Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2016

1. Project Data

Summary project data			
GEF project ID		3959	
GEF Agency project ID		GF/CHD/12/001 + 100184	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		UNIDO	
Project name		Promoting Renewable Energy Based Mini-Grids for Rural Electrification and Productive Uses in Chad	
Country/Countries		Chad	
Region		Africa	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		CC-SP3- -Promoting Market Approaches For Renewable Energy GEF SPWA Programmatic Approach	
Executing agencies involved		Ministry of Oil and Energy; Ministry of Environment (National executing agency/counterpart); Ministry of Finance and Economy (National executing agency/counterpart)	
NGOs/CBOs involvement		ECOWAS Centre for Renewable Energy and Energy Efficiency – executed some project activities	
Private sector involvement		TTA (Tramatecno Ambiental) – executed activities	
CEO Endorsement (FSP) /Approval date (MSP)		April 12, 2012	
Effectiveness date / project start		May 2012	
Expected date of project completion (at start)		November 2014	
Actual date of project completion		October 2015	
Project Financing			
		At Endorsement (US $M)	**At Completion (US $M)**
Project Preparation Grant	GEF funding	0.060	0.060
	Co-financing	N/A	N/A
GEF Project Grant		1.758	1.758
Co-financing	IA own	0.165	0.060
	Government	1.636	0.771
	Other multi- /bi-laterals	N/A	N/A
	Private sector	N/A	N/A
	NGOs/CSOs	N/A	N/A
Total GEF funding		1.82	1.82
Total Co-financing		1.80	0.77
Total project funding (GEF grant(s) + co-financing)		3.62	2.59
Terminal evaluation/review information			
TE completion date		May 2016	
Author of TE		Mark Draeck, Iva Bernhardt, Djibrine Ngarmig-Nig	
TER completion date		January 15, 2017	
TER prepared by		Punji Leagnavar	
TER peer review by (if GEF IEO review)		Molly Watts	

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	S	S	-	MS
Sustainability of Outcomes		MU	-	MU
M&E Design		MU	-	U
M&E Implementation		MS	-	MS
Quality of Implementation		S	-	MS
Quality of Execution		S	-	S
Quality of the Terminal Evaluation Report		N/A	-	MS

3. Project Objectives

3.1 Global Environmental Objectives of the project:

The ultimate goal of the project is to reduce energy use related emissions of greenhouse gases (GHG) produced by the energy sector of Chad.

3.2 Development Objectives of the project:

The overall objective of the project was to avoid greenhouse gas emissions by promoting renewable energy technologies for mini-grid rural electrification for productive uses in Chad. The project lists the following project outcomes during the CEO Endorsement: (CEO Endorsement, p.1)

- Outcome 1: An effective, market-oriented institutional, financial, policy and regulatory framework to stimulate investments in renewable energy
- Outcome 2: A portfolio of RE energy projects prepared for pilot private sector investments during and post the GEF-project
- Outcome 3: Reduced GHG emissions and increased access to rural electrification

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

The expected outputs were changed during the Mid-Term Review, because the project committee forecasted that co-financing would not arrive. The MTR also suggested changes in indicators and targets. The project then slightly changed outcome 1 (MTR, p.37 and p.98). The TER assess effectiveness based on the revised results framework and targets, since the reasons for the changes were due to exogenous factors.

- Outcome 1: An effective, market-oriented, policy and regulatory framework to stimulate investments in RE
- Outcome 2: A portfolio of RE projects prepared for pilot private sector investments during and post the GEF project
- Outcome 3: Reduced GHG emissions and increased access to rural electrification

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

The project was relevant to both national priorities in Chad concerning electricity and energy access, and to the GEF-4 Strategic Programs.

With regard to relevance to national priorities, the Government of Chad had developed a national target of 75% energy access by 2030. The baseline was that 14% of the population had energy access. Therefore, there were national plans for rural electrification, and specifically sourcing alternative energy sources to peri-urban and rural communities. The country developed the Energy Strategic Plan that outlined the use of mini-grids and renewables for those rural communities. Linking with this is the Poverty Reduction Strategy Paper that aimed to supply communities to electricity in order to harness economically productive activities (TE, p.32).

Furthermore, the project was relevant to the GEF Climate Change focal area's Strategic Program 3 – 'Promoting market approaches to renewable energy'. The project worked to disseminate RE technologies through demonstration, pilot projects and also through enabling private sector enterprises to secure a market in the technologies. This was targeted in rural areas of Chad. The project also tried to promote market approaches by creating the regulatory and legal frameworks to leapfrog RE businesses in the country. The project also sat within the GEF Programmatic Approach to Access to Energy in West Africa, and was part of the Strategic Program for West Africa (SPWA) (TE, p.32-33).

