Lesotho Renewable Energy-Based Rural Electrification Project (LREBRE)

DRAFT Terminal Evaluation Report

GEF Focal Area, Operational Program:	Climate Change, OP#6 (Adoption of Renewable Energy by Barrier Removal and Reducing Implementation Costs)
Implementing Agency:	United Nations Development Programme
Executing Agency:	Government of Lesotho, Ministry of Energy, Meteorology and Water Affairs
Evaluation Time Frame:	April 24 till June 5, 2013, with Lesotho Mission from April 29 till April 15.
Date of Submission:	Draft submitted 3 June 2013; Final on 23 July 2013
Evaluation Team:	Dr Andrew Mears, International Consultant & Team Leader (andrew@majorityworld.com.au), and Dr Molibeli Taele, National Consultant (bm.taele@nul.ls)

Acknowledgements & Declarations

The evaluation team would like to express its gratitude and appreciation to all stakeholders interviewed. Their contribution, through the facts and opinions they openly and freely shared with the evaluators were crucial in conducting the evaluation. In particular the team wishes to thank the project participants from the three target areas, and the private sector suppliers; the members of the Project Steering Committee; and the project sponsors, represented by Mr E. Lesoma, Principal Secretary, Ministry f Energy, Meteorology and Water Affairs (MEMWA); Mr Thabang Phuroe, Director, Department of Energy, MEMWA; Mr Leloko Mokhutsoane, Project Manager/Head of Rural Electrification Unit, Department of Energy, MEMWA.

The evaluation team would like to extend special thanks to the staff of the Project, in particular the Project Coordinator, Mrs Lipoloelo Tau; and of the UNDP Country Office team including Ms Lineo Mdee, and Ms Mpolai Maliehe, who supplied key information and assisted with logistics ,and the Regional Technical Advisor, Mr Lucas Black for the briefing.

The evaluation team also wishes to clarify that the National Consultant, Dr Molibeli Taele is currently a staff member at the National University of Lesotho and was involved in delivery of some training supported by the LREBRE project. To ensure objectivity of the evaluation, Dr Taele did not participate in the interviews or discussions relating to the training or NUL's involvement in the project.

Table of Contents

Executive Summary

The "Renewable Energy-based Rural Electrification Project in Lesotho" (LREBRE) was an initiative of the Government of Lesotho (GoL) which was financed primarily by the GoL and the Global Environment Facility (GEF). The Department of Energy of the Ministry of Natural Resources was the Executing Agency (EA) for this Nationally Executed (NEX) project. The total budget was US$6,975,500 including a total of GEF grants of US$2,720,00 (which includes a PDF-B grant of US$220,000). Implementation of this five-year project officially started in October 2006 although on-the-ground activities commenced in mid-2007 due to start-up delays. The project closed in March 2013. Key details are summarised in Table 1.

Table 1: Project Summary

Project Title:	**Renewable Energy-based Rural Electrification in Lesotho**			
GEF Project ID:	PIM 1858	Financing	*at endorsement* (US$)	*at completion* (US$)
UNDP Project ID:	00049143	GEF:	2,720,000	2,620,000
Country:	Lesotho	IA/EA (UNDP) own:	10,000	20,000
Region:	SA	Government:	3,689,500	4,625,000
Focal Area:	Climate Change	Other:	556,000	0
FA Objectives, (OP/SP):	OP#6 Adoption of Renewable Energy …	Total co-financing:	4,255,500	4,645,000
Executing Agency:	UNDP	Total Project Cost:	6,975,500	7,265,000
Other Partners involved:	Dept of Energy	ProDoc Signature Date:	October 2006	
		(Operational) Closing Date:	Proposed Dec 2011	Actual March 2013

The goal of the project was to "*Reduce Lesotho's energy related CO2 emissions by substitution fossil fuel (paraffin and diesel) with renewable energy sources (PV, wind and hydro) for household and productive uses through the provision of basic energy services to rural homes and community users*". The development objective of the project is "*To improve people's livelihoods by promoting the utilisation of renewable energy to provide basic electricity services to the rural areas in Lesotho starting in the Mokhotlong, Thaba-Tseka and Qacha's Nek districts, thus reducing the country's dependency on fossil fuels"*. The project aimed initially to accomplish this through activities supporting 6 outcomes, these being:

- Outcome 1 - To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages
- Outcome 2 - To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas
- Outcome 3 - To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of energy service to the rural areas

- Outcome 4 - To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services.
- Outcome 5 - To assist with the implementation of appropriate financing mechanisms for the larger scale dissemination of renewable energy based technologies to rural customers.
- Outcome 6 - To disseminate experience and lessons learned in order to promote replication throughout the country of rural electrification.

The Terminal Evaluation (TE) was conducted 2 months after the project was closed in accordance with UNDP/GEF guidelines on terminal evaluations and the Evaluation Ratings are summarised in Table 2.

Table 2: Summary of Evaluation Ratings[1]

1. Monitoring and Evaluation	**rating**	**2. IA & EA Execution**	**rating**
M&E design at entry	Moderately Satisfactory	**Quality of UNDP Implementation**	Satisfactory
M&E Plan implementation	Moderately Unsatisfactory	**Quality of Execution - GoL**	Moderately Satisfactory
Overall Quality of M&E	Moderately Unsatisfactory	**Overall quality of Implementation/Execution**	Moderately Satisfactory
3. Assessment of Outcomes		**4. Sustainability**	
Relevance	Relevant	**Financial**	Moderately Unlikely
Effectiveness	Moderately Unsatisfactory	**Socio-economic & political**	Moderately Likely
Efficiency	Moderately Unsatisfactory	**Institutional and governance**	Moderately Likely
Overall Project Outcome Rating	Moderately Unsatisfactory	**Environmental**	Moderately Unlikely
		Overall likelihood of sustainability	Moderately Unlikely
5. Overall Impact			
Impact	Minimal		

This original project design is highly relevant to Lesotho and whilst design changes have undermined this relevance to some extent, it has contributed significantly to enhancing the awareness and strengthens the commitment of Lesotho's public and private sector to the renewable energy sector. This awareness has led to enhance capabilities in GOL and the development of private enterprise involved in the supply and installation of solar photovoltaic (PV).

Overall it is not possible to determine the degree to which the project attained the stated Global or Development objectives as an effective monitoring system was not maintained and key indicators were either not identified during the baseline study or were not updated. The basic

[1] A full description of all ratings is provided in the TOR in Annex/Section 5.1.

approach, to strategically identify and remove barriers to the uptake of renewable energy (solar, wind and hydro) via a market-based approach, was sound as was the project logic. However, the outcome areas were in some cases closely interlinked and as a consequence shortcomings in one area impacted on the ability of the project to deliver other outcome areas. In particular the financing mechanisms underpinned the effectiveness of delivery models suited to a market-based approach and private sector participation. Consequently, when the Government changed its position on the subsidy mechanism, the potential for a market-based delivery model was diminished. The strategy also failed to recognize the nascent state of supplier and rural consumer financing in Lesotho and consequently these outcomes were not addressed appropriately. There was also a lack of emphasis on creating an effective policy and regulatory context and this ultimately contributed to weaken the project's transformative potential and sustainability. The project was also hindered by the withdrawal of project co-financing and in revising the project budget this led to a focus on outputs that would deliver direct short-term benefits to end-users. The enthusiasm to role out delivery models and technology packages overshadowed the need to have a clear policy and regulatory framework and to consolidate recent gains that would provide guidance for private sector investment and public sector decision making for the long term. Subsequently, the Government's decision to revise the subsidy mechanisms proposed in the project and to shift to a Government-led approach initiated the delivery of 1537 solar home systems to rural households (about 30% of the target) at a highly subsidised level, which is most certainly contributing to market distortions. Despite the strong commitment from DOE and the project team, the project has suffered from a lack of focussed technical input and consequently the technical qualities of several key outputs were weak. Consequently, the solar systems have exhibited significant technical issues and many have failed and most are under-performing although no monitoring was undertaken which can quantify these issues. The project also delivered solar PV systems for one business centre and seven income-generating activities, which was substantially less than targeted. The outputs associated with mini-grids and hydros were removed, and those for wind were reduced in scope.

The project introduced several mechanisms for stakeholder participation that were well regarded and which led to effective partnerships at the community level, and the integration of broader stakeholder representation into the decision making of the project. It is clear that key lessons also emerged for private sector and new skills and competencies were developed. The Lesotho Solar Industry Association was reformed and the training and certification mechanisms have exceeded expectations, resulting in 165 technicians, five instructors and the mainstreaming of solar PV into vocational and University programmes. This has informed innovation and market development outside of the project boundaries and this is likely to continue. The lack of an effective monitoring system has also limited the management team's capacity for adaptive management and the identification of evidence based lessons.

There is a high risk that remnant technical issues, spent batteries and distorted expectations due to the high subsidy levels will lead to ongoing problems for stakeholders and further erode the potential for a market-based approach within the project areas. The capacity gains in industry are likely to be maintained as the solar PV sector continues to grow in areas outside the project boundaries, however the Lesotho Solar Industry Association is unlikely to be active unless it develops an effective business plan and identifies ways in which it can secure income by creating value for its membership. There is a need for further action to manage these risks and remediation actions and the revision of the current Exit Strategy is required.

The Terminal Evaluation team feels that it is important to share the project experience and further details and findings are presented in the following report.

Acronyms and Abbreviations

AfDB	African Development Bank
ATS	Appropriate Technology Services, MCST
DANCED	Danish co-operation for Environment and Development
DOE	Department of Energy
EAP	Energy Action Plan
EAPP	Electricity Access Pilot Projects
EMP	Electricity Master plan
EPF	Energy Policy Framework
FAO	United Nations Food and Agricultural Organization
FINESSE	Financing Energy Services for Small Scale Energy Users
GEF	Global Environment Facility
GHG	Green House Gas
GoL	Government of Lesotho
kW	kilo Watt
kWh	kilo Watt hour
LEA	Lesotho Electricity Authority (Universal Access Fund)
LEC	Lesotho Electricity Corporation
LEMP	Lesotho Energy Master plan
LESES	Lesotho Solar Energy Association
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
LMS	Lesotho Meteorological Services
MCST	Ministry of Communications, Science and Technology
MHP	Muela Hydropower Plant
MLGC	Ministry of Local Government and Chieftainship
MNR	Ministry of Natural Resources
NEMP	National Electricity Master Plan
NGOs	Non-Governmental Organizations
NREB	National Rural Electrification Board
NREF	National Rural Electrification Fund
NREP	National Rural Electrification Programme
NUL	National University of Lesotho
PRSP	Poverty Reduction Strategy Paper
PS	Principal Secretary
PSC	Project Steering Committee
PSPC	Power Sector Policy Committee
PV	Photovoltaic
RET	Renewable energy technology
REU	Rural Electrification Unit
REWG	Rural Electrification Working Group
RR	UNDP Country Resident Representative
RWS	Department of Rural Water Supply
SADC	Southern African Development Community
SHS	Solar Home Systems
t	Metric tonne (1000 kilograms)
TE	Terminal Evaluation
TED	Technology for Economic Development
TVD	Ministry of Education and Training, Technical and Vocational Training
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WB	World Bank

1. Introduction

1.1. Purpose of the evaluation

1. **The main purpose of the TE, as described in the Terms of Reference** in the Annex (Section 5.1) is to *"assess the relevance, including the contribution to capacity development, and the achievements of global development goals. It will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP-GEF projects."* The TE will also assess the effectiveness and efficiency of the project, evaluate the strengths and weaknesses of project design, implementation, and monitoring and adaptive management, and analyse the sustainability of project outcomes. The evaluation covers the entire project including non-GEF financed components.
2. The particular objectives[1] are:
   I. To promote accountability and transparency, and to access and disclose the extent of project accomplishments;
   II. To synthesise lessons that can help to improve the selection, design and implementation of future GEF financed UNDP activities
   III. To provide feedback on issues that are recurrent across the UNDP portfolio and need attention, and on improvements regarding previously identified issues.
   IV. To contribute to the overall assessment of results in achieving GEF strategic objectives aimed at global environmental benefit
   V. To gauge the extent of project convergence with other UN and UNDP priorities, including harmonisation with other UNDAF and UNDP Country Programme Action Plan outcomes and outputs.

1.2. Scope & Methodology

3. **The Terminal Evaluation (TE) was conducted by independent evaluators**, Drs Andrew Mears and Molibeli Taele over the period April 24 to June 5 2013 and incorporating a mission in Lesotho from April 29 till May 15 which included consultations in Maseru and visits to project sites in each of the three participating districts. The project had operationally closed in March 2013 however the Project Coordinator's contract was extended through to the end of May in order to support the TE. The Evaluation Team, with the assistance of the UNDP Country Office and the Project Coordinator, was responsible for collecting data through document review and interviews, performing analyses, eliciting findings and preparing the report.
4. **The focus of the TE is on the project's success overall** and consequently it builds on the findings of the Mid-Term Evaluation and the potential for achieving results beyond the implementation period. The TE analysis therefore emphasizes those activities not covered by the mid-term evaluation, follow-up actions to the mid-term evaluation recommendations and subsequent management response. Attention was given to lessons learned and recommendations in light of the fact that a follow-on project is currently in the later stages of development. In other words, the emphasis for recommendations was on improving sustainability of the benefits from the project and on lessons to be applied by GoL, UNDP and/or GEF in future programming.

[1] UNDP, 2012 "Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects"

5. **The TE was conducted in accordance with the UNDP[1] and GEF[2] Guidance** and in line with GEF principles including independence, impartiality, transparency, and participation. It seeks to provide evidence-based information that is credible, reliable and useful. In this regard, the TE followed a participatory and consultative approach, and used a variety of evaluation instruments in order to ensure comprehensiveness and to validate data. These instruments include:

   Evaluation Matrix: An evaluation matrix was developed based on the set of questions covering the criteria of relevance, effectiveness, efficiency, sustainability, and impact which were included in the TOR for the TE and which were amended to be most useful to this particular TE. The matrix (presented in Annex/Section 0) served as a general guide for the interviews conducted.

   Documentation Review: The TE team reviewed more than 40 documents including the project document (ProDoc), project reports including Annual APR/PIR, project financial reports and audits, the Mid-Term Evaluation (MTE) report, progress reports, project files, field visit reports, procurement and commissioning reports, policy and national strategy documents, and other relevant documents. A complete list of documentation reviewed by the TE team is included as Annex/Section 0 to this report.

   Interviews Targeting Specific Stakeholder Groups: The evaluation methodology included the development of structure guides used for interviews (Annex 1.1) targeted at specific stakeholder groups including participating community members, solar equipment suppliers and installers, and Government, to guide the data gathering and analysis.

   Interviews: In-person interviews were conducted with more than 100 stakeholders including the GEF Regional Technical Advisor and the UNDP/Lesotho. Many of these meetings took place with small groups of up to 10 people such as, for example, with a village Solar PV Committee, or members of the Lesotho Solar Energy Society, etc. A complete list of stakeholders met is included in Annex/Section 5.3. Most interviews in Maseru or in District Councils took place in English, whereas most interviews in the villages and rural areas took place in the local language with the National Consultant posing the questions and interpreting the answers for the International Consultant. Being aware of the potential pitfall in having the National Consultant act solely as translator, the TE team openly discussed this issue at the mission outset to ensure the National Consultant freely pursued questioning in order to properly explore the interviewee's response. The summary of field interviews is provided as Annex/Section 5.4.

   Follow-up Email Communications: As time did not allow for all the necessary information to be gathered during the in-country mission (primarily due to the long time period required for the field trips), a significant amount of data was requested from the PC and UNDP CO following the return home of the International Consultant. The TE team subsequently compiled this information in an attempt to better assess project impact. However, whilst a great deal of information in terms of project inputs and activities were compiled, insufficient information was available for the TE team to conduct the necessary analysis and assessment related to impact. Of note, there was no national survey of solar PV penetration and no assessment of energy use patterns at either the baseline or final stages of the project.

   Field Visits: Because of time constraints and the distances to be covered by rough mountainous road, a substantial portion of the mission period was devoted to field visits. In order not to bias the findings each of the three districts was visited and beneficiaries in at least 2 villages in each were interviewed and their installations inspected. Income

[1] UNDP, 2012 "Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects"
[2] GEF, 2010 "GEF Monitoring and Evaluation Policy"

Generating Activities and District Council representatives were also interviewed and one Business Center was also inspected. The Villages selected were chosen by the TE team based on selection criteria that would allow assessment of installations made be a range of installers, during different phase of the project, and in different geographic regions (having different socio-economic conditions). The TE team also endeavored to select villages that were not included in the Mid-term Evaluation field visits.

Ratings: In accordance with GEF guidelines for project evaluations, the TE team assigned achievement ratings as well as sustainability and relevance ratings. The TE team rated project achievements and outcomes according to the GEF project review criteria (Relevance, Effectiveness, Efficiency, Results and Sustainability), using the obligatory 6 point scale GEF ratings of: 6 - Highly Satisfactory (HS), 5 - Satisfactory (S), 4 -Moderately Satisfactory (MS), 3 - Moderately Unsatisfactory (MU), 2- Unsatisfactory (U), and 1 - Highly Unsatisfactory (HU). A full description of these ratings and other GEF rating scales is provided in the TOR in Annex/Section 5.1. The TE team also rated various dimensions of sustainability of project outcomes using the GEF obligatory 4 point rating scale of: 4 - Likely (L), 3 - Moderately Likely (ML), 2- Moderately Unlikely (MU), and, 1- Unlikely (U).

Use of notional Revised Logframe: In describing the methodology adopted in this TE, it is important to note that significant changes were made to the original project design following changes in the co-funding arrangements. These changes included the removal of several key result areas as a consequence of changes in funding and a significant shift in policy position of the Government. Though these changes lead to a major shift in project approach, a revised logframe was not prepared. The TE studied the original logframe and based on findings of the interviews, review of some email correspondences provided by UNDP RTA, and documentation review sought to understand what changes had been made. The TE team therefore focused on the "notionally" revised logframe, and assessed project progress according to the notionally revised Expected Outcomes, Outputs and Indicators.

De-briefing and addressing comments: The final days of the mission to Lesotho (13-14 May) was devoted to a de-briefing and presentation of initial findings and draft recommendations to Resident Representative UNDP/Lesotho, Head of Energy and Environment UNDP/Lesotho, and with the Director of Rural Energy Unit, Department of Energy, Government of Lesotho. The evaluators took note of comments made. In addition the draft report was circulated for comments upon its completion.

1.3. Structure of the evaluation report

6. **The report structure provided in the TOR** (see Annex/Section 5.1) is adopted. Section 1 briefly describes the purpose, scope and methodology of the evaluation; Section 2 presents an overview of the project; and Section 3 presents the findings of the evaluation. Conclusions, recommendations and lessons are presented in Section 4. Lessons and recommendations are cross-referenced to the relevant paragraph in the report for fuller context.

2. Project description and development context

2.1. Project start and duration

7. **This project has taken more than 6.5 years from commencement to closure, however it has been in field implementation for only five years duration**. The project was conceived in 2003/4 with efforts consolidated through a PDF-B grant in 2004 with approval from GEF Council in May 2004. This approval was given subject to the inclusion of an appropriate financing mechanisms and further support was subsequently provided by GEF to undertake a detailed study of financing mechanism options in October 2005. Subsequently, the project document was prepared and signed on October 2006 and was initially schedule for closure in December 2010. The first disbursement took place in December 2006 however administrative delays, meant that the project became effectively operational only in April 2007 coinciding with the inception period and the appointment of the Project Coordinator, and with an inception workshop in May 2007. At around that time the scheduled closure was re-set to be April 2012 although the specific record of this decision is not available to the TE team. Project preparation activities, including establishment of the PSC and description of the baseline, were completed by August 2008. The project was officially launched in October 2009 in the Thaba Tseka district where 20 key decision makers including the Minister of Natural Resources and UNDP Resident Representative, witnessed households with solar power at Khoitsanyane village. The most active periods were in 2009/10 and in May 2011 a mid-term evaluation was undertaken with a view to informing the final year of the project. Further, in order to ensure that the TE be conducted and the final activities to secure sustainability of project outcomes and closure of the project office be completed, the GEF funding closure was extended to December 2012. The GoL support was closed in March 2013. However, the Project Coordinator's contract was extended for an additional two months by UNDP and will close at the end of May 2013.

2.2. Problems that the project sought to address

8. **The over-arching problem that the project sought to address was the utilisation of fossil fuels in rural areas and the consequential emission of green house gasses (GHG).** The GoL recognises that improving access to renewable energy and low GHG technologies is a means of reducing GHG emissions and is also a means of reducing poverty by improving access to electricity. The PDF-B activities sought to identify the main barriers to scaling-up the utilization of renewable energy and low GHG emission technologies. In keeping with the GEF approach that projects should strategically identify and remove barriers to the uptake of renewable energy, the PDF-B findings were the basis for the project design. These barriers are listed in Table 3 along with the relevant Outcome area of the project that is intended to address the problem.

Table 3: Barriers project sought to remove, and associated Outcome.

