthened with the Energy Performance Contracting pilot programme (Technical Assistance) 3.2: Investments in Solar PV, solar water heaters and energy efficiency retrofits in the health sector encouraged

[11] SMART stands for Specific, Measurable, Attainable, Relevant, Time-bound.

It follows from Table 4 above that the revised project RF consist of 3 outcomes and 8 outputs. Comparison of the original and revised RFs (respective Tables 1 and 4) shows that the main changes were made under Outcome 1 where the original four outputs were replaced by three newly defined outputs. Two new outputs were added under Output 2 while one output was dropped from Outcome 3. The revision effectively reduced the total number of substantive outputs from 8 to 7 (the new Output 2.3 is a procedural output related to M&E).

The evaluator found the essence of the revision reasonable, particularly for the reason that the revised RF has indicators and end-of-project (EOP) targets at the level of outputs which was not the case in the original RF. Also, dropping the original output on small scale piloting of other RE technologies (wind energy) in the public sector from Component 3 was a good move as the original output was out of scope and was not linked to the capacity building under the project. However, the new Output 2.2 and its indicators introduced some inconsistency into the revised RF as shown in Table 5 below.

Table 5: Inconsistency in the revised RF

Project result	Indicator	Comments
Outcome 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralised RE power generation (notably solar PV) and EE programmes in Jamaica's public sector	(2a) Implementation level of RR/EE regulation under national legislation including Electricity and Building Act;	The indicators are too general without specific relation to solar PV
	(2b) Implementation status of green procurement in Jamaica's public sector.	
Output 2.2: Adoption of RE/EE technologies in the public sector has been strengthened by increased coordination with line ministries and public procurement.	(2.2a) Establishment knowledge exchange platform (y/n);	The indicators are not relevant for measuring achievement of the output and would better fit under Outcome 1 (capacity building)
	(2.2b) National Standards/manual developed for the handling, installation and monitoring of Solar PVs.	

The RF revision also introduced 3 new indicators and targets for measurement of achievement of the Project Objective as shown in Table 6 below.

Table 6: New indicators and EOP targets at the level of the Project Objective

Result	Indicators	End-of-project Targets
Project Objective: To advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of RE and improvement in EE in the health sector	A. Total direct GHG emission reductions (ton CO_2eq)	16,919 tonnes CO_2eq (over lifetime)
	B. Volume of investment in RE and EE technologies mobilized (US$/y);	US$ 6 million per year (from DBJ)
	C. Extent to which EE policies and regulations are adopted and enforced (aligned with GEF CC tracking Tool)	C."3" (regulation proposed but not adopted)
	D. Annual electricity production (RE) and savings (EE) of installed demonstration pilots (MWh/y)	3.583 MWh/y
	E. Number of beneficiaries with access to improved energy services in Jamaica's health sector (m/f)	50 hospital clients per day (25m/25f)

The estimate of the total energy saved/produced was miscalculated in the Project Document and therefore the EOP target for Indicator D was set at an unrealistically high level. This was

not corrected during the revision of the project RF when only Indicator A and the related EOP target (total direct GHG emission reductions) were changed. The revision did not provide any rationale for the change of the EOP target. As the GHG emission reductions are directly related to the energy savings, the revision of the EOP target for Indicator A should have been based on a revision of the EOP target for Indicator D.

The new indicator B appears to be detached from the project results framework as there is no direct relation of the RE/EE financing by DBJ to the outcomes and outputs in the RF. Moreover, the new indicator E does not have relation to the Project Objective as it is by nature an impact indicator.

It could be concluded that the revision of the RF corrected to a great extent the deficiencies in the original RF and through definition of indicators and targets at the output level improved the use of the RF as a M&E tool for tracking progress in the project implementation.

Assumptions and risks

Identification of risks enables the implementing partners to recognize and address challenges that may limit the ability of the project to achieve the planned performance outcomes. At the project design phase, a risk analysis was conducted and an overview of risks to achievement of the project's goals was contained in the Project Document, including risk categorization and assessment, as well as corresponding risk mitigation measures, as shown in Table 7 below.

Table 7: Internal project risks identified at the project inception

Risk description	**Level**	Impact & Probability	**Mitigating actions**
Lack of communication and to some extent coordination amongst various stakeholders implementing similar projects in Jamaica	Moderate	P = 3 I = 2	The project will ensure the coordination and integration in support of energy and climate change objectives, in line with Jamaica's National Energy Policy 2009-2030. It will be implemented using the DIM modality with UNDP as the implementing agency and the PCJ the implementing agency for Component 3 with guidance from MWLECC (climate change policy oversight). These three institutions are tasked to engage other beneficiary ministries and public entities. There will be a strong communication network with similar projects being implemented in Jamaica in order to build synergy and avoid duplication. This project will also engage the Bureau of Women's Affairs.
Delays in technical components of the project due to lack of relevant capacity in the sector	High	P = 2 I = 4	The Project is designed to build capacity at the technical level to strengthen the RE sector in Jamaica by providing trained personnel that can design, assemble, install and maintain solar PV, solar water heating and retrofit EE systems. It will build the necessary awareness and provide relevant training for selected personnel from the financial sector and the ESCO industry (who will be implementing the EPC) to facilitate financing for RE projects.
The uptake of RE project remains low notwithstanding grant funding investments for EE and EPC to facilitate up take of RE	Low	P = 1 I = 3	Despite several financial programmes that have been established to support investment in the energy services sector, the results are slow in coming and available energy funds remain largely unused. There is a limited number of private local actors and low capacity. The few EE and RE projects presented to banking institutions are unattractively packaged with long payback periods. The Energy Services Company (ESCO) industry using the proposed Energy Performance Contracting (EPC) has the potential to create new businesses and new jobs, deliver savings in energy consumption and cost, and provide climate change mitigation through reduced carbon emissions.
The inability of the government to broaden existing fiscal and Financial incentives or to approve new incentives because of its IMF commitments	Moderate	P = 2 I = 2	This project will support the government's agenda to promote access to cleaner energy sources. As a consequence of the high electricity tariffs, and the costs to Jamaica's public sector (particularly the health sector), intervention in solar PV, solar water heating will redound to tremendous savings for the government.
Project Management risk	Medium	P = 1 I = 4	Selection of staff without the appropriate skills may comprise the delivery of the project. To avoid associated risk, the selection of key project staff must be based on competitive selection procedures emphasising the skills and qualification requirements stipulated in the ToR.

In addition to the above, several external risks were identified as follows:

- An unstable financing environment in which different financial and fiscal incentives, cost recovery mechanisms and other supporting measures are introduced and removed at short notice in an unpredictable manner.
  - Short term fiscal incentive would not allow the market to reach critical mass at which point it will begin to experience growth;
  - Government of Jamaica's inability to introduce new incentive packages for RE uptake at this time based on its stringent IMF commitments;
  - Inability to build the necessary institutional and local capacity during the project period due to lack of qualified personnel;
  - The continued reduction in the price of oil on the world market may likely give a false sense of security to the country's energy solution and therefore the gains made in the promotion of RE may lose some momentum in advancing the energy agenda forward;
  - Failure to secure co-financing from potential project partners. This may result from the unforeseen diversion of government budgets and resources towards issues with more pressing priorities such as disaster relief and large infrastructure projects that would generate significant economic benefits;
  - High upfront costs of PV systems may still pose a barrier to some targeted clients despite the proposed financial mechanism. Long-term and affordable financing (lending) mechanisms may be critical. High interest rates may undermine the attractiveness for financing RE investments;

The probability and impact of the external risks were not quantified in the Project Document.

As a standard practice of UNDP-implemented projects, the risk log based on the initial risk analysis should be regularly updated in UNDP enhanced results-based management platform (ATLAS) and new operational risks (if identified) added to the risk matrix. Risks rated as critical (i.e. when both impact and probability are high) and corresponding mitigation measures should be reported in the annual Project Implementation Reviews (PIRs).

Based on the available PIRs, the risk of slow uptake of the RE technologies was identified as critical and further monitored throughout the project implementation. Further operational risks were added in relation to lack of cooperation of the government entities (MOH and PCJ) and inability to ensure full staffing of the PMU. In 2020, a risk related to COVID-19 restrictions was added to the critical risk matrix.

The evaluator concludes that both the risk identification at the project inception as well as the risk management during implementation were performed thoroughly and critical risks were monitored and reported in the PIRs.

Lessons from other relevant projects incorporated into project design

This is a GEF-5 project that was designed between 2014 and 2016. At that time, relevant GEF-4 projects had not yet been completed hence there were no lessons to be learned from projects

on RE and EE implemented in the region. Specifically, UNEP has been implementing the GEF-4 project "LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica" since 2012 but the Project Document did not mention any lessons learned from the latter or any other relevant project.

Planned stakeholder participation

Although a number of stakeholders were listed in the Project Document, only few of them actively participated in the project. The main entry point for involvement of key project stakeholders was supposed to be meetings of the Project Board (PB). The project team and the UNDP MCO made an effort for frequent dissemination of critical information to key project stakeholders. Despite this effort, the project reportedly did not manage to get effective and timely support from some stakeholders.

Relevant project stakeholders (e.g. BSJ, JTEC, MSET and PCJ) provided valuable technical input or advice for the formulation knowledge products under the project such as the solar PV guidelines, improvement of regulatory frameworks for energy efficiency, coordination of training activities on sustainable energy, as well as for implementation of the RE and EE demonstration projects.

Gender responsiveness of the project design

The Project Document contains only a very brief and generic analysis of gender energy-related issues making reference to Jamaica's Sustainable Energy Road Map (2013). Gender issues were included in the capacity building through a plan to construct gender-disaggregated database of trained technicians for solar PV.

Replication approach

The project was designed to contribute to improved conditions for further investment in the energy sector and particularly in the solar PV sub-sector. The sustainability is based on piloting of the Energy Performance Contract (EPC) as a de-risking mechanism that aims at providing a sustainable source of financing without need for substantial initial cost and stringent financial commitment. The EPC mechanism offers a good opportunity for the public sector to enter into energy service contracts with ESCOs without having to provide high upfront investment capital. ESCOs would pay for the initial investments and get their money back from the savings on the energy bills. It has excellent potential for scalability to other public sector institutions in Jamaica and replication in the Caribbean region.

In addition to previous experience with RE interventions, the utilization of solar panels in public hospitals in Jamaica is intended to serve as a credible and practical first-hand experience to dispel doubts about renewable energy and its potential or development even at the community and household level. The demonstration of RE within the public sector is expected to have a replicating effect.

UNDP comparative advantage

UNDP is well equipped to assist developing countries in addressing their needs and priorities due to its focus on poverty reduction, pro-poor economic policies and environmental sustainability. With its permanent presence in nearly 170 countries and long-term relationships between UNDP and the vast majority of nations, the Organization serves as a key bridge between the world-wide vision of development as a core UN pillar and its sustainable achievement in individual states and lives – offering the global partnership, support, collaboration, expertise, and often funding, required. Hence, the organization has tools to support countries in pursuing a balanced inclusive and sustainable growth patterns.

The essence of UNDP's comparative advantage for the GEF-funded projects is embedded in its global network of country offices, its experience in integrated policy development, human resources development, institutional strengthening, and non-governmental and community participation. In addition to UNDP's proven track record on promoting, designing and implementing activities consistent with the GEF mandate and national sustainable development plans of the developing countries, UNDP also has extensive inter-country programming and implementation experience.

A key part of UNDP's comparative advantage is the role of knowledge management broker, i.e. in accumulation of first-hand experience from implementation of projects in specific technical areas. As one of the implementing agencies for GEF, UNDP has been expanding its work on energy efficiency for achievement of the Sustainable Development Goals (SDGs).

In the field of RE and EE, UNDP, has been implementing a large portfolio of GEF funded projects aimed at promoting policies, technologies, institutional structures and financial models to spearhead the transition towards low-carbon buildings in over 50 developing and transition economies around the globe. Starting form GEF-3, UNDP has also implemented much smaller portfolio of projects on standards and labelling for energy efficient appliances.

Besides the specific technical areas of RE and EE, UNDP has a long-standing experience in developing and implementing coherent packages of "hard" and "soft" interventions that make technology transfer successful when complemented by targeted strengthening of relevant human and institutional capacities.

Linkages between project and other interventions within the sector

In 2014, the European Union (EU) launched a 3-year project "Developing an Energy Services Company (ESCO) Industry in Jamaica", which was aimed at building trust and confidence in the energy-saving industry, while increasing awareness and understanding of the EE and RE main issues. Due to delays and low financial delivery, the EU prematurely cancelled the project and no real practical experience was gained in the field of Energy Performance Contracting (EPC).

In 2017, the Development Bank of Jamaica (DBJ) started an initiative led by the National Education Trust (NET) to identify private sector provider(s) for financing, installation and

maintenance of solar PV systems in a pilot project at 30 selected secondary schools under an ESCO model with payment to the private sector provider(s) from energy savings.

Also in 2017, the Government commenced the 6-year Energy Management and Efficiency Programme (EMEP). The Petroleum Corporation of Jamaica (PCJ) started to implement this US$ 40-million initiative funded by the Inter-American Development Bank (IDB), the Japan International Cooperation Agency (JICA) and the European Union Caribbean Investment Facility (EU-CIF). The EMEP is expected to finance extensive retrofits to achieve cost savings at 30 GoJ-operated healthcare facilities, schools and agencies with the intention to finance the deep retrofits using a guaranteed-savings model[12].

UNDP tried on several occasions to partner with the EMEP through discussions with the IDB about collaboration on the project. The IDB was also very keen on the results of UNDP's project and was quite receptive to possibly furthering the EPC model if successful. Reportedly, at some stage the DBJ shared the EMEP RFP and the template for the ESCO model with UNDP and the project ESCO training consultant. However, no other concrete links to the above projects have been spotted during the data collection for this TE.

