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Global Environment Facility (GEF)

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Ministry of Energy and Meteorology (MEM)

Mid-term Review (MTR) report

Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress

(GEF Project ID: 5742 – UNDP PIMS ID 5367)

LESOTHO

GEF-5; GEF Climate Change Mitigation; CCM-3: Renewable Energy – Promote investment in renewable energy technologies

Evaluation timeframe: Oct 2016 - present

Final version

27 December 2019

Disclaimer

Please note that the analysis and recommendations of this report do not necessarily reflect the views of the United Nations Development Programme, its Executive Board or the United Nations Member States. This publication reflects the views of its authors.

Acknowledgements

The authors wish to thank UNDP Lesotho, the Department of Energy, and the stakeholders met during the review mission for the assistance and information provided.

ABBREVIATIONS AND ACRONYMS

ACE	African Clean Energy
AfDB	African Development Bank
ATS	Appropriate Technologies Services
BBCDC	Bethel Business and Community Development Centre
BoS	Bureau of Statistics
CAA	Country Action Agenda
CIF	Climate Investment Funds
CPD	Country Programme Document
CTA	Chief Technical Advisor
DoE	Department of Energy (of MEM)
DSQA	Department of Standards and Quality Assurance
EA	Executing Agency
EAF	Energy Access Fund
EoP	End of Project
ERC	Energy Research Centre (of NUL)
ESC	Energy 'Shopping' Centres
EU	European Union
EUDL	European Union Delegation to Lesotho
FREA	Facility of Rural Energy Access
FSS	Financial Support Scheme
GEF	Global Environment Facility
IA	Implementing Agency
IAEA	International Atomic Energy Agency
IP	Investment Prospectus
IPP	Independent Power Producer
kWh	kilowatt-hour
LAC	Local Appraisal Committee
LCOE	Levelised Cost of Energy
LEC	Lesotho Electricity Company
LEMP	Lesotho Electrification Masterplan
LEWA	Lesotho Electricity and Water Authority
LHDA	Lesotho Highlands Development Authority
LPG	Liquid Propane Gas
LREBRE	Lesotho Renewable Energy-Based Rural Electrification Project
LSES	Lesotho Solar Energy Society
M	Maloti
M&E	Monitoring and evaluation
MDP	Ministry of Development Planning
MEM	Ministry of Energy and Meteorology
MoF	Ministry of Finance
MW	Megawatt
MTEC	Ministry of Tourism, Environment, and Culture
MTR	Mid-Term Review
NDC	Nationally Determined Contributions
NUL	National University of Lesotho
NSDP	National Strategic Development Plan
PA	Project Assistant
PBI	Performance-Based Incentive
PIMS	UNDP-GEF Project Information Management System
PM	Project Manager
PIR	Project Implementation Review

PPA	Power Purchase Agreement
PSC	Project Steering Committee
PSIC	Public Sector Investment Committee
PV	Photovoltaic
QoSSS	Quality of Service and Supply Standards
RE	Renewable Energy
RET	Renewable Energy Technology
REU	Rural Electrification Unit
REUG	RE User Groups
SAPP	Southern African Power Pool
SE4All	Sustainable Energy for All
SECS	Sector Energy Consumption Survey
SHS	Solar Home System
SREP	Scaling-up Renewable Energy Programme
SUG	Stove User Groups
TED	Technology for Economic Development
ToR	Terms of Reference
UAF	Universal Access Fund
UNCDF	United Nations Capital Development Fund
UNDAF	UN Development Assistance Framework
UNDP	United Nations Development Programme
USD	United States dollar
WB	World Bank

Note: The *Loti* is the currency of Lesotho, pegged to the South African rand on a 1:1 basis through the Common Monetary Area, the monetary union between South Africa, Namibia, Lesotho and Eswatini, expressed by the symbol “LSL”. However, the symbol “M” (standing for the plural “Maloti”) is more frequently used in reports (and even in Government documents) and this reports has chosen to use the symbol “M”.

