

Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2017

1. Project Data

Summary project data			
GEF project ID		3875	
GEF Agency project ID		BH-X1001; GRT/FM-11832-BH	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		IADB	
Project name		Implementing Sustainable Energy Projects in the Bahamas	
Country/Countries		The Bahamas	
Region		Latin America and the Caribbean	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		Strategic Program 1 (Promote energy efficiency in residential and commercial Buildings), Strategic Program 3 (Promote market approaches for renewal energy)	
Executing agencies involved		Ministry of the Environment of The Bahamas	
NGOs/CBOs involvement		Households (particularly low income) among the main beneficiaries	
Private sector involvement		Private sector involved in project implementation and end-user co-financing for renewable energy technologies	
CEO Endorsement (FSP) /Approval date (MSP)		10/15/2009	
Effectiveness date / project start		3/21/2010	
Expected date of project completion (at start)		August 2011	
Actual date of project completion		December 2016	
Project Financing			
		At Endorsement (US \$M)	At Completion (US \$M)
Project Preparation Grant	GEF funding	0	0
	Co-financing	0	0
GEF Project Grant		1	0.83
Co-financing	IA own	1.95	1.88
	Government	0.59	UA
	Other multi- /bi-laterals	NA	NA
	Private sector	0.31	0.35
	NGOs/CSOs	NA	NA
Total GEF funding		1	0.83
Total Co-financing		2.85	2.23
Total project funding (GEF grant(s) + co-financing)		3.85	3.05
Terminal evaluation/review information			
TE completion date		10/17/2017	
Author of TE		Oswaldo Patino	
TER completion date		3/24/2018	
TER prepared by		Nina Hamilton	
TER peer review by (if GEF IEO review)		Molly Sohn	

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	BLIND REVIEW	BLIND REVIEW	BLIND REVIEW	MU
Sustainability of Outcomes		BLIND REVIEW	BLIND REVIEW	ML
M&E Design		BLIND REVIEW	BLIND REVIEW	S
M&E Implementation		BLIND REVIEW	BLIND REVIEW	U
Quality of Implementation		BLIND REVIEW	BLIND REVIEW	UA
Quality of Execution		BLIND REVIEW	BLIND REVIEW	MU
Quality of the Terminal Evaluation Report		BLIND REVIEW	BLIND REVIEW	S

3. Project Objectives

3.1 Global Environmental Objectives of the project:

The project aims to “generate Global Environmental Benefits in the form of: carbon emission reductions, and financial savings due to avoidance of diesel purchase” (TE, pg. 18) with an estimated 60,418 tCO₂e reduction in direct greenhouse gas emissions reduction, and 295,455 tCO₂e reduction in indirect greenhouse gas emissions (reductions that could take place during the 10 years after project completion) (TE, pg. 18-19).

3.2 Development Objectives of the project:

The project’s general objective is to “promote and support the development and implementation of sustainable energy sources in the Bahamas providing alternatives to reduce dependency on imported fossil fuels,” specifically to “(i) provide technical assistance to the Government of the Bahamas (GoBH) to achieve energy efficiency (EE) in public buildings, the residential sector and commercial sectors, and to implement demonstration projects, in particular the phase-out of incandescent lights by replacing them with Compact Fluorescent Lamps (CFLs) and installation of Solar Water Heater (SWH) systems at the residential level; (ii) explore alternatives for renewable energy (RE), and implement pilot projects in RE, in particular a demonstration project for household photovoltaic (PV) systems connected to the grid using net metering devices; (iii) strengthen the energy sector in Bahamas; (iv) support the GoBH with a review of energy legislation, regulatory and policy issues to promote sustainable energy as well as institutional strengthening in the areas EE, RE and waste energy (WE); and (v) dissemination of findings” (PD, pg. 1).

3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

There were no changes in global environmental or development objectives or activities during implementation.

4. GEF IEO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

4.1 Relevance	Rating: Satisfactory
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This TER rates relevance as **satisfactory** given its alignment with GEF, country, and implementing agency priorities.