Management arrangements

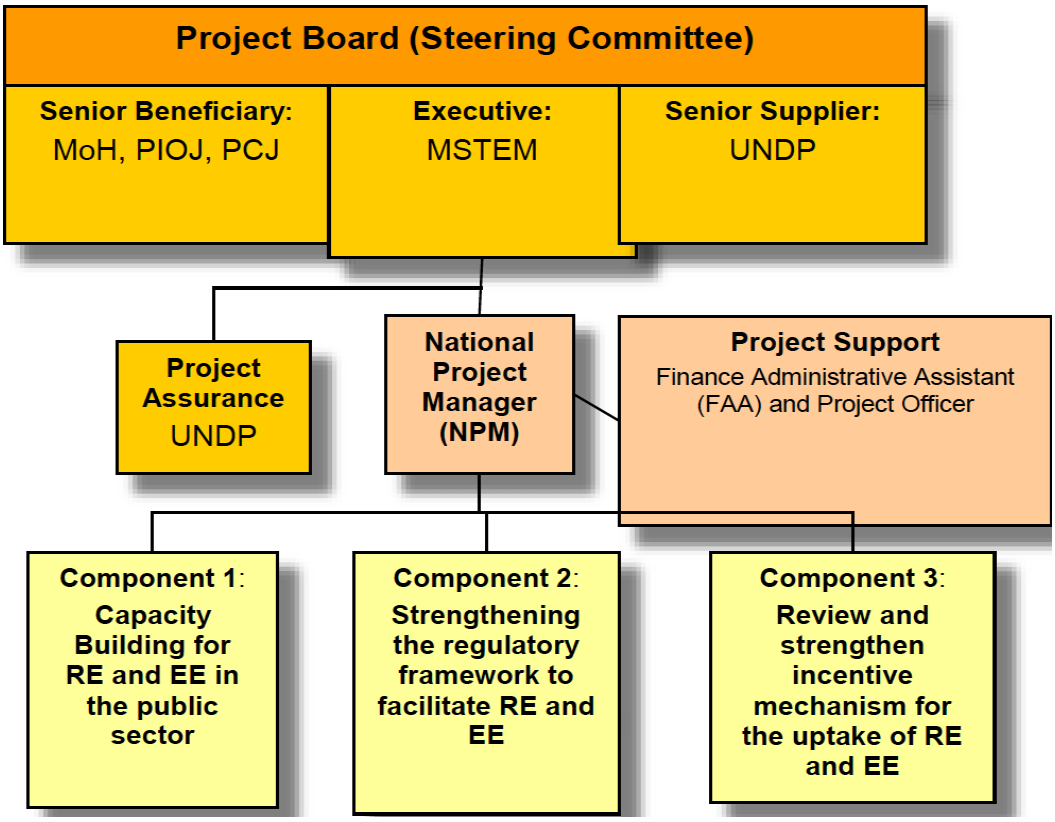
The project was designed for implementation according to UNDP's Direct Implementation Modality (DIM) in line with the DIM project management implementation guidelines agreed between UNDP and the Government of Jamaica. UNDP, represented by the Multi-Country Office (MCO) in Jamaica, assumed responsibility for (i) providing project assurance services (ii) recruitment of the project staff; (iii) overseeing financial expenditures against project budgets (iv) appointment of independent financial auditors; and (iv) ensuring timely reporting of implementation progress and commissioning of mandatory evaluations. In this context, UNDP MCO provided necessary support and backstopping to ensure the project was implemented according to UNDP and GEF policies and regulations and ensure the achieved results are in line with the project goal and objective.

Under the management arrangements outlined in the Project Document, UNDP MCO had overall management responsibility for Outcomes 1, 2 and 3 while PCJ as the Implementing Partner assumed responsibility for managing the implementation Outcome 3.

The original project management structure is in Display 1 below.

[12] In 2019, PCJ was subsumed into the Ministry of Mining and Energy and the EMEP is currently implemented by Ministry of Science, Energy and Technology.

Display 1: The project management structure



Inception Workshop

The Project Document stipulated that a project Inception Workshop (IW) is held within 4 months after the official project start date and after appointment of the Project Manager. This standard approach was not fully followed under this project. The Inception workshop was held on 22-24 March 2017, 8 months after the project official starting date.

The 1st day of the IW was an internal session attended by GEF advisors and UNDP specialists only and included substantive discussion on a number of topics, in particular review of the technical aspects of the project and of the M&E requirements and procedures for GEF-funded projects. The open session on the 2nd day was the inaugural meeting of the Project Board attended by key national stakeholders and the 3rd day was reserved for a site visit of two project beneficiary HCFs.

Although the IW was organized later than originally expected, it fulfilled the expected functions through addressing the following issues:

- Detailing the roles and responsibilities of the Implementing Partners and the project governance, including reporting and communication lines,
- Approval of the first Annual Work Plan (AWP) based on the project results framework,
- Providing a detailed overview and reach consensus on M&E requirements, including the M&E plan and budget;

Overall, the IW assisted the key project stakeholders to fully understand and take ownership of the project.

Project Board

As already mentioned above, the Project Board was established at the IW with the members listed in Table 8 below

Table 8: Composition of the Project Board

Agency	**Role**
UNDP	Executive and Senior Supplier
Petroleum Corporation of Jamaica (PCJ)	Senior Supplier, Senior Beneficiary
Ministry of Science Energy & Technology (MSET)	Senior Beneficiary
Ministry of Health	Senior Beneficiary
Ministry of Finance and Public Service (MOFPS)	Senior Beneficiary
Development Bank of Jamaica (DBJ)	Senior Supplier, Senior Beneficiary
Planning Institute of Jamaica (PIOJ)	Senior Beneficiary
Private Sector Organization of Jamaica (PSOJ)	Senior Beneficiary

Overview of the PB meetings is in Table 9 below.

Table 9: List of meetings of the Project Board

No.	**Date**	**No.**	**Date**
1	23 March 2017	8	28 August 2018
2	11 September 2017	9	20 December 2018
3	24 October 2017	10	16 January 2019
4	15 December 2017	11	19 February 2019
5	31 January 2018	12	13 March 2019
6	3 May 2018	13	16 October 2019
7	4 July 2018		

Despite the relatively frequent meetings of the Project Board, the real impact of these meetings was less than expected. Reportedly, on several occasions the PB did not act swiftly enough to address project risks and challenges and this hindered quick resolution of some issues and advancement of project activities.

The evaluator found the actual project management arrangements in line with the Project Document and considers them adequate for the size and complexity of the project. Review of available PB meeting minutes gave information about the functionality of PB and various technical and organizational issues that had been discussed.

Project implementation

Adaptive management

GEF evaluations assess adaptive management in terms of ability to direct the project implementation through adapting to changing political, regulatory, environmental and other conditions outside of control of the project implementing teams. The adaptive approach involves exploring alternative ways to navigate the projects towards meeting the planned objectives using one or more of these alternatives.

An example of successful adaptive management was the situation after resignation of the original Project Manager shortly after the project Inception Workshop. The UNDP MCO decided to promote then the Project Officer to the vacant position of the PM. Later in the year the UNDP RTA led the revision of the project RF that to a great extent corrected several inconsistencies in the RF. However, negotiations with PCJ about recruitment of a new Project Officer were not successful.

Continued internal management changes and a comprehensive internal audit at the PCJ triggered major cases of adaptive management for implementation of Component 3. To resolve the issue of below par involvement of the PCJ, UNDP MCO engaged a local Technical Advisor (TA) and an ESCO consultant to conduct review of the produced reports and propose the way forward. Following the recommendations of the latter, a concept note on an alternative ESCO model was sent to the MOF. However, the lack of feedback on the proposal from the Ministry further exacerbated the delays in implementation.

Due to the continued inability of the PCJ to perform the implementation duties after the subsuming of the PCJ under the Ministry of Science, Energy and Technology (MSET), the project negotiated amendment of deliverables for the contract with the local TA and managed thus to bridge the technical gap for preparation of procurement documents and installations of the demonstration solar PV systems.

Partnership arrangements

During visit of the project in October 2017, the UNDP RTA suggested to establish partnership with the USAID-funded Caribbean Clean Energy Program (CARCEP) that had been involved with technical and financing capacity development on EE to public and private agents. It was suggested that the project adapts the CARCEP´s concept to the health sector and use in trainings as it is well accepted and known in the market.

The UNDP RTA also suggested to learn from the project of the National Water Commission (NWC) of Jamaica for installation of energy efficiency pumps and variable speed drives at some of its facilities through guaranteed savings performance contracts with an international ESCO.

Although the above partnerships were established, they did not have major effect on the project implementation.

Project finance and co-finance

The GEF grant for this project was approved at US$ 1,254,987 and together with expected co-financing of US$ 10,748,754 the total cost of the project at inception was US$ 12,003,741. Table 10 below displays the breakdown of expenditures from the GEF grant by the years of the project implementation period.

Table 10: Actual expenditures by years of implementation[13]

	2016	2017	2018	2019	2020	2021	Total
Outcome 1		11,215.34	82,160.44	103,926.17	9,118.13	374.86	206,420.08
Outcome 2		14,129.50	10,362.08	17,366.78	16,313.31	52,965.00	111,136.67
Outcome 3		16,697.57	10,436.40	93,885.46	350,173.24	120,017.06	591,209.73
Project Management	16,364.67	22,343.13	26,553.43	8,991.71	19,112.46	0.00	93,365.40
Total	**16,364.67**	**64,385.54**	**129,512.35**	**224,170.12**	**394,717.14**	**172,755.86**	**1,002,131.88**

It follows from Table 10 that the total expenditure from the GEF funds at the project operational closure was US$1,002,131.88, that is 79.9% of the total GEF grant. Given that at the same time the amount of unliquidated obligations was about US$ 60,000, the total financial delivery will reach almost 85%.

The data in Table 10 also confirm the slow implementation in the first 2.5 years of the project (2016-2018) when the combined delivery reached only 16.8% of the total GEF grant.

Table 11 below provides comparison of the planned and actual expenditures by the project components.

Table 11: Planned and actual disbursement of the GEF funds by components[12]

Project Component	Budget (US$)	Expenditures (US$)	%
Outcome 1	225,148	206,420.08	91.7%
Outcome 2	126,000	111,136.67	88.2%
Outcome 3	789,750	591,209.73	74.9%
Project Management	114,089	93,365.40	81.8%
Total	**1,254,987**	**1,002,131.88**	**79.9%**

The figures in Table 11 show a balanced delivery under Outcomes 1 and 2 of approximately 90% of the total GEF grant. The lower delivery under Outcome 3 reflects the fact that some investments for the RE/EE demonstrations could not be completed before the operational closure, however, the delivery will also increase once all obligations are settled.

The project was designed to attract co-financing from several stakeholders including the PCJ as the Responsible Party for the project. Therefore, the figures from Section IV of the Project Document were further analysed in relation to co-financing. Table 12 below compares the

[13] Based on UNDP Combined Delivery Reports (CDRs) from 2016 till 11 June 2021.

planned co-funding at the project inception with the actually realized co-financing at the completion of the project.

Table 12: Comparison of planned and actual co-financing by source in 2015-2020

Source (type)	Planned (US$)	Actual (US$)
UNDP (in-cash)	30,000	0
PCJ (in-cash)	1,361,240	0
MoH (in-kind)	65,000	48,569
DBJ (in-cash)	43,450	0
DBJ (parallel)	8,368,143	5,500,000
JPC (in-kind)	120,000	0
GEF SGP (parallel)	313,300	0
Total	**10,301,133**	**5,548,569**

There are several inconsistencies in presentation of the co-financing figures provided by the Development Bank of Jamaica in the Project Document. The US$ amounts shown in the Project Document for the planned DBJ in-cash and parallel financing do not correspond to the amounts in J$ listed in the DBJ co-financing letter annexed to the Project Document[14].

At the project outset, the DBJ made available a technical assistance grant of J$ 5 million (in-cash) for conduct of energy audits and support of capacity building under Component 3. However, as no agreement between the DBJ, UNDP and PCJ was reached on spending the DBJ grant until the end of February 2020, the DBJ de-committed its technical assistance grant for the project. The in-cash co-financing pledged by the PCJ was not realized either.

Parallel financing of the project through the GEF Small Grants Programme (SGP) was not realized as the SGP financing was expended before the start of the project and an opportunity to use the DBJ parallel financing was not used for the project either. Although the DBJ was requested to earmark in its credit line a specific amount for parallel financing of ESCOs under the project, no mechanism was established for identification of specific activities or projects for the DBJ energy credit line. In 2016-2020, the DBJ energy credit line financed 74 energy audits and provided 31 loans for RE interventions at the total value of J$ 736 million (equivalent of US$ 5.5 million). However, the DBJ credit line was not used by the UNDP/GEF project hence there was no link between the project and the DBJ energy credit line.

The only realized in-cash co-financing was received from the UNDP core resources that was used on Project Management. Although the co-financing by project stakeholders is a mandatory condition for approval of GEF projects, the project agencies of the GoJ did not activate and systematically monitor actual levels of co-financing. Consequently, the information on the actually realized co-financing amounts was readily available only for the UNDP co-financing recorded in the UNDP CDRs.

[14] The in-cash co-financing commitment of DBJ at project inception was not correctly converted into US$

Monitoring and evaluation: design at entry and implementation

M&E design at project entry

The Monitoring & Evaluation (M&E) Framework was described in detail in the Project Document. The Framework consisted of the Project Inception Workshop, meetings of the Project Board, annual Project Implementation Reports, two audits and the Terminal Evaluation. The total indicative cost for the project M&E plan (excluding project team staff time and UNDP staff and travel expenses) was US$ 24,000, i.e. 1.9 % of the GEF grant. However, a major portion (US$ 14,000) of the allocated amount was earmarked for two audits hence the actual allocation for M&E activities was only 0.8% of the GEF grant that is considered insufficient.

The design of M&E framework followed the standard M&E template for projects of this size and complexity. Overall, the evaluator found the M&E design adequate for monitoring the project results and tracking the progress toward achieving the objectives, with the exception of the deficiencies in the project results framework discussed in the section "Analysis of the project results framework" above and the sub-optimal financial allocation for the M&E activities.

Therefore, the M&E design is rated **Moderately Satisfactory (MS).**

M&E at implementation

The main subject of the discussion here is the implementation of the originally planned components of the M&E plan. For the assessment of the M&E framework, the evaluator reviewed some of the project documentation related to monitoring and reporting, including the annual CDRs and annual Project Implementation Reviews (PIRs). The Inception Workshop and the Project Board are discussed under management arrangements above.

Annual Project Reports/Project Implementation Reviews (APRs/PIRs): The most important instrument in the monitoring process were the Project Implementation Reviews (PIRs) prepared regularly with annual periodicity at the end of each GEF fiscal year (July to June). Three PIRs were prepared for the GEF fiscal years 2018, 2019 and 2020 that provided a detailed account of progress made under the three project components. The PIRs were elaborated in a standard uniform structure and contain detailed reporting on progress towards performance targets at outcomes and the project objective levels, concise summaries on implementation progress and management of critical risks, as well as description of cross-cutting issues. In line with the requirements, PIRs contain ratings and comments on project progress provided by PM, UNDP MCO and the UNDP RTA. No inputs were provided by the GoJ Implementing Partner and the GEF OFP.

The evaluator found the PIRs compliant with the standard UNDP/GEF project cycle reporting tools and particularly detailed.

Terminal Evaluation: The Project Document stipulated TE to be conducted three months prior to the project completion date. In reality, TE preparation process was negatively influenced by

the COVID-19 pandemic in early 2020. TE was finally commissioned by the UNDP MCO in early 2021 and conducted in March-June 2021.