4.2 **Effectiveness**	Rating: Moderately satisfactory

This TER rates overall effectiveness as *moderately satisfactory.* The TER differs from the TE, which rated this as *satisfactory*, mainly due to the fact that the project was able to achieve some of its outputs and activities, despite the difficulties experienced by the project (co-finance, security challenges). This TER notes that there were outcomes that were only partially achieved or not achieved at all. Below is a discussion according to outcome.

- Outcome 1- *An effective, market orientated policy and regulatory framework to stimulate investments in RE*. The target for this outcome was 'Strategic framework for RE validated by government'. So far, the TE finds that the project was able to partially achieve this target, developing two policies that have yet to be validated and integrated into law; these are: (1) The Draft Document on Rural Electrification Policy in Chad and (2) the Draft Law of Electrification (RE) for Chad that pinpoints the development of the sector of mini-grids based on renewable energies in rural areas (TE, p.46). Therefore, the target is only partially met.

- Outcome 2- *A portfolio of RE projects prepared for private sector investments during and post the GEF;* the project developed the target '4-5 project sites identified and detailed feasibility studies prepared'. The TE finds that this Outcome target was achieved (five feasibility studies were completed in sites - Douguia, Mombou, Guelendeng, Mailao and Dourbali) (TE, p.42)

- Outcome 3- *Reduced GHG emissions and increased access to rural electrification;* this outcome had three targets and was not able to achieve any of them. An example of a target it failed to achieve was the reduction of CO2eq. It set out to reduce emissions - 'Direct: 3900 tonnes CO2eq; Indirect: 19,500-24,700 (over 10 year lifetime)'. However, it was only able to avoid an estimated 1,737 t CO2 eq. An example of another target it was not able to meet was '250 connections per site with a total of 1250'. In the end, the project could only make 213 connections in total for all three pilot sites. The project was not able to meet its target because of the lack of co-financing; the TE says "the original targets will not be achieved. The most significant constraint to achieving all the project results and outcomes is the budgetary situation with the absence of the remaining co-financing from the government." (TE, p.43)

4.3 **Efficiency**	Rating: Moderately satisfactory

The Terminal Evaluation has concluded that Project efficiency was *moderately satisfactory,* and this TER agrees with that assessment. There were efforts undertaken to ensure the cost-effectiveness of project implementation. One example that was cited was that the project team sourced consultants and technical experts that performed activities and deliverables beyond the scope of the initial TORs, increasing the cost-efficiency of certain activities. Despite the efforts to maximize the human resources in the project, the project did experience many inefficiencies. For instance, the project was delayed by eleven months, and that caused many activities (activities, trainings and the demonstration sites) to be behind schedule. (TE, p.56)

4.4 **Sustainability**	Rating: Moderately Unlikely

This TER finds that there are significant risks that affect some dimensions of sustainability, and for that reason project sustainability is rated as *moderately unlikely.* The two most considerable risks for the project concern institutional and governance risks and financial risk (discussed below).

Financial risks: There are some substantial financial risks to the project, and financial sustainability is *unlikely*. This is because it is uncertain that revenues from the installed energy platforms will be high enough that they can cover the costs of management and future equipment replacement (which is inevitable for long term use). Also, the three sites that the project installed RE equipment in might not be profitable enough for private sector actors to do the maintenance required in the future (TE, p.57). The maintenance particularly of solar technologies is critical for upkeep. The government also is not poised to invest in renewables since there is a strong oil lobby in the country, so getting the sites to a starter phase into long term sustainability is *unlikely*.

Socio-political risks: Socially, the project has demonstrated that the availability of electricity can result in a growth of productive activities (therefore, producing income), and that it can also reduce users' energy costs. These income saving initiatives have the potential to persist however, other political risks outweigh the income savings that these communities might have. Towards the end of the project some project sites were difficult to reach because of the threat of Boko Haram in the area, and those political and security threats remain in the country now (TE, p.69). The socio-political sustainability of the project is thus considered *moderately unlikely.*

Institutional risks – There are significant risks that limit the ability of the project to be sustainable in the institutional dimension. This TER considers the institutional sustainability to be *unlikely.* With regard to government, there is a recognition in the Niger Government that access to electricity for the rural population will not be solely through grid extension or from fossil fuels. The Government has demonstrated its interest in RE mini-grids and the project's business model for potential replication. However, there is no clear commitment from the Government despite these intentions (TE, p.51). In regards to institutional risks in the private sector, there is no framework for private sector investment in the operation of mini-grids is, so that severely prohibits project sustainability. The private sector is not strong, has limited technical capacity, and little interest in the short-term to operate/maintain the existing RE systems (TE, p.60).

Environmental risks - The TE did not identify any environmental risks to sustainability, therefore environmental sustainability is *likely*.

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?