The project is highly consistent with the Bahamas' national priorities and plans, namely 5 out of 7 of the Bahamas "principal areas of strategic focus in the energy sector" including "(ii) energy efficiency - using less energy to provide the same level of service; (iii) energy conservation as a result of a more efficient use of energy or by reducing energy consumption through behavioral changes (iv) clean energy, including renewable energy; (v) diversification and security of energy supply; and (vi) meeting the energy needs of the poor" (PD, pg. 20). The project aligns with these priorities by developing a National Energy Policy, and strengthening the Bahamas Electricity Corporation's (BEC) technical and financial capacity and promote energy efficiency and renewable energy pilot programs.

The project is also consistent with GEF Strategic Program 1 (Promote energy efficiency in residential and commercial buildings) and GEF Strategic Program 3 (Promote market approaches for renewable energy), as it will provide technical assistance to the government to achieve energy efficiency in public buildings, residential sector and commercial sectors, and support a review of energy legislation, regulatory and policy issues to promote sustainable energy (TE, pg. 21).

Furthermore, the project was complementary to 3 IADB Technical Cooperation projects promoting energy efficiency and renewable energy, and aligned with four principal areas of strategic focus in the IADB's 2003-2007 country strategy for The Bahamas: "(i) sustaining economic growth and private sector development and (iii) improving environmental management and natural resources conservation, and was also consistent with the goals of the Energy Sector Policy (ESP) of the IADB because it sought to: (i) develop alternative sources of energy, especially from renewable resources; (ii) reduce and/or replace the utilization of hydrocarbons in the production of energy; (iii) promote the efficient use of energy; and (iv) create and/or strengthen the institutional and technological base of the energy sector" (TE, pg. 6-7).

4.2 Effectiveness	Rating: Moderately unsatisfactory
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This TER rated effectiveness moderately unsatisfactory since most components had moderate shortcomings and two had significant shortcomings, namely objective 3 (strengthen the energy sector in Bahamas) and objective 5 (dissemination of findings).

Objective 1: Provide Technical Assistance to the GoBH to achieve energy efficiency in Public Buildings, the residential sector and commercial sector and to implement demonstration projects

This objective is rated **moderately satisfactory**. The technical assistance component of this objective was mostly achieved, with completion of an energy efficiency assessment, proposed national energy

efficiency program, energy audit protocols and procedures, energy audits for households, hotels and public buildings, and assessment of energy uses and consumption patterns and financial instruments to promote energy efficiency. However, there was no training conducted for solar water heater installers or plumbers, as was planned (TE, pg 11).

The achievement of targets for replacing incandescent lights with Compact Fluorescent Lamps was significantly undermined by poor monitoring, poor record keeping and data management. The project purchased more bulbs than targeted (270,000 compared to 150,000 targeted), and energy savings from the installation of the CFLs were moderately satisfactory. However, the energy saved that can be attributed to the project is significantly hindered by the lack of monitoring data for more than half of the distributed bulbs, as only 121,074 CFLs have monitoring data (TE, pg. 11).

For the installation of solar water heater systems at the residential level, only 782 kWh/year savings were achieved, compared to a target of 1,955 kWh/year. Although the project met the target number of installations, only 40% out of the 133 SWH systems installed were working properly and efficiently at the time of the TE. Furthermore, a planned training program for certification of plumbers and contractors was not implemented (TE, pg. 30).

Objective 2. Explore alternatives for renewable energy, and implement pilot projects in renewable energy

This objective is rated **moderately satisfactory** since the project exceeded the objective in terms of number installed, however a significant number are not connected to electricity grid. The project purchased and installed 33 Photovoltaic (PV) systems in households, however only 11 of the installed systems (all on New Providence island) are now connected to the electricity grid since, in Grand Bahama, the utility company did not make sufficient effort to connect the 10 PV systems to the electrical grid (TE, pg. 12). The remaining 12 were damaged during Hurricane Matthew.