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	3
TABLE OF CONTENTS	5
LIST OF BOXES	7
EXECUTIVE SUMMARY	8
1. INTRODUCTION.....	14
1.1 PURPOSE OF THE MID-TERM REVIEW (MTR) AND OBJECTIVES.....	14
1.1.1 <i>Background</i>	14
1.1.2 <i>Purpose of the MTR</i>	14
1.2 SCOPE AND METHODOLOGY	14
1.3 STRUCTURE OF THE MTR REPORT	15
2. PROJECT DESCRIPTION AND BACKGROUND	17
2.1 CONTEXT AND PROBLEMS THAT THE PROJECT SOUGHT TO ADDRESS	17
2.2 PROJECT DESCRIPTION AND STRATEGY	24
2.2.1 <i>Objectives of the project; expected results and established indicators</i>	24
2.2.2 <i>Project start and duration; main project partners and stakeholders</i>	26
2.2.3 <i>Project implementation arrangements</i>	28
3. FINDINGS: PROJECT DESIGN AND STRATEGY.....	29
3.1 RELEVANCE AND DESIGN.....	29
3.2 CONCEPTUALIZATION AND RESULTS FRAMEWORK	30
3.3 RATINGS FOR PROJECT DESIGN	32
4. FINDINGS: PROGRESS TOWARDS OUTCOMES	33
4.1 INTRODUCTION.....	33
4.2 PROGRESS IN ACHIEVING OUTPUTS AND OUTCOMES	33
4.2.1 <i>Component 2 Baseline energy data collection and monitoring for SE4All</i>	36
4.2.2 <i>Component 3 Successful establishment of a village-based energy service delivery model for replication</i>	37
4.2.3 <i>Component 4 Outreach programme and dissemination of results</i>	42
4.3 CLIMATE CHANGE AND OTHER IMPACTS	45
4.3.1 <i>Emission reductions</i>	45
4.3.2 <i>Gender and socio-economic impacts</i>	45
4.3.3 <i>Ratings of progress towards the objective and outcomes</i>	46
5. FINDINGS: PROJECT IMPLEMENTATION	47
5.1 IMPLEMENTATION AND MANAGEMENT.....	47
5.1.1 <i>Management arrangements and adaptive management</i>	47
5.1.2 <i>Monitoring and evaluation; reporting</i>	48
5.2 STAKEHOLDER INVOLVEMENT AND COMMUNICATION	49
5.3 PROJECT FINANCE AND CO-FINANCING.....	50
5.4 RATINGS OF PROJECT M&E AND PROJECT IMPLEMENTATION/EXECUTION	51
6. FINDINGS: SUSTAINABILITY.....	53
7. CONCLUSIONS AND RECOMMENDATIONS.....	59

7.1	CONCLUSIONS	59
7.2	RECOMMENDATIONS	60
7.3	LESSONS LEARNT	64
ANNEX A.	TERMS OF REFERENCE (TOR)	65
ANNEX B.	ITINERARY OF THE EVALUATION MISSION.....	72
ANNEX C.	LIST OF DOCUMENTS COLLECTED AND REVIEWED.....	73
ANNEX D.	UNCDF CALL FOR PROPOSALS.....	74
ANNEX E.	QUESTIONNAIRE AND EVALUATION MATRIX	77
ANNEX F.	CONSULTANT CODE OF CONDUCT FORM	82
ANNEX G.	ABOUT THE REVIEWERS	83
ANNEX H.	AUDIT TRAIL	84

LIST OF BOXES

Box 1	LESOTHO ENERGY DEMAND AND SUPPLY.....	17
Box 2	ELECTRICITY TARIFFS AND COST OF ELECTRICITY.....	18
Box 3	LESOTHO ELECTRICITY TRANSMISSION NETWORK	18
Box 4	HOUSEHOLD ENERGY CONSUMPTION (WINTER 2017)	19
Box 5	CURRENT ELECTRICITY SECTOR FRAMEWORK	19
Box 6	RELEVANT POLICY, PLANNING AND REGULATIONS	20
Box 7	WHAT ARE ENERGY MINI-GRID SYSTEMS?.....	22
Box 8	SUMMARY OF BARRIERS TO MINI-GRID AND RE DISTRIBUTED TECHNOLOGIES AND DEVELOPMENT PARTNER PROJECTS	23
Box 9	SUMMARY OF THE PROJECT OBJECTIVE, OUTCOMES, AND OUTPUTS	24
Box 10	LIST OF PROJECT PARTNERS AND MAIN STAKEHOLDERS	26
Box 11	LREBRE PROJECT.....	31
Box 12	EVALUATION RATINGS OF PROJECT DESIGN AND FORMULATION.....	32
Box 13	REGULATIONS FOR MINI-GRIDS AND ENERGY CENTRES.....	35
Box 14	EFFICIENT WOOD STOVES	38
Box 15	OVERVIEW OF PROJECT SITES	40
Box 16	CHARACTERISTICS OF THE PROJECT SITES (DESCRIBED IN THE PRE-FEASIBILITY STUDIES)	41
Box 17	DETAILS OF PROJECT SITES AND PROPONENTS SELECTED IN THE CALL FOR PROPOSALS	43
Box 18	SE4ALL PROJECT COMMUNICATION ACTIONS AND TARGET AUDIENCE	44
Box 19	EVALUATION RATINGS OF PROGRESS TOWARDS RESULTS.....	46
Box 20	PLANNED AND DISBURSEMENT, GEF BUDGET.....	50
Box 21	PLANNED AND DISBURSEMENT, GEF BUDGET.....	51
Box 22	EVALUATION RATINGS OF PROJECT IMPLEMENTATION AND EXECUTION.....	52
Box 23	NEW INSTITUTIONAL SETUP PROPOSED IN THE ENERGY POLICY 2015-2025	54
Box 24	CHARACTERISTICS OF CONSUMERS AND TYPICAL ELECTRICAL EQUIPMENT IN MINI-GRID SYSTEMS	55
Box 25	COST OF MINI-GRIDS, TARIFFS AND ABILITY/WILLINGNESS TO PAY (ATP/WTP)	56
Box 26	POSSIBLE MODEL FOR THE REFORMED INSTITUTIONAL SETUP OF THE ENERGY SECTOR	61
Box 27	TECHNOLOGY INNOVATION.....	63