Barrier	Outcome
Lack of an effective infrastructure for delivery of renewable energy-based services on a sustainable basis.	1,4
Fragmented institutional responsibilities and lack of integrated planning and implementation by various stakeholders including government, the research institutions, the academic institutions, the NGOs, community-based organisations and the private sector with regard to the application of renewable energy technologies.	1,4

Limited private sector supply capacity, distribution, installation and maintenance of renewable energy systems.	3	
Limited business skills, while there are some people with energy expertise the appropriate business skills to start energy enterprises are lacking.	3	
Very limited in-country experience with many of the relevant renewable energy systems options. Lack of sustainable financing arrangements for renewable energy companies and end-users, and the need for training of in-country financial institutions to lend for renewable energy enterprises and projects.	6 5	
Poor workmanship in the installation of renewable energy technologies, including PV systems.	3	
Lack of access to necessary information.	2,6	
Lack of public awareness of the renewable energy technologies.	2,6	
Lack of trained manpower at all levels and in particular insufficient qualified personnel for maintenance for renewable energy systems including PV.	3	

2.3. Immediate and development objectives of the project

9. **The immediate development objective of the project** is "*To improve people's livelihoods by promoting the utilisation of renewable energy to provide basic electricity services to the rural areas in Lesotho starting in the Mokhotlong, Thaba-Tseka and Qacha's Nek districts, thus reducing the country's dependency on fossil fuels*". The project aimed initially to accomplish this through 6 outcomes, being:

- **Outcome 1 - Delivery of renewable energy-based technology packages**: To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages
- **Outcome 2 - Awareness raising**: To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas
- **Outcome 3 - Private and public sector strengthening and training:** To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of energy service to the rural areas
- **Outcome 4 - Policy support and policy framework:** To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services.
- **Outcome 5 - Financial mechanisms:** To assist with the implementation of appropriate financing mechanisms for the larger scale dissemination of renewable energy based technologies to rural customers.
- **Outcome 6 - Learning and replication:** To disseminate experience and lessons learned in order to promote replication throughout the country of rural electrification.

10. **Soon after commencement, due to unforseen changes in project co-financing, there was substantial change in the project design** as several important outputs were removed from the project or reduced in scope. Then in 2009 and a shift in GoL's policy on subsidy mechanisms and delivery model resulted in a second major change in project design and approach especially with regards to Outcomes 1 and 5.
11. **These changes affected the scope of Outcomes 1, 4, 5 and 6 and several Expected Outputs were removed**. These changes did not lead to a change in the adopted

Logframe despite the effective change in project design and the project continued on the basis of a "notional logframe". Whilst the RTA prepared a summary of changes to the project in 2010[1] a revised logframe with amended indicators and targets was not prepared. The Mid-Term Evaluation, whilst proposing that some aspects be treated as though they were removed from the project logframe, also did not propose a change in Logframe or an update in indicators. The original project logical framework (included in the TOR in Annex/Section 5.1) describes the 6 Expected Outcomes and 22 Expected Outputs. Based on a comparison of the original logframe with the "notional" logframe, the TE team found that the substantive changes were effectively made to the project design during implementation.

12. **The Outcome 1 was reduced in scope to include only one delivery model, one target end-user group, and one technology package**. These changes arose for the following reasons:

- **Funding from World Bank supported Electricity Access Pilot Projects (EAPP) was withdrawn in 2007**. This meant that anticipated mini-grid developments at Sani Tops. Semonkong and Seforong by the World Bank did not proceed. Attempts were made to secure additional funding from Millenium Challenge Corporation (MCC) and GoL but these were not fruitful. These mini-grid developments were the basis for the project's anticipated wind/PV hybrid system for Sani Tops and the additional hydro capacity at Semonking and Seforong. Consequently, the PSC decided to the following design changes:
    - **Removal** of Output 1.4: *An isolated hybrid mini-grid using wind and PV is installed at Sani Top serving at least 25 customers and two businesses*
    - **Indefinite hold** of Output 1.7: *Feasibility study on the potential to increase the hydro component of the Semonkong hydro/diesel mini-grid*
    - **Removal** of Output 1.8: *The capacity of the hydro station at Semonkong is increased*
    - **Removal** of Output 1.9: The use of hydropower generation is included in the Seforong mini-grid
- **The GoL elected to amend the subsidy mechanisms and adopt a direct contracting approach** that they proposed as a means to fast track the delivery of the proposed SHSs. This decision directly undermined the original design of the project, that removing barriers to the widespread uptake of renewable energy would support a market driven approach. The change in subsidy mechanisms and delivery models shifted the design of the project from a market-drive performance-based approach to a Government-led social-welfare type project. Specifically, the following changes are evident:
    - A highly subsidised Government driven retail model was adopted as opposed to differentiated delivery models aimed at developing opportunities and lessons regarding market development;
    - Far-flung and remote off-grid villages were prioritised, thereby limiting scope of end-user groups targeted to a very specific low income high-access cost end-users;
    - Support was limited to a Solar PV system with standard configuration of about 65Wp, instead of the various options envisaged. The 65Wp systems were used in households, and also in a modular fashion in the IGAs and business centres.

13. **The Outcome 5 was also reduced in scope and consequently the financing mechanisms proposed were substantially altered.** Closure of the World Bank

[1] Lucas Black, August 2010, "Note to the File, Mission Report"

supported EAPP impacted on the development of the National Rural Electrification Fund (NREF) and consequently the availability of the Performance Incentive Grant mechanisms. The NREF was also to be the focus of policy development work supported by the project within the context of the National Energy Master Plan. Consequently Output 5.1 was not implemented as intended and indirectly the scope of Output 4.1 was reduced.

14. **It is beyond the scope of this evaluation to recommend whether such substantive changes warranted communication between UNDP and the GEF Secretariat** to determine wether the amount of GEF financing was warranted given the shift in project scope and expected outputs. It is apparent from correspondence between UNDP and the Government that these issues unravelled over time and that UNDP expressed concerns regarding the project changes. It was envisaged that the MTE would results in correction however this did not eventuate in the manner that UNDP had anticipated. Consequently, the project shifted from a market-based approach, and as this was the main purpose of the barrier removal activities, it represented a major change in scope

2.4. Expected Results

15. **An overview of the expected results is provided** in Table 4, which is an extract of the project's logframe as presented in the ProDoc. The TE team's analysis of the quality of the logframe is included in Section3.1. The analysis of the progress towards the project expected outputs, outcomes and objectives is in Section 3.3. This analysis compares the project's indicators and targets at project inception with the indicators and targets at the time of the TE. For clarity it should be noted that the particular formulation of Indicators in the project logframe has in most cases incorporated an implicit target rather than separately defining the target.

Table 4: Expected Project Results (with performance indicators and targets) source: Project Logframe 2006

Expected Results (Objective, Outcome and Outputs)	Performance Indicator & Target
Global objective: To reduce Lesotho's energy related CO_2 emissions by substituting fossil fuel (paraffin and diesel) with renewable energy sources (PV, wind and hydro) for household and productive uses through the provision of basic energy services to rural homes and community users	Consumption of paraffin reduced by 80 % in the households using renewable energy based systems for lighting
	Incidence of paraffin related respiratory and eye diseases reduced by 10 % over 5 years within those households targeted by the project
	Small scale renewable energy-based business activities increased by 50 % compared to the baseline
	Consumption of diesel for generating electricity reduced by 80% in the households and businesses targeted by the wind/PV and hydro/diesel mini-grid pilots
Development objective: to improve people's livelihoods by promoting the utilization of renewable energy to provide basic electricity services to the rural areas in Lesotho starting in the Mokhotlong, Thaba Tseka and Qacha's Nek districts, thus reducing the country's dependency on fossil fuels	The number of customers reached by renewable energy-based electricity services in Mokhotlong, Thaba Tseka and Qacha's Nek districts reaches 5735 in year 5 of the project, as compared to 735 in the baseline
	The hydro component of the Semonkong hydro/diesel mini-grid is expanded
Outcome 1: To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages	The number of household PV systems in the project area will increase by 1000 annually.
	A hybrid mini-grid using PV and wind is established at Sani Top
	The Semonkong mini-grid is equipped with additional hydro generation equipment

Expected Results (Objective, Outcome and Outputs)	Performance Indicator & Target
Output 1.1 1000 customers purchased PV-systems through a credit scheme or through cash sales in Mokhotlong, Thaba Tseka and Qacha's Nek districts annually	1,000 PV systems sold in Mokhotlong, Thaba Tseka and Qacha's Nek districts annually
Output 1.2 At least three business centers are established in the each district using PV as their energy source	Nine business centers established using PV
Output 1.3 Limited grant financing is provided to a small number of schemes proposed by the private sector to test various productive uses of renewable energy.	At least 15 grants provided to companies by the end of the project
	At least 3 product for productive use applications is commercialized by the end of the project
Output 1.4 An isolated hybrid mini-grid using wind and PV is installed at Sani Top serving at least 25 customers and two businesses	25 domestic customers and two businesses connected to a hybrid mini-grid at Sani Top
Output 1.5 The wind energy potential for small-scale power generation, in particularly hybrid mini-grids at selected sites that are favorable for hybrid mini-grids using wind is assessed	Capacity built in the Department of Energy and LMS to interpret wind data for assessing the wind energy potential
Output 1.6 Three villages in each district have been provided with PV water pumping systems	Nine systems installed and in operation in line with the PV Code of Practice
Output 1.7 Feasibility study on the potential to increase the hydro component of the Semonkong hydro/diesel mini-grid	Report on the feasibility of increasing the installed hydro capacity
Output 1.8 The capacity of the hydro station at Semonkong is increased	The installed capacity at the Semonkong hydro station is increased following the recommendation of the feasibility study
Output 1.9 The use of hydropower generation is included in the Seforong mini-grid	The mini-grid at Seforong has a hydropower component.
Outcome 2: To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas	Annual increase in the number of people using renewable energy technologies as compared with the baseline scenario
Output 2.1 Information and awareness packages have been developed and made available to the general public	Information and awareness packages in the form of brochures, leaflets, demonstrations, road shows, TV/radio announcements
Output 2.2 Awareness program for decision makers is developed and implemented	At least 25 key decision makers have visited the target area and have been exposed to the activities of the project
Output 2.3 A rural customer awareness program is formulated and implemented	At least 1,000 persons attending information meetings in the rural areas per annum
Outcome 3: To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of service to the rural areas	Number of businesses dealing with renewable energy systems increased by 50% by the end of the project
	Level of end-user satisfaction with installation and after sales increased by 50% by the end of the project
Output 3.1 Business development services in the renewable energy sector will be strengthened	At least 50% of all renewable energy dealers/companies active in Lesotho participated in at least one capacity building activity offered by the project
Output 3.2 Technical knowledge of renewable energy technologies is strengthened	Several technical training courses offered to vendors, dealers, technicians, etc. which are completed by 75% of the participants
Output 3.3 The association of PV suppliers in Lesotho is operational (Lesotho Solar Energy Society, LESES)	75% of all PV businesses are member of the association

Expected Results (Objective, Outcome and Outputs)	Performance Indicator & Target
Outcome 4: To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services	
Output 4.1 A policy and implementation framework for renewable energy based rural electrification is defined and in place	By the end of the project renewable energy features prominently in the National Rural Electrification Master Plan as an option for meeting energy needs in rural areas
Output 4.2 Standards for renewable energy technologies and mini-grids are updated and enforced	80% of suppliers of PV committed to the PV code of practice
	Workmanship complaints from end-users reduced by 30%
	Standards publically available
Outcome 5: To assist with the implementation of a performance grant and a credit guarantee scheme for the larger scale dissemination of renewable energy based technologies to rural customers	All major PV dealers operating within the project area offer at least one financing option for rural customers
Output 5.1 The performance based grant scheme is implemented and used by suppliers/installers	At least 2/3 of the available fund have been dispersed under this scheme to deliver PV systems to rural customers
Output 5.2 The credit guarantee scheme is operational and used by financial institutions/supplier credit entities	Credit terms offered by suppliers to customers have improved significantly (extension of installment period, interest rate)
Outcome 6: To disseminate experiences and lessons learned in order to promote replication throughout the country of rural electrification based on renewable energy technologies	
Output 6.1 A program for replication of the activities implemented under immediate objective 1 is prepared	Increase in the number of end users using renewable energy sources in other districts
	After year 4 of the project, the planned mini-grid at Seforong will be implemented using hydropower
Output 6.2 Evaluation of the impact of renewable energy technologies on rural livelihoods	Baseline survey and annual data updates provided throughout the project-life
Output 6.3 Support has been provided to disseminate the learning and replication experiences in the project area	Experiences from this project will be shared with all actors involved in rural electrification in Lesotho
	The experiences from this project will be shared with at least four countries in the SADC region before the end of the project

2.5. Main stakeholders

16. **The project's main stakeholders** include:

a. Ministry of Natural Resources (now Ministry of Energy, Meteorology and Water Affairs), including,

i. Department of Energy

ii. Rural Electrification Unit

b. GEF Focal Point, Ministry of Environment

c. Rural villages, owners of Income Generating Activities, and Occupants of Business Centres in the three targeted districts

d. Lesotho Electricity Authority
e. Lesotho Electricity Corporation
f. Lesotho Council of Non Government Organisations
g. Appropriate Technology Services, a section of the Ministry of Communications, Science and Technology
h. Ministry of Education and Training, Technical and Vocational Training, and Vocational Training Schools
i. National University of Lesotho
j. Lerotholi Polytechnic
k. Department of Rural Water Supply
l. Banks
m. Ministry of Finance
n. Central Bank of Lesotho
o. Lesotho Solar Energy Society and the Solar PV equipment suppliers and installers
p. Ministry of Local Government and Chieftainship, including
    i. District Councils in the three target areas

3. Findings

3.1. Project Design / Formulation

3.1.1. Analysis of Logframe/Results Framework

17. **The basic approach, to strategically identify and remove barriers to the uptake of renewable energy via a market driven approach, was sound as was the project logic**. That is, to create awareness and learning on the opportunities for renewable energy to the improve livelihoods and to demonstrate various technology options; to build demand through awareness raising of decision makers and end-users; to enhance the technical capacity of the private enterprise and public sector institutions who can best engage in delivery of these services; to create an enabling policy environment to ensure widespread adoption of renewable energy especially in off-grid areas; create a synergistic package of incentives and financing mechanisms to reduce cost of entry for end-users and assist companies improve their operations and reach a sustainable scale of operation; and finally to capture and disseminate experience and lessons so as to promote replication and improve access to renewable energy in other areas of the country
18. **However, the outcome areas were highly interlinked** and as a consequence any shortcomings in one area not only impacted on the attainment of objectives but also on the ability of the project to deliver other outcomes. In particular the Financing Mechanisms underpinned the effectiveness of delivery models suited to a market-based approach and private sector participation.
19. **The strategy also failed to recognize that nascent state of formal rural lending in Lesotho**. The suppliers were unlikely to embark on customer financing considering that financial institutions are not engaging in rural lending in any significant way for any

purpose, let alone renewable energy. As identified by the PDF-B study, "*all practical purposes, rural finance in Lesotho is almost non-existent, limited to those rural customers who come to Maseru and other urban areas to purchase goods on HP and lay-bye basis*". The financial institutions, except for PostBank, do not provide a specific rural lending service and some general consumer product retailers do provide customer finance, however they typically will not provide consumer finance for unsalaried customers or for otherwise unsecured investments. These criteria pretty much preclude most of the target beneficiaries of the project. To address this issue a much more comprehensive support package for financial institutions would be require building the capacity of the financial institutions to allow them to engage in rural lending. This is beyond the scope of any single renewable energy project and a phased approach linked to longer termed financial sector reform is required.

20. **An alternative approach would have considered building on the other informal or unregulated financial intermediaries** that rural people are already accessing and build on these mechanisms to improve access to finance. This might have included lending through existing Savings and Credit cooperatives or innovation modelled on the Mpate Sheleng funeral funds. This approach is unlikely to rely on Credit Guarantees or other mechanisms more suited to Banks and regulated financial institutions.

21. In retrospect, **another design issue of the project was the lack of emphasis on creating conducive policy and regulatory context**. The policy components were out weighed by the delivery models and financing components despite the very weak policy context. The enthusiasm to role out delivery models and technology packages appears to have overshadowed the need to have a clear policy and legal framework that would provide guidance for private sector investment for the long term. The focus on integration of renewable energy into the National Rural Electrification Master Plan failed to recognise the dynamic and emerging needs of the sector and a clear policy framework should have been emphasised. The emerging role of the LEA was also a timely entry point for substantial development of an integrated grid and off-grid regulatory function and a sustainable cross-subsidy to drive replication of off-grid services. This design issue was perhaps not as evident as it would have been had the project implemented the various delivery models proposed as these would have generated a clearer need for policy reform.

3.1.2.Assumptions and Risks

22. **The project anticipated most of the critical risks and assumptions within the project document** and in the case of the failed co-financing from EAPP these have been tested. The project design accommodated these risks by compartmentalising the activities to be funded, all except for the financing component.

23. The **two complementary financial mechanisms that were designed to address the identified financial barriers were central to the effectiveness of many of the other components.** The Credit Guarantee Scheme (CGS) – to be operated via the Central Bank of Lesotho – was proposed to mitigate the high up-front capital costs of renewable energy systems and associated lending risks through a government–backed loan guarantee scheme provided to local banks and qualified renewable energy installer/suppliers. Meanwhile the Performance Grant Scheme (PGS) – to be funded by the World Bank – was designed to provide post-installation grants to dealers/installers for actually installing, guaranteeing and maintaining operational solar PV systems. It was hoped that the introduction of these two mechanisms – in conjunction with other activities – would provide the required financial intermediation and incentives to stimulate private enterprise to meet the project target and to create a platform for replication throughout the project.

24. The **financial mechanisms failed to materialise as planned** and this undermined the implementation of other components of the project. The PGC is effectively not operating and the CGS is operating under a highly modified design compared to the original GEF project document.

25. However the **project also depended on financing of end-users** and whilst the project did consider financial sector willingness to finance renewables, they did not consider the risk that financial institutions or suppliers would not be willing to lend to rural households.

26. **Another key risk area, which was not anticipated in the project design, was the possibility that the DOE would not be willing to support a market-based approach**. The complexity and significance of the transformation required in the minds and practices of DoE (especially considering the weak policy context) to accommodate a market-based approach was not fully anticipated. In order to deliver this project as designed it was necessary for the GoL to engage with private sector in a close partnership to learn and develop new ways in which the market can be used to deliver wide-spread access to energy services to rural areas. This is a new approach, especially for DoE, as their traditional relationship with private sector in the implementation of electrification projects is as contracting entity. Similarly, private sector experience with GoL in the energy sector has almost solely been as the contractor supplying equipment and services. The transition was made more difficult for GoL by the fact that public funds were to be used as a direct incentive and for facilitating finance to private sector. Considering the major shift in the political context in the country around the time of the start of the project, and the public's focus on anticorruption and the effective use of public funds, it is no wonder that this approach was considered a risky and sensitive matter by GoL In the first years of the project the GoL changed it's position on the utilisation of the subsidy and reverted to the politically safer Government contracting model which subsequently negated much of the potential for a market-based approach.

3.1.3.Planned stakeholder participation

27. The **extent of stakeholder participation was as anticipated**, except in regards to private sector participation. It was envisaged that private sector would undertake the delivery of renewable energy-based rural electricity services to rural areas within a market context. However, the shift to a Government led contracting arrangement fundamentally changed the role of private sector in delivery of these services.

28. The **project introduced several mechanisms for stakeholder participation that were regarded by DOE as novel and innovative** for the energy sector. These were the use of Solar PV Committees (SPVC) at the community level, and the integration of broader stakeholder representation into the PSC. The SPVCs were modelled on a similar mechanism used by RWS but DOE had not adopted this approach and they found this to be an effective way of engaging communities. The use of a multi-stakeholder PSC with representation from District Councils and NGOs was well received and highly appreciated by DOE who now consider this as a model for future activities. In particular the PSC arrangements were well received and promoted a strong participation and representation from a broader range of stakeholder.

3.1.4.Replication approach

29. The **replication approach relied on the project demonstrating that a private sector–led model which engaged customers through market mechanisms could work** and this would build on the lessons and approaches gather from the various delivery models trailed. However, with the change in GoL approach to the subsidy

mechanisms a Government-led approach was adopted and this implies an alternative replication approach must be anticipated.

30. **It is clear that key lessons emerged for private sector that has informed innovation and market development** outside of the project boundaries. From discussions with Solar PV suppliers there is evidence that this is already taking place with one retailer having devised a group repayment mechanisms and having sold more than 1000 pre-wired SHS using this approach. This has all taken place outside of the project areas and without any subsidy. Whilst this provides evidence of the continued validity of the market-based approach it does not necessarily indicate that proposed replication of the approach taken during the project is likely.

3.1.5.UNDP comparative advantage

31. **There are several factors that have given UNDP a clear comparative advantage** as a GEF implementing partner in LREBRE. These are:

- The long-standing in-country presence of UNDP has led to an effective partnership with GoL and especially with the key stakeholders relevant to the project. This track record ranges from local level to high level policy decision makers and ensures that UNDP has a good understanding of the needs and expectations of the various stakeholders.
- The UNDP's Country Programme Document outlines the UNDP Lesotho's programme for the period and is formulated jointly with GoL. Consequently it is linked directly with GoL priorities.