Objective 3. Strengthen the energy sector in Bahamas

This objective is rated **moderately unsatisfactory**. The project successfully completed the target activities outlined in the project document, including an assessment of the Bahama Electricity Corporation's operational and financial management procedures, developing a financial model, and strategy for diversification of BEC's energy matrix using renewable energy (TE, pg. 13). However, expected outcome that "BEC includes renewable alternatives in its expansion program" was not met, since at the time of the TE it was not clear whether BEC had implemented any recommendations, suggesting a potential flaw in the design and/or theory of change for this component.

Objective 4. Support the government of the Bahamas with a review of energy legislation, regulatory and policy issues to promote sustainable energy as well as institutional strengthening in the areas of energy efficiency and renewable energy

This objective is rated **moderately satisfactory**. The project completed a study which examined obstacles in existing laws which impact energy efficiency and renewable energy, and provided recommendations on policies related to both (TE, pg. 13). At the time of the TE there is no evidence that the Government of the Bahamas has yet implemented the energy legislation and regulatory aspects, and there was no provision of training/capacity building to the Government of the Bahamas to prepare energy conservation plans, prepare renewable and waste energy programs or train energy auditors, energy technicians and operators to operate and maintain renewable energy technologies (TE, pg. 30), which would all be essential for the government to adopt the study's policy suggestions.

Objective 5. Dissemination of findings

This objective's achievements are rated **unsatisfactory**, as the two workshops planned for dissemination of findings of the technical studies and pilot projects were not implemented, and the funds allocated to this component were canceled at project completion (TE, pg. 13).

4.3 Efficiency	Rating: Moderately satisfactory
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The TER rates efficiency as **moderately satisfactory**, given significant delays from factors both within and outside the control of the project.

At the design phase, the project document notes that the project's abatement cost of the total carbon emission reduced (GEF US\$ 3.38/tCO₂e) was more cost effective than other GEF financed projects (average US\$ 4-6/tCO₂e) (PD, pg. 25).

It is also worth noting that the Compact Fluorescent Lamps pilot project (component 1) saved US\$141,000 from the total budget, as the project registered the purchase of more CFL bulbs than targeted at less than the budget allocated (allocated \$445,000 for 150,000 bulbs, compared to \$304,000 spent on 270,000 bulbs) (TE, pg. 29). However, this component suffered from poor monitoring and only 121,074 bulbs were confirmed to be distributed.

The project was extended three times from August 2011 to December 2016, as a result of delays from frequent staff turnover and Hurricane Matthew, and in the end the Bank and government agreed to cancel US\$174,478.80 out of the GEF Project as it was too time consuming and difficult to procure and complete repairs within the last extension of the grant (TE, pg. 10, 30).

4.4 Sustainability	Rating: Moderately likely
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The TER rates sustainability as **moderately likely**, with significant environmental risks.

Financial resources – Likely

The project document notes that “financial sustainability of the pilot projects is expected through the net metering regime, a more aggressive cost-reduction curve through the expansion of residential photovoltaic systems, and the cost-benefits associated with reduction of energy bills” (PD, pg. 24). However due to the project's substandard implementation of M&E, it is uncertain the extent to which these have promoted financial sustainability.

For the short term, financial resource sustainability is likely due to the IADB's continued strong support to the government of the Bahamas in this particular sector (TE, pg. 37). The IADB is planning to continue with technical assistance and advisory services that will generate global environmental benefits through carbon emission reductions and financial savings from the reduction of fossil fuel consumption” (TE, pg. 37).