EXECUTIVE SUMMARY

Project information table

Project Title:	Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4A) Progress			
GEF Project ID:	5367		<u>Committed at endorsement (USD)</u>	<u>Realized co-financing / spent GEF budget at mid-term review (USD)</u>
UNDP Project ID:	5742	GEF financing:	3,500,000	1,385,585
Country:	Lesotho	IA own (UNDP):	400,000	187,000
Region:	Southern Africa	Government:	8,467,837	8,467,837
Focal Area:	Climate Change	Others (private):	8,150,000	2,000,000
FA Objectives, (OP/SP):	Climate Change programme #3 to Renewable Energy - Promote investment in renewable energy technologies	Total co-financing:	19,267,837	13,714,837
Executing Agency:	Ministry of Energy and Meteorology (MEM)	Total Project Cost:	22,767,837	15,100,422
Other Partners involved:	Lesotho Highlands Development Authority (LHDA), Lesotho Electricity Company (LEC), Rural Electrification Unit (REU), Lesotho Electricity and Water Authority (LEWA), Bureau of Statistics (BoS), Department of Standards and Quality Assurance (DSQA)	GEF approval: 9 May 2016		ProDoc signature (date project began): 13 October 2016
		(Operational) Closing Date:	20 August 2021	

Description of the Project

The lack of access to modern energy services is particularly marked in the rural areas of Lesotho. More than two-thirds of the country's rural population remains un-electrified and, in many instances, given the low population densities and distributed character of settlement patterns and high cost of grid extension, the situation will remain so for the foreseeable future. However, most (rural) households rely on traditional fuels (wood and dung) for their energy needs for cooking and space heating. To address these issues, the project "*Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress*", shortly referred to as 'SE4All Project' was conceived by the Government of Lesotho and UNDP. The project design is effectively two-fold; assisting with the creation of an information-based enabling framework to support the long-term investment in off-grid energy service delivery as well as piloting renewable energy mini-grids and energy centres that provide distributed energy service options, such as efficient stoves or PV-powered devices. The project concept was submitted to GEF in 2014 and a fully-fledged project document (ProDoc) was developed and submitted to GEF thereafter. GEF endorsed the project in May 2016 for implementation up to the year 2021, making available a budget of USD 3.5 million.

The **objective** of the Project is "to catalyse investments in renewable energy-based mini-grids and Energy Centres to reduce GHG emissions and contribute to the achievement of Lesotho's Vision 2020 and SE4All goals". The objective will be achieved through **four components**:

1. Streamlining and simplifying policy, regulatory, legislative and financial instruments for renewable energy-based isolated mini-grids for rural electrification;
2. Developing capacity of stakeholders for development of renewable energy-based isolated mini-grids for rural electrification;

3. Creating attractive and competitive business terms and conditions for investors, such as providing financial incentives towards project development and implementation, which will give developers long-term stability and provide for sufficient investment return; and
4. Facilitating implementation of renewable energy-based isolated mini-grids for rural electrification in the country through a pool of trained technicians who would ensure high-quality construction, operation, and maintenance of the systems and ancillary equipment.

The main **findings** and **ratings** of the mid-term review are presented below:

Main criteria	Rating	Explanation
Progress towards results (objective achievement)	- MS	Most of the activities, as described above, are on track, except for Component 3. Being very important to eventually reaching the overall project objective, the Team gives an overall 'moderately satisfactory' rating regarding the progress towards results , mainly due to the progress in Financial Support Scheme (FSS) in 2019, while acknowledging the investment projects still needing to be implemented on the ground.
Progress towards results		
- Outcome 1	- S	<p>In Component 1, which focuses on the development of SE4ALL policies and strategies to facilitate investment in renewable energy-based mini-grids, the Project has supported the formulation of the SE4ALL Country Action Agenda and Investment Prospectus, and the formulation of a Regulatory Framework specifically for off-grid options (mini-grids and energy Centres). The documents have been presented in their draft final form to the Government for official approval. While obtaining official endorsement is strictly speaking outside the Project's sphere of influence, nonetheless, without official endorsements the documents will be limited; hence a 'satisfactory' rating is given.</p> <p>In Component 2, the Project has made an important contribution to having credible and up-to-date data on energy consumption. The national energy survey for households has been completed and validated and an energy database has been established with data sets uploaded to the Bureau of Statistics web portal. The survey has provided input data for the before-mentioned Country Action Agenda and to future updates of Lesotho's energy and climate change mitigation plans. Energy consumption surveys in other sectors have been undertaken as well and results will be published by the end of 2019. These are important information tools for policymaking, and finalised well on time; the Team gives a 'highly satisfactory' rating.</p> <p>The critical risk to the Project's progress has been the operationalization of the FSS, for which a total of USD 1.2 million in GEF and UNDP funding has been allocated. When management by a public entity was not feasible, one other idea was to have the FSS operated by a bank in Lesotho, but under UNDP's financial rules and regulations, grantees cannot be private firms. An agreement was, therefore, reached early 2019 with the UN Capital Development Fund (UNCDF) to manage the FSS. In the subsequent Call for Proposals, issued in May 2019, a fairly large number of proposals were received, and after evaluation, seven companies were selected to establish mini-grid systems at 10 sites and energy centres at 10 sites. Final negotiations are underway between UNCDF and the companies to reach a Grant Agreement, and after the Concession Agreement with the Department of Energy (DoE) has been signed, the implementation of the investment projects can start, likely by the end of 2019 - early 2020. However, not all issues have been solved and the lack of an approved mini-grid regulatory framework may discourage mini-grid developers to go ahead, unless dispensation agreements are reached with DoE. Although there is no progress yet on the ground in terms of construction, the Team decided to give a 'moderately satisfactory' rating, based on the FSS progress in 2019.</p> <p>In Component 4, a Communication Plan has been formulated which will aid the implementation of the investment project by capacity building of District and local officials and awareness-raising and information dissemination to the beneficiary target groups in the 20 project sites. An important element will be the monitoring of the Component 3 investment projects and dissemination of results and information. However, this can only start when the mini-grids and energy centres are up and running. Despite being officially in draft form, implementation has already started with a number of activities. Therefore, the Team gives a 'satisfactory' rating,</p>
- Outcome 2	- HS	
- Outcome 3	- MS	
- Outcome 4	- S	