The M&E individual stages were implemented more or less correctly with only minor deficiencies in reporting hence the quality of M&E implementation as **Satisfactory (S).**

UNDP and implementing partner implementation / execution

The project followed the management arrangements presented in the Project Document that were based on a common scheme for project management arrangements under the UNDP Direct Implementation Modality (DIM). At the project preparatory phase, the PCJ, that would normally serve as the National Implementation Partner for projects on RE/EE, was undergoing internal restructuring. Therefore, the Government requested UNDP to implement this project in the DIM with the PCJ designated as the Responsible Party specifically for implementation of Component 3.

Reportedly, the PCJ did not produce any workplan for implementation of Component 3. The disagreement between PCJ and MOF about the PCJ role in the ESCO model slowed down the work under the ESCO/EPC output. Due to the on-going internal restructuring, the PCJ ability to implement even the single project component gradually faded out. The GoJ decision to dissolve the PCJ in 2019 ended direct involvement of GoJ in implementation of Component 3 and effectively transferred this responsibility to UNDP MCO.

Besides the internal problems of the PCJ, there was also another negative factor, namely the disagreement between the PCJ and MOF that slowed down the work under the ESCO/EPC output. The dissolution of the PCJ later on contributed to further delay in implementation of the demonstration solar PV installations. Due to the below par performance of PCJ, both outputs under Component 3 required additional efforts and adaptive management interventions by UNDP MCO as the Implementing Agency.

Apart from the MCO in Jamaica, UNDP also made available the Regional Technical Advisor (RTA) for advisory and technical backstopping of the project. RTA for the entire period of the project implementation was based in the UNDP Panama Regional Hub. Due to the geographical distance, the RTA's support was provided remotely with exception of one mission to Jamaica in October 2017 that included major revision of the project RF.

Based on the above findings, the overall quality of UNDP and implementing partners implementation/execution is rated Moderately Satisfactory (MS).

Project results

The information presented in this section was sourced from the various project implementation reports and verified with information collected through interviews with key informants. Additional sources of information were various studies and technical reports produced by the project. The list of documents consulted is provided as Annex 4 to this report.

Relevance

The questions discussed under this section are to what extent is the project linked to the national development priorities of Jamaica, the relevant GEF Operational Programme and strategic priorities of UNDP in the country and region.

The pertinent policies and strategies of the Government of Jamaica are as follows:

Vision 2030 Jamaica - National Development Plan[15], under the National Outcome 10 Energy Security and Efficiency, identifies energy as an essential input for modern economies and social life. The Plan calls for provision of a secure and sustainable energy supply through will diversification of the energy supply, increased use of renewable energy and a more efficient use of energy throughout the economy and society. Through the related Energy Efficiency and Conservation Programme (EECP), the Government is committed to designing and implementing measures to improve EE/EC in government-owned buildings, which will ultimately lead to substantial cost reductions in public sector operations.

The Jamaica National Energy Policy 2009–2030[16] approved by the Parliament in November 2010 seeks to develop "…a modern, efficient, diversified and environmentally sustainable energy sector, providing affordable and accessible energy supplies with long-term energy security and supported by informed public behaviour in energy issues, and an appropriate policy, regulatory and institutional framework." Implementing the Policy and meeting the abovementioned challenges require increased institutional capacity to formulate, plan, and implement the various programmes and specific initiatives set out in the policy and to monitor progress and impacts.

The Building Act 2018[17] came into force in January 2019 also facilitates the adoption and efficient application of the National Building Code of Jamaica (EEBC-95). The Code, originally adopted in 1995, has been under substantive revision during the recent years. Before the adoption of the Building Act, there was no legislation for mandatory compliance with EEBC-95. The passing of the Building Act impose significant new requirements for energy savings and provide thus opportunities for the development of EE services, in particular implementation of projects under a performance contracting scheme.

In relation to the UN Framework Convention on Climate Change (UNFCCC), the project helps the Government of Jamaica to fulfil the country's commitment to deeper GHG emission reductions in the energy sector where the latter sector together with the land use change and forestry are

[15] http://www.vision2030.gov.jm/National-Development-Plan
[16] https://jis.gov.jm/media/MinisterRobertsonRemarks-NationalEnergyPolicy_Oct-4.pdf
[17] https://japarliament.gov.jm/attachments/article/339/The%20Building%20Act,%202018.pdf

expected to achieve emission reductions between 25.4 %(unconditional) and 28.5 % (conditional) relative to a business-as-usual scenario[18].

The three components of the project are also well aligned with the GEF-5 Focal Area Climate Change Mitigation that puts emphasis on technologies that are commercially available but face barriers and require market pull to achieve widespread adoption and diffusion. Key expected outcomes under Objective 1 of the GEF FA Objective 1 '*Promote the demonstration, deployment and transfer of innovative low-carbon technologies*' include creation of enabling policy environment and mechanisms for technology transfer as well as demonstration and deployment of selected technologies. Under Objective 2 of FA '*Promote market transformation for energy efficiency in industry and the building sector*', the key expected outcomes include adoption and enforcement of appropriate policy, legal and regulatory frameworks and mobilization of investments for energy savings and GHG reduction.

Renewable energy has been placed high amongst corporate priorities for UNDP. The UNDP Strategy Note on Sustainable Energy 2017-2021 defines actions to support governments in transforming their renewable energy markets—removing barriers to renewable energy investment and creating favourable conditions for private sector involvement. Within its work on renewable energy, UNDP supports the development of on- and off-grid renewable energy technologies and delivery services. In doing so, UNDP supports governments to transform their renewable energy markets and identify and implement policies that catalyse investment in renewable energy technologies. All renewable energy solutions supported by UNDP focus on integrated approaches that benefit climate and development.

Key UNDP services in the area of energy efficiency include policy and programme support to promote energy efficiency in households, public and municipal facilities, residential and commercial buildings, and industry. UNDP is also supporting national and local governments to design and adopt efficient policies and legislation and help governments with integrated solutions that tackle energy efficiency in disaster risk reduction and recovery processes. Additionally, UNDP supports the implementation of business models and financing mechanisms to facilitate energy-efficient investment by private sector partners.

The project is also well aligned with the UN regional and country assistance frameworks. It links to the UN Multi-country Sustainable Development Framework (UN MSDF) in the Caribbean for 2017-2021, namely its Priority Area 4 – Sustainable and resilient Caribbean, that calls for taking measures to increase the sustainable and efficient use of renewable resources. It also aligns with the UNDP Country Programme for Jamaica 2017-2021, namely to its Priority Area 3, Output 3.1 - Inclusive and sustainable solutions adopted to achieve increased energy efficiency and access to renewable/alternative energy.

[18] Update of the Nationally Determined Contribution (NDC) to UNFCCC, Ministry of Science, Energy and Technology, 2020

In relation to the UN Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, energy is being recognized as a key enabler for development through establishment of SDG Goal 7: *Ensure access to affordable, reliable, sustainable and modern energy for all.* Its indicator 7.3 calls to double the global rate of improvement in energy efficiency by 2030. Universal access to energy, a higher share of renewable energy and massive improvements in energy efficiency are now part of the top global priorities for sustainable development. In addition to direct relation to SDG7, energy efficiency is indirectly related to other SDGs as summarized in Table 13 below.

Table 13: Relation of energy efficiency to UN SDGs[19]

Sustainable Development Goals	**Linkage with energy efficiency**
Sustainable energy	
7.3 Double the global rate of improvement in energy efficiency	7a. Enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies 7b. Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries
Other SDGs:	
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Energy efficiency and conservation influence the country's energy intensity and carbon content of economic growth
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Resilient infrastructure and public-private partnerships are required to ensure access to energy for all and to maximise energy efficiency
11. Make cities and human settlements inclusive, safe, resilient and sustainable	Municipalities require careful electricity planning and efficient power distribution
12. Ensure sustainable consumption and production patterns	The residential and buildings sector is a key part of a future in which there is sustainable consumption of energy and products
13. Take urgent action to combat climate change and its impacts	The carbon-intensive energy sector (based on fossil fuels) is a key driver of climate change.

Based on the above, relevance of the project is rated Relevant (R) for the recipient country, as well as the donor and implementing agencies.

Effectiveness

The principal questions to be discussed in this section are whether and how the project outcomes as well as its objective have been achieved and whether the project results have been delivered with the least costly resources possible. The text below will also highlight positive and negative, foreseen and unforeseen changes and effects produced by the project intervention.

In the series of tables below, the project results and achievements have been summarized and compared against the target indicators listed in the project's logical framework. The initial information about the project results/achievements was extracted from the project's PIRs and

[19] Compiled from Transforming our World: the 2030 Agenda for Sustainable Development (UN, 2015), Indicators and a Monitoring Framework for the Sustainable Development Goals, Sustainable Development Solutions Network (SDSN)

verified and updated through interviews and meetings held during the data collection phase. Additional information was supplemented from the project-related documentation provided by PMU.

Tables 14 – 17 list the indicator targets for the individual outputs, summarize the delivery status at the Terminal Evaluation and provide rating for the Outputs' delivery. Each table contains an overview of the actually achieved project results in bullet points followed by a short narrative with additional insight and details on how and why the results have or have not been achieved. At the end, the narrative also explains the basis for rating of each project outcomes. The text following each table summarizes some important facts related to the project results that could not be captured in the tables but were considered important for the justification of the rating of the project outcomes.

Table 14: Deliverables for Outcome 1

Result	Indicators	EOP Targets	Status at TE	Rating
OUTCOME 1: Increased knowledge in RE and EE for Individuals in the public sector and strong institutional capacity to support RE and EE development in Jamaica's public sector	1a) Quality standards for RE and EE tertiary education formalized (y/n);	1a) Quality standards adopted by tertiary education sector and formalized by Government;	JTEC considering development of post-secondary curricula framework	MS
	1b) Number of building managers and O&M staff certified (m/f);	1b) 20 people certified (26m/14f);	2 training workshops for 31 O&M persons (31m/0f)	
Output 1.1: Recommendations for acceptable industry standards in RETs and EE training and education, particularly in the solar PV subsector developed and capacity of selected training institutions within the RE/EE sector enhanced.	1.1a) Quality standards for RE and EE tertiary education developed.	(1.1a) Recommendations for quality standards developed.	Sustainable Energy Education Assessment completed	S
	1.1b) Quality standards for licensed electricians developed and the testing and measurement regime modernized	1.1.b) Curriculum for licensed electricians enhanced; Testing and Measurement Regime modernized and adopted by the Ministry of Science Energy and Technology through the GER.	BSJ energy efficiency testing laboratory upgraded	
Output 1.2: Technicians within the public sector trained and certified to acceptable industry standards in RE and EE with a focus the solar photo-voltaic subsector. M&V	1.2a) Number of Government officers trained to support RE and EE systems; disaggregated by sector and sex (m/f)	(1.2a) 40 Government Officers trained to support RE and EE systems (disaggregated by sex and sector)	31 Maintenance Persons trained in Energy Management and Solar PV Operations and Maintenance. (31 m/0f). 80 Health Sector Operatives (52m/18f) sensitized the RE/EE (2021)	HS
Output 1.3: Selected staff from financial institutions have increased knowledge in matters of RE, EE and Energy Performance Contracting.	1.3) Number of staff from financial institutions sensitized on RE, EE and EPC. Disaggregated by sex (m/f)	(1.3a) 20 people reached in addressed financial institutions (26m/14f)	4 people from financial institutions trained on green financing (2021) 40 energy service providers and project developers trained on financial aspects of RE/EE projects (2021)	MU

Output 1.1: An international consulting company was contracted to conduct a series of consultations within the public education system at the tertiary and professional levels in 2019. The consultations and related surveys established the education sector strengths, weaknesses and synergies and produced recommendations for improvement of the RE and EE education standards. The resulting assessment study of sustainable energy education identified lack of implemented international standards for the design and installation of RE systems as well as lack of enforcement

of existing standards as the main barriers to wider uptake of RE, especially smaller PV systems. Since the Jamaican energy system is mainly built on US technologies, the study recommended adoption of the most up to date US standards for RE technologies in Jamaica with necessary adjustment due to the different frequencies and voltage levels used in the two countries. The study further recommended the application of the adopted standards to already installed PV systems to improve their endurance in during strong hurricanes.

Through provision of a power generator for the EE testing laboratory of the BSJ, the project improved the BSJ's testing facility that was recently upgraded under a World Bank-funded project. With the new power generator, the BSJ testing lab is now able to provide the testing services to the domestic market (50Hz appliances) but also to the CARICOM market (60Hz appliances).

Output 1.2: A total 31 participants were trained in two training workshop conducted on 20-21 February 2019. The participants were the operation and maintenance staff and managers of hospitals and regional health authorities responsible for the procurement, installation, operation & maintenance in health facilities. The training provided the trainees with greater knowledge of the fundamental concepts, the technology and components used in grid connected solar PV systems, their safe operation, maintenance and performance monitoring. The participants received certificates for participation in the course.

In February 2019, two sensitisation workshops were organized for total 74 health sector operatives (42 males and 32 females) from hospitals, health centres and regional health authorities responsible for the management and operation of health facilities, on the importance of Energy Management and Renewable Energy Technologies. In April 2021, a virtual sensitization workshop was organized for operations and maintenance staff of the HCFs to further build their capacity in RE & EE utilization.

Output 1.3: A virtual training on financing of green technologies was organized for 4 participants from the Scotia Bank. The training covered development of RE/RE projects, their financial structuring, cash flow, sensitivity and risk analysis. In addition, 40 persons representing energy service providers and project developers participated in a virtual training on financial aspects of RE and EE project development.

Overall Assessment of Outcome 1: The most important part of the Outcome was the Sustainable Energy Curricula Improvement Recommendations[20] study that helped to establish the minimum expected standards for post-secondary education programmes. Without the support from the project, such assessment would probably not have been conducted or at least it would have taken longer time to accomplish it. The study also established that a combination of carefully selected matriculation requirements favouring a technical/science background and more technically focused course content pertinent to RE and EE would enable the educational institutions to satisfy the demand of the market.

[20] Sustainable Energy Curricula Improvement Recommendations: Final Report, Grue and Hornstrup for the EE project, 2019

The study was well accepted by the Jamaica Tertiary Education Commission (JTEC) that entered discussion with leading national universities about development of curriculum framework for RE/EE. With the assessment study, JTEC as a relatively new institution got a tool for the promotion of quality standards in post-secondary education programmes as a contribution to the restructuring of the tertiary education system in Jamaica.

The project assisted the Government in sensitization of a number of health sector operators on importance of energy management and RE technologies. This was critical for prioritizing RE and EE procurement and maintenance in the health sector. Through specific training of solar PV technicians, the project also contributed to improved standards of installation and maintenance of the solar PV systems in the country. However, there is no official system of certification for validation of competence to perform PV design, installation, commissioning operation and maintenance.