Sociopolitical – Moderately unlikely

Sociopolitical sustainability is rated moderately unlikely due to lack of buy-in from key stakeholders and lack of public/stakeholder awareness. With the photovoltaic systems pilot project, it was evident that there was insufficient buy-in from utility companies, as the utility company in Grand Bahama did not make sufficient effort to connect the 10 PV systems to the electrical grid due the energy fluctuations (TE,

pg. 13). Furthermore, due to the lack of campaigns for Compact Fluorescent Lamps, Photovoltaic, and solar water heater technologies and dissemination of findings as planned at project enforcement, there is still suppressed demand for these technologies in the Bahamas (TE, pg. 35). For example, the Bahamian public “knows little about CFLs, SWH or PV and often confuses the latter two as electricity producing systems” (TE, pg. 36). As a result, most people are still unaware of the costs and benefits associated these technologies and are unable to make informed purchasing decisions.

Institutional framework and governance – Moderately likely

The project pilots have successfully illustrated to the government the viability of renewable energy systems and energy efficiency strategies by through the two pilot projects, and the project’s institutional study provided clear strategies for BEC to expand to renewable energy (TE, pg. 32). However, institutional framework and governance sustainability is rated moderately likely since there is not yet evidence that the government or BEC have adopted measures suggested through this project’s outputs.

Environmental – Moderately unlikely

The project faces significant environmental risks that manifested during the project and are likely to continue.

It is evident that some technologies installed by the project were not well adapted for the Bahamian climate. At the time of the TE, the majority (60%) of the 133 solar water heater systems installed suffered from corrosion “from hard water from the city mains, and from being made from materials that is not conducive for the Bahamas environment, which is humid and has a high salt content” (TE, pg. 21). In this environment, the solar water heater systems lasted no more than 2 years while the expected lifetime was 7-10 years (TE, pg. 12).

There also remains a great risk from climate change and increased frequency of natural disasters. During project implementation, Hurricane Matthew damaged 11 PV systems out of the 22 installed in New Providence, and contributed to the extension of the completion date and cancellation of part of the GEF grant (TE, pg. 15). On the other hand, the installed PV systems in Grand Bahamas were not damaged due to a better technical installation model which should be disseminated as best practice for countries that are affected by hurricanes (TE, pg. 35).

Furthermore, the project failed to include the design or implementation of mitigation measures for the disposal of the Compact Fluorescent Lamps distributed by the project (as required by the project’s environmental assessment), as they contain mercury and can potentially represent a health and environmental threat if improperly disposed of (TE, pg. 32).

5. Processes and factors affecting attainment of project outcomes

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project’s outcomes and/or sustainability? If so, in what ways and through what causal linkages?

IADB co-financing was essential to the achievement of the objectives, as it provided the majority of funding for three out of the five components which were not covered by the GEF grant. The government committed to contribute about US\$590,000 (cash and in-kind) and private sector about US\$310,000 (through end user financing). However, the government’s materialized contribution is unclear, as the TE

notes that “the beneficiaries [of the solar water heater and photovoltaic systems] committed US\$351,907,” which is slightly higher than the expected amount (TE, pg. 31).

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project’s outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The project was extended three times from August 2011 to December 2016, as a result of delays from frequent staff turnover, Hurricane Matthew, and slow government processes (TE, pg. 10). In the end, the Bank and government agreed to cancel US\$174,478.80 out of the GEF Project as it was too time consuming and difficult to procure and complete repairs within the last extension of the grant (TE, pg. 30).

Frequent personnel turnover in project managers resulted in delays in procurement activities, project execution, and disbursements, and resulted in incomplete implementation by the closing date (namely the public awareness program, audit of the CFLs component, and the two workshops to disseminate findings) (TE, pg. 31). The TE also notes that this turnover was not an indication of reduced government commitment (TE, pg. 34). The project also experienced delays in receiving approval from the government and Bahamas Electricity Corporation to connect the installed photovoltaic systems to the electricity grid (TE, pg. 35). Gaining approval from the Ministry of Public Works’ building control department also caused delays, as they requested a racking system that is hurricane certified, which had to be ordered and shipped to The Bahamas (TE, pg. 35).