Main criteria	Rating	Explanation
		although noting that awareness and capacity strengthening more directly linked with the FSS investment projects still need to be initiated.
Relevance	- R	The SE4All Project builds on earlier experiences with off-grid (mainly stand-alone) systems in Lesotho and the design tries to promote mini-grids as the identified niche option for electrification (between grid and stand-alone electrification) by addressing the policy-regulatory, high cost, and capacity barriers. It is therefore very ' relevant '.
Implementation and adaptive management	- S	<p>With the FSS taking USD 1.2 million (out of the GEF contribution of USD 3.5 million) it is obvious that this has an impact in the form of slow disbursements. However, these delayed disbursements are a reflection of a number of external factors beyond the direct control of the Project implementation:</p> <ul style="list-style-type: none"> • The delay in getting the FSS established and operational, based on wrong assumptions on Lesotho public entities being able or willing to host the fund or private entities being allowed to disburse to private sector organisation. The FSS setup should have been more clearly defined in the ProDoc. • Implementation of the accepted mini-grid under the Call for Proposals may be delayed if the proposed regulatory framework for mini-grids is not officially in place. <p>In spite of these issues, Project Management has tried to find solutions that work (e.g. having UNCDF manage the FSS) which the Team finds recommendable. Given the above, the Team has the opinion that, against the odds, the project implementation by the Project Management Unit has overall been performing 'satisfactorily'.</p>
Sustainability	- MU	<p><i>Governance and institutional sustainability</i></p> <p>Several policy and planning documents have been formulated that can guide the Department of Energy, such as the Energy Policy 2015-2025, Lesotho Electrification Master Plan (LEMP) of 2018, Regulatory Framework for the Development of Renewable Energy Resources in Lesotho and now (formulated with SE4All Project support), the SE4All Country Action Agenda and the Renewable Energy Mini-Grid Generation, Distribution and Supply Regulations. Apart from the Energy Policy and LEMP, none of these documents have been officially approved, and thus have no legal status, while main elements of Energy Policy (e.g. institutional reform) and LEMP (e.g. off-grid) lack implementation. At this point in time, the country cannot be seen as ready to take up the challenges of the energy sector in a coordinated way with clear electrification planning with approved on-grid and off-grid targets and with a conducive institutional framework. This creates high uncertainty for the private sector to invest in capital-intensive mini-grid projects. This may even hamper the initiation of the mini-grid investments under the Call for Proposals. At this point in time, the MTR Team sees substantial governance-institutional risks and rates sustainability as 'moderately unlikely', although with the observation that the SE4All Country Action documents and RE Mini-grid Regulations having been officially adopted, the MTR would give a 'moderately likely' rating.</p> <p><i>Socio-economic sustainability</i></p> <p>Mini-grid systems may offer a cost-effective alternative to grid extension over a large distance to sparsely populated areas with low electricity demand. However, this does not mean that the electricity produced is cheap, as renewable energy has high upfront costs, even though over the whole lifetime of the technology, the lifecycle cost (upfront cost and annual expenditures) may be lower than conventional alternatives. The Pre-Feasibility studies give ranges of M 5.0-9.50 per kWh for solar mini-grids (or about USD 0.35-0.68) which is substantially higher than the tariff in the national grid system for households (M 1.48 /kWh, domestic tariff). However, the findings of the Pre-feasibility studies are that actually many households would be willing to pay such a tariff. In the Call for Proposals, the company OnePower, for example, plans to charge M 5/kWh on average in their mini-grids. Another issue that may come up is the use of high-wattage equipment of cookers and power tools that may be restricted given the installed power and energy generation capacity of the mini-grid. However, only when the mini-grids start</p>