This output sensitisation of the financial institutions was not part of the original project design and was inserted during the substantive revision of the project RF in 2017. Interview with the representative of the Development Bank of Jamaica (DBJ) revealed that there was no urgent need for such support from this project. Since 2010, the DBJ had offered a special credit line for promotion and financing RE and EE interventions, including related capacity building of local financial intermediaries that administered the credits to the target beneficiaries.

Based on the above, the achievement of Outcome 1 is rated Satisfactory (S).

Table 15: Deliverables for Outcome 2

Result	Indicator	EOP Targets	Status at TE	Rating
OUTCOME 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralised RE power generation (notably solar PV) and EE programmes in Jamaica's public sector	2a) Implementation level of RR/EE regulation under national legislation including Electricity and Building Act;	(2a) RE/EE regulation drafted and proposed for approval;	Parts of the Building Code revised: Property Management Code (JS308) Existing Buildings (JS310) Mechanical Code (JS312)	MS
	2b) Implementation status of green procurement in Jamaica's public sector.	(2b) Guidelines for green procurement proposed and accepted.	Energy Efficiency and Conservation Standards Guide for the Public Sector (2019)	
Output 2.1: The legal and regulatory regime to facilitate scale-up of RE and EE reviewed and strengthened.	2.1) Number of proposals and studies delivered to support RE/EE policy development	2.1) At least 2 proposals and studies delivered	Qualitative Assessment of the ESCO Market in Jamaica	S
Output 2.2: Adoption of RE/EE technologies in the public sector has been strengthened by increased coordination with line ministries and public procurement.	2.2a) Establishment knowledge exchange platform (y/n);	2.2a) Knowledge exchange platform active among public institutions and education centres;	No information reported	MU
	2.2b) National Standards/manual developed for the handling, installation and monitoring of Solar PVs.	2.2b) Standards for the handling, installation and monitoring of Solar PVs partially completed	National Guidelines for Solar PV Operations and Maintenance (2019)	
Output 2.3: A project M&E Plan designed and implemented, including GEF Terminal Evaluation.	2.3) Status GEF TE (y/n)	2.3) GEF Terminal Evaluation conducted and reported	Terminal Evaluation conducted (2021)	S

Output 2.1: The project provided support to the Bureau of Standards Jamaica (BSJ) for essential revision of the 2003 Building Code that comprises 11 International Code Council (ICC) Documents. The assistance of the project was extended for revision and update of 3 essential ICC Documents, namely the International Property Management Code (IPMC-JS308), International Existing Building Code (IEBC-JS310) and International Mechanical Code (IMC-JS312). Revision of other 3 ICC Documents was on-going in parallel under funding from the GoJ.

In collaboration with the Petroleum Corporation of Jamaica (PCJ) and the Ministry of Science Energy and Technology (MSET), the project supported development and review of the Energy Efficiency and Conservation Standards Guide for the Public Sector, based on the Jamaica Application Document for the International Energy Conservation Code (JS 309). The finalized Guide was officially launched in February 2018. This work was part of an ongoing policy initiative to reduce electricity consumption in the public sector and to achieve the vision of the GoJ to become a model/leader in energy conservation and green procurement. The Guide serves as an information source for office and facility managers on procurement and management of energy efficient goods and services in the public sector as well as to provide for increasing the knowledge and awareness of public sector employees on energy efficiency and conservation standards.

A study on Qualitative Assessment of the ESCO Market in Jamaica was conducted to map the key stakeholders in the ESCO market in Jamaica. The study concluded that the market is still at its nascent stage where companies that can assume the responsibilities and tasks of an ESCO are mainly small mechanical, electrical and plumbing (MEP) developers, equipment suppliers, or consultants with expertise in one or two technologies. These companies do not have the energy service performance contracting as their central core business and therefore not ready for more complex projects due to inability to integrate, implement or guarantee a diverse range of energy conservation measures.

The study also identified that the country has no real capacity to conduct the investment grade audits and the dependence on international experts is expensive and not effective for knowledge transfer. Also, there is still not enough knowledge on performing measurement and verification (M&V) at the level of EE projects.

Output 2.2: The project assisted with the development of the National Guidelines for Solar PV Operations and Maintenance of Solar PV Systems for the Health Sector in Jamaica as the reference manual for installers, users, and maintenance staff of the PV systems. After a review through public and private sector consultations, the Guidelines were finalized and delivered to the BSJ and MSET for utilisation in future government RE interventions.

Output 2.3: The Terminal Evaluation was initiated in early 2021 and was concluded in June 2021.

Overall Assessment of Outcome 2: Through the support for revision of the essential parts of the national building codes and development of the national EE standards manual, the project made an important contribution to improvement of the legal and regulatory regime for EE and RE uptake

and to enhanced capacity for procurement and management of energy efficient goods and services in the public sector. The project has therefore contributed to harmonization of regulations on RE and EE with the aim to provide an objective basis for public procurement policy and decision-making. However, some targets were not achieved, in particular the development of a knowledge exchange platform among public institutions and education centres.

Based on the above, the achievement of Outcome 2 is rated Moderately Satisfactory (MS).

Table 16: Deliverables for Outcome 3

Result	Indicator	EOP Targets	Status at TE	Rating
OUTCOME 3: An operational Energy Performance Contracting mechanism to facilitates ECSOs in their investments portfolio towards the scale up RE and EE in the public and private sector of Jamaica	3a) EPC business model for RE/EE installation and operation designed and implemented (y/n);	3a) EPC business models and contracts for RE/EE implemented (tentatively: 5 contracts)	Draft ESCO business model for the health sector (2019) Model EPC procurement documents (2019) Recommendations for ESCO Industry (2019)	S
	3b) Number of hospitals retrofitted with RE and EE Technologies	3b) Four hospitals retrofitted with RE and EE Technologies)	Six HCFs retrofitted with LED lighting (2020)	
Output 3.1: Uptake of renewable energy strengthened with the Energy Performance Contracting pilot programme. (Technical Assistance)	3.1a) Status of model contracts for RE/EE procurement and EPC contracting (y/n);	3.1a) Model contracts designed and approved by Technical Working Group	Training Programme on ESCO financing and operation (2019) Virtual training on ESCO financing and M&V for 36 participants (2020)	MU
	3.1b) Status EPC business model.	3.1b) EPC business model detailed and approved by PCJ.	Qualitative Assessment of the ESCO Market in Jamaica (2019)	
Output 3.2: Investments in Solar PV, solar water heaters and energy efficiency retrofits in the health sector encouraged.	3.2a) Number of hospitals retrofitted with solar PV systems.	3.2a) Solar PV systems installed and operational at two (2) hospitals	Solar PV systems installed at 3 HCFs (2021)	MS
	3.2b) Number of hospitals retrofitted with solar water heaters	3.2b) solar water heaters installed and operational at five (5) hospitals	Technical specifications for solar water heaters developed (2021)	
	3.2c) Number of hospitals retrofitted with energy efficient technologies.	3.2c) EE retrofits installed and operational in five (5) hospitals	Six HCFs retrofitted with LED lighting (2020)	

Outcome 3: This Outcome was designed to be implemented by the PCJ with the expectation that the entity would go further to (1) develop and use the EPC business model (Output 3.1) and (2) serve as a "super ESCO" for procurement, oversight and installation of the RE and EE interventions through energy performance contracts (EPC) with local energy service providers as contractors (Output 3.2).

The implementation was significantly delayed due to lack of agreement between PCJ and MOFPS on the role of PCJ as the ESCO in this project. The essence of the disagreement was the cost recovery mechanism for the investment projects. PCJ expected to receive payback from MOF according to the monetary savings resulting from the RE and EE projects. This arrangement was essence of a model for reinvestment of the realized energy savings in the 6 recipient HCFs for funding similar projects in other hospitals and/or public sector buildings.

Unfortunately, the GoJ did not approve the proposed ESCO financing model for public procurement and the Ministry of Finance and the Public Service (MOFPS) did not provide its approval for the hospitals to engage in an EPC nor for PCJ to seek cost recovery from interventions.

MOFPS preferred to use the monetary savings from reduced energy consumption for financing social intervention programmes rather than the ESCO mechanism. The MOF concept of using the savings from the RE/EE projects was developed and shared with PCJ in December 2018 but no feedback was received despite intensive follow-up from the project team and the UNDP MCO. After the PCJ dissolution in late 2019, the issue was finally resolved through implementation of the project interventions by UNDP without the ESCO financing model.

Output 3.1: The Project appointed a consulting company that designed and delivered a training programme on ESCO financing and operation. The training included 7 onsite and offsite (online) training modules covering topics such as EPC contract development and tendering, conduct of IGEAs and M&V for performance contracting.

The 3-day onsite training was attended by 18 representatives from the PCJ, DBJ and the Jamaican Productivity Centre (JPC) and further 28 participants from the three organizations were invited to the online training that was designed for the PCJ team designated to participate in the Super ESCO activity and other interested parties within the organization.

The consulting company further conducted a qualitative market assessment that provided analysis of the main opportunities and challenges to the local ESCO market in Jamaica. The assessment included but was not limited to ESCO concepts, Performance Contracting, shared and guaranteed savings, ESPC Initiatives in the country, Lessons learned, challenges and short to long term recommendations and possible road map. The findings were also presented to key stakeholders and the feedback was incorporated into the final document.

Due to the lack of agreement of the MOF with the super ESCO model outlined above, no EPC business model was developed under the project. Instead, the ESCO consultant conducted assessment of the ESCO market in the country with recommendations for establishment of operational ESCOs.

In April 2021, two modules of virtual training were organized on the respective topics of ESCO and M&V. The objective of the ESCO training was to build the capacity of potential ESCO companies in theoretical knowledge and practical skills for the creation and operation of an ESCO, EPCs, and business plans to obtain financing. The objective of the M&V training was capacity building for M&V of energy savings and use the EPC mechanism. The trainings were attended by total 36 representatives (20 males and 16 females) mainly from potential ESCO companies but also few representatives from other entities with interest in sustainable energy, such as the MSET and the Caribbean Centre for Renewable Energy and Energy Efficiency.

Output 3.2: The Ministry of Science, Energy and Technology through PCJ commissioned investment grade energy audits (IGEA) at six HCFs, namely Sir John Golding Hospital, Bellevue Hospital, National Chest Hospital, Savanna-la-Mar Hospital, Black River Hospital, and May Pen Hospital.

The IGEA reports for the six targeted HCFs were submitted in June 2018 but PCJ refused to approve them due to their low quality. The refusal together with inability to resolve the dispute with MOF about the ESCO mechanism resulted in 12-month delay in the implementation of the output. The CO engaged an ESCO consultant in November 2018 who provided a quick review of the revised reports in January 2019. The issue of the IGEA reports was resolved in June 2019.

Investments and interventions from other projects, ongoing energy upgrades, and change of use for spaces at the target hospitals affected the applicability of the IGEA recommendations Additionally, the IGEAs were not sufficiently thorough or accurate to satisfy the intended precision required for EPC procurements and final works. There was neither sufficient funding nor time to upgrade the IGEA therefore UNDP through its local Technical Advisor conducted site visits of all 6 hospitals and provided guidance on validation of the IGEA finding and recommendations.

Following the validation and acceptance of IGEA reports for the six HCFs, the project announced procurement for supply, installation, commissioning, testing of high-quality energy-efficient LED lamps, including verification of savings. However, procurement was negatively affected by the COVID-19 outbreak. In some cases, procurement notices had to be cancelled given the health risk posed to the project team members who would have been required to conduct site visits at the target HCFs during the peak incidence of the virus. The Government's stay-in-place orders also affected the ability of the project team including consultants and contractors to conduct physical verification, technical assessments and installations of RE and EE interventions as well as shipment of ordered equipment and materials to Jamaica.

The procurement for LED lamps for Sir John Golding Rehabilitation Centre, Bellevue Hospital, and the National Chest Hospital was announced in November 2019 and the retrofits were commissioned in June 2020. The second batch for the Savanna-la-Mar Hospital, Black River Hospital, and May Pen Hospital was announced in February 2020 and the retrofits were commissioned in May 2021.

Delays also occurred in preparation of the demonstration solar PV installations. In January 2019, a contract was signed for supply and installation of a 76.9kW solar PV system at the May Pen hospital, consisting of three separate units (26.5kW, 25.,2 kW and 25.2 kW). Procurement of two additional solar PV systems for the National Chest Hospital (82.1kW) and Sir John Golding Rehabilitation Centre (13.3 kW) was initiated in late 2019 with the UNDP Global Procurement Unit (GPU) in Copenhagen. The procurement was conducted through the Long-Term Agreement (LTA) modality with solar PV suppliers developed by the GPU.

The progress in procurement was negatively affected by the COVID-19 pandemic outbreak during 2020 that hampered the necessary site visits by the project consultant and slowed down the required structural assessment at the recipient HCFs. By the completion of the TE, the solar PV systems were fully installed at the National Chest Hospital and Sir John Golding Hospital. At the May Pen Hospital, only one of the three solar PV systems was installed while at the other two sites the installation was pending additional equipment. The three sites now await a Net Billing License

(NBL) and Standard Offer Contract for grid connection compliance. The NBL application, initiated by the PCJ, is normally a lengthy process and with the loss of the PCJ as the Implementing Partner there could be further delays. Consequently, the Net Billing License process is to be completed by the Ministry of Health and Wellness (MOHW) with support from the MSET (for which PCJ has been incorporated as an operational unit of the Ministry).

Overall assessment of Outcome 3: The project supported elaboration of an implementation strategy for development of operational and financial structures necessary for financing RE/EE interventions in the public sector on performance-based contracting. As already discussed above, this Component was negatively affected by external factors, in particular non-compliance of the Super ESCO business model with the national policies for financing the public sector entities and later by failure of the PCJ to fulfil its obligations as the Responsible Party to the project. This particularly affected the delivery under Output 3.1 where training was provided to a number of representatives of the PCJ who were designated to operate the proposed Super ESCO mechanism but there was no use of the built capacities after the dissolution of the PCJ in late 2019.

Although the innovative financing mechanisms were not implemented, the project has delivered the draft ESCO/EPC financing model through consultations with the GoJ and created a basis for potential future applications of the model to finance clean and efficient energy options in hospitals and other public sector entities.

The negative impact of the PCJ dissolution on Output 3.2 was to great extent mitigated by the project team through inclusion of the technical outputs for the RE/EE installations in the amended contract of a local TA. However, the COVID-19 outbreak caused delays in implementation of this outcome as it prevented planned face to face engagements (trainings, consultations and meetings) and delayed preparation of technical specifications and procurement. Finally, the solar PV installation was done at three HCFs instead of the planned two but the total installed power capacity is 172 kW, about 80% of the planned 200 kW capacity. Also, the EE retrofits of the HCFs were limited to replacement of inefficient fluorescent lamps with LED lamps while the Project Document anticipated wider scope of the EE retrofits, including replacement of AC units and electric motors as well as procurement of solar water heaters. Development of technical specifications for solar water heaters for two HCFs was completed only in early 2021 but there was not enough time to proceed with the procurement before the project completion date in June 2021.