The project was not able to meet its expected level of co-financing and that affected the project activities and ultimately the achievement of project outcomes. The Ministry of Petroleum and Energy (Project's EA), committed to co-financing the project and providing US$ 1.8 million. However, at the completion of the project the Ministry only provided 42.8% of expected co-financing (~US$ 771,000) (TE, p.10). The TE notes that many of the original outcomes, activities and overall goals could not be achieved because of this lack of funding (the project had to change its results framework and approach because it suffered from lack of funding as well).

The TE specifically states that – "the Global Environmental Benefits were not at the expected level during project design, due to the lack of co-financing" (TE, p.50). Some concrete examples of this are that the actual GHG avoided without the co-financing was only 1,737 t CO2 (from 121.7 kWc installed), instead of 2,235 t CO2 which was originally planned in the project document. As well, the lack of government co-financing led to a cut in the number of demonstration project sites and directly affected the sustainability of the project (TE, p.63).

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 initially delayed by eleven months. Some activities were behind schedule, and the project experienced periodic delays during implementation as well. Before the project began the delays occurred because there was a delay in the appointment of a local legal team to develop and oversee contracts, securing contract signatures from all parties, and securing the first payment from UNIDO to begin project activities.

During the implementation delays also occurred because there was much uncertainty over co-financing. Additionally it should be mentioned that some of the activities were delivered behind schedule due to the security situation in Chad and Boko Haram activities that were close to the three project sites; at times travel to those sites was impossible.

The consequence was a delay in project activities. The Project Steering Committee was only established in April 2013, over a year after the project already started. This potentially led to a loss of ownership and ultimately sustainability of the project since beneficiaries were integrated into the project later than it began.

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 level of project ownership from both beneficiaries/stakeholders and the Government of Chad is high. At the time of the of the evaluation the project staff noted that the Government Agency representatives and Ministries, stakeholders and private sector all expressed strong ownership of their roles. However, although the government showed a sense of ownership, it was still not strong enough to manifest itself in the promised amount of co-financing which ultimately affected the achievement of the outcomes.

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: Unsatisfactory

The TE rated M&E Design at entry as unsatisfactory, and this TER agrees with that rating. The TE found that the poor M&E design did not allow the project to integrate an adaptive management approach or the ability to effectively monitor the project results (TE, p.37). The M&E results framework did not provide verifiable indicators and targets for each of the foreseen project activities or outputs. Nor did it provide a fair assumption of risks. Therefore, some of the indicators stated refer directly to activities." (TE, p.37) In April 2013, the Steering Committee changed its monitoring plan because it realized that there were many inconsistencies in the project design. The latest monitoring plan still however, does not include all SMART indicators and appropriate targets (TE, p.59). For example, the outcome indicator for 'an effective, market oriented policy and regulatory framework to stimulate investments in RE' is *availability of strategic framework for RE'* which is not specific enough. The target for that Outcome is also not as specific as it could be – *validated strategic framework for RE* – validated by whom?

The budget for M&E however, was sufficient; the TE notes that "Adequate funding has been provided for M&E activities during the project implementation" (TE, p.60). The M&E design at entry allocated $866,000 for the M&E plan.

6.2 **M&E Implementation**	Rating: Moderately satisfactory

The TE rates M&E implementation as moderately satisfactory, and this TER agrees. The strength of the project M&E implementation was that it was able to absorb an adaptive management approach when it came to changing the results framework. The change in project outputs, targets and outcomes during the MTR is one example of how the project was able to quickly adapt to new circumstances and situations.

However, there are some shortcomings in M&E implementation. For instance, the TE explains that the project successfully delivered Annual Reports and PIRS, but that there was no formal reporting or monitoring of the project beyond the PIRs, even though the work plan is supposed to be used as a monitoring tool by the Steering Committee and UNIDO. The other reason why the project receives a moderately satisfactory score is because many of the M&E activities were delayed and could have affected the ability of the project to be more adaptive. The Mid-Term Review was delayed by twenty-one months (TE, p. 61).

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: Moderately satisfactory

The TE notes UNIDO provided all resources (financial, administrative, etc.) were implemented on time, and that "UNIDO was responsible for financing and determination of means from GEF funding and this was done in a responsible and cost-effective manner" (TE, p.62). The IA was available and operating even under times of high security and in situations where travel was difficult. For those reasons, the IA did a good job in implementing the project (TE, p.67).

However, UNIDO displayed some signs of inefficiency when managing this project. There was a delay in the appointment of a local legal team and following contract signature (in September 2014) there were further delays in starting the work due to delays in the first payment from UNIDO. These events caused a cascade of delays to extend onto the project timeline and ultimately affected the delivery of activities. In addition to delays, the TE noted that the management decisions that were taken from the UNIDO Vienna HQ added an extra step in overall management, creating inefficiencies. These are the reasons why this TER rating is *moderately satisfactory* as opposed to *satisfactory*.