Main criteria	Rating	Explanation
		<p>operating can we observe whether all these assumptions on willingness to pay are true. It is difficult to attribute ratings on 'sustainability' since the whole mini-grid development is at the beginning, In contrast to mini-grids, the energy centre concept is a business model that is already being pioneered and these first results (by companies, such as Africa Clean Energy and Solar Lights) look encouraging. Taking into account the above considerations, the MTR Team rates as 'moderately likely'.</p> <p><i>Financial sustainability</i></p> <p>One barrier to the deployment of renewable energy technologies in Lesotho has been the lack of appropriate financing mechanisms. The Government of Lesotho in its Electrification Master Plan (LEMP), makes a 20 % provision of its annual electrification budget for off-grid solutions, while limited funds coming from development partners are insufficient. These are not implemented as part of an overall national off-grid and rural energy programme, but on a project-by-project basis only. Given the high cost of mini-grids, the sector cannot be left entirely to private initiatives, but need the same government financial support as the national grid (extension) does. In the absence of such a national framework, the Team gives a 'moderately unlikely' rating.</p> <p><i>Environmental sustainability</i></p> <p>Disposal of batteries from solar lanterns purchased from Energy Centres, which may contaminate the water table and pose health risks to children and the communities at large is a relevant risk for the project. However, this risk will be mitigated starting from next year (2020) when the first Energy Centres become operational. Communities will be sensitized to return batteries to the Energy Centres where they will receive a rebate on the next product they purchase. Rating is 'likely'.</p> <p><i>Overall sustainability</i></p> <p>However, the situation of Lesotho is not much different from many other countries in Southern Africa which are only at the beginning of the technology innovation cycle in the demonstration phase with a few (sustainable) mini-grids. The timeframe of subsequent phases of more widespread deployment let alone larger-scale dissemination of the mini-grid technology is much larger than the 4-year period of a project like SE4All Lesotho. In this respect, it may be too early to make a judgement on 'overall sustainability'.</p>

Note: "Progress towards results" and "Implementation and adaptive management" are rated on a 6-point scale ranging from Highly satisfactory (HS), Satisfactory (S), Moderately satisfactory (MS), Moderately unsatisfactory (MU), Unsatisfactory (U) and Highly unsatisfactory (HU); Relevance is rated on a 2-point scale: Relevant (R) or Not relevant (NR); Sustainability is rated on a 4-point scale, ranging from Likely (L), Moderately Likely (ML), Moderately Unlikely (MU) and Unlikely (U)

Main conclusion

Most of the activities, as described above, are on track, except for Component 3. Being very important to eventually reaching the overall project objective, the Team gives an overall 'moderately satisfactory' rating regarding the progress towards results, although acknowledging that the FSS investment projects still need to be implemented on the ground and provide results. Despite facing external factors outside its direct control, the MTR Team has done as much as possible and has decided to give an overall rating of 'satisfactory' for implementation and adaptive management.

The MTR Team likes to stress the strategic importance of a project like SE4All Lesotho to demonstrate the need for an enabling environment with sufficient funding and a legal-regulatory framework to promote off-grid solutions. Policy-makers will not dedicate time, funding and efforts for setting up mini-grid' funds within an appropriate enabling framework until the time (and even then, there is no guarantee) that mini-grids demonstrate their effectiveness and potential. Yet, mini-grids will not be deployed unless adequate funding is available as part of an overall enabling environment. This situation resembles the 'chicken and egg' question. Until there is some progress in proving the

effectiveness of mini-grid energy solutions in an under-resourced country like Lesotho, then the Government will be more tempted to set up a functioning enabling environment with sufficient funds.

The great value of the SE4All project is to help demonstrate the viability of the first mini-grid projects and shed more light on the above-raised questions regarding sustainability in Lesotho. As the mini-grid market in Africa is still in its early stages, Lesotho's experience will be invaluable for countries planning to implement similar renewable energy-based mini-grids for rural electrification in general and on the merits of the private-sector-led mini-grid business model in Sub-Saharan Africa.

Recommendations

No.	Recommendation	Timeframe; Responsible
1	<p>Extension of the project implementation period</p> <p>Of immediate concern in the short-term is the project duration. The FSS grant is in the form of an initial grant for mini-grids at the beginning of year 1, followed by a performance-based grant at the end of Years 1 to 4. In practical terms, this means that the grant mechanism will be implemented from the beginning of 2020 to the end of 2023, a period that exceeds the planned SE4ALL operational closure date by mid- 2021. The MTR Team thinks it is essential that the SE4All Project continues for a longer period to be able to provide troubleshooting assistance (if needed) and to monitor progress of the operation of the mini-grids and energy centres in general, and to be able to derive lessons learnt from these first experiences. Ideally, the Project would have to be extended with 2.5 years (to end-2023) to be able to fully cover the FSS grant disbursement period. However, the maximum extension period for a GEF-funded project, as per the latest UNDP-GEF project extension guidelines is 12 months (i.e. until Oct 2022).</p> <p>This might not be acceptable to GEF (and/or project funds may not be sufficient), in which case the grant period needs to be reduced and/or funds (and management responsibility) transferred to UNCDF. The MTR Team suggests the following possible options:</p> <ul style="list-style-type: none"> • Reduce the grant period to one year only (de facto converting all grants into initial grants given in 2020) with no extension of the Project (ends by mid-2021) • Reduce the grant period to two years with a one-year extension period (initial grant, 2020 with performance-based parts one year after the initial grant, i.e. in 2021 and 2022) • One-year extension of the Project period, and with transfer of funds to UNCDF after project closure (grant scheme implemented over 4 years, 2020 to the end of 2023). 	Immediate UNDP, GEF, DoE, UNCDF
2	<p>Appropriate institutional setup (e.g. RE/rural/electrification agency) on the longer-term with an overall programme that integrated various donor-funded initiatives in one funding scheme that is linked with or managed by the 'agency'</p> <p>A number of documents, including Lesotho's own Energy Policy 2015-2025 and documents elaborated with development partner support (e.g. European Union) propose a reformed 'model for the energy sector' with the following elements:</p> <ul style="list-style-type: none"> • Have clearer division of tasks with a) policy formulation as the mandate of MEM's Department of Energy; b) policy regulation in the hands of the Lesotho Electricity and Water Authority (LEWA) as an autonomous government agency; and c) policy implementation the responsibility of public entities (and with private sector involvement) that distinguish between non-electricity and electricity and within the electricity sector between (peri-)urban electricity, grid extension, and off-grid electrification; • Lesotho Electricity Company (LEC) is responsible for managing the main grid and distribution. LEC and the private sector (independent power producers) are the main players in (renewable energy power production for the grid, which is regulated by the Regulatory Framework for the Development of Renewable Energy Resources in Lesotho (2015). LEWA regulates the electricity industry as Authority independent from the Government, without operating as a policymaker. It is up to the DoE to guide the whole sector setting policy goals and the Electrification Master Plan; • Regarding electrification, the tasks of the REU (Rural Electrification Unit) need to be divided up into grid extension, the responsibility of LEC and a new "off-grid agency" covering off-grid electricity (and non- 	Long-term; Government of Lesotho