Based on the above findings, the overall achievement of Outcome 3 is rated Moderately Satisfactory (MS).

Achievement of the Project Objective

The primary objective of the project was to build relevant capacity in the public sector by increasing the knowledge base on matters pertinent to RE and EE as well as developing the appropriate technical skills necessary to support investments in the sector. This was to be achieved through strengthening the regulatory framework for development and deployment of RE and EE

technologies as well as through establishing public private partnership (PPP) mechanism for greater uptake of RE and EE.

The Project Document estimated the direct cumulative amount of reduced/avoided CO_2 emissions as a direct and indirect result of the investments, financed by the project, at 39,344 tonnes of CO_2eq. However, during the revision of the Results Framework in 2017, this target was reduced to 16,919 tonnes CO_2eq. The expected annual RE production and EE savings from installed demonstration pilots was left unchanged at 3.583 MWh/year.

During the substantive RF revision, three additional indicators were included, namely i) mobilized volume of investment in RE and EE technologies, ii) extent of adoption and enforcement of EE policies and regulations, and iii) number of beneficiaries with access to improved energy services in Jamaica's health sector.

Status of achievement of the Project Objective is summarized in Table 18 below.

Table 17: Status of achievement of the Project Objective

Project Objective	Indicator	EOP Targets	Status at TE	Rating
To advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of renewable energy (RE) and improvement in energy efficiency (EE) in the health sector	A. Total direct GHG emission reductions (ton CO2eq)	16,919 tonnes CO_2eq (over lifetime);	3,320 tonnes CO_2eq (RTS) 4,749 tonnes CO_2eq (EE)	MS
	B. Volume of investment in RE and EE technologies mobilized (US$/yr);	US$ 6 million per year (from DBJ);	No direct mobilization of DBJ funding	MU
	C. Extent to which EE policies and regulations are adopted and enforced (aligned with GEF CC tracking Tool).	C."3" (regulation proposed but not adopted)	Revision of the Building Codes adopted and implemented und the 2018 Building Act	S
	D. Annual electricity production (RE) and savings (EE) of installed demonstration pilots (MWh/yr);	3.583 MWh/y:	Post-project electricity: 234 MWh/y (RTS) generated 852 MWh/y (EE) saved	MS
	E. Number of beneficiaries with access to improved energy services in Jamaica's health sector (m/f).	50 hospital clients per day	No data available	N.A.

The approved Project Document anticipated installation of total 200 kW solar PV capacity in two HCFs. In reality, total 172 kW capacity was installed in the three HCFs. However, due to the various delays explained in the Efficiency and Effectiveness section (in particular the negative impact of the COVID-19 outbreak), the three solar PV systems have not been commissioned before the end of the project implementation period. Moreover, the actual scope of the EE retrofits in HCFs was narrower than the scope anticipated in the Project Document as replacement installation of solar water heaters was not pursued at all.

The technical documentation provided with the three solar PV systems establishes the annual electricity production at 234 MWh. The total related GHG emission reductions achieved through the RTS installations and the EE retrofits can be estimated at 3,320 tonnes of CO_{2eq} for the 20-year lifetime of the solar PV systems and 4,749 tonnes $CO2_{eq}$ for the 7-year lifetime of the LED bulbs, respectively. The total estimated direct energy savings and GHG emission reductions (Indicators D and A) are lower than expected.

The purpose of inclusion of the Outcome Indicator B (volume of mobilized investment in RE and EE technologies) is not understood as there were no planned activities linking the project with mobilization of investment in RE and EE. At the time of the project conception, there was no critical lack of funding for RE/EE solutions in Jamaica. Through its special line of credit operated in 2010-2020, the DBJ has provided funding for access to loans for to purchase and install RE solutions in agriculture, tourism, residential and retail sectors. Through its local financial intermediaries, the DBJ supported more than 150 energy audits and supplied more than US$ 30 million in loans for almost 300 RE/EE projects, in particular for total installed solar PV capacity of more than 500kW[21]. According to the DBJ, the main challenge in financing the RE/EE solutions was lack of local ESCO companies.

Target under Indicator C was achieved through adoption of revised Building Codes and their implementation under the 2018 Building Act.

Target under Indicator E (number of beneficiaries with access to improved energy services in Jamaica's health sector) was probably also achieved as the 6 beneficiary HCFs with installed RTS and EE solutions must have more than 50 clients per day. However, this is an impact indicator and therefore unsuitable for measurement of progress towards the low carbon development path in Jamaica.

Based on the above findings, the overall achievement of the Project Objective is rated Moderately Satisfactory (MS).

Efficiency

The main issues examined in relation to efficiency were the length of the project implementation period and to what extent the results have been achieved with the least costly GEF and other resources possible.

The Project was approved for implementation by GEF CEO on Mar 23, 2016 for a period of 48 months. The signature of the Project Document by the Government on 28 July 2016 officially marked start of the project implementation. However, the progress in the initial two years of the project implementation was very slow due to protracted recruitment of the project personnel.

The original closure day of the project was July 2020. However, due to the slow progress in the initial years and impact of the COVID pandemic in the last year, an 8-month extension was granted until March 2021.

The project was severely affected by the staff turnover in the early stages and around mid-point of implementation. Since its inception, the project changed the Project Manager, the Finance Officer and the Project Officer. The re-appointment and learning process of the new staff contributed to intermittent delays throughout the project duration.

[21] Interview with the DBJ representative.

The Project Manager was hired in mid-October 2016 but the recruitment of two other members of the PMU was split between PCJ (Project Officer) and UNDP MCO (Finance and Administrative Assistant). The project team was finally in place in April 2017 but soon after that the PM resigned (in June 2017). The Project Officer was promoted to the PM position. PCJ committed to recruit a new PO but this did not materialise and the PMU consisted only of the PM and the Finance Officer that caused increased workload for the last 2 years of the project.

After the sluggish start, the project implementation gained momentum on progress under Components 1 and 2. However, implementation of Component 3 was negatively affected by the decision of the Government to subsume PCJ, the originally designated Responsible Party for implementation of Component 3, into the Ministry of Science, Energy and Technology in an attempt to increase cost-efficiency in the country's energy sector. The negative effect of this change was visible particularly on financial delivery as Component 3 contained a major part of the project budget allocation. The decision was announced in September 2019.

Despite the dissolution and management issues with the PCJ, UNDP managed to mitigate the negative effect of the PCJ departure from the project through an agreement with the contracted local Technical Advisor to include some technical activities that had been expected from PCJ. This arrangement ensured adequate technical support for achievement of the remaining project targets on RE/EE retrofitting of HCFs. Although the Government decision about the PCJ dissolution was out of control of the project Implementing Partners, they are fully responsible for the initial delays due to protracted recruitment of the project personnel.

Based on the above findings, the efficiency in terms of the project timeline and use of resources is rated **Moderately Satisfactory (MS).**

Sustainability

Sustainability of the project is judged by the commitment of the beneficiary country to continue and replicate the project activities beyond the project completion date. The evaluation identifies key risks to sustainability and explains how these risks may affect continuation of the project benefits after the project closes. The assessment covers institutional/governance risks, financial, socio-political, and environmental risks.

Institutional framework and governance:

The Government of Jamaica is committed to further deployment of RE/EE solutions. The institutional sustainability is enhanced by the creation of a pool of trained technicians that will ensure availability of required technical skills in the country to support future installation and maintenance of RE and EE solutions. The trained personnel will also benefit from use of the National Guidelines for Solar PV Operations and Maintenance.

The second element of institutional and governance sustainability is embedded in the support granted to BSJ for revision of the Building Codes and provision of electricity generator to the BSJ

laboratories. The revised Building Codes will be used for several years after the project completion.

Based on the above, the institutional framework and governance sustainability is rated: **Likely (L).**

Financial sustainability: The financial sustainability is judged by the commitment of the project stakeholders for continued support for sustaining the already realized project benefits and their replication to new additional locations.

The financial sustainability of the RE/EE intervention in the public sector depends fundamentally on the ability to use relevant financial mechanisms for upfront costs of the RE/EE interventions. The failure to establish and advance the ESCO model and EPC contracting under the project poses the main risk to financial sustainability.

Based on the above, financial sustainability is rated **Moderately Likely (L).**

Socio-political sustainability: The socio-political sustainability depends on the willingness of the customers to request the relevant services and benefits from the RE/EE interventions after the project closure.

The main risk to the socio-political sustainability of the results is lack of interest of public sector institutions for purchase of RE/EE solutions. Despite some efforts under this project, the general level of public awareness in Jamaica is not yet at the level where it can drive the demand for RE/EE interventions. In such nascent markets, subsidies play critical roles for deployment of such measures. However, the GoJ policy has reportedly seen a general lowering of taxes hence specific incentives such as subsidies would run counter to the GoJ policy.

Based on the above socio-political sustainability is rated **Moderately Likely (L).**

Environmental sustainability: The project generates a positive environmental effect through promotion of energy efficient measures in building construction and establishment of solar PV for electricity generation. The key environmental concern affecting the sustainability of PV installations in Jamaica is impact of weather, namely tropical storms and cyclones. Solar PV installations have to be robust to resist the strong winds and rains. Certification and labelling for quality control and safety coupled with affordable and reliable insurance support resilience of the solar PV systems.

Based on the above, the environmental sustainability is rated **Likely (L).**

Since overall rating for sustainability should not be higher than its lowest rated dimension, the overall rating for sustainability is rated **Moderately Likely (ML).**

Country ownership

In order to examine country ownership, GEF evaluations are required to find evidence that the project fits within stated sector development priorities, and also that outputs, such as new

environmental laws, have been developed with involvement from the governmental officials and have been adopted into national strategies, policies and legal codes.

As shown in under the Relevance section above, the project had clear and direct linkages to national development and sectoral plans and was expected to contribute to the Government's plan for reduction of energy demand through implementation of EE retrofits and RE installations.

The project was designed upon extensive consultations with an array of public stakeholders, including extensive inputs from the key agencies of the Government. After the Government signature to the ProDoc, the project was officially launched by UNDP and the Minister of Science, Energy and Technology on 30 November 2016. The event was attended by key project stakeholders.

The first consultations at the start of the project were held with the PCJ as the primary partners to establish work plans. Introductory meetings were held with key stakeholders such as the Ministry of Health (MOH) and the Development Bank of Jamaica (DBJ) particularly related to the HCFs and the development of the ESCO model under Component 3. Further stakeholder consultations were held with the University of the West Indies (UWI), University of Technology (UTECH), and the Latin American Energy Organization (OLADE) to establish prerequisites regarding the advancement of the training and standard activities under Component 1.

While there was a strong buy-in at the beginning of the project documented by the co-financing letters and related commitments, the project ownership gradually stalled due to multiple changes of policies and priorities of some key stakeholders.

This was particularly the case of the PCJ that frequently experienced changes at the senior as well as operating levels of management resulting in alteration of the company's perspectives and priorities. These changes contributed to the delays in finalizing some project deliverables such as the final energy audit reports for the target HCFs and of procurement documents in relation the ESCO initiative.

Certain activities and results, particularly those under Outcome 3, were heavily dependent on concurrence and approval from the MOFPS. At the project development phase, the PCJ expressed a strong commitment to assume the role of the Responsible Party and pledged co-financing for Outcome 3. This commitment emanated as it was envisioned that the PCJ would aim to become a Super ESCO[22] and thereby manage, implement and monitor the Energy Performance Contracts issued under the project and beyond. However, it came out that the MOF did not want to follow the proposed ESCO mechanism with the PCJ.

At the request of MOFPS, the PMU with support from the UNDP MCO drafted a concept on an alternative ESCO model in order to secure commitment from MOFPS to utilize the energy savings

[22] A Super ESCO is defined as an entity established by the government that functions as an ESCO for implementing projects mainly or exclusively for the public sector (hospitals, schools, municipalities, public buildings, street lighting and other public facilities) and supports capacity building and project development activities of existing private ESCOs. The Government capitalizes the Super ESCO with sufficient funds to undertake public sector performance contracting projects and to leverage commercial financing.

from the project for establishment of a revolving fund for social intervention programmes related to energy. However, it was later revealed that that the MOF did not want to proceed with the proposed ESCO mechanism with the PCJ.

Mainstreaming

The focus of this section is to discuss to what extent the extent to which the project mainstreamed UNDP priorities such as poverty alleviation, improved governance, and women's empowerment**.** Specifically, whether it is possible to identify and define positive or negative effects of the project on local populations**,** whether gender issues had been taken into account in project design and implementation and in what way has the project contributed to greater consideration of gender aspects.

The project was prepared after the issuance of the GEF Policy on Gender Mainstreaming[23] that expresses GEF's commitment to enhancing the degree to which the GEF and its implementing agencies promote the goal of gender equality through GEF-funded projects. Lack of experience with implementation of the above cited policy is perhaps explanation for the fact that the project did not include any specific activities on gender empowerment and equality.

Although there was no specific gender strategy, the project did make basic efforts to include gender perspectives. During project implementation, attention was given to inclusion of women in various capacity building activities, training workshops on RE and EE for the health sector. About 62% of men and 38% of women working in the health sector participated in the workshops for HCF.

Another element of gender mainstreaming was the assessment of the post-secondary curricula related to RE/EE. The assessment found low female enrolment in all post-secondary courses on sustainable energy education in Jamaica and pointed out the absence of gender support programmes in the institutions engaged in post-secondary sustainable energy education.

The reasons for a lower female enrolment appeared to be a mixture of personal preferences, availability of state support and attractive alternative employment. The study recommended that substantive gender support programmes be introduced to make energy education more attractive to women thereby potentially increasing the female enrolment and consequently the number of female graduates.

Exit strategy

An exit strategy is explicitly linked to sustainability in that it considers means of ensuring sustainability of the project achievements after the end of the technical and financial support by the donor. A sound exit strategy should be planned early in the project implementation and should be based on established partnerships and local linkages, on developed local organizational and human capacities and on mobilization of local and external resources.

[23] Policy on Gender Mainstreaming, Global Environmental Facility, May 2012

At the operational closure, the project does not have a written exit strategy that would outline steps and activities to ensure sustainable management of the achieved results by the project stakeholders after the end of the donor support.

Mandatory TE ratings

The summary of ratings of the mandatory evaluation criteria is in the Table 18 below.