3.1.6.Linkages between project and other interventions within the sector

32. **The design of the project was predicated on the availability of co-funding support** through a number of other initiatives including the World Bank supported electricity Access Pilot Project (EAPP) and in particular the NREF. The delays in implementation and changes to the World Bank programme meant that this funding was removed from the project within the first year after signing the ProDoc.

33. **The UNDP's Africa Adaptation Project (AAP),** being an Africa wide initiative supporting counties towards adaptation to climate change, was commenced in Lesotho in May 2010 in two phases through till end of 2011. The project was therefore not originally envisaged as a source of co-funding for LREBRE. The project included a component aimed at "Climate resilient policies and measures in energy and health sectors implemented and community-based adaptation action promoted" and under this component several energy projects were overlapping or complementary with LREBRE. Consequently, the LREBRE project collaborated on the preparation of a PV water pumping scheme for the Thabong Irrigation Project and at the recommendation of the MTE, LREBRE planned to undertake some preparatory studies to feed into the AAP's work on a Renewable Energy Policy although these were not completed. AAP also supported training by NUL on design software for solar PV that DOE staff undertook and applied to the LREBRE project activities. However, several opportunities for collaboration appear to have been forgone, notably the Ketane Community Electricity Project, which was a diesel powered mini-grid which has never operated due to inability to contract fuel supplies. This project could have been an effective platform for reinstating the renewable energy mini-grid technology packages that were removed from Outcome 1. The TE team also has some concern regarding reports that the AAP provided SHSs free to households and that this has resulted in further distortion of the market in rural areas. The TE team first heard this from disgruntled villagers who used

this news as a reason not to make their repayments for their SHS provided under the LREBRE project.

34. **The Millennium Challenge Corporation (MCC) provided rural infrastructure** including health clinics and water supplies that are often powered by solar PV. In 2008 the LREBRE project approached MCC regarding possible collaboration however no opportunities were forthcoming.

3.1.7.Management arrangements

35. **The LREBRE project employed management arrangements that drew on lessons from previous projects** in the DOE and from other experience in the region. This led to the establishment of the Project Team within the REU or the DoE with the intention that project team should be integrated as much as feasible into the key implementation unit for rural electrification.

36. **At the time of commencement of the project the REU was not established** and until 2010 the Project Coordinator (PC) reported to the Director of Energy (as depicted in Figure 1). Upon the establishment of the REU the LREBRE PC reported to the Project Manager (PC) who was a staff member of the REU (as depicted in Figure 2). The intention was that the PM function would assist in integration of LREBRE activities within the REU.

37. **The Director of Renewable Energy, also within the DOE (not shown in diagrams) was effectively the counterpart for the LREBRE PC** and reported to the Director of Energy throughout. This role was intended to provide a technical counterpart to the PC's management role and to ensure a separation of duties. This also included close engagement on planning and budgeting and the Head of Renewable Energy was required to countersign all authorisations of the PC. Authorisations were then subject to final signoff by the Director of Energy although after 2010 the PM was authorised to sign on behalf of the Director of Energy in order to avoid delays due to the additional decision layer.

38. **Despite the strong commitment from DOE and the willingness to engage technical staff in the project, the project has suffered from a lack of focussed technical input**, especially in the early years when significant benefits could have been reaped from improved technical quality and inputs in learning and adaptive management. The integration of a full time Technical Advisor into the management structure at least for the first years, for the purposes of Quality Assurance would have addressed these issues and better supported the capacity development of DOE and REU technical staff.

39. **The shift in delivery models also meant that the nature and extent of contract management overheads was increased**. In particular the procurement of supply and installation services for the SHSs and the management of these contracts and payments was not anticipated. The project team would have benefitted from additional support in the management of government procurement processes and contracts. Given the geographic coverage of the project it is also likely that coordination and monitoring capacity at the district level would have improved monitoring and delivery of the project. The district administration offices may have been able to provide this capacity.

Figure 1: Original implementation management structure as proposed in ProDoc (2007-2010)

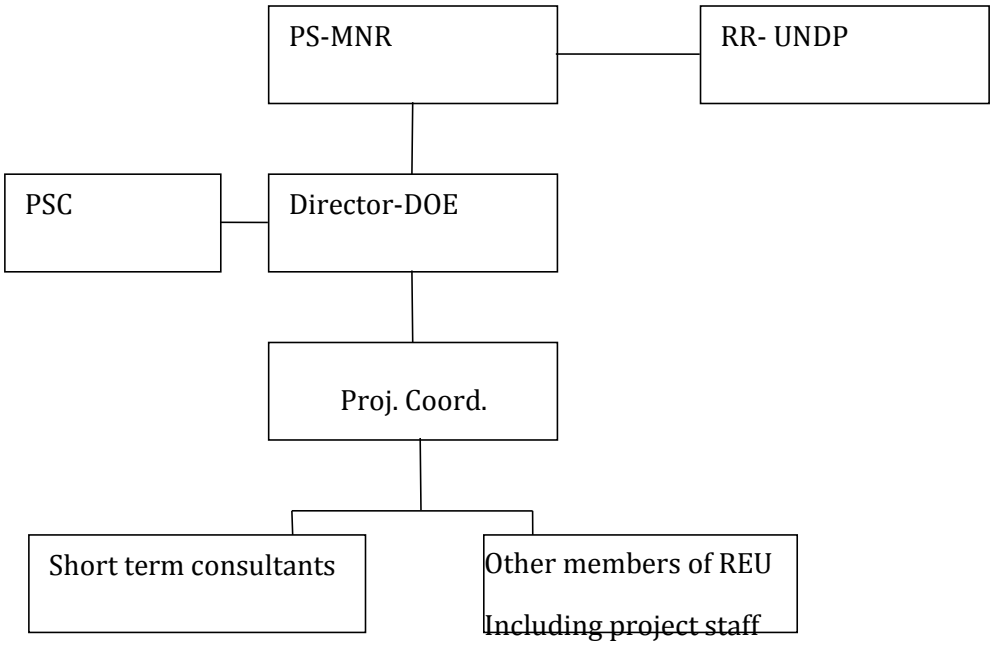
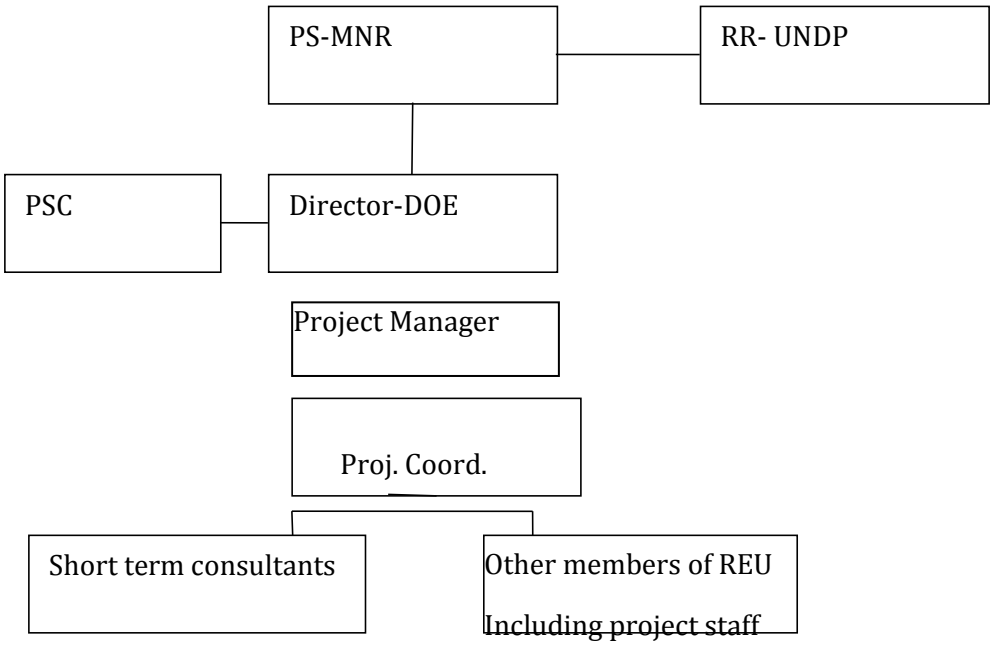


Figure 2: Implementation management arrangements after 2010



3.2. Project Implementation

3.2.1.Adaptive management

40. **The project management has adapted to substantive changes in external context** including loss of co-financing and changes in GoL subsidy policy and has managed to deliver some important results despite significant constraints. These changes took place

within the first years of the project implementation and led to "notional" design changes that impacted on most of the implementation period. The PSC and project management team, together with UNDP CO, made use of national and international expertise at this time to explore the impact of these issues and to propose adaptive measures. In particular the project used the guidance of the RTA's report and much later the findings MTE to identify adaptive measures.

41. However, **the ability of management to adapt to project issues arising was severely limited by the lack of an effective monitoring system** for key project indicators (discussed in section 3.2.4).

3.2.2.Partnership arrangements

42. **The partnership/implementation arrangements were generally well considered and successfully** executed during implementation. In particular the positioning of the project team within the REU led to an effective working partnership for implementation of the project. Other key partnerships, including with private sector through the support for LESES, and with ATS in the implementation of the commissioning surveys were initially driven by project activities but have resulted in a strong sense of shared purpose.

43. The adoption of a **multi-stakeholder PSC involving both national level and local level representation has led to partnership building** down to the district and community council levels. The DOE commented to the TE team that this was a previously unrealised benefit to them as they had not worked in this way before.

3.2.3.Monitoring and evaluation: design at entry and implementation (*)

44. The **ProDoc elaborated a detailed Logframe that was intended to provide the basis for an integrated Monitoring and Evaluation (M&E) system** in the project. The period from ProDoc signing in 2006 to the first PSC meet was more than 12 months and during this time it is evident that changes in baseline conditions took place. However the review during inception phase was not well aligned with the log frame. The baseline study was not comprehensive and took place in 2009 that was too late to capture real baseline context.

45. Throughout **the project duration UNDP employed M&E Specialists whose role was to oversee and ensure the smooth and timely implementation of the M&E systems**. However, there are substantial shortcomings in the implementation of the M&E system as key activities were not completed or were of low quality. In particular, the failure to prepare a comprehensive baseline and to undertake subsequent monitoring studies as required to track progress against the indicators means that evaluation of attainment of objectives is inconclusive. These issues are in part a consequence of limited technical capacity in the project team and also because of unclear roles between UNDP, GOL and the Project Team with regards to M&E activities.

46. Although the project may have reached specific outcomes and indicators, due to a lack of appropriate monitoring introduced in a systematic and methodological manner to collect evidence, the TE team had **difficulty in assessing attainment of objectives and some results.**

The M&E design at entry is Moderately Satisfactory (MS) and at implementation was Moderately Unsatisfactory (MU), and overall was Moderately Unsatisfactory (MU)

3.2.4.Feedback from M&E activities used for adaptive management

47. **Several M&E activities have taken place throughout the project**, both in the field and in the project office and in general these have been used effectively as management tools. The PSC was an active and engaged group and met on a regular basis. These PSC meetings appear to have been well run and it has been reported that it was a dynamic forum for debate and decision-making. The PSC engaged on key issues and was an effective governing body for the project. The PSC minutes, quarterly and annual reports, and annual work plans were well prepared and consistently maintained throughout the project.

48. **Several field visits were undertaken and these have provided the Project team with end-user feedback**. However there was little collection of data or lessons that may have been useful in informing the project management such as supplier sales figures, system fault and repair logs, success stories etc. In particular, the mechanisms for recording the payments of customer deposits was left to the community councils and in many cases this was poorly managed and the project did not maintain any record of payments of deposits by individual customers. Apparently an excel spread sheet record was maintained of the deposits of repayments (paid only by those who had already paid a deposit and had their system installed) into the project account however the project was unable to locate this at the time of the TE. The TE team estimates that less than 30% of repayments have been made with an average arrears period of more than 2 years (people have stopped paying). Tracking this information more effectively may have helped to mobilise enforcement or further action on this matter sooner and lack of data is likely to hinder future attempts to reassert the repayment mechanisms.

3.2.5.Project Finance:

49. **The project total budget was initially US$6,975,500 that was distributed under the five outcomes and was an appropriate amount for the original project design.** The total GEF contribution consisted of the main grant being US$2,500,000 with an additional US$220,000 of PDF-B support provided to help prepare the project. Following the changes in co-funding arrangements the PSC removed outputs 1.4, 1.7, 1.8, and 1.9 from the project. The MTE indicated that the reasons given were that these outputs would not provide direct beneficiaries and that the allocated budgets were too low. It is evident from the TE that major changes in the financing arrangements have occurred during the project primarily as a consequence of the removal of the World Bank EAPP and NREP co-finance. An estimate of the co-financing, as provided by the UNDP CO and Project Team, at the time of the project TE is reflected in Table 5. It is apparent that tracking of actual in-kind co-financing especially that provided by Government and private sector was not undertaken and these are not captured in these figures. Data on actual expenditure of co-financing was also not reported.

50. **UNDP advised the TE team that a financial audit including asset audit was prepared each year of the project** and the TE team was provided with audit reports from 2008 to 2011. These considered UNDP/GEF funds only and did not include Government disbursements. No major issues were identified in any of the audit reports reviewed by the TE team.

51. **The quality of the financial reporting of the project was weak** and the data provided in most of the Annual Reports was often inconsistent with information provided by ATLAS. The reporting format was not consistent and there was little evidence that attempts we made to reconcile these reports. It appears that the PSC provided minimal scrutiny of these figures. There was insufficient information available to the TE team to

determine the reasons for inconsistencies. Certainly, the financial reports were difficult to interpret in part because no consistent system for multi-currency budgeting and reporting was established and whilst the UNDP system was in US Dollars the Government worked solely in Maloti. Significant variations in exchange rate during the period of the project therefore made it difficult to track financial performance and in some cases changes in delivery rates of more than 20% were a consequence of exchange rate fluctuations rather then expenditure.

52. The **disbursement of funds changed with co-financing circumstances and the adaptive project management and project design changes** which were made in response. This effected the disbursement across outcome areas as depicted in Table 6. This data provided by UNDP CO is for GEF component only as recorded in the ATLAS system. There was no data available on the actual expenditure of co-financing, including the Government expenditure, against project outcomes.

Table 5: Planned and Actual Co-financing (mill. USD) for all sources by type (@ end March 2013)

Co-financing (type/source)	IA own Financing (UNDP) (mill US$)		Government (mill. US$)		Other Sources (mill. US$)		Total Financing (mill. US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants	-	0.02	3.573	4.508	0.546	-	4.119	4.528
Loans/Concessions	-	-	-	-	-	-	-	-
In-kind	0.01	-	0.117	0.117	0.01	-	0.137	0.117
Other	-	-	-	-	-	-	-	-
Total	0.01	0.02	3.690	4.625	0.556	-	4.256	4.645

Table 6: Planned and Actual GEF Expenditure (mill. USD) per year by Outcome areas (till end March 2013)

Expenditure (mill. US$)	2006/7		2007/8		2008/9		2009/10		2010/11		2011/12		2012/13		Total	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Outcome 1	0.35	0.20	0.30	0.18	0.24	0.24	0.23	0.25	0.29	0.28	0.18	0.29	0.01	0.01	1.59	1.46
Outcome 2	0.09	0.05	0.03	0.03	0.07	0.13	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.27	0.28
Outcome 3	0.03	0.04	0.07	0.05	0.05	0.09	0.07	0.05	0.05	0.04	0.03	0.04	-	-	0.31	0.31
Outcome 4	0.01	0.01	0.02	0.00	0.03	0.02	0.01	0.00	0.01	-	-	-	-	-	0.08	0.03
Outcome 5	0.05	0.24	0.02	0.00	0.09	0.00	0.01	0.00	0.02	-	-	-0.19	-	-	0.18	0.05
Outcome 6	0.00	0.03	0.02	0.10	0.02	0.08	0.02	0.08	0.04	0.00	0.01	0.16	-	-	0.11	0.45
Outcome M&E	0.03	-	0.02	-	0.07	-	0.08	0.01	0.05	-	0.06	-	-	-	0.31	0.01
Management Costs	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.02	0.02	0.02
Total	**0.56**	**0.57**	**0.48**	**0.37**	**0.58**	**0.56**	**0.44**	**0.42**	**0.47**	**0.35**	**0.30**	**0.31**	**0.04**	**0.04**	**2.87**	**2.62**

3.2.6. UNDP and Implementing Partner implementation / execution (*) coordination, and operational issues

53. **UNDP was an active and supportive *GEF Implementing Agency*** throughout the design and implementation of the project and demonstrated a preparedness to engage on key issues as required. This included effective follow-up with Government on implementation of decisions of PSC, recommendations from MTE and the RTA, and other project issues that arose. UNDP maintained an effective communication with counterparts and an effective and positive working relationship persists. Throughout the project UNDP provided attentive and critical feedback on the implementation of the project from both UNDP Country Office and the Regional Bureau levels. In particular, the RTAs provided substantive and regular comments on technical and management issues and undertook several missions between 2008 and 2010 specifically for this purpose.

54. **However, UNDP could have been a more effective *knowledge broker*** in support of the project and could have:

- Improved lesson sharing especially regarding other similar concurrent projects in the region (Botswana, Namibia), and with other related UN initiatives in Lesotho (e.g. AAP);
- Promoted a greater integration with other UNDAF programme areas, especially elements of the poverty programme. Also as a consequence of the shift in approach away from a market based approach to a government led approach, UNDP could have been more proactive in linking with areas of decentralisation reform for lesson sharing and coordination;
- More support to ensure an effective focus on operationalising the M&E system, reviewing TORs and project outputs, especially project baseline, nationwide survey;
- Input on quality of management and project outputs especially the Inception Report, Exit Strategy, battery collection concept, final project report;
- Provided lessons on the importance of supportive policy, and enforcement of technical standards and the role of regulation;
- Based on the poor quality of early project outputs, especially the installed solar PV systems, UNDP should have suggested targeted international technical expertise, perhaps especially in the area of technical quality.
- Identified the need for skills development in the management of procurement processes and contracts;

55. **UNDP could also have been more effective at the *strategic and political level*** engagement regarding:

- Management of co-financing commitments and improved donor coordination. For example, the decision of the World Bank to close the EEAP came as a surprise to the project;
- Improved coordination with other UNDP initiatives, especially the Africa Adaptation Programme (AAP) which led to duplication and negative impacts on LREBRE project;

56. **The GoL was an effective and committed *GEF Executing Agency*** and fully supported execution of the project. Given the broader barrier removal challenge, the adoption of the NEX modality and the choice of DOE as the Executing Agency were appropriate. DOE is responsible for the overall national energy policy, coordination and monitoring of energy programmes and projects. DOE through the REU is also fully responsible for the planning

and implementation of rural electrification. The location of the project team within the REU was well intentioned as it created the potential for an integrated approach consistent with the NEX modality.

57. **The provisions for project management and administration capacity were adequate** for the original project design, however the shift to a direct contracting approach by Government for the installations of the SHSs, meant that the contract management overheads exceeded the capacity of the project office. The lack of an Independent Audit Firm to provide certification of installations also led to the overloading of DOE staff. Consequently additional capacity was derived from elsewhere within the DOE and if required from other ministries (e.g ATS).

58. **However, it was the decision of GoL to expedite the project by shifting away from a private sector-led market-based approach to that of a government led** highly subsidised approach and this decision undermined key elements of the project design. It is apparent from discussions with DOE and UNDP that this decision was not widely supported at the operational level and efforts were made to engage with high-level decision makers in Government. The TE team believe that the Government at the time reasonably understood the likely consequences of its decision. These consequences included potential market distortion through unsustainable subsidy, reduced number of SHS installed (higher level of subsidy meant that fewer customers could be supported), and loss of lessons on alternate delivery models. At the time UNDP raised concerns that DOE was not complying with the ProDoc agreement as signed in 2006. However, the UNDP and the PSC decided to proceed as it was recognised that the project would still contribute to some extent to the attainment of objectives.

The UNDP was a Satisfactory (S) Implementing Agency; and the GoL was a Moderately Satisfactory (MS) Executing Agencies

3.3. Project Results

59. This section provides a summary of project achievements, in particular the progress towards attainment of the Global and Development Objectives of the project, and other achievements and key shortcomings as determined by the TE team. The relevance of the project, degree of country ownership, anticipated sustainability of project results, and the extent to which the project was mainstreamed with UNDP and Government priorities. A review of the potential for the outcomes to lead to impacts is included in Table

3.3.1.Overall results (attainment of objectives) (*)

60. **The global objective of the projec**t is "*To reduce Lesotho's energy related CO2 emissions by substituting fossil fuel (paraffin and diesel) with renewable energy sources (PV, wind and hydro) for household and productive uses through the provision of basic energy services to rural homes and community users*." The following four indicators (with implicit targets) were proposed:

- Consumption of paraffin reduced by 80% in the households using renewable energy based systems for lighting.
- Incidence of paraffin related respiratory and eye diseases reduced by 10% over 5 years within those households targeted by the project.
- Small-scale renewable energy-based business activities increased by 50% compared to the baseline.

- Consumption of diesel for generating electricity reduced by 80% in the households and businesses targeted by the PV solar.