	<p>electricity energy) in rural areas as part of its mandate. Under the guidance of and in cooperation with DoE, such an entity updates the 'Off-grid Electrification' section of the integrated Lesotho Electrification Master Plan. On the regulatory side, this setup is accompanied by a Special Regulatory Framework Regulatory for mini-grid applications;</p> <ul style="list-style-type: none"> • Adequate financial support will be needed to address the high initial (capital) cost of off-grid renewable energy (RE) mini-grids, i.e. supplementing the investments by local communities and private sector/NGOs with government and donor-funded resources. As already contemplated in the Energy Policy 2015-2025, a 'Facility of Rural Energy Access' (FREA) for financing off-grid projects is to be established, alongside or as a subset of an overall Energy Access Fund'. FREA financing schemes (financed from the general budget, proceeds from the electrification surcharge in the electricity tariff, and development partner programmes) should clearly indicate one consistent subvention system, rather than grants provided in different ways on a project-by-project basis. 	
3	<p>Address mini-grid regulatory issues before FFS scheme starts disbursing</p> <p>As long as the Regulatory Framework for mini-grid applications does not have official status, this situation will shy away investors, while even the companies selected under the Call for Proposal may delay their decision to start with the construction of the mini-grids. The Project should discuss with DoE these dispensation issues as part of the 'concession agreements' to be signed with the mini-grid proponents.</p>	<i>Immediate</i> MEM, UNDP, SE4All Project
4	<p>More involvement of academic stakeholders in the Project's activities</p> <p>On a working level, the collaboration of the Project with academic institutions, such as the National University of Lesotho (Energy Research Centre) or the Lerotholi Polytechnic can be strengthened and a work plan for such collaboration developed.</p>	<i>Medium-term</i> SE4All Project
5	<p>Implement a monitoring and evaluation plan during the implementation of the Call for Proposal mini-grid and energy centre projects</p> <p>It is important that a good follow up takes place to allow troubleshooting interventions (if needed), to collect information for dissemination to the public at large and to distil conclusion on the pros and cons of the private-sector-led business model. The MTR Team recommends the following studies to be carried out, based on the experience with construction and operation of the mini-grid and energy centres:</p> <ul style="list-style-type: none"> • Assessment of actual energy demand and uses of electricity in the mini-grids and energy centres, actual costs of investment and operation, experiences with willingness and ability to pay (WTP/ATP) and required tariff to make mini-grids economic; • Assessment of the desirability and viability of the private sector-led business model regarding mini-grids, looking at the actual policy-institutional-regulatory framework, financial availability and options, and comparison with similar mini-grid (government or private-led) initiatives • Post-project plan for future action (issues/barriers remaining and/or not addressed; proposals or ideas for future rural energy interventions). 	<i>Short-term</i> SE4All Project
6	<p>Future mini-grid activities in Lesotho and the region</p> <ul style="list-style-type: none"> • Lesotho's experience will be invaluable for countries planning to implement similar renewable energy-based mini-grids for rural electrification in general and on the merits of the private-sector-led mini-grid business mode. In particular, the results and lessons of the Lesotho project can help inform the design of the concept GEF-7 Africa mini-grids program, which includes 11 participating countries. • The MTR Team suggests some South-South cooperation activities, e.g. a study tour of officials to countries in the region that have advanced more with establishing an enabling environment for mini-grid systems, or a workshop/seminar on government-enabled, private-sector-led mini-grid development with international participation from Africa and other regions to expose Lesotho to successes in other countries. • The current SE4All project supports the demonstration of the first mini-grid project. The story does not end here; in contrary, technical assistance will be needed to enter into the next innovation phase of a more widespread 'deployment' with emphasis on a) knowledge generation and dissemination, b) further refinement of the legal-regulatory framework (including tariff setting; taxes, importation; technical standards)), techno-economic analysis; community engagement and productive uses; commercialisation and innovative financing finance (from public and private sources). The MTR Team proposes to investigate if a successor project could be formulated by MEM and UNDP (where possible with GEF-7 support). 	<i>Medium-term</i> UNDP, MEM