7.2 **Quality of Project Execution**	Rating: Satisfactory

The TE describes the quality of execution by the part of the Ministry of Energy and Petrol as satisfactory. The Ministry set up a system that functioned well for this project, in that they were responsible for overall project coordination and the Project Coordination Unit (the project team within the Directorate of Energy) carried out all day-to-day activities and the M&E plan. The Ministry was also willing and able to work in a highly flexible manner, something much needed by this project considering the changes it had in project activities.

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 project was able to avoid an estimated 1,737 tonnes CO2 eq. GHG through the installation of renewable energy technologies across three communities in Chad (TE, p.39). Originally, the project planned to avoid 2,235 tonnes, but due to lack of co-financing many of the project sites had to be reduced (TE, p.52).

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.

> The project installed a total kW of 121.7 kWc, which is energy that can potentially be used for productive income generating activities. One of the sites is already using it for water pumps for agricultural productive uses (Mombou), and another (Douguia) finds SMEs using the electricity. The 213 electricity connections have been made in total for all the three pilot sites until project ending (TE, p.39).

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 – The project provided trainings for private developers on solar installations, renewable software and management of mini-grids. These skills are likely to continue beyond the duration of the project (TE, p.45).

b) Governance – One of the primary barriers for renewable energy is the lack of a legal basis for their development in Chad. For that reason, the project initially aimed to strengthen policies and regulatory mechanisms to encourage renewable energy based mini-grids. In the end, the project developed two draft pieces of policy (Draft Document on Rural Electrification and the Draft Law of Electrification) (TE, p.44).

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.

No unintended impacts were noted in the TE.

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.

No adoption at scale were noted in the TE.

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 following lessons were learned from the implementation of this project (TE, p.79):

- The project should have forecasted timelines that were more realistic considering the remoteness and logistical challenges of the project, and the time it takes to for project start-up (securing contracts, funding, personnel, etc.)
- Agencies and project designers should ensure all co-financing and commitments from co-financing partners are made at the beginning of the project design.
- In-kind co-finance should be included as a form of co-financing in the Project Document with activities listed in the in-kind co-finance already there (for instance: office space, lending personnel etc.).

- Flexible management is required for effective project implementation and project flexibility should be allowed. Considering this, the Mid-term review is a critical tool to steer the project in the right direction, especially if there are unexpected situations that arise during project implementation (lack of major co-financing, Ebola etc.)

9.2 Briefly describe the recommendations given in the terminal evaluation.

The TE provided recommendations to both UNIDO and the Government of Chad. The following recommendations are for UNIDO:

- For future projects, greater level of detail and study is required at the Project Preparation Grant (PPG) stage in order to create a strong project baseline.

- In remote undeveloped areas, a more holistic approach is needed to ensure delivery of all the potential impacts. For instance, electricity will not alone deliver productive activities if there is no awareness of what those activities could be, or ways to finance them in the long term.

The following recommendations can be given to the Government of Chad:

- To support the sustainability of the project the Chadian Government should: encourage Public-Private initiatives for operating RE mini-grids after the duration of the project; reinforce local technical capacities to maintain solar mini-grids, pass the Law on National Strategy of Electrification, Business Plan for Renewable Energies and Renewable Energy Law.
- The Chadian Government should take advantage of renewable energy pilot project sites and undertake public awareness activities at those locations
- Seek co-financing from donors for funding new renewable energy projects in Chad (replication of pilot projects).

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 TE does a satisfactory job of evaluating the relevant outcomes, impacts and achievements. It presents the full results framework and walks through each output/outcome/activity. Specifically as it relates to the outcomes, the TE provided some assessment of why or how the project was able to achieve them, but it doesn't go into depth about those achievements or shortcomings. Therefore, it is considered satisfactory, instead of highly satisfactory.	**S**
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The TE prepared ratings that were inconsistent with the findings. For example, the project fell short of its expected targets in many cases and the TE stated that the project 'achieved' its targets. One example, is that the project had a target of 1250 electricity connections and in the end, was only able to make 213. This should have been labeled as 'not achieved', but the TE rated it 'achieved as planned'. (TE, p.43)	**MU**
To what extent does the report properly assess project sustainability and/or project exit strategy?	The TE did a highly satisfactory job assessing project sustainability and provided a robust analysis of each sustainability dimension.	**HS**
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	Although the lessons learned were supported by evidence, they could have been more comprehensive or robust considering all of the challenges the project endured.	**MS**
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The report does have project costs per activity (in the TE its Component), and a co-financing breakdown.	**S**
Assess the quality of the report's evaluation of project M&E systems:	The report does a satisfactory job of assessing and presenting the M&E systems. It does a good job of discussing the M&E design and associated weaknesses, but did not elaborate on the quality of the implementation as much as it could have.	**S**
Overall TE Rating		**MS**

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

CEO Endorsement, MTR 2015, PPG, Short ProDoc