61. **The extent to which the Global objective was attained could not be quantitatively evaluated** using these indicators, as monitoring was incomplete through the project. Whilst a baseline study[6] considering end-user energy use patterns and practices was done in 2008, there was no follow-up study and consequently no means of establishing updated indicators for assessing progress towards the target. The baseline study also did not characterise the health indicator or undertake a medical or dealer survey. The TE team are not aware of any other energy use or health studies that could be used as a proxy dataset to estimate these indicators.

62. The **project did install 1537 SHS** and new solar installers who were trained by the project and who became established as a consequence of the project have reported that they have installed additional systems (one reports more than 1000) outside of the project areas. It is therefore likely that the project has contributed to meeting the Global Objective however there was no determination of the impact on fossil fuel usage and hence no means to quantify this against the targets proposed. An overly simplistic analysis would estimate the maximum potential emission reductions arising from the PV systems alone to be around 3541 tonnes CO2 over a 10-year period (see Section 5.9 for brief analysis). However, the TE team is reticent to propose an emission reduction estimate based solely on the number of installed solar PV systems due to the lack of information on the performance of the systems and the evidence that many systems have performed poorly. Anecdotal evidence from discussions with participating villagers also suggests there is also a risk that displaced lighting paraffin was diverted to additional cooking and space heating purposes which would not have contributed to reducing paraffin-based GHG emission or health impacts. The removal of the other emission reduction components (i.e. the hydro and wind hybrid) was also the main mechanism for reducing diesel consumption and consequently this indicator should have been revised.

The attainment of the Global Objective is rated as Moderately Unsatisfactory (MU)

63. **The development objective of the project** is "*To improve people's livelihoods by promoting the utilisation of renewable energy to provide basic electricity services to the rural areas in Lesotho starting in the Mokhotlong, Thaba-Tseka and Qacha's Nek district, thus reducing the country's dependency on fossil fuels*." The following two indicators (with implicit targets) were proposed:

- The number of customers reached by renewable energy-based electricity services in the Mokhotlong, Thaba-Tseka and Qacha's Nek districts reaches 5735 in year 5 of the project, as compared to 735 in the baseline
- The hydro component of the Semonkong hydro/diesel mini-grid is expanded to increase its customer base

64. **The extent to which the development objective was attained is uncertain based on these indicators**. The first indicator does not fully capture the requirement of the objective, that is, the objective refers to "utilisation" of renewable energy which suggests that systems must be functional and providing a useful service, whereas the indicator only considers number of customers. The second indicator is not appropriate as the hydro and most of the wind related activities associated with the mini-grids were removed from the project. The Development Objective indicators should have been

[6] Ntlafalang Consultsnts, August 2008 "Baseline study for the lesotho renewable energy-based rural electrification project"

revised at the time of the project changes or at least at the time of the MTE, as should have the targets.

65. The **project has installed a total of 1537 SHSs in the three target districts as well as IGA and business centres.** However it is clear that a significant proportion of these systems are no longer operating. There is no quantitative evidence available to the TE team to determine the number of functional systems that are still providing useful services to customers. It is evident from commissioning reports and interviews with customers that the effectiveness and reliability of systems was highly dependent on the installer involved. The quality control at the time of commissioning provided by DOE and ATS identified significant issues with many installations and it is apparent that in many cases these issues were not rectified. Villagers reported on numerous occasions during the field visits that some systems have never functioned correctly or failed soon after installation with the main causes being failed inverters and degradation of batteries. The conversion by DOE of SHS lights from AC to DC in 2012 as a recommendation of the MTE, has in most cases exacerbate system failure issues. This is primarily for two reasons: 1) wiring size was not re-evaluated to account for voltage drop due to current increase arising from the lower DC voltage, and consequently this has led to poor performance of lights and shortened lifespan of lights on long wire runs. Also, 2) DC globes are not available outside of Maseru and this is already a major issue rendering SHSs useless once the DC globes fail. In the absence of a detailed survey of systems, and based on review of commissioning reports and interviews with villages, DOE and ATS staff, and solar PV installers, it is the opinion of the TE team that at least 50% of systems installed by the project have either failed or are providing inadequate service. The TE team also anticipate that the changes to the original SHS system design, poor component quality, and recent reconfiguration activities has contributed to a faster than anticipated decline in battery life and that many more systems will fail sooner than normally anticipated.

66. A separate study[7] in 2010 undertook an analysis of nation-wide penetration of Solar PV by considering census data, data from institutional programmes and using dealer survey data. This study estimated that prior to 2008 there were 2803 solar PV systems installed in Lesotho of which 385 were installed in the target districts. At the end of 2009 there were 8057 solar PV installations in the country of which 1250 were in the three districts targeted by the project and on average only 84% were still operating. This suggests that in 2008 and 2009 there were 865 systems installed in the target districts however by the end of 2009 the project had installed less than 234 systems. It is evident that there was a significant amount of activity going on outside of the project largely due to other institutional and donor programmes and it is unlikely this is attributable to the LREBRE project.

The attainment of the Development Objective is rated as Moderately Unsatisfactory (MU)

3.3.2.Relevance (*)

67. The **project was designed to create learning opportunities and to remove barriers to the uptake of low GHG technologies** for rural electrification and a market-based approach was anticipated as the means increasing private sector participation. As such, the original design was highly relevant to the Government's electricity sector objectives as well as within the broader national development objectives. In particular it was well aligned with the 2002 Energy Policy Framework and the ongoing electricity sub-sector

[7] Tsoelopele Consultants & Contractors, Final Report Countrywide Baseline Study on PV Installations, 16 July 2010

institutional reforms especially with regards increasing private sector participation. At the time of project design the National Vision 2020 and medium-term Poverty Reduction Strategy (PRS) identified employment creation, infrastructure development, food security and rural development as core priorities all of which depend on the availability of reliable and affordable energy supply. The PRS Goals are aligned closely with the MGDs and the project consequently supports MDG 7 most closely. This situation has persisted and progress of the Government's decentralisation process has seen the shift in many areas of service delivery and decision making to the local level.

68. The **project was relevant to the UNDAF's (2008-2012) third outcome areas** that focus on achieving "strengthened policy and institutional capacities related to improving natural resource and environmental management" and includes, "increased access to sustainable energy services, electricity and cleaner fuels". However changes in project design, in particular the focus on 1 delivery model, the removal of mini-grid elements, will necessitate a change in 3 of the 6 indicators used in Country Programme Outcome 3.3 of the UNDAF's logframe.

69. The **project's focus on a market based approach for renewable energy options** provided the Government's electrification mandate with a pathway into rural areas that was timelier than other grid-based options, promoted more equitable development, and promised greater participation of private sector.

70. **In these aspects the original project design has remained relevant from inception to the TE.** However, some of the changes made in the project, especially regarding the delivery models of Outcome 1 and the subsidy mechanism of Outcome 5, led to the project shifting from a market driven performance based approach to a public sector driven social-welfare project. This shift has made the project less relevant to national trends and priorities in the energy sector and the delivery by central Government undermined the potential promoting greater private sector participation. This shift in approach has reduced the relevance of project as it was implemented.

The Project is Relevant (R)

3.3.3.Effectiveness & Efficiency (*)

71. This section provides the TE team's evaluation of how well the project Outputs were achieved using the GEF rating scale of Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MS), Unsatisfactory (U), and Highly Unsatisfactory (HU). Considering that a revised logframe was not prepared those outputs that were removed early in the project will not be rated. A summary of these ratings is provided in Table 7.

Effectiveness & Efficiency of Delivery Models

72. **Output 1.1:** *1,000 customers purchased PV-systems through a credit scheme or through cash sales in Mokhotlong, Thaba Tseka and Qacha's Nek districts annually*

- The project installed a total of 1,537 with the installations rolled out in three phases: 250 PV systems in 2008/2009, 337 PV systems in 2009/2010 and 951 PV systems in 2010/2011. This represents about 30% of the installation target of 5,000 solar home systems by 2012. A fourth phase was planned however problems in the procurement process led to delays and at the time of the TE there was no progress. The PV lighting systems (65Wp system of 3x18W lights) were equally divided between the three districts.
- Instead of the proposed development of different delivery models designed to promote wide spread adoption through a market-based approach, the project was revised so as to

deliver the systems by direct contracting of private sector for supply, installation and a 1 year maintenance period. The systems were then sold to customers who paid an upfront deposit of M50 and then purchased the system for M2,000. The customer could elect to pay the M2,000 in a lump sum or to repay in installments over a period of 7 years.

- The customer paid M2,000 however the cost of the installed systems was M12,570 of which the GoL paid the balance of M10,570 (84% of the cost). The detailed records of repayment rates were not made available to the TE team, however, based on inspection of village record books and interviews with installers, the TE team estimate that repayment rates were less than 30%.
- The installer was obliged to maintain the systems for one year after installation. To facilitate this the installers in each village were to train local technicians, and Solar PV Committees (SPVCs) were established to oversee systems maintenance and collect monthly installments from customers. Although rural customers are aware and highly appreciative the benefits of Solar Home Systems, they are very reluctant to purchase PV systems as they believe they should wait for their turn in the government subsidy program. Cash sales in the three districts were very minimal.

73. **Output 1.2:** *At least three business centers are established in each district using PV as their energy source*

- One business center in Mokhotlong (Malefiloane village), 6 income generating activities and one PV water pumping for community farm (Thabong irrigation project in Mokhotlong at Matsoaing village) are established. A target of fifteen IGAs and nine business centers was not reached due to budget constraints, as the anticipated National Rural Electrification Fund was never created to finance these activities.

74. **Output 1.3:** *Limited grant financing is provided to a small number of schemes proposed by the private sector to test various productive uses of renewable energy*.

- Seven grants were provided to income generating initiatives (IGAs) in Mokhotlong and Qacha's Nek districts. Africa Adaptation Programme (AAP) funded the seventh IGA.

75. **Output 1.4:** *An isolated hybrid mini-grid using wind and PV is installed at Sani Top serving at least 25 customers and two businesses*

- Activities related to this component were removed from strategic work-plan (with the PSC authority) due to lack of in-country capacity, policy and funds.

76. Output 1.5: *The wind energy potential for small-scale power generation, in particularly hybrid mini-grids at selected sites that are favorable for hybrid mini-grids using wind is assessed*

- The project assisted the Lesotho Metrological Services (LMS) through the Certification of two Officers in Denmark in 2009 and provision of Wind Energy Assessment Software (WASP) to the LMS, hence wind resource assessment can be done locally.

77. **Output 1.6:** *Three villages in each district have been provided with PV water pumping systems*

- Only one village in Mokhotlong district (Thabong Irrigation Project) was provided with a PV water pumping system for community farming. The project role was limited to identification of the village and funding was availed by the Africa Adaptation Project (AAP). This system was implemented as IGA rather than village water supply activity. There was no need to continue with water pumping systems as there was funding from Millennium Corporation Account to supply water for villages in the country.

78. **Output 1.7:** *Feasibility study on the potential to increase the hydro component of the Semonkong hydro/diesel mini-grid*

- Activities related to this component were removed from strategic work-plan (with the PSC authority) due to lack of in-country capacity, policy and funds.

79. **Output 1.8:** *The capacity of the hydro station at Semonkong is increased*

- Activities related to this component were removed from strategic work-plan (with the PSC authority) due to lack of in-country capacity, policy and funds.

80. **Output 1.9:** *The use of hydropower generation is included in the Seforong mini-grid*

- Activities related to this component were removed from strategic work-plan (with the PSC authority) due to lack of in-country capacity, policy and funds.

Effectiveness & Efficiency of Awareness Raising

81. **Output 2.1:** *Information and awareness packages have been developed and made available to the general public.*

- Remarkable awareness has been created among the beneficiaries, policy makers and other major stakeholders. More than 200 awareness campaigns were conducted through different methodologies as follow: Radio Messages; Newspaper articles; Leaflets and Pamphlets; PV Exhibitions; Office Exhibitions; Installation of Demo Equipment; Seminars and Lectures; Formal meetings; Meetings with Beneficiaries; Field Visits
- The project developed and produced very informative and comprehensive awareness packages: Different set of printed materials (pamphlets, annual news letter, articles in local newspapers) and promotional items (T-shirts, Caps, brochures, paper folders, pens, squeeze bottles, key rings, umbrellas) were produced and widely distributed to the project stakeholders and the general public during exhibitions, stakeholders' workshops, daily consultations and public gatherings.

82. **Output 2.2:** *Awareness programme for decision makers is developed and implemented*

- 51 decision-makers visited the project areas and have been briefed on Solar Energy Technologies. Sensitization program for policy maker was through workshops at the district level and exhibitions organized in Maseru.

83. **Output 2.3:** *A rural customer awareness programme is formulated and implemented*

- Public gatherings were organized at the district level and attended by more than thousand persons annually.
- A total of 118 radio programmes and 120 adverts were aired on radio Lesotho from 2008 to 2012. The radio programmes were aired every Thursday at 1130 – 1200hours. It is estimated that at least more than 250, 000 potential end-users could have been reached through these combined efforts.
- Local banks were invited to radio programmes to discuss different options offered by the banks to access loans for purchasing solar home systems.
- Solar companies were invited to radio programme to market their solar products to the general public, in support of the market led approach to installations.

Effectiveness & Efficiency of Private and Public Sector strengthening and training

84. **Output 3.1**: *Business development services in the renewable energy sector will be strengthened*

- The project has held 3 training workshop on technical, business planning and financial aspects of PV systems in 2008, 2009 and 2012 where almost all PV dealers in Maseru and at least 70% outside Maseru have actively participated
- Two members of the LESES executive committee attended the solar world conference in Johannesburg in October 2009. The main objective was to network in and form strategic partnerships with international and regional renewable energy companies.

85. **Output 3.2:** *Technical knowledge of renewable energy technologies is strengthened*

- The project has trained over 165 technicians on PV technology, system sizing, installation and maintenance.
- 7 Training workshops were organized and attended by suppliers, installers and artisans. However, the lack of surveys among suppliers and technicians has not allowed the impact of this training on their business turnover to be quantified. Very few female technicians participated in the training workshops despite the fact that LREBRE pledged to make a deliberate effort to ensure gender equity.
- The project has trained 5 instructors from one vocational training institution and two polytechnic institutions on PV technology, and mainstream PV technology in Technical and Vocational Department (TVD) Curriculum and also provided PV equipment for teaching purposes. Thus, knowledge on PV systems installation and servicing strengthened.
- A solar PV booklet for secondary schools was prepared and distributed to impart such knowledge to young students. A total of 340 booklets were distributed in 2010 to some schools in Quthing, Botha-Bothe, Leribe, Maseru and Mohale's Hoek districts, and technical institutions.

86. **Output 3.3:** *The association of PV suppliers in Lesotho is operational (Lesotho Solar Energy Society, LESES)*

- The project has substantially contributed to the revival and *stabilization* of the Lesotho Solar Energy Society (LESES) in 2007. The LESES was financially supported by the project in 2008, 2009 and 2010. LESES secured office space, bought office equipment and furniture, recruited office assistant and used the funds for fund raising activities.
- The project organised training on managing societies for the executive committee and some members. The LESES experienced improved financial status, increased membership and general growth in 2010. LESES membership had increased from 60 in 2008 to 120 in 2012.
- An MOU between the Department of Energy (DOE) and the LESES was signed in March 2009. The MOU clearly outlined the working relationship between the LESES and the DOE and the project with the view of contributing towards making LESES fully operational. LESES has been financially independent since 2011.

<u>Effectiveness of Policy Support and Policy Framework</u>

87. **Output 4.1:** *A policy and implementation framework for renewable energy based rural electrification is defined and in place*

- The development of policies is still at draft stage in spite of a long period of consultation and project support and participation.
- The National Rural Electrification Master Plan is not yet developed, however, renewable energy-based rural electrification activities have been integrated into the National Strategic Development Plan (NSDP) 2012/13 – 2016/17 and the 2007 National

Electrification Master Plan, with renewable energy-based rural electrification projects to be allocated more than 50% of the M84.9 Million allocated to electricity supply in the 2013/14 national budget.

- Lesotho Energy Policy is still at the draft stage since 2003. The project participated actively in the formulation of the Lesotho Renewable Energy Policy 2013 which was prepared by AAP. This is yet to be endorsed Government.

88. **Output 4.2:** *Standards for renewable energy technologies and mini-grids are updated and enforced*

- Lesotho has no Bureau of Standards, hence rely on the South African Bureau of Standards (SABS) that are considered to be in line with the international standards. There is no means of enforcing or checking compliance with these standards.
- However, the project made a significant contribution in the promotion and dissemination of PV Code of Practice throughout the country. The project packaged the existing solar PV code of practice and translated the English version to Sesotho and copies were publicized.
- Project used PV Code of Practice for certification of installers, but no enforcement mechanism exists. 70 Engineers and technicians were trained on the Code of Practice.
- Through a number of radio programmes the project promoted PV Code of Practice for solar PV installations. In one specific programme, the project invited members of the LESES Executive Committee to discuss guidelines and procedures for installation and code of conduct for PV installers.

Effectiveness & Efficiency of Financial Mechanisms

89. **Output 5.1:** *The performance based grant scheme is implemented and used by suppliers/ installers*

- This output was based on the World Bank Project (Electrification Access Pilot Project – EAPP) and the establishment of National Rural Electrification Fund (NREF). With the phasing out of the EAPP before the LREBRE start and the NREF not in place the performance guarantee scheme did not materialize as conceptualized in the project document.
- Instead, the installers are pre-qualified by the government and assigned pre-selected households in the target districts. The installers receive 65% reimbursement (of total cost) by the government at receipt of the hardware, 90% reimbursement (of total cost) at verification of installment and 100% reimbursement after one year of maintenance.

90. **Output 5.2:** *The credit guarantee scheme is operational and used by financial institutions/ supplier credit entities*

- The CGS is practically non-functional – there is no advantage to most of the suppliers to get guaranteed lending compared to their relationships with banks and they are not providing credit to end users.

Effectiveness & Efficiency of Learning and Replication

91. **Output 6.1:** *A programme for replication of the activities implemented under immediate objective 1 is prepared*

- Experiences and lessons learned from the project were documented and shared with key stakeholders through workshops. The project team was however unable to go beyond the

borders to share experiences due to lack of funds. Along with lessons learned two videos on project activities were produced, one in 2009 and the other in 2010.

92. **Output 6.2:** *Evaluation of the impact of renewable energy technologies on rural livelihoods*

- Baseline survey was undertaken in 2008 in the three target districts. Countrywide baseline survey followed in 2009. Impact analysis study and a countrywide survey were not achieved.
- However, for this output it is too early to come to concrete conclusions. It was however was evident that some PV application has created jobs, income and new business opportunities.
- The impact of PV on health and reduced reliance on kerosene is still at early stage to assess.

93. **Output 6.3:** *Support has been provided to disseminate the learning and replication experiences in the project area.*

- Experiences and lessons learned from the project were documented and shared with key stakeholders through workshops. The project team was however unable to go beyond the borders to share experiences due to lack of funds. Along with lessons learned two videos on project activities were produced, one in 2009 and the other in 2010.

The Effectiveness & Efficiency ratings of the project were Moderately Unsatisfactory (MU)

Table 7: Summary of TE teams ratings of Effectiveness and Efficiency of Results

Component		Evaluation					
		HS	S	MS	MU	U	HU
Outcome 1	*To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages.*				**X**		
Output 1.1	1,000 customers purchased PV-systems through a credit scheme or through cash sales in Mokhotlong, Thaba Tseka and Qacha's Nek districts annually				X		
Output 1.2	At least three business centres are established in each district using PV as their energy source				X		
Output 1.3	Limited grant financing is provided to a small number of schemes proposed by the private sector to test various productive uses of renewable energy.			X			
Output 1.4	An isolated hybrid mini-grid using wind and PV is installed at Sani Top serving at least 25 customers and two businesses	removed					
Output 1.5	The wind energy potential for small-scale power generation, in particularly hybrid mini-grids at selected sites that are favourable for hybrid mini-grids using wind is assessed.				X		
Output 1.6	Three villages in each district have been provided with PV water pumping systems				X		

Component		Evaluation					
		HS	S	MS	MU	U	HU
Output 1.7	Feasibility study on the potential to increase the hydro component of the Semonkong hydro/diesel mini-grid	removed					
Output 1.8	The capacity of the hydro station at Semonkong is increased	removed					
Output 1.9	The use of hydropower generation is included in the Seforong mini-grid	removed					
Outcome 2	*To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas***.**		**X**				
Output 2.1	Information and awareness packages have been developed and made available to the general public		X				
Output 2.2	Awareness programme for decision makers is developed and implemented			X			
Output 2.3	A rural customer awareness programme is formulated and implemented		X				
Outcome 3	*To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of service to the rural areas.*		**X**				
Output 3.1	Business development services in the renewable energy sector will be strengthened		X				
Output 3.2	Technical knowledge of renewable energy technologies is strengthened		X				
Output 3.3	The association of PV suppliers in Lesotho is operational (Lesotho Solar Energy Society, LESES)		X				
Outcome 4	*To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services.*			**X**			
Output 4.1	A policy and implementation framework for renewable energy based rural electrification is defined and in place				X		
Output 4.2	Standards for renewable energy technologies and mini-grids are updated and enforced			X			
Outcome 5	*To assist with the implementation of a performance grant and a credit guarantee scheme for the larger scale dissemination of renewable energy based technologies to rural customers*					**X**	
Output 5.1	The performance based grant scheme is implemented and used by suppliers/ installers					X	
Output 5.2	The credit guarantee scheme is operational and used by financial institutions/ supplier credit entities					X	
Outcome 6	*To disseminate experiences and lessons learned in order to promote replication throughout the country of rural electrification based on renewable energy technologies.*					**X**	
Output 6.1	A programme for replication of the activities					X	

Component		Evaluation					
		HS	S	MS	MU	U	HU
	implemented under immediate objective 1 is prepared						
Output 6.2	Evaluation of the impact of renewable energy technologies on rural livelihoods					X	
Output 6.3	Support has been provided to disseminate the learning and replication experiences in the project area.				X		

3.3.4.Country ownership

94. **There was strong country ownership of the project and its objectives**. This was in part because the project design was well aligned with Lesotho's development goals as well as the Energy Policy Framework. It was also well integrated into the UNDAF and the 2008-2012 Country Programme Action Plan (CPAP) and as UN agencies and GoL jointly develop them they are a good indicators of country ownership.