Note: Short-term: < 0.5 year; medium-term: between 0.5 and 1.5 year; long-term: > 1.5 year

1. INTRODUCTION

1.1 Purpose of the mid-term review (MTR) and objectives

1.1.1 Background

The lack of access to modern energy services is particularly marked in rural Lesotho. More than two-thirds of the country's rural population remains un-electrified and, in many instances, given the low population densities and distributed character of settlement patterns and high cost of grid extension will remain so for the foreseeable future. This situation is untenable given the developmental importance of access to modern energy services as well as Government of Lesotho's and, indeed, international commitment to universal energy access. This goal has been championed by the UN's Sustainable Energy for All (SE4All), a key organisation in the commitment to universal access to sustainable energy. The SE4All's mission to empower leaders and governments to ensure universal access to sustainable energy resources underpins the mutual commitment between the Government of Lesotho, represented by the Ministry of Energy and Meteorology (MEM) and the United Nations Development Programme (UNDP) to enhancing access to modern energy services in rural Lesotho.

The project is titled "Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress", which is referred in this report shortly as "SE4All" or "SE4All Lesotho" project and is an initiative funded by the Global Environment Facility (GEF, USD 3.5 million) and the United Nations Development Programme (USD 0.4 million) and nationally implemented by the Ministry of Energy and Meteorology. It will do so by leveraging about USD 19 million in multilateral and private sector financing over the project implementation period.

The objective of the project is to catalyse investments in renewable energy-based mini-grids and energy centres to reduce GHG emissions and contribute to the achievement of Lesotho's Vision 2020 and SE4All goals. The project was conceptualized and submitted to GEF in 2014. A fully-fledged project document (ProDoc) was developed and submitted to GEF in September 2015. GEF endorsed the project in May 2016. The project was launched at an Inception workshop in November 2016, and is currently under implementation and scheduled to be operationally closed by May 2021.

1.1.2 Purpose of the MTR

With implementation well underway, a Mid-Term Review (MTR) needs to be undertaken of the project in accordance with the UNDP and GEF Monitoring and Evaluation (M&E) policies and procedures. The MTR has to be carried out by an independent consultant, i.e. not previously involved in project design or implementation. In a competitive process, two experts were chosen to undertake the MTR, Mr. Johannes (Jan) van den Akker (Netherlands) and Mr. Ramochaha Lethola (Lesotho) hereafter referred to as the "MTR Team".

The **objective** of the MTR is to *"assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on track to achieve its intended results. The MTR will also review the project's strategy and its risks to sustainability."*

1.2 Scope and methodology

The MTR has been utilising the following *sources of information*:

- Desk review of progress reports and project documents (listed in Annex C),
 - CEO Endorsement Request (CEO ER) and annexes; annual progress reports (PIRs, project implementation reviews); other progress reporting;
 - Overview of budget expenditures and realized co-financing; annual work plans
 - Project technical reports and description of outputs; project or counterparts' websites
 - National policy documents on (urban planning, waste, sustainable transport, energy, etc.) as well as other relevant reports, PowerPoint presentations, and documents from counterpart organizations.
- A review mission of 5 working days with the purpose of meeting UNDP, DoE, and holding interviews with project partners and stakeholders. A list of project partners and stakeholders met is provided in [Box 8](#). The meetings and interviews helped the reviewers to obtain in-depth information on impressions and experiences and to explore opinions about the Project and their understanding and identify opportunities
- A presentation of the initial findings was made at the end of the MTR mission (on 14/10/2019).

Regarding *data analysis and methods for analysis*, a large number of relevant reports and documents were collected and studied (where possible before the mission). The review of project and background documents (listed in Annex C) provided the basic facts and information for developing the mid-term review report, while the mission served to verify these basic facts, get missing data and learn the opinions of respondents to help interpret the facts. With respect to the latter, the interviews with individuals (representatives from project partners and stakeholders) were based on open discussion to allow respondents express what they feel as main issues, followed by more specific questions on the issues raised (guided by the list of interview questions, presented in Annex E). Triangulation has allowed validation of information through cross verification from two or more sources.

The rating has taken place according to the evaluation criteria and the rating scales identified in the UNDP *Guidance for Conducting Midterm Reviews of UNDP-supported, GEF-financed Projects* (2014)¹. The ratings in this report have been determined based on the project progress reporting and the analysis the Reviewers carried out of the available information and comparing these with observations from the mission (interviews with stakeholders and site visits) and checking with the information presented in project technical reports and policy and background documents.

1.3 Structure of the MTR report

This report contains the executive summary, main body, and annexes. The body of this report is structured around the following chapters; it starts with an introduction to the objectives, scope, and methodology of the mid-term review (Chapter One), description of the project context and a summary of project facts (such as start date, duration, the context in which the project started), its objectives and stakeholders (Chapter Two).