In October 2016, Category 5 Hurricane Matthew caused major damage to homes, and especially the roofs, where the project’s photovoltaic systems had been installed. An inspection of the damage indicated that 11 of the 33 installed systems were damaged, with some panels lost entirely, some panels blown off causing roof damage, and significant damage to the panels’ wiring and racking systems which hold the panels. (TE, pg. 35)

5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal links:

The TE notes that the project aligned closely with country’s economic strategy at the time and “was supported by the GoBH” (TE, pg. 34). The TE also indicates that the government’s “strong ownership towards increasing the introduction of renewable energy sources facilitated the implementation of the pilot project” (TE, pg. 36). However, the TE does not provide specific evidence regarding country ownership during project implementation or after project completion.

6. Assessment of project’s Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

6.1 M&E Design at entry	Rating: Satisfactory
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The Project Execution Unit (PEU) in the Executing Agency, the Ministry of the Environment (MOTE), was responsible for managing and implementing the project's M&E system. The plan laid out a clear reporting schedule, comprehensive results framework with indicators and targets for each output and outcome, a mid-term evaluation workshop with key stakeholders to allow for adaptive management, and plan to share M&E results with institutions participating in the project (e.g. Bahamas Electricity Company) (PD, pg. 6). The plan indicated that the PEU would ensure the consolidation of the baseline information for all indicators within the first 6 months.

The M&E design also included regular monitoring of photovoltaic and solar water heater systems regarding its operational status, user satisfaction, and benefits to the electricity grid and the user, including provisions for record-keeping and continued monitoring for a "reasonable period" after project completion (PD, pg. 25).

However, the budget only allocated \$80,000 towards M&E (PD, pg. 6), with the allocation of grant resources focused mainly on the implementation of the pilot projects, which likely contributed to the poor M&E implementation and lack of capacity to monitor multiple pilot projects.

6.2 M&E Implementation	Rating: Unsatisfactory
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M&E implementation is rated unsatisfactory since inadequate monitoring resulted in the inability to assess project effectiveness and impact for many components, and government counterparts failed to follow the results framework matrix in their reporting.

The project had a substandard level of monitoring, record keeping and reporting for the Compact Fluorescent Lamps pilot project. For example, there was a lack of data to confirm the number of CFLs distributed, and no data tracking household consumption six months after receiving CFLs in order to compare with initial consumption (TE, pg. 33). It was evident that the distribution, installation, tracking, and record keeping of such a large amount of CFLs were not properly designed in line with the human resources available at the PEU. For example, the IADB plan had called for a comparative analysis of households' consumption over a 3-month period to serve as the basis for monitoring CFLs installation, beneficiary behavior and estimation of energy savings. However, the monitoring mechanism was not implemented due to the lack of personnel (TE, pg. 21). In response, the PEU requested the Bahamas Electricity Corporation to collect consumption data as of June 2011 in order to make comparison of their consumption between 2010 vs. 2011, however the data was not collected.

Furthermore, government counterparts did not provide data for all indicators and did their evaluation reports did not follow the comprehensive Project Results Framework Matrix from the project document (TE, pg. 33). On the other hand, there was data on the photovoltaic systems and solar water heaters installed and in operation, which enabled the calculation of carbon emissions and financial savings from avoided diesel purchases (TE, pg. 33). However, no monitoring system was installed on the solar water heaters to gather data for metering, or data on solar production and hot water consumption (TE, pg. 30).

7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in

performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 Quality of Project Implementation	Rating: Unable to assess
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The TE did not provide sufficient information to assess the quality of supervision and assistance provided by IADB, the implementing agency. However, there was evidence that the IADB was responsive to issues as they arose. For example, when there was an issue with photovoltaic inverters not working with the electricity grid, the problem was corrected with the support of the IADB and the PEU through the purchase and installation of new inverters which were better adapted to the Bahamas (TE, pg. 12).

7.2 Quality of Project Execution	Rating: Moderately unsatisfactory
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The executing agency was the Ministry of Environment of the Bahamas. While the Ministry of Environment played a crucial role in the effective implementation of most of the project's components. The quality of project execution is rated moderately unsatisfactory due to the delays from frequent staff turnover, and the poor implementation of the M&E system which was the responsibility of the Project Execution Unit within the Ministry of the Environment (see section 6.2).