95. **The Government, through the PSC demonstrated control of the both the design and implementation of the project**. This has included a close working commitment to ensure the project was responsive to the needs of target groups, aligned with national policy, and was results-focussed. However, it is also apparent that Government commitment to key elements of the project design changed over time. In particular the market-based approach proposed by the project was marginalised by the GoL's decision to adopt an alternate financing mechanism. This decision by GoL was debated intently by UNDP at the time with close engagement at a high level and at the professional level.

96. The **high level of GoL staff committed to the project objectives further supports a strong country ownership** of the project. The PSC engaged representatives from various ministries and was an active and committee forum for decision-making. The integration of the Project Team into the REU assisted in mainstreaming activities within the rural electrification agenda of the GoL At a technical level Staff from other units of the DoE, and from other ministries including ATS and RWS were engaged in various aspects of the project to the extent that the TE team recognise a substantial amount of undocumented in-kind contribution.

97. The **DOE has clearly adopted renewable energy as a part of their rural electrification program.** The financial commitments made to the project by Government were generally maintained throughout the project by availing M5 millions (in 2008), M5 Millions (in 2009), M14 Millions (in 2010) and M5 Millions (in 2011). However, probably the best evidence of strong country ownership is the Government's intentions to continue to provide basic energy services to rural communities and promote the use of RETs, as is evidenced in the 2013/2014 National Budget where more than 50% of the M84.9 Million available to the electricity sector is to be used to implement renewable energy-based rural electrification projects.

3.3.5.Mainstreaming

98. The **project design looked at mainstreaming** of socio-economic issues through the income generating activities, however besides activities related to renewable energy enabled enterprises other options were not explored. Governance was addressed at the local level by working with village committees and engaging district counterparts in project implementation. The gender perspective has been embraced in a standard approach to inclusion of women in capacity development and training however there was

no systemic monitoring of women's participation and it is the TE understanding that the actual engagement of women was very low. That said, women's representation in village committees, local government and in the project team was high. There were no specific project activities targeting women or youth.

3.3.6.Sustainability (*)

99. **The project did not prepare a sustainability strategy and the Exit Strategy fails to provide any concrete measures to address identified risks** despite issues being identified by the MTE. The financial, socio-economic, institutional and environmental risks require further attention if achievements are to be maintained. The sustainability is rated according to financial, socio-economic, institutional and environmental risks and the ratings are presented in Table 8, and discussed further subsequently.

100. The combined risks to sustainability mean that there is a substantial risk and that key outcomes of the project are Moderately Unlikely (ML) to carry on after the project closure.

Table 8: Project Sustainability Ratings

Risk Area	Sustainability Risk Rating
Financial	Moderately Unlikely (MU)
Socio-economic	Moderately Unlikely (ML)
Institutional framework and governance	Moderately Likely (ML)
Environmental	Moderately Unlikely (MU)
Overall Sustainability	**Moderately Unlikely (MU)**

101. The commitment of GoL to the delivery of rural electrification is central to its energy sector priorities and **budget commitments are already reflecting an ongoing interest in supporting off-grid services**. The main risk is that GoL will fall short of putting in place the sustainable subsidy mechanisms required to enable effective long term planning and implementation. However, the current subsidy levels for SHS of more than 80% is an unsustainable level and reduces the number of customers served. This level of subsidy is also likely to continue to distort the solar PV market within the project boundary and outside. Unless these unsustainable subsidy levels are dramatically revised, and supplemented by more sustainable financing mechanisms, then it is likely that political will wain as cost-benefit to GoL is seen to decline.

102. **The poor quality of many of the installed SHS means that many systems have failed**. Recent attempts to reconfigure the systems have in some cases exacerbated the problems. It is unclear if GoL will make any further attempts to fix these technical quality issues. The imminent failure of systems is likely to pose financial burden on households as inverters, DC globes and batteries fail. The lack of access to affordable and good quality replacement components is a major risk to households and puts the viability of installed systems at risk.

Financial Sustainability is Moderately Unlikely:

103. The **public/stakeholder awareness is high in support of the project's long-term objectives** however, unless the livelihood and income generating benefits of renewable energy are demonstrated and taken up by beneficiaries then the full potential will not be realised. The project has delivered few lessons for income generation using renewables and impact on health and other socio-economic benefits has not been substantiated. Once households start to bear a more realistic cost for solar PV it is unlikely they will maintain their systems unless there are clear benefits for income generation, health or education for their children.

104. The **political interest in solar PV is high** and one risk factor is the high interest from politicians to capture political credits of the project in their areas. This was certainly evident in the lead up to the recent elections at both the local and national levels. This may have been a factor in the decision of the Government to change their policy on the subsidy mechanisms.

Socio-economic and Political sustainability is Moderately Likely:

105. **A draft of Renewable Energy Policy 2013 has been developed (by AAP).** Reinforcement of renewable energy strategy will stem from the approval of the policy. However there has been no progress on the NREF or the Master Plan and it is unclear as to the main policy drivers. In particular there is no clear path to integration of grid and off-grid planning. Steps towards clarifying private sector participation are being proposed but this is yet to be clarified. The project has strengthened the role of REU in delivery of off-grid services and provided the support to REU (and ultimately the establishment of a more independent REU) then supportive institutional arrangements will persist. Similarly the DOE staff capacity has been strengthened by the project and this is likely to support the ongoing engagement in renewable energy-based rural electrification.

106. The LESES is fully operational however this is presently dependent on free office space and support provided by GoL. **The longer-term sustainability of LESES will depend on its ability to provide value to its members** and to generate revenue from this value. The previous preferential arrangements in GoL procurements and subsidised training and certification costs are no longer an possible and this incentive to members is gone. LESES has the potential to establish itself as an effective industry-based not-for-profit organisation that can provide quality-labelling services, certification of training, and lobbying for industry. However, presently LESES has no business plan or strategy to explore these options and it is at risk of decline.

107. DoE, NUL and LESES are playing a joint role regarding **certification and training of public and private sector and it is unclear how this will be supported with the closure of the projec**t. The training facility, established at NUL, is likely to be maintained and utilised in NULs physics and engineering programmes. However, unless there is a strong commitment from DOE and other renewable energy projects to maintain the certification process then it is likely to collapse. Presently there are no other national frameworks (e.g. training standards or national curriculum) within which the certification process can be housed.

Institutional framework and governance sustainability is Moderately Likely:

108. There is a **high risk that inappropriate disposal of spent batteries from the solar PV systems will result in environmental pollution and health and safety issues**. The project has not put in place a battery collection and recycling scheme and a recent draft concept paper

for battery collection is quite inadequate, as no financially viable collection mechanisms have been identified. A pilot collection phase as attempted by DOE but this resulted in less than 10% participation by households due largely to lack of sensitisation. Risk related to disposal and waste management of CFL bulbs needs to be managed effectively using existing waste streams however no such waste management process currently exists for batteries.

Environmental Sustainability is Moderately Unlikely:

3.3.7.Impact

109. It is unlikely that any short-term project such as this one can realise impacts within the duration of the project. However, considering the logic of the project design the project has made important progress in meeting many of its targeted objectives and removed a wide range of institutional, cultural and informational barriers to the adoption of renewable energy and this is likely to lead to some key impacts. Demand for renewable energy in Lesotho and general awareness of the benefits of renewable energy between both policy-makers and the general public has increased because of project activities. The management of the project and commitment of project stakeholders with regards to reporting requirements, communications and project oversight has been excellent. The technical capacity of key industry stakeholders has been significantly improved as a result of project activities. These gains were identified by the MTE and have persisted the end of the project.

110. There is also some evidence that the project has created impact in promoting the market for solar energy as some Solar PV installers reported during interviews with the TE team that they had made substantial sales of SHS in areas outside the project boundaries. Unfortunately the project did not undertake any countrywide survey to update the baseline data and so there is no quantifiable evidence. Also, the interviews with beneficiaries revealed that in some areas the project had undermined market potential for SHSs due to distorted expectations (because of unsustainable subsidies) and poor quality of systems. This negative market impact was not evident at the time of the MTE and suggests that the initial positive trend has been undermined by increased failure rates of systems and consolidation of market distortion effects.

111. The likely impacts of the project are analysed in terms of the likely pathways from Outcomes to Impact. Impacts ratings are either Significant (S), Minimal (M) or Negligible (N) potential impact. This analysis and rating is depicted in Table 9.

The Overall Impact rating of the project is Minimal (M)

Table 9: Impact Ratings, based on review of outcomes to impact pathways.

Component	Findings	Review of Outcomes to Impacts/ Impact Ratings
Outcomes		
Outcome 1: To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages	A market-based approach was not achieved and only one delivery model using one technology package via a Government-led approach was implemented. However, important lessons and institutional capacity has been developed which will help with future renewable energy-based rural electrification.	Minimal (M)

Component	Findings	Review of Outcomes to Impacts/ Impact Ratings
Outcome 2: To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas	Awareness regarding the importance of renewable energy in meeting basic energy needs has increased. In some cases this is creating an increase demand for solar PV.	Significant (S)
Outcome 3: To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of service to the rural areas	Capacity of both public and private sector has been substantially improved. The solar PV Industry is strengthened and new certification and training schemes are available.	Significant (S)
Outcome 4: To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services	Policy and regulatory frameworks are yet to emerge and there is no framework for quality or service or technical standards exist. However, institutional capacity is strengthened and the industry has a code of conduct.	Negligible (N)
Outcome 5: To assist with the implementation of a performance grant and a credit guarantee scheme for the larger scale dissemination of renewable energy based technologies to rural customers	Access to effective financing mechanisms for suppliers and end-users for renewable energy investments has not been improved. The current subsidy mechanism is unsustainable and threatens to distort the market for solar PV in rural areas.	Negligible (N)
Outcome 6: To disseminate experiences and lessons learned in order to promote replication throughout the country of rural electrification based on renewable energy technologies	Interest in promoting solar PV for rural electrification is high and Government is already preparing to invest further. Experience shared from this project will greatly assist in design of future schemes and replication.	Negligible (N)
Overall Impact Rating		Minimal (M)

4. Conclusions, Recommendations & Lessons

4.1. Corrective actions for the design, implementation, monitoring and evaluation of the project

112. The **project failed to track key indicators or to maintain an effective monitoring system for project outputs.** This information will be essential for informing future actions and for remedying issues that may yet arise as a consequence of this project. In particular there needs to be a technical and financial audit on SHS, this should include a thorough inventory of installed assets and the condition of the systems and financial records including deposits and repayments. A national survey of renewable energy penetration and energy use patterns in households and enterprise should also be undertaken otherwise it should be a key feature of the inception phase of any follow-on projects.

4.2. Actions to follow up or reinforce initial benefits from the project

113. The **currently adopted Exit Strategy is completely inadequate** and must be redone. The TE recommends that, even though the project has closed that DOE develop a revised Exit Strategy and that a PSC meeting be convened to approve it. Development of a meaningful exit strategy requires time and resources and should be a considered an important output of the project. Whilst the currently proposed Exit Strategy was prepared in sufficient time to enact some measures, the Strategy failed to identify a useful plan of action. The Exit Strategy should include, amongst other things, the following measures:

Delivery Models

a. **There is a high risk that remnant technical issues, spent batteries and distorted expectations due to high subsidy will lead to ongoing problems for stakeholders** and a bad reputation for UNDP and the DOE. This is likely to cause problems for private enterprise or follow-on projects working in these areas. This should be addressed as high priority even before further systems are rolled out. These technical issues are a consequence of lack of enforcement of component quality requirements[8], lack of maintenance and ongoing support, and poor product-market fit (i.e. the standardisation on one system design). The initial decision to adopt an AC system was in itself a reasonable design choice as it accommodated long wire runs and utilizes readily available CFL lights. However in implementation there was a high failure rate of the inverters. It is evident that this was due in part to low awareness on proper operation, but mostly due to poor quality components. Those systems where good quality components were used and a significant effort was made by installers at awareness raising have demonstrated substantially better performance. The one year warranty period was not successful in most cases and the inceptive payments (10% of outstanding amount) was not effective. Those areas where the installer who did make regular maintenance visits have performed much better as early installation issues were eliminated and the installer had more opportunity to raise awareness of end-users on system management. The GoL should consider steps to rectify existing system faults prior to installing more systems and assistance should be provided to villages to help them access maintenance support (for a fee).

[8] Although compliance with internationally recognized technical standards was a requirement of the RFT this does not appear to have been enforced as the TE team observed many sub-standard components installed in SHSs. It is unclear from the tender evaluation reports what was the procedure for checking or reporting of compliance.

b. However **there is also a need to address the repayments arrears in order to correct unrealistic expectations** of rural electricity costs amongst end-users. It should therefore be a requirement that further assistance will only be provided to those households who have paid their existing obligations.

c. **Households currently have no idea how to obtain assistance to repair their systems** or to obtain good quality replacement parts. In particular, access to good quality inverters, replacement batteries and 12V DC globes are an issue. Villages need assistance in accessing maintenance and good quality replacement parts and a scheme should be developed for this purpose. For example, participating households could pay a voluntary or mandatory monthly usage fee (added onto the fee for the repayment of any outstanding obligations) that could be deposited into a maintenance account. Installers would then visit the village in accordance with a maintenance plan provided the maintenance payments had reached a predefined level. The installer would also stock a list of approved replacement parts that the customer can purchase separately. The delivery of this maintenance service should be tendered with installers bidding on the basis of a maintenance plan and a price list for the replacement parts. Only one installer should be selected on an annual basis and only until such time as a LREBRE follow-on project can develop a more general option. This would result in reduced cost through economies of scale and would not involve direct subsidy.

Awareness Raising

d. **Valuable resource materials should continue to be utilized.** The information resources including pamphlets, videos, demonstration kits and other materials prepared should be catalogued and DOE should then undertake a wider consultation with training institutions, NGOs and others in order to identify a suitable repository where these resources will be utilized by as many people as possible (as well as DOE and REU).

e. In particular the Permanent Secretary is proposing to prepare a series of radio and other awareness activities for both energy and water and LREBRE project materials would be useful for this purpose.

Capacity Development

f. **LESES needs to be supported to prepare an effective business plan** that it can use as the basis for planning and fund raising. It needs to focus on market development and quality and further development of training standards and certification process and cannot rely on preferential treatment for Government contracting. They need to develop a clear strategy to build market recognition for quality and service. A possible mechanism is to develop a quality labeling system that defines LESES's brand and about which LESES works to build broad public recognition as a sign of quality and value. Through a licensing agreement members are able to display this label on their products. The other key value proposition to members is access to a work place competency based certification process which will require substantial development but which LESES develop as a project proposal for funding applications to a number of donors.

g. Certification needs to continue and LESES and NUL should partner for this purpose. The Solar PV training facility should remain with NUL and the project should transfer these assets for use in their education and research work. However LESES should seek funding to establish training standards for Solar PV installers. These standards should be the basis for design of the NUL training and certification course and a workplace based competency assessment mechanisms

for LESES. LESES would then manage the certification process and would be the ones to offer certification.

114. **There is a need for a follow-on project that capitalizes on the lessons learned** and broad commitment and awareness generated by the LREBRE project. This project should include preparation and early stage activities that address some of the remnant issue of the LREBRE project.

4.3. Proposals for future directions underlining main objectives

115. The following recommendations are provided by the TE team to inform future initiatives in Lesotho:

a. It is important to consider that **both the market-based approach and Government-led approach may be complementary** rather than competing options and that a two-pronged framework could be considered. That is, that there may be a role for a Government-led option in the medium term for low-income end-users in low population density areas and that a market-based approach could be applicable for other more market-ready end-users. This would guarantee a minimum level of service at an affordable price yet still allow private enterprise to innovate and address other viable market segments.

b. **End-users need reliable and affordable electricity services and they are prepared to pay for this**. Consequently, any future project must undertake a detailed market analysis that seeks to characterise key market segments and consider a range of service and product options and assesses the impact of various subsidy levels. The assessment should consider various ownership and delivery models. This will include technology product options, whereby renewable energy technologies are sold to end-users with appropriate warranty and quality standards enforced; and service options, whereby the end-user pays a fee to receive an energy service and the provider, a third party or Government retains ownership of the technology; and some combination of these. In particular there should be recognition that not all products and services will require the same level of subsidy and in some cases no subsidy should be expected.

c. **Mini- and micro- grids have numerous advantages** in terms of hardware cost, energy use and quality, operations and maintenance compared to individual stand-alone households. Notwithstanding the fact that because of project funds not materializing as expected the activities focused on mini-grids were removed or significantly downsized, installers and other stakeholders interviewed suggested that they viewed mini-grids as one of the key growth areas for the development of their industry.

d. **The Government needs to establish a clear policy for subsidising rural electrification that takes into account private sector participation in service delivery**. Government needs to be comfortable using pubic funds to support a private sector delivery of services. One approach would be to strengthen the role of the regulator (as intended) and develop clear Electricity Quality of Service and Supply Standards[9] for off-grid electricity services and then use this as the basis for determination of subsidy levels. This may involve the Government defining a minimum service level that is reflective of a unified approach for both grid and off-grid end-users. That is, there needs to be a clearer picture of what services the Government considers eligible for subsidy and this will involve some decision on cost-benefits and the level of cost sharing with the end-user (and in some cases

[9] LEA already regulates grid and rural electricity through separate QSSSs. A separate QSSS could be developed for off-grid services, however it would probably be better to revise the rural electricity QSSS to include standalone and mini-grid considerations.

the service provider). This should not restrict the services that can be offered (although not all may be eligible for subsidy) and must take into account a role for private enterprise in delivery of these services.

e. **There needs to be a policy and regulatory framework developed for private sector participating in energy service delivery for both grid- and off-grid services**. Currently there is no legal basis for private sector involvement and this is a barrier to further investment[10]. The ongoing developments of the Renewable Energy policy, Independent Power Producers policy, and the emerging role of LEA, need to consider off-grid issues. This could lead to an integrated approach in which the planning, financing, and regulation of grid and off-grid services is unified and incorporates clear objectives for private sector participation. This would also open the way for sustainable project development financing (via the Universal Access Fund operated by LEA and in lieu of the NREF) for both LEC and rural electrification and a sustainable operating subsidy mechanism for off-grid services that draws on the current cross-subsidy already established for grid services. Having clear and consistent Service Standards articulated for both grid and off-grid services would help to ensure a more equitable approach to the subsidy issue.

f. **There needs to be a clearer role for local government in the delivery of rural energy services.** The Local Government Act does not currently provide a mandate for District or Community Council involvement in electricity service delivery. However, the experience from LREBRE suggest there is potential a role for them in rural electrification and especially for off-grid services[11]. The scope for decentralisation of some of the functions currently held by REU should be considered. There is already precedence as maintenance and support for rural water supplies is already part of District Council mandates. Also, this is a timely consideration as there is opportunity to link with current Governance reform process taking place in the country. In particular, UNDP is preparing a new Governance project[12] and any LREBRE follow-on project must consider linkages.

g. **LEA has a role in rural electrification and the promotion of renewable energy** and support needs to be provided to ensure that it is capacitated to provide regulation and enforcement of QSSS and other standards.

h. **There is a need to establish in Lesotho a mechanisms for ensuring that technologies comply with internationally recognised technical standards** and that these standards are enforced for all Government procurement and information is available in the public domain to assist consumers assess the quality of products. A key shortcoming of LREBRE was the lack of quality of some key components of the SHSs that led to high failure rates for some installers. For other installers who provided high quality components the systems exhibited superior performance. It is evident that many low quality solar PV components are now available in the marketplace yet there is a lack of information available to consumers on the merits of these products. As discussed previously, LESES has a role in this process and could provide a good platform upon which to build a sustainable and high quality renewable energy sector.