Table 18: Overall Project Ratings

Evaluation Criteria	Evaluators' Rating
Monitoring and evaluation: design at entry	Satisfactory (S)
Monitoring and evaluation: implementation	Moderately Satisfactory (MS)
Overall quality of monitoring and evaluation	**Moderately Satisfactory (MS)**
Quality of UNDP Implementation	Moderately Satisfactory (MS)
Quality of Execution - Executing Agency	Moderately Satisfactory (MS)
Overall quality implementation / execution	**Moderately Satisfactory (MS)**
Relevance	**Relevant**
Effectiveness	
Outcome 1	Satisfactory (S)
Outcome 2	Moderately Satisfactory (MS)
Outcome 3	Moderately Satisfactory (MS)
Efficiency	**Moderately Satisfactory (MS)**
Overall Project Objective	**Moderately Satisfactory (MS)**
Overall likelihood of sustainability	**Moderately Likely (L)**
Institutional framework and governance	Likely (L)
Financial	Moderately Likely (ML)
Socio-political	Moderately Likely (ML)
Environmental	Likely (L)

CONCLUSIONS AND RECOMMENDATIONS

This section contains conclusions as judgements based on the findings provided in the previous section. A short summary of relevant finding precedes each conclusion that is followed by a recommendation as a corrective action proposed to be taken by relevant project stakeholders to address the deficiencies identified in the findings and conclusions.

This Terminal Evaluation makes two types of recommendations. Recommendations on substantive matters are provided for consideration of the national project partners in order to ensure the project results are consolidated and sustained by relevant project stakeholders. These recommendations are suggested for implementation as soon as possible using the existing institutional capacities and frameworks that have been created by the current project.

Recommendations to follow-up and/or reinforce initial benefits from the project

Conclusion 1: The project developed a Super ESCO model for acceleration of RE/EE investments in public buildings. Even though the public sector has a considerable energy savings potential, the public sector entities cannot implement RE/EE investments due to several factors complicating replication and upscaling of demonstrated interventions. These include lack of incentives for making energy savings and lowering total energy budget, stringent and complex budgeting and procurement procedures, and limited access to commercial project financing.

> *Recommendation 1: The Government of Jamaica should consider adoption of a policy on the preferred ESCO/EPC with energy service contracts for implementation of RE/EE interventions in the public sector using the institutional and human capacities developed under this project.*

Conclusion 2: One of the main barriers in the Jamaican ESCO market is the need to develop local capacities within the ESCOs to be able to carry out IGAs, implement EPCs and guarantee a portion of the savings.

> *Recommendation 2: UNDP MCO in cooperation with the Government of Jamaica and the Development Bank of Jamaica should consider further capacity building for local private ESCOs to learn the skills and concepts that they need to successfully carry out energy performance contracting.*

Conclusion 3: The project developed technical specifications for procurement of solar water heaters for the project target HCFs but could not complete the procurement procedure due to the expiration of the project time period.

> *Recommendation 3:UNDP MCO should pursue engagement with the Ministry of Health and Wellness in order to secure funds for procurement and installation of solar water heaters for the project beneficiary HCFs.*

Conclusion 4: Detailed information about energy use and realized energy and monetary savings from the project demonstration RE/EE interventions could raise awareness of EPC in other HCFs and in the public sector in general and interest of potential private ESCOs.

Recommendation 4: The Ministry of Health & Wellness in collaboration with the Regional Health Authorities should ensure that the project beneficiary health care facilities monitor the realized energy savings from the project EE/RE interventions and make this information available for other public sector stakeholders.

Conclusion 5: Through detailed assessment of the existing sustainable energy education and training curricula at the post-secondary level in Jamaica the project provided critical assistance and recommendations for improvements in the Jamaica education sector.

Recommendation 5: The Ministry of Education in collaboration with the University Council of Jamaica (UCJ) and the Jamaica Tertiary Education Commission (JTEC) should advance development of a curriculum framework for sustainable energy that will include minimum education standards for post-secondary education and training curricula.

Conclusion 6: The project contributed to strengthening of legal, regulatory and institutional frameworks for revision of the national Building Codes and their implementation under the 2018 Building Act as well as strengthening the BSJ's energy efficiency testing laboratory that could become the testing hub for refrigerators, freezers and room air conditions for the entire region. However, the BSJ appears to be understaffed.

Recommendation 6: The Government of Jamaica should consider strengthening the human and financial resources necessary for implementation of the national building codes and energy efficiency testing at the BSJ.

Conclusion 7: The efforts of the project to foster implementation of the Super ESCO business model was not successful due to lack of agreement with the EPC mechanism after change of administration. Although basic capacity building was provided by the project, the use of EPC in the public sector remains unfinished business and was not brought to the desired final state.

Recommendation 7: The Government of Jamaica should consider the inclusion of further development and implementation of the ESCO/EPC model for the public sector in programmes financed by the international development assistance, such as the partnership of the Green Climate Fund and the Caribbean Development Bank[24].

Recommendations to improve the design and monitoring of UNDP projects on RE/EE

Conclusion 8: The project design was not based on a clear and explicit theory of change that would visualise the chain of results from activities, through expected outputs to expected outcomes.

[24] Green Climate Fund: Scaling up the deployment of Integrated Utilities Services (IUS) to support energy sector transformation in the Caribbean,

Consequently, the individual components of the project results framework did not have enough logical interlinkages.

Recommendation 8: UNDP MCO should ensure that the RE/EE projects are based on a clear theory of change and a coherent results framework.

Conclusion 9: A project results framework with correctly defined indicators at the output level is a key element for effective monitoring of progress towards planned results. Monitoring of progress at the level of project outcomes does not sufficiently inform the project implementation team about lack of progress on delivery of the project outputs.

Recommendation 9: UNDP MCO should ensure that indicators for the project results and their target values are correctly formulated to measure delivery at the project output and outcome levels and that progress towards achievement of results is regularly assessed at the level of project outputs.

Conclusion 10: The project experienced initial delays due to challenges in recruitment of the PM and other staff of the PMU. This reflected the difficulties to identify and recruit specific technical expertise for the project implementation.

Recommendation 10: The UNDP MCO should consider creation of a database of national experts in RE and EE linked to national post-secondary educational institutions and professional associations in order to have a pool of national RE/EE experts at hand and shorten the recruitment of project personnel for RE/EE projects.

Conclusion 11: Lack of monitoring of the extent of actual co-financing for the project does not allow the evaluator to assess the effect of co-financing or the lack of thereof on achievement of project outcomes and on sustainability of project results.

Recommendation 11: For GEF-funded projects, UNDP MCO and the national implementing partners should track actual levels of co-financing during implementation and report the actually realized levels of co-financing in annual PIRs.

Lessons learned and good practices

The project design was based on three standard pillars, namely institutional and regulatory strengthening, human capacity building and RE/EE technology demonstration. Due to the absence of a robust theory of change, these components were put together as a loose cluster without strong internal coherence. Although some insufficiencies in the project RF were identified after the Inception Meeting and resulted in a major revision of the project RF, they did not improve the internal coherence of the project logframe.

The project was designed for demonstration of energy savings through deployment of RE technology and application of EE retrofits in the public sector. It targeted the health care sector for the demonstration as the HCFs are known to be among the most energy intensive of the public

sector facilities. The preparation of the energy savings demonstration part of the project was based on solid grounds, namely on the Hospital Energy Auditing Programme that had been conceived and developed by the PCJ in partnership with UNDP.

Component 3 of the project comprised two parts – demonstration of potential for energy savings and demonstration of a sustainable financing mechanism for RE/EE interventions. Despite several previous analyses and feasibility studies, development of a functional ESCO/EPC model in the public sector was considered a novelty. However, the project design did not sufficiently emphasize the critical importance of the ESCO model and an operational EPC mechanism for overall success of the project in terms of demonstration of energy savings.

Apart from the dissolution of the PCJ in 2019, there was another factor that negatively affected the project implementation, namely change of administration and lack of agreement of the new team at the Ministry of Finance and Public Service (MOF) with the Super ESCO model proposed by the project. The new administration insisted that revenues originating from the project funding should be returned to the Consolidated Fund[25] for redistribution. The PCJ as the statutory body of the GoJ was fully dependent on GoJ funding and therefore not allowed to keep any monetary savings originating from the project-funded RE/EE demonstrations for operation of the ESCO/EPC mechanism. The phase effectively resulted in Output 3.2 on demonstration of RE/EE not being implementable from the very outset.

The lesson learned from the above is that agreement with the proposed ESCO could have been considered as a specific modality of GoJ co-financing for the project. While commitment to in-cash co-financing is secured through standard co-financing letters requested for inclusion in the Project Document, explicit written commitment to support the proposed ESCO model should have been required during the project preparatory phase.

Overall, this project had a very ambitious goals of demonstration of RE/EE solutions in the public sector and the MCO team made considerable efforts to achieve the planned results. Given the external factors, such as uncertainties around the restructuring of the PCJ as the previous national champion of RE/EE initiatives and limited knowledge on the EPC mechanism, the project registered a slow implementation pace that made it impossible to achieve the identified targets within the project timeframe.

The Super ESCO concept proposed by the project was based on two premises: i) the Government would capitalize the Super ESCO with sufficient funds to undertake public sector energy performance contracting projects, and ii) the realized monetary savings from RE/EE interventions would be used by the Super ESCO for the implementation of other similar interventions. It was however revealed that there was a conflict of the project concept with the national fiscal policy.

[25] The Consolidated Fund is the principal Government account to which all government revenues must be deposited and from which expenditure, via warrants, is withdrawn.

The latter determines that finances of the public sector organisations (including public HCFs) are directly controlled by the MOFPS through the Consolidated Fund.

The main factor accounting for limited achievements under Component 3 were the delays from suboptimal implementation by the PCJ. The initial delays were exacerbated by the arrival of COVID-19 restrictions. Despite the adaptive management efforts by the UNDP MCO, there was not enough time for completing all planned activities and delivery of all results under Outcome 3.2.

In order to reduce the cost of equipment for the RE/EE retrofits, the project team used services of the UNDP Global Procurement Unit (GPU) based in Copenhagen, Denmark that organized the procurement of solar PV systems using a Long-Term Agreements (LTA) with suppliers of such equipment. Due to involvement of the UNDP Resident Representative, the GPU agreed to lower the service fee for organizing the procurement.

There are also special lessons learned from the experience with the remote modality for this evaluation. The COVID-19 pandemic has put some constraints on the evaluative activities, in particular to conduct field mission for data collection and limited possibilities for triangulation of results obtained during desk reviews through observation and direct contact with project stakeholders and beneficiaries.

In a normal situation, it is usually possible to organize all planned face-to-face meetings with project stakeholders and beneficiaries during a period of a standard one-week field mission of an international consultant. The remote conduct of this evaluation proved to be more demanding for timely organization of the planned virtual meetings as some stakeholders felt more freedom of choice that resulted in postponement of some interviews. Active involvement of UNDP MCO proved to be an important factor for organization of virtual meetings as the UN office can more easily convince national stakeholders and beneficiaries to adhere to the planned schedule of meetings with the evaluation team. Obviously, the assistance of the Implementing Agency should be restricted only to organization of meetings and not to data collection that would compromise independence of the evaluation.

Annex 1: Evaluation Terms of Reference

GENERAL INFORMATION

Title: Terminal Evaluation for Deployment of Renewable Energy and Improvement of Energy

Efficiency in the Public Sector (PIMS ID: 4900) Project
Project Name: Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector (PIMS ID: 4900)

Reports to: UNDP Officer-in-Charge, Programmes Unit
Duty Station: Jamaica
Duration of Assignment: 31 working days

1. INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. This Terms of Reference (ToR) sets out the expectations for the TE of the *medium-sized* project titled Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector (PIMS ID: 4900) implemented through UNDP Jamaica Multi-Country Office. The project started on the 28 July 2016 and is in its final year of implementation. The TE process must follow the guidance outlined in the document 'Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects (http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf) .

2. PROJECT BACKGROUND AND CONTEXT

The world is currently facing the COVID-19 pandemic, which is affecting people everywhere and impacting global and local economic activity and transport systems, as well as causing unprecedented disruptions to daily life that undercut the societal fabric of opportunities for human interaction[1]. In order to ensure the well-being and safety of UNDP's staff and contractors, as well as to ensure no harm is done to partners, communities and interlocutors, the implementation of this TE shall be undertaken virtually, as outlined in "Evaluation Approach and Method" of this TOR.

This project sought to advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of renewable energy (RE) and improvement in energy efficiency (EE) in the health sector. The project strengthened relevant capacity in the public sector by increasing the knowledge base of its operatives on matters pertinent to RE and EE as well as developed the appropriate technical skills necessary to support investments in the energy sector. It sought to strengthen the regulatory framework that governed the development and deployment of RE and EE technologies. The project also supported and investigated a potential mechanism involving public private partnership (PPP) to engender a greater uptake of RE and EE. The hospital sector has a high-energy demand and high operational costs and benefitted significantly for RE and EE applications.

Expected outcomes and associated outputs were:

Outcome 1: Increased knowledge in RE and EE for Individuals in the public sector and strong institutional capacity to support RE and EE development in Jamaica's public sector.

Output 1.1 Recommendations for acceptable industry standards in RETs and EE training and education, particularly in the solar PV subsector developed and capacity of selected training institutions within the RE/EE sector enhanced.

Output 1.2. Technicians within the public sector trained and certified to acceptable industry standards in renewable energy technology and energy efficiency particularly in the solar photo-voltaic subsector.

Output 1.3: Selected staff from financial institutions, have increased knowledge in matters of RE, EE and Energy Performance Contracting.

Output 1.4: Awareness of senior management and maintenance staff at selected hospitals, other public institutions enhanced.

Output 1.5: Relevant institutional capacity within public institutions strengthened to facilitate an increase in the scale-up of RE.

Outcome 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralized RE power generation (notably solar PV) and EE programmes in Jamaica's public sector

Output 2.1: The legal and regulatory regime to facilitate scale-up of RE and EE reviewed and strengthened.

Outcome 3: An operational Energy Performance Contracting mechanism to facilitate the development of ESCOs and their viability to support RE and EE scale-up in the public sector of Jamaica.

Output 3.1: Uptake of renewable energy strengthened with the Energy Performance Contracting pilot programme:

Output 3.2: Investments in Solar PV, solar water heaters and energy efficiency retrofits in the health sector encouraged

Timeframe

This project was approved for a duration of 48 months by the GEF, commencing August 2016 and terminating in July 2020. A project extension was granted, and the new project closing date is March 26, 2021.

Management Arrangements

Please refer to Section IX of the Project Document for details on the Management Arrangements of the Project.

The following table summarizes key project information:

Table 1: Project Summary

Project Title:	**PIMS ID: 4900 Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector**			
GEF Project ID:	00094832		*at endorsement (Million US$)*	*at completion (Million US$)*
UNDP Project ID:	00087974	GEF financing:	$1, 254,987	
Country:	Jamaica	IA/EA own:	30,000	
Region:	Caribbean	Government:	$1,361,240	
Focal Area:	Climate Change	Other:	$9,387,514	
FA Objectives, (OP/SP):	CC1: Promote innovation, technology transfer, and supportive policies and strategies CCM2 Promote market transformation for energy efficiency in industry and the building sector CCM3 Promote investment in renewable energy technologies	Total co-financing:	$10,748,754	
Executing Agency:	UNDP Jamaica	Total Project Cost:	$12,003,741.00	$12,003,741.00
Other Partners involved:	Development Bank of Jamaica	ProDoc Signature (date project began):		28/07/2016
	Ministry of Health and Wellness	(Operational) Closing Date:	Proposed: 26/03/2021	Actual:

3. TE PURPOSE

The TE report will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE report promotes accountability and transparency and assesses the extent of project accomplishments.