As mentioned in the section 5.2, project implementation suffered many delays due to inadequate human resources, which contributed to poor project administration, including record keeping and monitoring outputs and outcomes. The project would have benefitted from the assignment of a larger team commensurate with the project scope to be achieved within the allotted timeframe.

8. Assessment of Project Impacts

Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The TE presents very limited evidence of measurable impact due to the project's substandard monitoring and recording keeping. The two pilot projects resulted in the following environmental change:

- Compact Fluorescent Lamp use: energy savings of 7,954 MWh/year (TE, pg. 14)
- Solar water heater use: saving around 1,955 kWh/year (TE, pg. 15)

8.2 Socioeconomic change. Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and

qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

There was no evidence of socioeconomic change due to the poorly implemented M&E system.

8.3 Capacity and governance changes. Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. “Capacities” include awareness, knowledge, skills, infrastructure, and environmental monitoring systems, among others. “Governance” refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

a) Capacities

Awareness raising campaigns were implemented across low-income households during the compact fluorescent lamp pilot project (TE, pg. 13). This included several training programs to raise awareness for changing energy efficiency habits. Through this door-to-door program, the installation of the CFLs, and town hall meetings, the TE notes that a “minimal threshold of increased knowledge of CFL technology was attained,” and beneficiaries declared that they were very satisfied with the benefits experienced by the CFLs (TE, pg. 12).

Furthermore, the project resulted in strengthened financial and operational performance for the Bahamas Electricity Corporation, and helped identify options to expand into renewable energy. The project also contributed to the capacity of the private sector to implement projects on solar water heaters and photovoltaic systems (TE, pg. 31).

b) Governance

The study conducted as part of the GEF project provided recommendations for policies on energy efficiency and renewable energy, including efficiency standards, tax exemptions, and the establishment of a Sustainable Energy Unit and energy efficiency programs for the households, hotels and public buildings (TE, pg. 13). For renewable energy policy, the study recommended increase of awareness, implementation of training programs for RE technologies, facilitating access to capital to cover the high up front costs associated with RE, incentives to the power company and clear grid connection rules. (TE, pg. 13).

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

In households with Compact Fluorescent Lamps and solar water heaters, the project contributed to a decrease in the monthly electricity bill with the, and in some cases a small income generation for households with fully operational photovoltaic systems that are currently fully operational (TE, pg. 31). The TE does not provide figures on electricity bill savings or income generation.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

The TE notes that the project “has had a catalytic role in the GoBH committing to the promotion of sustainable energy practices” (TE, pg. 32), however it does not indicate any specific commitment made on behalf of the government of the Bahamas.

9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

- The installed photovoltaic systems in Grand Bahamas were not damaged due to a better technical installation model of the racking systems over the roof. The model should be disseminated as best practice for installing PV system for countries that are affected by hurricanes (TE, pg. 35).
- Many households suffered from water leaks following the installation of solar water heaters. All water lines should not permeate roofs, but run down then into the home near the water lines. In addition, selected beneficiaries should be trained on how to conduct a quarterly maintenance flush on their system to reduce hard water issues. (TE, pg. 35)
- For future or follow up energy operations, it is important to implement an M&E system within a unit or division at the Project’s Executing Agency. This unit or group should be created at the start of the project in order to demonstrate the benefits of renewable energy activities supported by the GEF and IADB grants to the country and in doing so, this will help to justify follow-up operations (TE, pg. 33).
- Although the MTE&H (PEU) has proper internal organization and procedures for grants implementation, a POM would have been ideal to have in place as it defines and compiles in one document: the institutional organization of the PEU, key staffing, internal organizational structure, financial and accounting procedures, reporting formats, and external auditing and the hiring of key staff for the PEU (TE, pg. 34).
- As a result of no awareness campaigns and dissemination of findings, most people are unaware of the costs and benefits associated with CFLs, SWH and PV systems and are unable to make informed purchasing decisions. Thus, it is important to develop and implement broad awareness campaigns and dissemination of findings to support the GoBH’s efforts in promoting and implementing the use of EE and RE measures that aim to help reduce The Bahamas’ fossil fuel dependency (TE, pg. 36).