[10] The TE team were informed by a solar installer that he wishes to become a power service provider and has explored opportunities for both off-grid and mini-grid service businesses. The main obstacle is the lack of a clear policy and legal basis, which means lots of risk and uncertainty with dealings with government.
[11] On discussion with District officers there is also a strong interest from their side as they see synergies with their existing functions regarding water supply.
[12] The joint UNDP and EU "Deepening Decentralisation Project" (in preparation)

i. **Improving access to enabling finance for renewable energy** technology suppliers, rural electrification service providers, and end-users is an important barrier removal activity. The LREBRE project has raised awareness of this important issue and any follow-on project must consider this as central to developing a market-based approach and increasing private sector participation. However, these financial tools should not be developed in isolation of broader financial sector activities. Consequently, the follow-on projects should engage with ongoing enterprise development projects currently offered in the country. In the case of supplier financing, this includes the Partial Credit Guarantee Fund (PCGF) offered by the Ministry of Finance and Development Planning, which provides a credit guarantee MSMEs. In the case of renewable energy project developers, the LEA Act indicates that the Universal Access Fund can provide concessionary financing. In the case of consumer finance, there is a need to consider the capacity and interests of financial institution to engage in rural areas and this is likely to require engagement with the emerging micro-finance sector or HP consumer finance through retailers. The capabilities of solar suppliers to provide end-user finance is very limited, however complementary sector activities (such as mobile phone companies) are already providing finance and may be suitable partners for delivery of certainly renewable energy technologies.

j. **Management of decentralised energy service deliver requires local level support**. The project was managed out of Maseru with regular monitoring to the project areas. Other monitoring was provided by suppliers and district offices. However this was inadequate for effective monitoring of the programme and dedicated local level capacity should have been established for this purpose. Future projects must consider these management arrangements and preferably this should be mainstreamed into the council or other local level entity.

k. **Need for focussed technical support to ensure quality assurance of key project products and ongoing capacity development**. Future projects should consider further the inclusion of a dedicated technical advisor or targeted short term support to provide project assurance and ensure quality of technical and management outputs.

5. Annexes

5.1. ToR for Terminal Evaluation

CONSULTANCY: LESOTHO

LESOTHO RENEWABLE ENERGY BASED RURAL ELECTRIFICATION (PIMS 1858)
UNDP-GEF PROJECT
TERMINAL EVALUATION
TERMS OF REFERENCE

INTRODUCTION

UNDP-GEF Monitoring & Evaluation Policy: UNDP-GEF Monitoring & Evaluation (M&E) policy is available on-line at: http://www.undp.org/gef/05/monitoring/policies.html. The Monitoring and Evaluation (M&E) policy at the project level in UNDP-GEF has four objectives: (i) to monitor and evaluate results and impacts; (ii) to provide a basis for decision making on necessary amendments and improvements; (iii) to promote accountability for resource use; and (iv) to document, provide feedback on, and disseminate lessons learned. In accordance with UNDP-GEF M&E policies and procedures, all regular and medium-sized projects supported by the GEF should undergo a final evaluation upon completion of implementation.

Final evaluations are intended to assess the relevance, performance and success of the project. It looks at early signs of potential impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. It will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP-GEF projects. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the Lesotho Renewable Energy Based Rural Electrification (PIMS 1858). The essentials of the project to be evaluated are as follows:

Project Summary Table

Project Title:	Lesotho Renewable Energy Based Rural Eletrification			
GEF Project ID:	PIM 1858		*at endorsement US$)*	*at completion (US$)*
UNDP Project ID:	00049143	GEF financing:	2,720,000	2,720,000
Country:	Lesotho	IA/EA own:	0	0
Region:	SA	Government:	4,255,500	4,625,000
Focal Area:	Energy	Other:	0	0
FA Objectives, (OP/SP):	Access to Energy	Total co-financing:	4,255,500	4,625,000
Executing Agency:	UNDP	Total Project Cost:	6,975,500	7,345,000
Other Partners involved:	GoL	ProDoc Signature (date project began):		October 2006
		(Operational) Closing Date:	Proposed:	Actual:

			Dec 2011	Dec 2012

OBJECTIVE AND SCOPE

The project was designed to:

Reduce Lesotho's energy related emissions by substituting fossil fuel (paraffin and diesel) with renewable energy sources (PV, Wind and Hydro) for household and productive uses through the provision of basic energy services to rural household and community users. It was in addition designed to improve people's livelihood by promoting the utilization of renewable energy through provision of basic electricity services to the rural districts in Lesotho, namely, Mokhotlong, Thaba Tseka and Qacha's Nek, thus reducing the country's dependence on fossil fuel.

The project outcomes are:

I. Implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages.
II. Increase awareness among the general public, decision-makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas.
III. Strengthen and support the public and private sector working in the renewable energy sector to provide better quality of service to the rural areas.
IV. Assist in the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services.
V. Assist with the implementation of appropriate financing mechanisms for the larger scale dissemination of renewable energy based technologies to rural customers.
VI. Disseminate experience and lessons learned in order to promote replication throughout the country of rural electrification based on renewable energy technologies

EVALUATION APPROACH AND METHOD

An overall approach and method[13] for conducting project terminal evaluations of UNDP supported GEF financed projects have developed over time. The evaluator is expected to frame the evaluation effort using the criteria of **relevance, effectiveness, efficiency, sustainability, and impact,** as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. A set of questions covering each of these criteria have been drafted and are included with this TOR as per *Annex C*. The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report. The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Mokhotlong, Qacha's Nek and Thaba Tseka, including some but not all of the following project sites;

[13] For additional information on methods, see the Handbook on Planning, Monitoring and Evaluating for Development Results, Chapter 7, pg. 163

Mokhotlong		Thaba Tseka		Qacha's Nek	
Village	**# of H/H**	**Village**	**# of H/H**	**Village**	**# of H/H**
Ha Meno	25	Seruting	20	Ralengoele & Takatso	52
Limonkaneng	28	Lebung	12	Tsolo	27
Paeleaithlatsoa	27	Aupulase	8	Leseling & Ha Letete	81
Masheaneng	25	Sehong-hong	28	Mohlanapeng	41
Ha Ramosoeu	24	Mashai (Moreneng)	28	Ha Molomo	13
Liotloaneng	28	Makunyapane	31	Sekiring	36
Limapong	24	Linakeng	21	Khohlong Ha Lefaso	10
Thlanyaku	28	Lihareleng Ha Peterose	29	Ha Sepechele	10
Masaleng	25	Likoaring Ha Makhina	39	Ha Isaac	10
Ha Matobo	24	Litsoeneng, Ha Mahao	21	Litooaneng	10
Ha Liphate	24	Litsoeneng	14	Jakopo, Ramatšeliso	56
Matlaong	24	Liphakoeng	30	Makhoareng,	
Mateanong	28	Koma-Koma	60	Ntai	
Likhameng	25	Ha Tšeu	28	Likhaneng, Masuoaneng	35
Ha Setoko	25	Sekoting	60	Thamathu	75
Marakong	24	Mahahleng	28		
Matsoaing	24	Khoitsanyane	21		
Matsekheng	28	Ha Labane	35		
Linakaneng	28				

Interviews will be held with the following organizations and individuals at a minimum:

National

1) Lesotho Electricity Authority
2) Beneficiaries
3) Rural Electrification Department
4) Lesotho Electricity Company
5) Lesotho Highlands Development Authority
6) Lesotho Chamber of Commerce
7) Technology for Economic Development
8) Appropriate Technology Section of Ministry of Communications, Science and Techology
9) Ministry of Education and Training, Technical and Vocational Training (TVD)
10) World Bank
11) Department of Rural Water Supply
12) Banks
13) Ministry of Development Planning
14) Ministry of Finance
15) Ministry of Energy, Meteorology and Water Affairs
16) Dept of Energy
17) Lesotho Energy Society
18) Project Steering Committee
19) Solar PV Installers
20) National University of Lesotho, Physics Department

21) Dept of Environment
22) Ministry of Local Government and Chieftainship (District Councils in the three districts)
23) Lerotholi Polytechnic

International:

1) UNDP Country Offices in Lesotho
2) Regional UNDP-GEF office in South Africa

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in Annex B of this Terms of Reference.

EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see Annex A), which 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 obligatory rating scales are included in Annex D.

Evaluation Ratings:			
1. Monitoring and Evaluation	***rating***	**2. IA& EA Execution**	***rating***
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	**rating**	**4. Sustainability**	**rating**
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental :	
		Overall likelihood of sustainability:	

PROJECT FINANCE / CO-FINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US$)		Government (mill. US$)		Partner Agency (mill. US$)		Total (mill. US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/Concessions								
• In-kind support								
• Other								
Totals								

MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.[14]

CONCLUSIONS, RECOMMENDATIONS & LESSONS

The evaluation report must include a chapter providing a set of **conclusions**, **recommendations** and **lessons**.

IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP CO in Lesotho. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

EVALUATION TIMEFRAME

[14] A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROtI) method developed by the GEF Evaluation Office: ROTI Handbook 2009

The total duration of the evaluation will be 30 days according to the following plan:

Activity	Timing	Completion Date
Preparation	3 days	2nd March 2013
Evaluation Mission	*10* days	17th March 2013
Draft Evaluation Report	5 days	27th March 2013date
Final Report	2 days	29th March 2013

EVALUATION DELIVERABLES

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
Presentation	Initial Findings	End of evaluation mission	To project management, UNDP CO
Draft Final Report	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, PCU, GEF OFPs
Final Report*	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

TEAM COMPOSITION

Evaluation Team

A team of independent experts will conduct the evaluation. The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities. The evaluation team will be composed of one International Consultant or team leader and one National Consultant. The consultants shall have prior experience in evaluating similar projects. Former cooperation with GEF is an advantage.

International consultant

1. Masters or Ph.D. degree in social sciences related to international development, i.e. economics, international relations, public and business administration or equivalent;
2. Extensive (at least 10-year) experience and proven track record with energy efficiency and/or renewable energy field, policy advice, development and implementation;

3. Highly knowledgeable of participatory monitoring and evaluation processes, and experience in evaluation of at least 3 projects with a major donor agencies;
4. Familiar with renewable energy technologies in Africa either through management and/or implementation or through consultancies in analysis and evaluation of energy efficiency and/or renewable energy projects;
5. Experience in credit schemes and other project financing schemes;
6. Demonstrated ability to assess complex situations, succinctly distills critical issues, and draw forward-looking conclusions and recommendations;
7. Ability and experience to lead multi- disciplinary and national teams, and deliver quality reports within the given time; 8. Writing and communication will be in English, and must have excellent communication skills in English. The consultant must bring his/her own computing equipment.

Local consultant:

1. Masters degree in social sciences related to international development, i.e. economics, international relations, public and business administration or equivalent;
2. At least 5 years experience with energy efficiency and/or renewable energy field, policy advice, development and implementation;
3. Demonstrated skills and experience in development project implementation and management;
4. Knowledgeable on renewable energy institutions and projects in the country, climate change issues and priorities, and related policies and legislations in particular in relation to off-grid electrification;
5. Proficient in writing and communicating both in English and in Sesotho and also ability to interpret to the international counterpart and also to translate necessary written documents into English.

Team Qualities:

1. Recent experience with result-based management evaluation methodologies;
2. Experience applying participatory monitoring approaches;
3. Experience applying SMART indicators and reconstructing or validating baseline scenarios;
4. Recognized expertise in renewable energy technologies;
5. Familiarity with RE policies and management structures in Lesotho;
6. Demonstrable analytical skills;
7. Work experience in relevant areas for at least 10 years;
8. Experience with multilateral or bilateral supported projects;
9. Project evaluation experiences within United Nations system will be considered an asset;
10. Excellent English communication skills.

The National Consultant will provide input in reviewing all project documentation and will provide the International Consultant with a compilation of information prior to the evaluation mission. Specifically, the national expert will perform tasks with a focus on:

Review documents;

- Prepare a list of the outputs achieved under project;
- Organize the mission programme and provide translation/interpretation when necessary;
- Participate in the design of the evaluation methodology;
- Conduct an analysis of the outcome, outputs and partnership strategy (as per the scope of the evaluation described above);
- Draft related parts of the evaluation report;
- Assist Team leader in finalizing document through incorporating suggestions received on draft related to his/her assigned sections.

EVALUATOR ETHICS

Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluations'

PAYMENT MODALITIES AND SPECIFICATIONS

%	Milestone
10%	At contract signing
40%	Following submission and approval of the 1ST draft terminal evaluation report
50%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report

APPLICATION PROCESS

Applicants are requested to apply online at http://jobs.undp.org by 22th February 2013. Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

ANNEX A: PROJECT LOGICAL FRAMEWORK

STRATEGY	INDICATORS	MEANS OF VERIFICATION	CRITICAL ASSUMPTION
Global objective: **To reduce Lesotho's energy related CO2 emissions by substituting fossil fuel (paraffin and diesel) with renewable energy sources (PV, wind and hydro) for household and productive uses through the provision of basic energy services to rural homes and community users**	Consumption of paraffin reduced by 80 % in the households using renewable energy based systems for lighting	Energy use survey	
	Incidence of paraffin related respiratory and eye diseases reduced by 10 % over 5 years within those households targeted by the project	Medical survey	
	Small scale renewable energy-based business activities increased by 50 % compared to the baseline	Dealer survey	
	Consumption of diesel for generating electricity reduced by 80% in the households and businesses targeted by the wind/PV and hydro/diesel mini-grid pilots	Energy use survey	
Development objective: **To improve people's livelihoods by promoting the utilisation of renewable energy to provide basic electricity services to the rural areas in Lesotho starting in the**	The number of customers reached by renewable energy-based electricity services in the Mokhotlong, Thaba Tseka and Qacha's Nek districts reaches 5735 in year 5 of the project, as compared to 735 in the baseline;	Dealer survey EAPP files Project files	Paraffin prices will not significantly drop EAPP will be implemented as planned

Mokhotlong, Thaba-Tseka and Qacha's Nek district, thus reducing the country's dependency on fossil fuels	The hydro component of the Semonkong hydro/diesel mini-grid is expanded to increase its customer base	Site visit	The feasibility study that will be carried out under the project concludes the expansion of the hydro capacity at Semonkong is feasible
Outcome 1: **To implement different delivery models for renewable energy-based rural electrification targeting different end-user groups and making use of different technology packages**	The number of households with PV systems in the project area will increase by 1000 annually	Project implementation and progress report	End-users are able and willing to adopt new technologies
	A hybrid mini-grid using PV and wind is established at Sani Top		
	The Semonkong mini-grid is equipped with additional hydro generation equipment		
Output 1.1 1000 customers purchased PV-systems through a credit scheme or through cash sales in Mokhotlong, Thaba Tseka and Qacha's Nek districts annually	1000 PV systems sold in Mokhotlong district Thaba Tseka and Qacha's Nek districts annually	Data from PV dealers	Private sector is willing to engage in offering credit schemes to rural customers
Output 1.2 **At least three business centres are established in each district using PV as their energy source**	Nine business centres established using PV	Project files	Rural households are interested to use the services of the business centres

Output 1.3 **Limited grant financing is provided to a small number of schemes proposed by the private sector to test various productive uses of renewable energy**	At least 15 grants provided to companies by the end of the project	Project files	Private sector is willing to participate in the development of productive use applications of PV
	At least 3 products for productive use applications is commercialized by the end of the project	Dealer survey	
Output 1.4 An isolated hybrid mini-grid using wind and PV is installed at Sani Top serving at least 25 customers and two businesses	25 domestic customers and two businesses connected to a hybrid mini-grid at Sani Top	Project files	End-users are able and willing to adopt new technologies
Output 1.5 The wind energy potential for small-scale power generation, in particularly hybrid mini-grids at selected sites that are favourable for hybrid mini-grids using wind is assessed	Capacity built in the Department of Energy and LMS to interpret wind data for assessing the wind energy potential	Report on capacity building activities done Collected data and site evaluation	Funds for wind measurement equipment will be provided for in the annual budget of LMS
Output 1.6 Three villages in each district have been provided with PV water pumping systems	Nine systems installed and in operation in line with the PV Code of Practice	Project files	
Output 1.7 Feasibility study on the potential to	Report on the feasibility of increasing the installed hydro capacity	Project files	

increase the hydro component of the Semonkong hydro/diesel mini-grid			
Output 1.8 The capacity of the hydro station at Semonkong is increased	The installed capacity at the Semonkong hydro station is increased following the recommendation of the feasibility study	Project files	The feasibility study that is carried out under output 2.1 concludes the expansion of the hydro capacity at Semonkong is technically feasible and economical viable
Output 1.9 The use of hydropower generation is included in the Seforong mini-grid	The mini-grid at Seforong has a hydropower component	Project files	
Outcome 2: **To increase awareness among the general public, decision makers and rural customers on the potential role of renewable energy in meeting basic energy needs in rural areas**	Annual increase in the number of people using renewable energy technologies as compared with the baseline scenario	Energy consumption report	
Output 2.1 Information and awareness packages have been developed and made available to the general public	Information and awareness packages in the form of brochures, leaflets, demonstrations, road shows, TV/radio announcements	Copies of these packages are readily available	Willingness of market parties, national, district and local government to act as an outlet for the distribution of the packages
Output 2.2 Awareness programme for decision	At least 25 key decision makers (Ministers, MPs, District Administration, PSs, Counsellors) have visited the target area and have been exposed to the activities of	Reports prepared on these visits	Willingness of high-level decision makers to undertake multi-day trips to remote rural areas.

makers is developed and implemented	the project		
Output 2.3 **A rural customer awareness programme is formulated and implemented**	At least 1000 persons attending information meetings in the rural areas per annum.	Reports on information meetings	Rural customers are interested to participate in information meetings
Outcome 3: **To strengthen and support the public and private sector working in the renewable energy sector to provide better quality of service to the rural areas**	Number of businesses dealing with renewable energy systems increased by 50% by the end of the project	Dealer survey	Market actors are willing to co-operate and businesses are eager to expand and/or include renewable energy technologies in their business
	Level of end-user satisfaction with installation and after sales increased by 50% by the end of the project	End-user survey	
Output 3.1 Business development services in the renewable energy sector will be strengthened	At least 70% of all renewable energy dealers/companies active in Lesotho participated in at least one capacity building activity offered by the project	Project files (attendance register capacity building activities)	Willingness of private sector to invest time in training
Output 3.2 Technical knowledge of renewable energy technologies is strengthened	Several technical training courses offered to vendors, dealers, technicians, etc. which are completed by 75% of the participants	Project files	

Output 3.3 The association of PV suppliers in Lesotho is operational (Lesotho Solar Energy Society, LESES)	75% of all PV businesses are member of the association	Membership register of LESES	Private sector is willing to co-operate in the PV association
Outcome 4: **To assist the development of policy and institutional arrangements needed for the widespread adoption of renewable energy sources for off-grid electricity services**			Willingness of NREF to incorporate renewable energy based electricity into their operations
Output 4.1 A policy and implementation framework for renewable energy based rural electrification is defined and in place	By the end of the project renewable energy features prominently in the National Rural Electrification Master Plan as an option for meeting energy needs in rural areas	National Rural Electrification Master Plan	
Output 4.2 Standards for renewable energy technologies and mini-grids are updated and enforced	80% of suppliers of PV committed to the PV code of practice	List of companies that agreed to adhere to the code of practice	Private sector willing to improve quality of services by adhering to PV code of practice
	Workmanship complaints from end users reduced by 30%	Complaints registry	End users report complaints
	Standards publicly available	Standards and Codes of Practice, booklets and handouts	Industry is willing to co-operate to develop these standards

Outcome 5: **To assist with the implementation of a performance grant and a credit guarantee scheme for the larger scale dissemination of renewable energy based technologies to rural customers**	All major PV dealers operating within the project area offer at least one financing option for rural customers	Contracts between dealers and consumers Audit reports Data from dealers and financial institutions compiled in project documentation	Willingness of financial sector to get involved in financing renewable / PV energy systems
Output 5.1 The performance based grant scheme is implemented and used by suppliers/ installers	At least 2/3 of the available funds have been disbursed under this scheme to deliver PV systems to rural customers	Data from REU and WB	
Output 5.2 The credit guarantee scheme is operational and used by financial institutions/ supplier credit entities	Credit terms offered by suppliers to costumers have improved significantly (extension of installment periods, interest rates)	Data from REU and filed/ customer survey	
Outcome 6: **To disseminate experiences and lessons learned in order to promote replication throughout the country of rural electrification based on renewable energy technologies**			
Output 6.1 A programme for replication of the activities implemented under immediate objective 1 is prepared	Increase in the number of end users using renewable energy sources in other districts.	Sales figures	Successful implementation of the activities of component 1 Willingness of rural customers in other districts to use PV

	After year 4 of the project, the planned mini-grid at Seforong will be implemented using hydropower	Resource assessment completed Hydropower included in the tendering documents	
Output 6.2 Evaluation of the impact of renewable energy technologies on rural livelihoods	Baseline survey and annual data updates provided throughout the project-life	Evaluation report	Willingness / ability of rural customers to provide necessary socio-economic information to assess impact
Output 6.3 **Support has been provided to disseminate the learning and replication experiences in the project area**	Experiences from this project will be shared with all actors involved in rural electrification in Lesotho	Project files	Actors involved in rural electrification in Lesotho are willing to learn from the project experiences
	The experiences from this project will be shared with at least four countries in the SADC region before the end of the project	Project files	Willingness of actors in other countries to actively share information on their renewable energy based rural electrification activities

ANNEX B: LIST OF DOCUMENTS TO BE REVIEWED BY THE EVALUATORS

Document	Description
Project document	The Project Document and Revisions Project Financial Mechanisms Study
Project reports	Project Inception Report Project Annual Work-plans Project Quarterly Reports Project UNDP Annual Reports Baseline report Consultancy reports
Annual Project Report to GEF	Project Implementation Reports for 2007/2008; 2008/2009, 2009/2010,2010/2011,2011/2012
Other relevant materials:	Financial Audit Reports 2007, 2008, 2009, 2010, 2011, 2012 Press articles Minutes of Project Steering Committee Meetings Field visits reports
GEF and UNDP/GEF Monitoring and Evaluation Policy	http://thegef.org/MonitoringandEvaluation/MEPoliciesProcedures/mepoliciesprocedures.html) (http://www.undp.org/gef/05/monitoring/policies.html).
Atlas Risk Management System	UNDP-GEF Risk Management Strategy resource kit, available as Annex XI at http://www.undp.org/gef/05/monitoring/policies.html

ANNEX C: EVALUATION QUESTIONS

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?			
•	•	•	•
•	•	•	•
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
•	•	•	•
•		•	•
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?			
•	•	•	•
•	•	•	•
Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?			
•	•	•	•
•	•	•	•
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?			
•	•	•	•
•	•	•	•

ANNEX D: RATING SCALES

Ratings for Outcomes, Effectiveness, Efficiency, M&E, I&E Execution	***Sustainability ratings:***	***Relevance ratings***
6: Highly Satisfactory (HS): no shortcomings 5: Satisfactory (S): minor shortcomings 4: Moderately Satisfactory (MS) 3. Moderately Unsatisfactory (MU): significant shortcomings 2. Unsatisfactory (U): major problems 1. Highly Unsatisfactory (HU): severe problems	4. Likely (L): negligible risks to sustainability 3. Moderately Likely (ML):moderate risks 2. Moderately Unlikely (MU): significant risks 1. Unlikely (U): severe risks	2. Relevant (R) 1.Not relevant (NR) ***Impact Ratings:*** 3. Significant (S) 2. Minimal (M) 1. Negligible (N)

ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

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.