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the "Guidance for conducting terminal evaluations of UNDP-supported, GEF-Financed Projects". The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

4. TE APPROACH & METHODOLOGY

The TE report must provide evidence-based information that is credible, reliable and useful. The TE team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP) the Project Document, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The TE team will review the baseline tracking tools submitted to the GEF at the CEO endorsement and the terminal tracking tools that must be completed before the TE begins.

The TE team is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Jamaica Country Office, the Regional Technical Advisor, direct beneficiaries and other stakeholders.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to organizations and persons listed below; executing agencies, senior officials and task team/component

leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc (See Annex H).

The specific design and methodology for the TE should emerge from consultations between the TE team and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE team must use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule and data to be used in the evaluation must be clearly outlined in the TE Inception Report and be fully discussed and agreed between UNDP, stakeholders and the TE team. The final report must describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses of the methods and approach of the evaluation.

5. DETAILED SCOPE OF THE TE

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see Annex A). The TE will assess results according to the criteria outlined

in the Guidance for TEs of UNDP-supported GEF-financed Projects *(*http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf *)*.

The Results Framework provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of relevance, effectiveness, efficiency, sustainability and impact. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary.

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in Annex C.

The asterisk "(*)" indicates criteria for which a rating is required.

Findings

i. Project Design/Formulation

- National priorities and country drivenness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Standards (Safeguards)
- Analysis of Results Framework: project logic and strategy, indicators
  - Assumptions and Risks
  - Lessons from other relevant projects (e.g. same focal area) incorporated into project design
  - Planned stakeholder participation
  - Linkages between project and other interventions within the sector
  - Management arrangements

ii. Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements

- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)
- Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
- Risk Management, including Social and Environmental Standards (Safeguards)

iii. <u>Project Results</u>

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
- Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*)
- Sustainability: financial (*) , socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*)

- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect
- Progress to impact

<u>Main Findings, Conclusions, Recommendations and Lessons Learned</u>

- The TE team will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
- The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses and results of the project, respond to key evaluation questions and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE team should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to incorporate gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown below:

Table 2: Evaluation Ratings Table for Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector

Monitoring & Evaluation (M&E)	Rating[2]
M&E design at entry	
M&E Plan Implementation	
Overall Quality of M&E	
Implementation & Execution	Rating
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	
Overall quality of Implementation/Execution	
Assessment of Outcomes	Rating
Relevance	
Effectiveness	
Efficiency	
Overall Project Outcome Rating	
Sustainability	Rating
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

6. TIMEFRAME

The total duration of the TE will be approximately 31 *working days* over a time period of *8 weeks*.

[2] Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight & Execution, Relevance are rated on a 6-point scale: 6=Highly Satisfactory (HS), 5=Satisfactory (S), 4=Moderately Satisfactory (MS), 3=Moderately Unsatisfactory (MU), 2=Unsatisfactory (U), 1=Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4=Likely (L), 3=Moderately Likely (ML), 2=Moderately Unlikely (MU), 1=Unlikely (U)

7. TE DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	TE Inception Report	TE Consultant clarifies objectives, methodology and timing of the TE	No later than 2 weeks before the TE mission:	TE Consultant submits Inception Report to Commissioning Unit and project management
2	Presentation	Initial Findings	End of TE mission:	TE Consultant presents to Commissioning Unit and project management
3	Draft TE Report	Full draft report *(using guidelines on report content in ToR Annex C)* with annexes	Within 3 weeks of end of TE mission:	TE Consultant submits to Commissioning Unit; reviewed by RTA, Project Coordinating Unit, GEF OFP
5	Final TE Report* + Audit Trail	Revised final report and TE Audit trail in which the TE details how all received comments have (and have not) been addressed in the final TE report *(See template in ToR Annex H)*	Within 1 week of receiving comments on draft report:	TE Consultant submits both documents to the Commissioning Unit

*All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.

8. TE ARRANGEMENTS

The principal responsibility for managing the TE resides with the Commissioning Unit. The Commissioning Unit for this project's TE is the UNDP Jamaica Multi-Country Office. The Commissioning Unit will contract the evaluators. The Project Team will be responsible for liaising with the TE consultant to provide all relevant documents, to include an itinerary of the confirmed stakeholder interviews.

9. TE TEAM COMPOSITION

One international independent evaluator will conduct the TE. The consultant shall have prior experience evaluating UNDP-GEF financed projects. The evaluator will assess emerging trends with respect to legal and regulatory framework for decentralized RE power generation, budget allocations, institutional capacity to support RE and EE development, impact of renewable energy and energy efficient technology on the health sector, work with the Project Team in developing the TE itinerary, etc.)

The evaluator cannot have participated in the project preparation, formulation and/or implementation (including the writing of the project document), must not have conducted this project's Mid-Term Review and should not have a conflict of interest with the project's related activities.

The selection of an evaluator will be aimed at maximizing the overall qualities in the following areas:

Education

- Master's degree in Environmental Sciences, Agriculture, Engineering, Rural Development or other closely related field.
- Relevant experience with results-based management evaluation methodologies;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;
- Competence in adaptive management, as applied to Climate Change
- Proven experience evaluating GEF projects;
- Experience working in the Caribbean Region*;*
- Experience in relevant technical areas for at least *5 years;*
- Demonstrated understanding of issues related to gender Climate Change *;* experience in gender responsive evaluation and analysis;
- Excellent communication skills;
- Demonstrable analytical skills;
- Project evaluation/review experience within United Nations system will be considered an asset.

Language

- Fluency in written and spoken English.

10. EVALUATOR ETHICS

The TE team will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation'. The evaluator 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 evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

11. PAYMENT SCHEDULE

- 20% payment upon satisfactory delivery of the final TE Inception Report and approval by the Commissioning Unit
- 40% payment upon satisfactory delivery of the draft TE report to the Commissioning Unit
- 40% payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail
- The final TE report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other TE reports).
- The Audit Trail includes responses to and justification for each comment listed.

Criteria for issuing the final payment of 40%[4]:

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.

[4] The Commissioning Unit is obligated to issue payments to the TE team as soon as the terms under the ToR are fulfilled. If there is an ongoing discussion regarding the quality and completeness of the final deliverables that cannot be resolved between the

Commissioning Unit and the TE team, the Regional M&E Advisor and Vertical Fund Directorate will be consulted. If needed, the Commissioning Unit's senior management, Procurement Services Unit and Legal Support Office will be notified as well so that a decision can be made about whether or not to withhold payment of any amounts that may be due to the evaluator(s), suspend or terminate the contract and/or remove the individual contractor from any applicable rosters. See the UNDP Individual Contract Policy for further details:

https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PSU_Individual%20Contract_In dividual%20Contract%20Policy.docx&action=default

12. APPLICATION PROCESS[5]

Recommended Presentation of Proposal:

a) **Letter of Confirmation of Interest and Availability** using the template[6] provided by UNDP;
b) **CV** and a **Personal History Form** (P11 form[7]);
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 procurement.jamaica@undp.org in a sealed envelope indicating the following reference "Consultant for Terminal Evaluation of Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector" or by email at the following address ONLY: *procurement.jamaica@undp.org* by *(January 29, 2021 at 4:00pm)*. 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.

[5] Engagement of evaluators should be done in line with guidelines for hiring consultants in the POPP https://popp.undp.org/SitePages/POPPRoot.aspx

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

[7] http://www.undp.org/content/dam/undp/library/corporate/Careers/P11_Personal_history_form.doc

Annex 2: Evaluation Matrix

Evaluative Criteria Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels?			
• Does the project relate to the GEF Climate Change focal area and has it been designed to deliver global environmental benefits in line with relevant international climate change objectives?	• The project includes the relevant GEF outcomes, outputs and indicators • The project makes explicit links with global climate action goals	• Project Document • GEF-5 Focal Area Strategy	• Desk Review of Documents
• Is the project aligned to national development objectives, broadly, and to national energy efficiency priorities specifically?	• The project design includes explicit links (indicators, outputs, outcomes) to the national development policy/national energy policies	• National development strategy, energy policies, etc.	• Desk Review of Documents
• Is the project's Theory of Change relevant to addressing the development challenge(s) identified?	• The Theory of Change clearly indicates how project interventions and projected results will contribute to the reduction of the three major barriers to low carbon development (Policy, institutional/ technical capacity and financial)	• Project Document • PIF	• Desk Review of Documents

• Does the project directly and adequately address the needs of beneficiaries at local and regional levels?	• The Theory of Change clearly identifies beneficiary groups and defines how their capabilities will be enhanced by the project	• Project Document • PIF	• Desk Review of Documents
• Is the project's results framework relevant to the development challenges have the planned results been achieved?	• The project indicators are SMART • Indicator baselines are clearly defined and milestones and targets are included • The results framework is comprehensive and demonstrates systematic links to the theory of change	• Project Document • PIF	• Desk Review of Documents
• Have the relevant stakeholders been adequately identified and have their views, needs and rights been considered during design and implementation?	• The stakeholder mapping and associated engagement plan includes all relevant stakeholders and appropriate modalities for engagement. • Planning and implementation have been participatory and inclusive	• Project Document • Inception report • Stakeholder mapping/engagement plan and reporting • Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents • Stakeholder Interviews
• Have the interventions of the project been adequately considered in the context of other development activities being undertaken in the same or related thematic area?	• A partnership framework has been developed that incorporates parallel initiatives, key partners and identifies complementarities	• Project Document • Quarterly Reports • Annual Reports (PIR) • Stakeholder mapping/engagement plan and reporting	• Desk Review of Documents • Stakeholder Interviews
• Did the project design adequately identify, assess and design appropriate mitigation actions for the potential social and environmental risks posed by its interventions?	• The SES checklist was prepared and all reasonable risks were identified with appropriate impact and probability ratings and risk mitigation measures specified	• Project Document • SES Annex	• Desk Review of Documents
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
• Has the project achieved its output and outcome level targets?	• The project has met or exceeded the output and outcome indicator end-of-project targets	• Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents

			• Site visit/field reports	• Interviews with project team, stakeholders and beneficiaries
	• Have lessons learned been captured and integrated into project planning and implementation?	• Lessons learned have been captured periodically and/or at project end	• Validation Workshop Minutes *(if available)* • Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project team, stakeholders and beneficiaries
	• Has the M&E plan been well-formulated, and has it served as an effective tool to support project implementation?	• The M&E plan has an adequate budget and was adequately funded • The logical framework was used during implementation as a management and M&E tool • There was compliance with the financial and narrative reporting requirements (timeliness and quality) • Monitoring and reporting has been at both the activity and results levels	• Project Document • M&E Plan • AWPs • FACE forms • Quarterly Narrative Reports • Site visit reports	• Desk Review of Documents • Interviews with project team and government stakeholders
	• Were relevant counterparts from the Government and civil society involved in project implementation, including as part of the Project Board?	• The Project Board participation included representatives from key project stakeholders	• Project Board Minutes *(if available)*	• Interviews with project staff, stakeholders and beneficiaries
	• How effective were the partnership arrangements under the project and to what extend did they contribute to achievements of the project results?	• A partnership framework has been developed that ensured coordination of parallel initiatives, involvement of key partners and identification of complementarities	• Annual Reports (PIR) • Quarterly reports	• Desk Review of Documents • Interviews with project team, stakeholders and other donors
	• How well were risks (including those identified in the Social and Environmental Screening (SES) Checklist), assumptions and impact drivers being managed?	• A clearly defined risk identification, categorization and mitigation strategy (updated risk log in ATLAS)	• UNDP ATLAS Risk Log • M&E Reports	• Desk Review of Documents • Interviews with project team, stakeholders and beneficiaries

• Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?			
• Did the project adjust dynamically to reflect changing national priorities/external evaluations during implementation to ensure it remained relevant?	• The project demonstrated adaptive management and changes were integrated into project planning and implementation through adjustments to annual work plans, budgets and activities • Changes to AWP/Budget were made based on mid-term or other external evaluation • Any changes to the project's planned activities were approved by the Project Board • Any substantive changes (outcome-level changes) approved by the Project Board and donor, as required	• Annual Work Plans • Validation Workshop Minutes • Quarterly Reports • Annual Reports (PIR) • Project Board meeting minutes *(if available)*	• Desk Review of Documents • Interviews with project team stakeholders and beneficiaries
• Was the process of achieving results efficient? Did the actual or expected results (outputs and outcomes) justify the costs incurred? Were the resources effectively utilized?	• The project achieved the planned results in an efficient manner • Funds used for project implementation were utilized affectively and contributed to achievement of project results	• Annual Workplans • Quarterly Reports • Project document	• Desk Review of Documents • Interviews with project team, stakeholders, beneficiaries
• What were the strengths and weaknesses of the implementation modality?	• The project implementation followed the division of responsibilities between the project implementing partners in an efficient manner	• Annual Reports (PIR) • Quarterly reports	• Desk Review of Documents • Interviews with project team, stakeholders, beneficiaries
• Was co-financing adequately estimated during project design (sources, type, value, relevance), effectively tracked during implementation? Which were the reasons for any differences between expected and realised co-financing?	• Co-financing was realized in keeping with original estimates • Co-financing was tracked continuously throughout the project lifecycle and deviations identified and alternative sources identified • Co-financiers were actively engaged throughout project implementation	• Annual Work Plans (AWPs) • Validation Workshop Minutes *(if available)* • Quarterly Reports, including financial reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project team stakeholders, other donors and beneficiaries

• Was the level of implementation support provided by UNDP adequate and in keeping with the implementation modality and any related agreements?	• Technical support to the Executing Agency and project team were timely and of acceptable quality. • Management inputs and processes, including budgeting and procurement, were adequate	• UNDP project support documents (emails, procurement/ recruitment documents) • Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project team, UNDP personnel
• Were financial audit/spot check findings adequately addressed and relevant changes made to improve financial management?	• Appropriate management responses and associated actions were taken in response to audit/spot check findings. • Successive audits demonstrated improvements in financial management practices	• Project Audit Reports (if available)	• Desk Review of Documents
• Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?			
• Are there political, social or financial risks that may jeopardize the sustainability of project outcomes?	• The exit strategy includes explicit interventions to ensure sustainability of relevant activities	• Program Framework Document • Risk Log	• Desk Review of Documents
• What are the factors that will require attention in order to improve prospects of sustainability and potential for replication?	• The exit strategy includes explicit interventions to ensure sustainability of relevant activities and identifies relevant factors requiring attention in the future	• Program Framework Document	• Desk Review of Documents
• Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits?	• The exit strategy identifies relevant socio-political risks and includes explicit interventions to mitigate same	• Program Framework Document • Risk Log	• Desk Review of Documents
• Have key stakeholders identified their interest in project benefits beyond project-end and accepted responsibility for ensuring that project benefits continue to flow?	• Key stakeholders are assigned specific, agreed roles and responsibilities outlined in the exit strategy	• Program Framework Document • Risk Log	• Desk Review of Documents
• Are there ongoing activities that may pose an environmental threat to the sustainability of project outcomes?	• The exit strategy identifies relevant environmental risks and includes explicit interventions to mitigate same	• Program Framework Document • Risk Log	• Desk Review of Documents

Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?			
• Are there verifiable improvements in ecological status, or reductions in ecological stress, that can be linked directly to project interventions?	• The project has contributed directly to improved ecological conditions, including through reduced GHG emissions for energy generation	• Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents
CROSS-CUTTING ISSUES: PROMOTION OF UN VALUES FROM A HUMAN DEVELOPMENT PERSPECTIVE			
Evaluation Questions	**Indicators**	**Sources**	**Methodology**
Supporting policy dialogue on human development issues			
• To what extent did the initiative support the government in monitoring achievement of MDGs? • What assistance has the initiative provided supported the government in promoting human development approach and monitoring MDGs? • To what extent do the project objectives conform to agreed priorities in the UNDP country programme document (CPD) and UNDAF?	• Level of contribution of the project to the achievement of MDGs • Level of alignment of the project objectives with the CPD and UNDAF	• Project documents • Evaluation reports • HDR reports • MDG reports • National Planning Commission • Ministry of Finance	• Interviews with government partners • Desk review of secondary data
Contribution to gender equality			
• To what extent was the UNDP initiative designed to appropriately incorporate in each outcome area contributions to attainment of gender equality? • To what extent did UNDP support positive changes in terms of gender equality and were there any unintended effects? • Provide example(s) of how the initiative contributes to gender equality. • Can results of the programme be disaggregated by sex?	• Level and quality of monitoring of gender related issues		• Interviews with UNDP staff and government partners • Observations from field visits • Desk review of secondary data

	Addressing equity issues (social inclusion)			
	• How did the UNDP initiative take into account the plight and needs of vulnerable and disadvantaged to promote social equity, for example, women, youth, disabled persons? • To what extent have indigenous peoples, women, conflict-displaced peoples, and other stakeholders been involved in pro- ject design?	• Level and quality of monitoring of social inclusion related issues	Project documents Evaluation reports UNDP staff Government partners	• Interviews with UNDP staff and government partners • Observations from field visits • Desk review of secondary data

	• Provide example(s) of how the initiative takes into account the needs of vulnerable and dis- advantaged groups, for example, women, youth, disabled persons • How has UNDP programmed social inclusion into the initiative?			

Annex 3: List of People Interviewed

Name	Organization	Position
Ava Whyte-Anderson	UNDP MCO	Officer in Charge, Programme Unit
Richard Kelly	UNDP MCO	Programme Specialist
Tenny Daley	UNDP MCO	Project Manager
Ludmilla Diniz	UNDP Panama Regional Hub	Regional Technical Advisor
David Barrett	ENBAR Consulting	Local Technical Advisor
Gillian Guthrie	Ministry of Water, Land, Environment and Climate Change	GEF Operational Focal Point
Horace Buckley	Ministry of Science, Energy and Technology	Director of Projects
James Leslie	Ministry of Health	Senior Director, Project Management and Health Facilities & Maintenance
Tracey-Ann Smith	Jamaica Tertiary Education Commission	Director - Policy Planning & Research
Kathleen Gregory Jackson	Bureau of Standards Jamaica	Senior Engineer, EE Laboratory
Julia Bonner Douett	Bureau of Standards Jamaica	Director, Standards
Shane Slater	Bureau of Standards Jamaica	Standards Development Branch
Edison Galbraith	Development Bank of Jamaica	General Manager, Loan Origination & Portfolio Management,
Diana Brown Miller	Black River Hospital	Chief Executive Officer

Annex 4: List of Documents Consulted

1. Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector: Request for CEO Endorsement, UNDP 2016
2. Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector: Project Document, UNDP 2016
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19. Outcome-Level Evaluations, A Companion Guide, UNDP, 2011
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Annex 5: Project Results Framework (at the Project Inception)

1. Helping countries to achieve the simultaneous eradication of poverty and significant reduction of inequalities and exclusion **2. Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded;** **3. Countries have strengthened institutions to progressively deliver universal access to basic services**
Applicable GEF Strategic Outcome: Growth and development are inclusive and sustainable incorporating productive capacities that create employment for the poor and excluded.
Applicable GEF Expected Outcomes: (i) Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented (ii) Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)
Applicable GEF Outcome Indicators: (i) Coverage of cost-efficient and sustainable energy, disaggregated by energy source and beneficiary, sex, rural/urban and excluded groups (ii) Extent of change in: a) energy efficiency, and/or b) modern energy coverage by users and specific sectors

	Strategic Development Indicator	**Baseline**	**Targets End of Project**	**Source of verification**	**Assumptions**
Project Objective: To advance a low carbon development path and reduce Jamaica's public sector energy bill through the introduction of renewable energy (RE) and improvement in energy efficiency (EE) in the health sector.	Cumulative amount of reduced/avoided CO2 emissions as a direct and indirect result of the investments, financed by the project	20.7 tonnes of CO2 reduced/avoided annually	Lifetime Direct: 39,344 cumulative tonnes of CO2eq reduced/avoided (Indirect Bottoms up and Top Down: 33,838 tCO2 and 718,400 tCO2respectively) Approximate Total energy produced annually : 3,583 MWh	Project final report as well as annual report on energy consumption & reductions for each RE project. Annual report on hospital energy consumption and expenditure on electricity	The country continues to experience economic growth Government is committed to supporting RE development in Jamaica. RE systems are in place and are functioning effectively.
Outcome 1 Increased knowledge in RE and EE for Individuals in the public sector and strong institutional capacity to support RE and EE development in Jamaica's public sector.	•Number of technicians from the health sector and the private sector with improved capacity to assemble, install, maintain and retrofit RE and EE systems and programmes in Jamaica by the end of project. •Number of persons employed in the RE and EE sector.	No formally trained technicians in the health sector to support solar PV	At least 5 trained technicians (35% women) 75 persons employed (35% women)	Gender disaggregated database on trained and certified technicians eligible to provide a range of RE and EE related services.	Certified training programmes for technicians are recognized, well-funded and supported. Capacity of government does not substantially delay approval of RE policies and RE projects.
	•Number of operatives from the health sector trained on RE and EE	No health sector	At least 40	Database on trained and certified operatives	Funding for training of operatives within the health sector are

	Strategic Development Indicator	Baseline	Targets End of Project	Source of verification	Assumptions
	to enable them to function effectively	operatives with formal knowledge in RE and EE.			provided by the government, private sector and regional and international partners.
	• Number of persons (almost 40% of women) from financial institutions trained on the fundamentals (by evidence of those who have completed training and received certificates) of RE technology, EE programs, risk assessment, project development, implementation and evaluation	No persons from financial institutions trained	40 persons	Annual report from financial institutions Report on training activity Database on trained financial personnel (as above)	Financial institutions have demonstrated commitment to building the relevant capacity in supporting RE and EE.
Outcome 2: A supportive legal and regulatory framework to facilitate the deployment of small decentralized RE power generation (notably solar PV) and EE programmes in Jamaica's public sector	Amount of electricity drawn from the national grid for hospital with on-grid rooftop solar-PV panels financed by the GEF funds	30 GWh/yr of electricity drawn from the national grid annually to service hospitals	0.0018 GWh of electricity drawn annually from grid tie PV system by the end of project	Annual report on hospital energy consumption and expenditure on electricity	The proposed legal and regulatory improvements passing through the Government approval process without delays.
Outcome 3: An operational Energy Performance Contracting mechanism to facilitates ECSOs in their investments portfolio towards the scale up RE and EE in the public and private sector of Jamaica	Pilot Energy Performance Contract established No of contracts signed	Limited EPC/ESCO resources available to date aside for Model EPC contract prepared by JPC and ESCO gap analysis No active Energy Performance Contracts in place in Jamaica Zero companies operating as "true"	Establishment of resources to enable Energy Performance Contracting (e.g. contracting guidance documents) 5 Energy Performance Contracts signed during project implementation. PCJ, a major player in the energy sector, to	Executed EPC contracts PCJ Annual Reports RE/EE market reports & communications (e.g. from the Jamaican Renewable Energy Association)	•Successful EPC contract execution

	Strategic Development Indicator	Baseline	Targets End of Project	Source of verification	Assumptions
		ESCOs	develop "true" ESCO capabilities		
	Annual investment in RE and EE programmes	Approximately US240,000 investments annually in solar pv technology (and EE systems) to date in Jamaica	10%-15 % increase in solar PV systems and EE programmes Greater public and private sector participation in the DBJ energy audit grant program DBJ disbursement of more than $6 million annually due to increased demand for RE/EE investments	Result of market survey on RE and EE in Jamaica Record of performance Contracts processed Financial institutions' annual Financial Report. DBJ reporting of energy audit grant disbursement	Adequate market size to support the supply-side of the RE and EE market. DBJ committed to sustained financing for RE and EE projects

Annex 6: Performance Rating of GEF Projects

The main dimensions of project performance on which ratings are provided in terminal evaluation are outcomes, sustainability, quality of monitoring and evaluation, quality of implementation, and quality of execution.

Outcome ratings

The overall ratings on the outcomes of the project will be based on performance of the criteria of relevance, effectiveness and efficiency. A six-point rating scale is used to assess overall outcomes.

Highly Satisfactory (HS)	Level of outcomes achieved clearly exceeds expectations and/or there were no short comings
Satisfactory (S)	Level of outcomes achieved was as expected and/or there were no or minor short comings
Moderately Satisfactory (MS)	Level of outcomes achieved more or less as expected and/or there were moderate short comings
Moderately Unsatisfactory (MU)	Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings
Unsatisfactory (U)	Level of outcomes achieved substantially lower than expected and/or there were major short comings
Highly Unsatisfactory (U)	Only a negligible level of outcomes achieved and/or there were severe short comings
Unable to Assess (UA)	The available information does not allow an assessment of the level of outcome achievements

Sustainability Ratings

The sustainability will be assessed taking into account the risks related to financial, sociopolitical, institutional, and environmental sustainability of project outcomes. The evaluator may also take other risks into account that may affect sustainability. The overall sustainability will be assessed using a four-point scale.

Likely (L)	There is little or no risks to sustainability
Moderately Likely (ML)	There are moderate risks to sustainability
Moderately Unlikely (MU)	There are significant risks to sustainability
Unlikely (U)	There are severe risks to sustainability
Unable to Assess (UA)	Unable to assess the expected incidence and magnitude of risks to sustainability

Monitoring and Evaluation Ratings

Quality of project M&E are assessed in terms of design and implementation on a six point scale:

Highly Satisfactory (HS)	There were no short comings and quality of M&E design / implementation exceeded expectations
Satisfactory (S)	There were no or minor short comings and quality of M&E design / implementation meets expectations
Moderately Satisfactory (MS)	There were some short comings and quality of M&E design/implementation more or less meets expectations
Moderately Unsatisfactory (MU)	There were significant shortcomings and quality of M&E design / implementation somewhat lower than expected
Unsatisfactory (U)	There were major short comings and quality of M&E design/implementation substantially lower than expected
Highly Unsatisfactory (U)	There were severe short comings in M&E design/ implementation
Unable to Assess (UA)	The available information does not allow an assessment of the quality of M&E design / implementation

Implementation and Execution Rating

Quality of implementation and of execution will be rated separately. Quality of implementation pertains to the role and responsibilities discharged by the GEF Agencies that have direct access to GEF resources. Quality of Execution pertains to the roles and responsibilities discharged by the country or regional counterparts that received GEF funds from the GEF Agencies and executed the funded activities on ground. The performance will be rated on a six-point scale.

Highly Satisfactory (HS)	There were no short comings and quality of implementation / execution exceeded expectations
Satisfactory (S)	There were no or minor short comings and quality of implementation / execution meets expectations
Moderately Satisfactory (MS)	There were some short comings and quality of implementation / execution more or less meets expectations
Moderately Unsatisfactory (MU)	There were significant shortcomings and quality of implementation / execution somewhat lower than expected
Unsatisfactory (U)	There were major short comings and quality of implementation / execution substantially lower than expected
Highly Unsatisfactory (U)	There were severe short comings in quality of implementation / execution
Unable to Assess (UA)	The available information does not allow an assessment of the quality of implementation / execution

Annex 7: Evaluation Report Outline

i. Opening page:

- Title of UNDP supported GEF financed project
- UNDP and GEF project ID#s.
- Evaluation time frame and date of evaluation report
- Region and countries included in the project
- GEF Operational Program/Strategic Program
- Implementing Partner and other project partners
- Evaluation team members
- Acknowledgements

ii. Executive Summary

- Project Summary Table
- Project Description (brief)
- Evaluation Rating Table
- Summary of conclusions, recommendations and lessons

iii. Acronyms and Abbreviations

1. Introduction

- Purpose of the evaluation
- Scope & Methodology
- Structure of the evaluation report

2. Project description and development context

- Project start and duration
- Problems that the project sought to address
- Immediate and development objectives of the project
- Baseline Indicators established
- Main stakeholders
- Expected Results

3. Findings

(In addition to a descriptive assessment, all criteria marked with (*) must be rated)

3.1 Project Design / Formulation

- Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
- Assumptions and Risks
- Lessons from other relevant projects (e.g., same focal area) incorporated into project design
- Planned stakeholder participation
- Replication approach

- UNDP comparative advantage
- Linkages between project and other interventions within the sector
- Management arrangements

3.2 Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance:
- Monitoring and evaluation: design at entry and implementation (*)
- UNDP and Implementing Partner implementation / execution (*) coordination, and operational issues

3.3 Project Results

- Overall results (attainment of objectives) (*)
- Relevance (*)
- Effectiveness & Efficiency (*)
- Country ownership
- Mainstreaming
- Sustainability (*)
- Impact

4. Conclusions, Recommendations & Lessons

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success

5. Annexes

- ToR
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Evaluation Question Matrix
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form

Annex 8: Evaluation Consultant Agreement Form

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

Evaluators:

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 imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Name of Consultant: Dalibor Kysela

Name of Consultancy Organization (where relevant)**:** N.A.

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Vienna 19 March 2021

Signature: 

Annex 9: GEF Tracking Tool at the Terminal Evaluation - annexed as a separate file

Annex 10 Audit Trail – annexed as a separate file