9.2 Briefly describe the recommendations given in the terminal evaluation.

- **Develop a Program's Operations Manual (POM).** Its development and implementation would have given a transfer of knowledge to the various project managers assigned to the project, and would have assisted in counteracting the negative impact of high staff turnover, as well as help to align project monitoring and oversight of project outputs and outcome indicators, which for this grant were too many indicators to track.
- **Ensure robust project administration.** The project would have benefitted from the assignment of a larger team commensurate with the project scope to be achieved within the allotted timeframe.
- **Ensure the buy-in of key stakeholders.** Securing the full support of the BEC and GBPC would have helped to minimize the delays in approval for the PV systems to be connected to the grid, as well as the transfer of data to the MOTE for the monitoring of impact of the CFLs.
- **Continuous awareness raising and incentives are essential to sustain consumers' use of energy efficient technology.**
- **Procedures for recycling of incandescent lights bulbs, and safe disposal of CFLs, should be established prior to distribution of CFLs.**
- **Improve qualifications criteria to attract bidders and enhance product testing such as with the inverters.** The experience of the pilot project for purchasing PV systems and its inverters highlighted the need for testing the inverters before shipment and stronger eligibility criteria at the time of procurement to ensure the supply of high quality goods.
- **Technical diagnostics of water conditions should be performance prior to purchasing solar water heater system and in accordance with the country environment.**
- **Adapt technical design and installation of the photovoltaic systems and solar water heaters for greater protection against Hurricanes.** All PVs and SWH installations and racking systems should be hurricane certified.
- **Renewable energy systems should have insurance for hurricanes.**
- **Train beneficiaries in basic maintenance of RE systems.** The provision of basic maintenance training to beneficiary households for the RE systems introduced into their homes would have helped to maximize the longevity of the systems and the sustainability of the impacts derived from the pilot projects.
- **Include all relevant technical personnel in the development of specifications for RE systems.**
- **Training should be provided to installers prior to installation of solar water heaters.** The provision of installation training to the chosen installation firms would have resulted in the application of appropriate installation techniques, thereby reducing the instances of SWH-related leakages developing in the homes of beneficiaries.
- **Implement an M&E system within the Government's executing unit, and focus on M&E during project implementation/supervision needs.** Having a M&E team on the project execution unit, or at least a team within the executing agency, would have had a strong impact on improving project implementation and oversight of the results on the ground.

10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	GEF IEO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	The report provides a detailed assessment of the achievement of project outputs and outcomes as outlined the project document's results framework.	S
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The report was internally consistent and well substantiated, although the assessment in the results framework matrix (TE, Table 1) is not always consistent with the assessment in the TE's narrative on the effectiveness of each component (e.g. for objective 3, there is no evidence that BEC has adopted the proposed plan, yet the TE assessed the objective as 100% achieved). There is also inconsistency with some statistics, such as the percentage of operational solar water heaters.	MS
To what extent does the report properly assess project sustainability and/or project exit strategy?	The report provided an assessment of project sustainability, however the threat of natural disasters/climate change was not mentioned, which has already hampered project outcomes and has a high likelihood of occurring again.	MS
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The report provides relevant, well substantiated, comprehensive lessons learned.	HS
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The report provides detailed actual project costs by activities and co-financer, however the distinction between government co-financing and end user co-financing is not clear as it was in the project document.	S
Assess the quality of the report's evaluation of project M&E systems:	The report provided a detailed assessment of the quality of the project's M&E system.	HS
Overall TE Rating		S

11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

No additional sources of information were used.