Evaluation Consultant Agreement Form[1]

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

Name of Consultant: _____

Name of Consultancy Organization (where relevant)**:** _____

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

Signed at _____ on _____

Signature: _____

[1] www.unevaluation.org/unegcodeofconduct

ANNEX F: EVALUATION REPORT OUTLINE[1]

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
(See: UNDP Editorial Manual[2])

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])

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

[1]The Report length should not exceed 40 pages in total (not including annexes).
[2] UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008
[3] Using a six-point rating scale: 6: Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- 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 G: EVALUATION REPORT CLEARANCE FORM

Evaluation Report Reviewed and Cleared by
UNDP Country Office
Name: _____
Signature: _____ Date: _____
UNDP GEF RTA
Name: _____
Signature: _____ Date: _____

5.2. Terminal Evaluation Mission Itinerary

Dates	Programme
Monday 29, 2013	Commencement
10:00-11:00	Team Leader meeting with RTA in Johannesburg
14.45	Arrival in Maseru of Team Leader
16:00 – 17:00	Brief welcome at UNDP
17:00 – 16:00	Meeting of Terminal Evaluation (TE) team at UNDP
Tuesday 30, 2013	Maseru
08:00 – 09:00	Meeting with LREBRE Project Office
10:00 – 11:30	Meeting with officials of Rural Electrification Unit (REU)
11:30 – 12:30	Meeting with NGOs – Technology for Economic Development
13:00 – 13:30	Meeting with Principal Secretary's Office (PS) - MEMWA
15:30 – 16:30	Meeting with DOE – Technical Team
Wednesday 01, 2013	PUBLIC HOLIDAY
10:00 – 14:00	Working meeting for TE team
14:00 – 16:00	Discussions with LREBRE Project Coordinator
Thursday 02, 2013	Maseru
08:00 – 09:00	Meeting with NEDBANK - Lesotho
09:00 – 10:00	Meeting with LESES & Solar PV Installers
10:00 – 11:00	Meeting with Lesotho Electricity Authority
14:30 – 15:30	Meeting with NUL – Physics Dept.
Friday 03, 2013	Maseru
09:00 – 10:30	Meeting with Lesotho Electricity Company
11:00 – 12:00	Meeting with Appropriate Technology Services
12:00 – 13:00	Meeting with DOE - Director
14:30 – 15:30	Meeting with Head of Renewable Energy – DOE
Monday 06, 2013	Field Visit to Thaba Tseka District
09:00 –	Depart to Thaba Tseka
14:30 – 15:30	Meeting with Admin. Manager – DCS Office
16:00-	Meet beneficiaries – Koma Koma (see summary below)
Tuesday 07, 2013	Field Visit to Mokhotlong District
08:00-	Depart to Mokhotlong
10:00- 13:00	Meet beneficiaries – Linakeng (see summary below)
13:00-	Mokhotlong's journey continues
Wednesday 08, 2013	Field Visit to Mokhotlong District
08:00 – 09:00	Meeting with Admin. Manager – DCS Office

10:00 – 13:00	Meet beneficiaries – Paelaitlhatsoa (see summary below)
14:00 – 19:00	Depart to Maseru
Thursday 09, 2013	Field Visit to Qacha's Nek District
10:00 –	Depart to Qacha's Nek
14:00- 16:00	Meeting with Bethel Technical Institution
Friday 10, 2013	Field Visit to Qacha's Nek District
08:00 – 09:30	Meeting with Admin. Manager – DCS Office
10:00 - 13:00	Meet beneficiaries – Molalanyane (see summary below)
15:00 – 17:00	Meet beneficiaries – Makhoareng (IGAs) (see summary below)
Saturday 11, 2013	Maseru
08:00 – 15:30	Depart to Maseru
16:00- 17:30	Meeting with MOSCET – Installer
Sunday 12, 2013	Rest Day
Monday 13, 2013	Maseru
11:00 – 12:00	Meeting with Head of E&E UNDP
14:30 - 15:30	Meeting with GEF Focal Point
16:00 – 17:00	Meeting with RR UNDP
Tuesday 14, 2013	Maseru
15:00- 16:30	Debriefing meeting at UNDP (UNDP, DOE/REU and LREBRE)
Wednesday 15, 2013	Maseru
11:30	International Consultant depart Lesotho

5.3. List of persons interviewed

(Names of key persons only in attendance at interviews arranged in alphabetical order.)

Name	Institution	Position	Contacts
Adoro Tsiu	LESES	Secretary	ajtsiu@nul.ls
Bonang Moranye	KAYBON	MD	bmoranye@gmail.com, kaybon@tlmail.co.ls
Emmanuel Lesoma	Min. of Energy, Meteorology & Water Affairs	Principal Secretary	22322334, Emmanuel.lesoma@gmail.com
Fusi Notoane	NEDBANK	Acting MD	58870014, fnotoane@nedbank.co.ls
Itumeleng Ramone	DOE	Renewable Energy Officer	62114494, Reo.re@energy.gov.ls
Ivan Yaholnitsky	Bethel Business and Community Development Centre	MD	Ivan.yaholnitsky@gmail.com
Jerry Mokhethi Seitlheko	DOE	Head of Renewable Energy Unit / PSC Member	22322349, Peo.re@energy.gov.ls
Karla Hershey	UNDP	UN Resident	Karla.hershey@one.un.org

		Representative	
Khotso Mosito	MOSCET	MD	info@moscet.co.ls
Leloko Mokhutsoane	REU	Project Manager / PSC Member	58852387, Projectmanager@reu.gov.ls
Lineo Mdee	UNDP	Head of E & E Unit / PSC Member	Lineo.mdee@undp.org
Lipolelo Tau	LREBRE- UNDP	Project Coordinator	62133550, m.tau@reu.gov.ls, lipolelotau@ymail.com,
Lucas Black	UNDP	Regional Technical Advisor	+27718744893, lucas.black@undp.org
M. Hoohlo	LEC	MD	22312236, md@lec.co.ls
M. Motsuikha	LEC	Chief Engineer	22312236
Malikopo Malataliana	Local Government	Admin. Manager DCS Office – Thaba Tseka / PSC Member	59111250, 22900164
Mantopi Lebofa	Technology for Economic Development (TED)	Manager / PSC Member – Representative of Lesotho Council of NGOs	mantopi@yahoo.com
Mofota Phatela	Local Government	Admin. Manager DCS Office – Qacha's Nek / PSC Member	63292204, 22950270
Molleloa Mahlatsi	Local Government	Human Resource Manager DCS Office – Mokhotlong / PSC Member	62096508, 22920496
Monica Moeko	LEC	Director of Projects	22312236
Monti Ntlopo	LEA	Electrical Engineer	22312479, mntlopo@lea.org.ls
Palesa Malataliana	DOE	Technical Officer	58948817, Ta.re@energy.gov.ls
Pompo Pompo	LESES	Executive Committee member	58087281, 22317353
Seriti Phate	TCC	MD	lsphate2010@hotmail.com
Stanley Motsamai Damane	Min. of Tourism, Environment & Culture	Director – GEF Focal Point	22311767 62000010 stanleydamane@hotmal.com
Thabang Phuroe	DOE	Director	director@energy.gov.ls
Thale Seutloali	ATS	Electrical Engineer	63097135
Thuso Ntlama	LEA	Electrical Engineer	22312479
Tlalinyana Ramone	DOE	Electrical Engineer	Tramone7@mail.com

A detailed transcript of each interview was prepared and is available separately. Attempts were made to engage other stakeholders but several were not available for interview during the period of the mission. These include:

- World Bank Country Manager
- Department of Rural Water Supplies
- Standard Bank Lesotho
- PostBank Lesotho
- Lerotholi Polytechnic
- Ministry of Educaton and Training, Technical and Vocational Training (TVD)
- Melissa Jakola, LREBRE M&E Specialist 2008-2010
- Palesa Motleleng, LREBRE M&E Specialist 2011-2013

- Mokitlane Lepheane, LREBRE Project Adminisrator

5.4. Questionnaire used

116. Typically the Team Leader would commence the introductions except in the case were the interviewee was unlikely to speak English in which case the National Consultant would run the interview. In all cases the following introduction was used:

We are (insert name here) and (insert name here) and are Independent Consultants here to learn from you about your experience with the LREBRE project. We would like to have free and open discussion with you and value free and frank opinion so as to help us to learn what went correctly, effectively and what did not go well. We are not evaluating the performance of any particular individuals but instead wish to focus on the experience of the project overall and how the experience was for you.

Whatever you share with us today might be used in a report we are writing but no reference will be made to the people who made the comments. Your input will be confidential.

Our meeting has nothing to do with any future project. We are only consultants who have been hired to evaluate how well the LREBRE project did and hopefully this will help to improve future projects in the country. We have no authority to decide if there will be any future project.

Do you know about this project? Is so, how were you involved? When did you first get involved?

Following from the introduction the following questionnaires provided a flexible yet targeted structure for interviews. In some cases all questions were asked but in others, especially those where the interviewee had a very specific role, only those applicable to the person were asked. The TE team ran the interview in the manner of an investigation rather then that of a survey and consequently would drill down with secondary follow-up questions (not listed here) as key issues emerged.

A) Guidance used for participating villagers, IGA owners, and residents/staff in Business Centers

1. Before getting involved in the project did the project tell you how it would benefit you and what were your obligations?
2. Did you receive what you expected from the project? If not, could you elaborate?
3. What has been your experience of installation, operation and maintenance of the solar systems?
4. If you had problems, have you received any help or support to overcome these problems?
5. When you compare the situation today to before the project, how have you or the community benefitted from the project?
6. What other changes have occurred as a consequence of your solar PV system?
7. From your experience do you think solar is a good option for rural people?
8. If you have a problem with your system in the future do you know whom to contact and how to get the problem fixed? If so, who is that?
9. What factors needs to be in place to ensure the system works for you?
10. Was this amount charged by the project fair and reasonable?
11. How much did you pay for your system?
12. If you didn't pay all the amount owing, why was this the case?
13. How do you plan to pay for replacement parts in the future?

B) Guidance used for participating solar suppliers and installers

1. Before getting involved in the project did the project tell you what it was planning to do and how it would benefit you?
2. Did you receive what you expected from the project? If not, could you elaborate?
3. What has been your experience of supply, installation, operation and maintenance of the solar systems?
4. What training was given to you by the project?
5. Did the training effect your business?
6. Are solar businesses doing anything differently today compared to before the project as a result of the project?
7. Has the project help to develop the market for solar PV in Lesotho? Is this the case for both inside and outside of the project areas?
8. Has the project made it easier for you to get finance to expand your renewable energy business?
9. Is the solar industry stronger as a result of the project? If so, how and why?

5.5. Summary of field visits

In addition to the interviews undertaken in Maseru and with the District Councilors, five participating villages and one business center, being two sites in each of the three target Districts, were visited. This also included 3 IGAs. A summary of the visit findings is included here although a detailed transcript was prepared for each interview and site inspection and this is available separately.

These sites were selected by the TE team in discussions with the LREBRE project team in order to provide an overview of the three districts, the impact of different installers, and the changes to the systems during the various phases of the project. The evaluators meet with the participating beneficiaries of the project during the field visits but separate from project staff and their institutions. These were typically members of the community solar PV committees and other participants. Prior to meeting with villagers the normal protocol of briefing the chief was observed.

Monday, 6 May 2013

1. 3.30pm Meeting with beneficiaries in Komakoma Village, Tsaba Tseke District

- The SPVC was established in 2010 and deposits were collected 7 May 2010. All the systems were installed before October 2010, and included 1-battery design. The installers returned 1 time only to make some repairs and collect fees. The DoE staff did commissioning inspection on 15 houses only (they only do a sample). At this time batteries had already started to fail however these were not repaired. The DoE returned in 2011 and gave households the option to convert lighting to DC. In one case owner was away and DOE did conversion anyway without asking him.
- Residents claimed more than half the systems no longer worked however, due to late time, we could only visit 4 households and these were all in reasonable order. In all cases systems do not work as well as when installed after DC conversions. They now get 2-4 hrs light whereas before went all night.
- The SPVC and households did not know to whom they should report problems. They had tried calling the supplier soon after installation and several times subsequently. They were told the supplier would come to visit but this did not happen. They stopped calling the supplier when DoE told them that the suppliers' contract had expired.

- Local technicians were trained but can only do simple things - changing bulbs etc. Supplier said they should be paid but households do not pay them. They did not know where to obtain replacement DC bulbs.
- Installations looked to be of reasonable quality with conduit and good positioning. Some showed problems with water ingress and many had blown globes and were unable to locate replacements.
- Upon inspection of the SPVC repayment book it was evident that 60 households paid deposits of R150 on 7 May 2010. Next re-payments were 8 Oct 2010 and 53 households paid different rates R50-R200. The 2nd repayments 28 April 2011 were again various amounts, but only 27 HH paid During 2011/12 only a few households paid on various dates with last repayment being on 12 May 2012 and only 2 people paid out of 60. All households are now reluctant to pay as systems are not working and they heard that other villages got their systems for free (NB. AAP project gave pre-wired systems away with efficient stoves)
- They do not have an account but have not deposited the money. They did not know where to get the LREBRE account number and now that suppliers has gone they have no idea who to contact.
- They like Solar very much and consider it a good option as long as Government maintains the system.

Tuesday 7 May 2013

10am Visit to Linakeng Village, Tsaba Tseke District

- met with SPVC and each person described their experience. We then undertook inspections of some houses. There are 9 systems in this village all installed in April 2009. These are all phase 1 and are 2 battery types mounted on the roof (for metal roofs) or on poles (for thatch roofs). The installer came once to fix a specific problem in 1 house but did not provide any maintenance to other households despite issues.
- DOE came three times - most recently for reconfiguration. Households were briefed on conversion and given choice. Most households chose to convert as they thought it would be better however subsequently the light is dimmer and many bulbs have blown and replacements are not available locally. If these issues were fixed they would still be happy with the systems. They like the DC system as they only have to pull the string to get the light on and do not have to turn on the inverter as well.
- In this village all members had paid R2000 within 1 year of receiving the system. They paid a deposit of R500 and then paid as they were able. Other households also paid similar amounts but these were not selected for installation in phase 1. They waited for subsequent phase but this didn't come. Eventually they were concerned about holding the deposit money (R14000) and so it was reimbursed.
- They tried to open their own account for this money but it was too complicated to do so with the bank. The deposit and repayments for the connected households was transferred to the project account.
- They suggest that R2000 was a fair price and they would even be prepared to pay more provided the systems were maintained. They suggested they would even pay R50/month for maintenance however regular repayments are difficult, as they do not have money all the time.
- Most use inverter for charging cell phones and radio. Occasionally some may watch TV but this is only viable for a short time as battery goes flat.
- Inspection of the households showed that the main problems experience were failure of inverters. Since the DC conversion, the failure of the DC bulbs has been a major issue for most households concerned. A system has been struck by lightening. In all houses the lights

had been reconfigured to connect directly to the battery. They could have used the load output on the controller that incorporates a current overload protection.

- In all cases the DC conversion did not upgrade the long wire runs that may lead to excessive voltage drop. This may be cause of failed bulbs where wire runs are long. In conversion 11 W DC bulbs were provided were originals were 15W Ac. This explains complaints regarding low intensity.

3pm Visit to Malefiloane Business Center, Moghotlong District

- The business center includes a number of social services and businesses. The LREBRE project provided solar PV to the following: 2 shops, Appropriate Technology Services (ATS) offices, Agriculture and Food Security Resource Center (AFRSRC) and 2 staff houses, High school. Other buildings including clinic and health staff houses, ATS staff houses, and various workshops and sheds were not provided with solar PV. The clinic was approached by declined as they were undergoing reconstruction at the time with support of MCC. The new building is now almost completed.
- The systems were installed in 2010 and are 2 battery, 65W systems. Typically 5 lights and inverter were provided. DOE came in December 2012 to reconfigure but it appears that most were not reconfigured. DOE provided new bulbs as required.
- One shop system was no longer in place and has been removed prior to the current owner. The original owner died 2 years ago and the new tenants do not know where the PV system has gone. The wiring and fixtures remain intact. The shop has purchased their own solar system from Durban and paid R2500 for 80W panel and R500 for regulator and inverter combo system. The other shop has a fully functional system and had replaced the failed inverter themselves. The systems were configured to provided light and cell phone charging and in the second shop it also powered the cash register.
- AT Staff reported that their system was not working and had not worked for a long time
- The AFSRC centre's systems still functions and is used for light and cell phone charging. Lights only work for 1 hour. No one is sure who owns the system and they do not know who to call for maintenance or repairs. The AFSRC staff houses could not be inspected but other staff reported the systems were still working.
- The High School has systems installed in 6 classrooms, library, staffroom, and headmaster's office. They are all standard 63W systems. The systems in library, staff room and headmasters office are still working but classrooms failed after 3 months. Class room systems were repaired when DOE came in 2012 but now only 3 of the 6 classrooms work. They don't use the classrooms or any of the rooms at night and were unsure as to the reason why they received systems for these rooms. Systems in offices and staff room provide power for laptops, radio and cell phone charging during day. They have no computers for the classrooms. They have a generator but no longer need to use it.
- They do not know who owns system or who to call if they have issues.

<u>Wednesday, 8 May 2013</u>

11am Visit to Paeleaitlhatsoa Village, Moghotlong District

- Have 28 systems in 2 localities. Unfortunately most people were in the fields or working on a road project in anticipation of a visit by the Minister. Met with Chief and 3 householders who were all participants in the project.
- The systems were 2 battery all AC systems of the first phase. Very few households have any TV and most used system only for lighting and cell phone charging. The systems were installed in 2008/9 by PowerTech but there were substantial problems due to very poor installation quality and in some cases incomplete installations. The project refused to pay and the contractor

instigated legal action. However the PS instructed the project to pay and many issues were not resolved. The systems worked for less than 1 year with most failing in that period. The project was aware of these issues and commissioned Lesedi PV Systems to rectify issues. This was done in 2010. All systems were corrected with pole mounting of panels, replacement of failed inverters and bulbs.

- In 2012 DOE reconfigured some system to DC lighting although it is evident that this was not completed for all households.
- DOE returned this year to get batteries. Some said they were offered R20 and others were offered R60. The households refused as they did not consider this a sufficient refund. DOE reportedly told them they could get a replacement battery for R1500.
- The demand for solar is high despite issues. People expect the Government to provide cheap systems and they have heard that others get them for free.
- Households stopped paying after a few months (the systems were still working at this time). The reason was the collapse of the SPVC as the repayments were not being deposited in the account and people were not confident in the SPCV. The issues with the SPCV were not rectified and SPCV is not functioning.
- There is general agreement that R2000 is a fair amount and would repay now if systems were maintained. They would also consider a regular repayment. Some said this could be R23/m and other said up to R100/m.
- Upon inspection it was found that most system worked for less than 1 year. Initially worked well and they could occasionally watch TV but inverters failed.
- Initially the panels were installed directly onto the thatch roof and the light was placed in the apex of the ceiling. Some have had to renew roof and so had to dismantle the whole system. The second installer put in a pole mount and reconnected panel.
- Most paid R50 deposit and then several repayments totaling about R100-200 over first few months. They then stopped repaying due to issues with SPVC.
- Many have replaced the failed inverters with cheap chinese made units purchased in Durban.
- It was noted that all systems inspected has a major issue as both the panel connection and the load bypassed the charge controller. The charge controller was only connected to the batteries and therefore only acted as a battery level meter. The owner said this was as initially installed.
- It was also observed in several cases that lone wire runs to the secondary huts of more than 20m had not been upgraded during the reconfiguration to DC. This resulted in weak light and high bulb failure rate probably due to high voltage drop in the wire as wire sizes were not changed during reconfiguration to DC.

<u>Friday May 10, 2013</u>

12pm Visit to Molalanyane Village, Quacha's Nek District

- Met with chief's wife (chief recently passed away), the SPVC chairperson, and several participating householders/SPVC members and then inspected households.
- Total of 26 systems installed of the 1 battery system type in late 2010. Of these 2 systems have had batteries stolen. All other systems still working, although some have lost inverters or bulbs. Most people are only using for light and cellphone charging as none can afford a TV.
- Installer came regularly during first year (almost monthly) and checked and repaired as needed. He also collected repayments and consequently almost half the households paid R50 on a regular basis until May/June 2011 when the installer stopped coming.
- DOE also visited for commissioning and reconfiguration although only those systems where the inverter had failed were reconfigured (less than 5). Project team also visited regularly.

They came to collect batteries but only 1 accepted their offer all others consider refund too low.

- Main problem now is lack of access to DC globes as they are not available locally.

- Some said that R2000 is too high and don't want to pay for solar PV. The do not know who to contact in the event of a technical problem and have no number other than the installer, but he is not obliged to attend. They have had no contact with District or Community Council regarding the solar PV systems. They have no confidence that Councillors will help them with this matter.
- Inspection showed that these systems were well installed and utilised good quality components (Steca regulator, Excis battery, Setsolar Inverters). This has contributed to their comparatively good performance.
- In some cases long cable runs were used which means only AC system is suited. In cases where inverter failed some had purchased low quality units (R350) from Durban. They did not know where to obtain DC globes.

4pm Visit to "Jabulani Nonke" Shop (IGA) in Makhoareng Village, Quacha's Nek District

- Met with Mrs M. Ramatebele who rents the building to run her business since April 2012 although the business has been here since 1999.
- This shop was included as an Income Generating Activity (IGA) under the project and retailed general food items and was a Bar providing beer and spirits. The solar PV system was a 5x63W systems with 2 batteries and a 600W inverter. Good quality components were used and the system was well installed with separate switchboard including Residual Current Device for earth leakage protection and safety. This feature was not seen in the household Ac systems.
- The system powers lights, fridge (summer only) and sound system and enables the bar to provide cold drinks and to open into the evening. This has meant a dramatic improvement to her business and she is very happy with the system
- She was not willing to tell us how much she paid.

5pm Visit to Makhoareng Village, Quacha's Nek District

- Could not find SPVC representative so met with households individually and inspected installations. Systems installed in 2010/11 and are 1-battery systems. These worked well although some problems with inverters, typically due to misuse. All households used for light and cell phone charging although this is an able village and there was evidence of large TVs that may have contributed to inverter failure. Some have purchased cheap inverters from Durban to replace.
- Most households paid deposit of R50 but were not able/willing to confirm any further payments. SPVC has not been effective and was only active for as long as installer was visiting. In all cases system performance has declined and people are now concerned that systems may not work for much longer. They know that a new battery costs R1500 and that they must buy these but they are unsure where to get them other than in Maseru or Durban.

5.6. List of documents reviewed

LREBRE Documents

- Project Document, October 2006
- Strategic Work plan 2007-2011
- Annual Work plans from 2008 to 2013
- Annual Reports from 2007 to 2012
- Annual Project Implementation Report (PIR) for 2009 to 2012
- Quarterly Reports including Financial Reports for Q3, Q4 2007; Q1, Q2, Q3 2008;Q1-4 2009; Q1-4 2010; Q1, Q3, Q4 2011; Q1-4, 2012
- Mid-term Evaluation Report May 2011
- Exit Strategy, Sept 2011
- Minutes of PSC meetings 2007-2013 (various, incomplete)
- Draft Project Review Report, (prepared by Project Coordinator)
- Inception Report, 2007
- Financial Audit Reports 2008 to 2011
- Various reports on workshops, training, conferences, study tours
- Various communications and awareness raising materials

RTA and Consultant Reports and Correspondence

- (note on) Credit Guarantee Scheme for LREBRE analysis
- (note on) Deviation from the Project Document April 2009
- Installation Price Analysis per system
- Letter from UNDP RR (A Eziakonwa-Onochie) to RTA (A. Salau), Sept 2008
- Note to File from UNDP RR on meeting with DoE, Nov 2008
- Note to File from UNDP on meeting with PS, Nov 2008
- Note to File from RTA (J Akker) visit to project, Feb. 2009
- Note to file from RTA (L Black) mission report August 2010
- LREBRE, Final Report, Financing Mechanisms Options for Solar PV in Lesotho, Oct. 2005
- LREBRE, Determination of Levels of Installments for Solar Electricity, Jan 2010
- LREBRE, Final Report, Baseline Study for three targeted districts, August 2008

- LREBRE, Final Report, Countrywide Baseline Study on PV Installations, July 2010 (prepared by external consultants)

GEF and UNDP Frameworks

- Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects - Project-Level Evaluation, UNDP Evaluation Office, 2012
- United Nations Development Assistance Framework (UNDAF) 2008-2012
- UNDP Lesotho, Country Programme Action Plan (CPAP) 2008-2012
- UNDP Country Programme Document for Lesotho (CPD) 2008-2012
- GEF Focal Area Strategy Paper 2007

Various other projects and studies

- B.Taele et al., "Grid electrification challenges, photovoltaic electrification progress and energy sustainability in Lesotho", v16, p273-980, Renewable and Sustainable Energy Reviews, 2012
- Final Evaluation Report, Africa Adaptation Programme (AAP) in Lesotho, Feb 2013
- Lesotho: Renewable Energy Policy (LesREP) Report, Feb 2013 (prepared by AAP)

5.7. Evaluation Question Matrix

The following matrix is based on the key evaluation questions provided in the TOR (see Anex/Section 5.1) and draws on the model matrix[1] to suite the LREBRE evaluation.

Evaluation Criteria	Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the UNFCCC and GEF focal areas, and to the environment and development priorities at the local, regional and national levels?				
Is the project relevant to UNFCCC and other international convention objectives?	• How does the project support the objectives of the UNFCCC? • Does the project support other international conventions, such as the • Carpathian Convention, and the UNFCCC?	• UNFCCC priorities and areas of work incorporated in project design • Level of implementation of UNFCCC in Lesotho, and contribution of the project • Priorities and areas of work of other conventions incorporated in project design • Extent to which the project is actually implemented in line with incremental cost argument	• Project documents • National policies and strategies to implement the UNFCCC, other international conventions, or related to environment more generally • UNFCCC and other international convention web sites	• Documents analyses • Interviews with project team, UNDP and other partners
Is the project relevant the GEF climate change focal area?	• How does the project support the GEF climate change focal area and strategic priorities	• Existence of a clear relationship between the project objectives and GEF climate change focal area	• Project documents • GEF focal areas strategies and documents	• Documents analyses • GEF website • Interviews with UNDP and project team
Is the project relevant to Lesotho's environment and sustainable development objectives?	• How does the project support the environment and sustainable development objectives of Lesotho? • Is the project country driven? • What was the level of	• Degree to which the project supports national environmental objectives • Degree of coherence between the project and nationals priorities, policies and	• Project documents • National policies and strategies • Key project partners	• Documents analyses • Interviews with UNDP and project partners

[1] Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects - Project-Level Evaluation, UNDP Evaluation Office, 2012

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	stakeholder participation in project design? • What was the level of stakeholder ownership in implementation? • Does the project adequately take into account the national realities, both in terms of institutional and policy framework in its design and its implementation?	strategies • Appreciation from national stakeholders with respect to adequacy of project design and implementation to national realities and existing capacities • Level of involvement of government officials and other partners in the project design process • Coherence between needs expressed by national stakeholders and UNDP-GEF criteria		
Is the project addressing the needs of target beneficiaries at the local and regional levels?	• How does the project support the needs of relevant stakeholders? • Has the implementation of the project been inclusive of all relevant stakeholders? • Were local beneficiaries and stakeholders adequately involved in project design and implementation?	• Strength of the link between expected results from the project and the needs of relevant stakeholders • Degree of involvement and inclusiveness of stakeholders in project design and implementation	• Project partners and stakeholders • Needs assessment studies • Project documents	• Document analysis • Interviews with relevant stakeholders
Is the project internally coherent in its design?	• Are there logical linkages between expected results of the project (log frame) and the project design (in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc)? • Is the length of the project sufficient to achieve project outcomes?	• Level of coherence between project expected results and project design internal logic • Level of coherence between project design and project implementation approach	• Program and project documents • Key project stakeholders	• Document analysis • Key interviews
How is the project relevant	• Does the GEF funding support	• Degree to which program was	• Documents from other donor	• Documents analyses

Evaluation Criteria	Questions	Indicators	Sources	Methodology
with respect to other donor-supported activities?	activities and objectives not addressed by other donors? • How do GEF-funds help to fill gaps (or give additional stimulus) that are necessary but are not covered by other donors? • Is there coordination and complementarity between donors?	coherent and complementary to other donor programming nationally and regionally	supported activities • Other donor representatives • Project documents	• Interviews with project partners and relevant stakeholders
Does the project provide relevant lessons and experiences for other similar projects in the future?	• Has the experience of the project provided relevant lessons for other future projects targeted at similar objectives?	• Degree to which lessons are evident and have the potential to be recorded and disseminated	• Data collected throughout evaluation	• Data analysis
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?				
Has the project been effective in achieving the expected outcomes and objectives?	• Has the project been effective in achieving its expected outcomes? 1. Institutional capacity in place to assess, plan and implement priority renewable energy programs 2. Rural villagers capacity and incentives for and participation in promoting the use of solar home systems is improved 3. Monitoring and evaluation program for the LREBRE Solar PV 4. National Energy policy incorporates project experience	• See indicators in project document results framework and log frame	• Project documents • Project team and relevant stakeholders • Data reported in project annual and quarterly reports	• Documents analysis • Interviews with project team • Interviews with relevant stakeholders

Evaluation Criteria	Questions	Indicators	Sources	Methodology
How is risk and risk mitigation being managed?	• How well are risks, assumptions and impact drivers being managed? • What was the quality of risk mitigation strategies developed? Were these sufficient? • Are there clear strategies for risk mitigation related with long-term sustainability of the project?	• Completeness of risk identification and assumptions during project planning and design • Quality of existing information systems in place to identify emerging risks and other issues • Quality of risk mitigations strategies developed and followed	• Project documents • UNDP, project team, and relevant stakeholders	• Document analysis • Interviews
What lessons can be drawn regarding effectiveness for other similar projects in the future?	• What lessons have been learned from the project regarding achievement of outcomes? • What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results?	• Degree to which lessons are evident and have been recorded	• Data collected throughout evaluation	• Data analysis
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?				
Was project support provided in an efficient way?	• Was adaptive management used or needed to ensure efficient resource use? • Did the project logical framework and work plans and any changes made to them use as management tools during implementation? • Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information? • Were progress reports	• Availability and quality of financial and progress reports • Timeliness and adequacy of reporting provided • Level of discrepancy between planned and utilized financial expenditures • Planned vs. actual funds leveraged • Cost in view of results achieved compared to costs of similar projects from other organizations • Adequacy of project choices in view of existing context,	• Project documents and evaluations • UNDP • Project team	• Document analysis • Key interviews

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	produced accurately, timely and responded to reporting requirements including adaptive management changes? • Was project implementation as cost effective as originally proposed (planned vs. actual) • Did the leveraging of funds (co-financing) happen as planned? • Were financial resources utilized efficiently? Could financial resources have been used more efficiently? • Was procurement carried out in a manner making efficient use of project resources? • How was results-based management used during project implementation?	infrastructure and cost • Quality of results-based management reporting (progress reporting, monitoring and evaluation) • Occurrence of change in project design/ implementation approach (i.e. restructuring) when needed to improve project efficiency • Cost associated with delivery mechanism and management structure compare to alternatives		
How efficient are partnership arrangements for the project?	• To what extent partnerships/linkages between institutions/ organizations were encouraged and supported? • Which partnerships/linkages were facilitated? Which ones can be considered sustainable? • What was the level of efficiency of cooperation and collaboration arrangements? • Which methods were successful or not and why?	• Specific activities conducted to support the development of cooperative arrangements between partners, • Examples of supported partnerships • Evidence that particular partnerships/linkages will be sustained • Types/quality of partnership cooperation methods utilized	• Project documents and evaluations • Project partners and relevant stakeholders	• Document analysis • Interviews
Did the project efficiently utilize local capacity in implementation?	• Was an appropriate balance struck between utilization of international expertise as well	• Proportion of expertise utilized from international experts compared to national	• Project documents and evaluations • UNDP	• Document analysis • Interviews

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	as local capacity? • Did the project take into account local capacity in design and implementation of the project? • Was there an effective collaboration between institutions responsible for implementing the project?	experts • Number/quality of analyses done to assess local capacity potential and absorptive capacity	• Beneficiaries	
What lessons can be drawn regarding efficiency for other similar projects in the future?	• What lessons can be learnt from the project regarding efficiency? • How could the project have more efficiently carried out implementation (in terms of management structures and procedures, partnerships arrangements etc…)? • What changes could have been made (if any) to the project in order to improve its efficiency?	• Degree to which lessons are evident and have been recorded	• Data collected throughout evaluation	• Data analysis
Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?				
Are sustainability issues adequately integrated in project design?	• Were sustainability issues integrated into the design and implementation of the project?	• Evidence / quality of sustainability strategy • Evidence / quality of steps taken to ensure sustainability	• Project documents and evaluations • UNDP and project personnel and project partners • Beneficiaries	• Document analysis • Interviews
Financial sustainability	• Did the project adequately address financial and economic sustainability issues? • Are the recurrent costs after project completion sustainable?	• Level and source of future financial support to be provided to relevant sectors and activities after project ends • Evidence of commitments from international partners,	• Project documents and evaluations • UNDP and project personnel and project partners • Beneficiaries	• Document analysis • Interviews

Evaluation Criteria	Questions	Indicators	Sources	Methodology
		governments or other stakeholders to financially support relevant sectors of activities after project end • Level of recurrent costs after completion of project and funding sources for those recurrent costs		
Institutional and governance sustainability	• Were the results of efforts made during the project implementation period well assimilated by organizations and their internal systems and procedures? • Is there evidence that project partners will continue their activities beyond project support? • What degree is there of local ownership of initiatives and results? • Were laws, policies and frameworks addressed through the project, in order to address sustainability of key initiatives and reforms? • • What is the level of political commitment to build on the results of • the project? • • Are there policies or practices in place that create perverse • incentives that would negatively affect long-term benefits?	• Degree to which project activities and results have been taken over by local counterparts or institutions/organizations • Level of financial support to be provided to relevant sectors and activities by in-country actors after project end • Efforts to support the development of relevant laws and policies • State of enforcement and law making capacity • Evidences of commitment by government enactment of laws and resource allocation to priorities	• Project documents and evaluations • UNDP and project personnel and project partners • Beneficiaries	• Document analysis • Interviews
Social-economic sustainability	• Did the project contribute to	• Example of contributions to	• Project documents and	• Interviews

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	key building blocks for socio-economic sustainability? • Did the project contribute to local stakeholders' acceptance of effective agro-environmental schemes? • Are there adequate market incentives to ensure sustained environmental and economic benefits achieved through the project?	sustainable socioeconomic changes in support of national development goals and strategies • Examples of contributions to sustainable socioeconomic changes in support of the objectives of the UNCBD and other conventions	evaluations • UNDP, project personnel and project partners • Beneficiaries	• Documentation review
Environmental sustainability	• Are there risks to the environmental benefits that were created or that are expected to occur? • Are there long-term environmental threats that have not been addressed by the project? • Have any new environmental threats emerged in the project's lifetime?	• Evidence of potential threats such as infrastructure development • Assessment of unaddressed or emerging threats	• Project documents and evaluations • Threat assessments • Government documents or other external published information • UNDP, project personnel and project partners • Beneficiaries	• Interviews • Documentation review
Individual, institutional and systemic capacity development	• Is the capacity in place at the regional, national and local levels adequate to ensure sustainability of the results achieved to date? • Were the necessary related capacities for lawmaking and enforcement built?	• Elements in place in those different management functions, at the appropriate levels (regional, national and local) in terms of adequate structures, strategies, systems, skills, incentives and interrelationships with other key actors	• Project documents • UNDP, project personnel and project partners • Beneficiaries • Capacity assessments available, if any	• Interviews • Documentation review
Replication	• Were project activities and results replicated nationally and / or scaled up? • What was the project contribution to replication or scaling up actively or	• Number/quality of replicated initiatives • Number/quality of replicated innovative initiatives • Scale of additional investment leveraged	• Other donor programming documents • Beneficiaries • UNDP, project personnel and project partners	• Document analysis • Interviews

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	passively promoted? • Were project activities and results replicated or scaled-up in other countries?			
Challenges to sustainability of the project	• What are the main challenges that may hinder sustainability of efforts? • Have any of these been addressed through project management? • What could be the possible measures to further contribute to the sustainability of efforts achieved with the project?	• Challenges in view of building blocks of sustainability as presented above • Recent changes which may present new challenges to the project • Education strategy and partnership with school, education institutions etc.	• Project documents and evaluations • Beneficiaries • UNDP, project personnel and project partners	• Document analysis • Interviews
Future directions for sustainability and catalytic role	• Which areas/arrangements under the project show the strongest potential for lasting long-term results? • What are the key challenges and obstacles to the sustainability of results of the project initiatives that must be directly and quickly addressed? • How can the experience and good project practices influence the strategies for use of renewable energy in particular solar energy • Are national decision-making institutions prepared to continue improving their strategy for effective promotion on the use of solar energy?	• Degree to which project elements feature in strategy and vision.	• Data collected throughout evaluation	• Data analysis
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?				

Evaluation Criteria	Questions	Indicators	Sources	Methodology
How is the project effective in achieving its long-term objectives?	• Will the project achieve its overall objective to reduce "Lesotho's energy related CO2 emissions by promoting renewable and low GHG technologies as a substitute for fossil fuels utilized in rural areas of the country? • What barriers remain that hamper the wide-scale implementation of renewable energy technologies? • Are there unanticipated results achieved or contributed to by the project?	• Change in capacity: o To pool/mobilize resources o For related policy making and strategic planning o For implementation of related laws and strategies through adequate institutional frameworks and their maintenance • Change in use and implementation of sustainable livelihoods • Change in the number and strength of barriers such as: o Knowledge about climate change and sustainable use of energy resources, and economic incentives in these areas o Cross-institutional coordination and inter-sectoral dialogue o Knowledge of climate change and sustainable use practices by end users o Coordination of policy and legal instrument incorporating new and renewable energy strategies	• Project documents • Key stakeholders • Monitoring data	• Documents analysis • Meetings with UNDP, project team and project partners • Interviews with project beneficiaries and other stakeholders
How is the project effective in achieving the objectives of the UNFCCC?	• What are the impacts or likely impacts of the project? o On the local environment; o On economic well-being; o On other socio-economic issues.	• Provide specific examples of impacts at household and village levels, as relevant	• Project documents • UNFCCC documents • Key Stakeholders • Monitoring data	• Data analysis • Interviews with key stakeholders
Future directions for results	• How can the project build on its successes and learn from its	•	• Data collected throughout evaluation	• Data analysis

Evaluation Criteria	Questions	Indicators	Sources	Methodology
	weaknesses in order to enhance the potential for impact of ongoing and future initiatives?			

5.8. Evaluation Consultant Agreement Forms

EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

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.

Evaluation Consultant Agreement Form[1]

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

Name of Consultant: _____Andrew Mears_____

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

Signed at _Carey Bay NSW AUSTRALIA__ on __28 April 2013_____

Signature: _____  _____

[1] www.unevaluation.org/unegcodeofconduct

EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

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.

Evaluation Consultant Agreement Form[1]

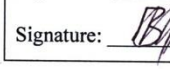
Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: **Dr. Molibeli Taele**

Name of Consultancy Organization (where relevant): _____

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

Signed at **Maseru (Lesotho)** on **28th May 2013**

Signature: 

[1]www.unevaluation.org/unegcodeofconduct

5.9. Estimation of Emission Reduction

117. The initial CO2 emission reduction anticipated for the targeted 5,000 PV systems in the three districts was 25,000 tonnes over a 10-year period. However this analysis was in error and a figure of 11520 tonnes is anticipated. The analysis assumed systems were fully functional and delivered electric light resulting in an average saving of 6 liters of paraffin per month per customer. The analysis assumed that CO2 emissions averted per liter of paraffin were 3.2kg (based in international emission factor data). Given the actual installed figures of 1537 PV systems the maximum emission reductions anticipated will therefore be 3541 tonnes over 10 years.

118. However, this estimate must be used cautiously as the underlying assumptions of this analysis are untested. The baseline survey of the project did not assess the paraffin used for lighting and no subsequent survey was undertaken to assess the changes in paraffin usage arising as a consequence of the project. There is also no comprehensive data on the status of systems and it was evident to the TE team that many systems are not functioning. The TE team has therefore deferred estimating emission reductions, as an estimate is not feasible.