The assessment of the “review findings” has been guided by the questions on the “review evaluative matrix”, of which a final draft was formulated at the inception stage of the assignment (see Annex E)². The report follows the outline for midterm reviews of UNDP/GEF projects³ but has split the suggested chapter on “Findings” in three parts for practical reasons due to the chapter size and to permit a more reader-friendly presentation of the information. Findings on relevance, design, and results framework formulation are in Chapter Three. An overview of progress regarding the achievement of outcomes and outputs is given in Chapter Four, while the findings on project implementation and monitoring are presented in Chapter Five. Finally, Chapter 6 discusses the findings on the replication effects and sustainability. Chapter Seven presents the conclusions, recommendations, and lessons learned from the project. These include actions that might be taken (by the Government) to help ensure the sustainability and continuity of project

¹ Other guidelines consulted are those presented in the UNDP *Handbook on Planning, Monitoring and Evaluating for Development Results, Updated Guidance on Evaluation* (2012), and the UNDP Discussion Paper: *Innovations in Monitoring & Evaluating Results* (2013) and the GEF *Review of Outcomes to Impacts (ROTI) Handbook* (2009). Regarding gender aspects, the evaluation refers to the *Guide to Gender Mainstreaming in UNDP Supported GEF Financed Projects* (2016).

² See the *Inception Report of the Mid-term Review* (J. Van den Akker; R. Lethola; Nov 2019)

³ See Annex F, ‘Evaluation Report Outline’ in the UNDP *Guidance for Conducting Terminal Evaluations* (2012)

achievements. The MTR Team also gives some suggestions for UNDP (and GEF) to help improve the design and implementation of future projects.

In development projects, 'results' are the describable or measurable development change resulting from a cause-and-effect relationship. These results include project outputs, short to medium-term outcomes, long-term impacts, including global environmental and development benefits.

The achievement of the results and the longer-term sustainability thereof is influenced by the:

- Way the project was formulated and designed (discussed in Chapter 3);
- Way the project was implemented by the various project partners (discussed in Chapter 5);
- Occurrence and impact of internal and external risks (discussed in Chapter 6).

Annexes at the end of the report include the Terms of Reference (Annex A), mission details and list of organisations and people interviewed (Annex B), documents collected and bibliography (Annex C), text of Call for Proposals (of mini-grid and energy centre investments; Annex D, and evaluation questions and methodology (Annex E).

2. PROJECT DESCRIPTION AND BACKGROUND

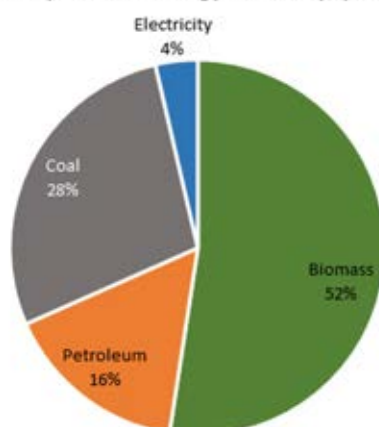
2.1 Context and problems that the project sought to address

Energy sector overview

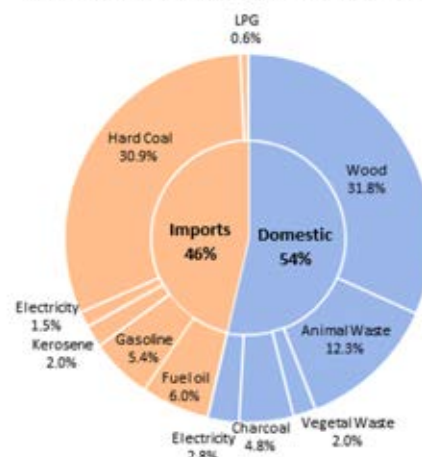
Lesotho's most relevant energy sources are currently biomass, coal, petroleum products and electricity. Lesotho's energy mix is dominated by biomass, which constitutes over half of Lesotho's energy balance, with most biomass derived from wood. Fossil fuels such as coal and petroleum products also make up a substantial portion of Lesotho's energy mix while electricity's contribution to the overall energy mix is small. Since Lesotho has no proven reserves of coal, oil or gas, it imports nearly all its fossil fuel from South Africa. Because of dwindling forest reserves Lesotho has also started importing fuelwood to meet energy demand.

Box 1 Lesotho energy demand and supply

Composition of Energy Demand (TJ), 2010



Composition of Supply Mix (ktoe), 2014



Source: SREP-Investment Plan for Lesotho (2018); based on BoS data (2010/11) and UN statistics (2017)

Electricity sector

Peak demand in the national grid system was 153 megawatt (MW) in 2016 and annual energy consumption was 732 GWh. National generation capacity is limited (about 75 MW)⁴ generating about 515-520 GWh annually, the difference between demand and supply (about 212-217 GWh) met by energy imports from South Africa and Mozambique through the Southern African Power Pool (SAPP) system (peak power demand: about 70 MW; electric energy: about 370 GWh annually). Power demand is expected to grow at 3.2% annually⁵, which will imply more imports at a higher cost for the country if national generation capacity is not increased. Power is generated in the large Muela hydropower plant, 72 MW (owned by LHDA and selling to LEC)⁶ and two smaller hydro facilities, in Mantsonyane and Katse, of about 2.5 MW in total. LEC owns one off-grid hydro-diesel system that powers a mini-grid in Semonkong (0.18 MW)⁷.

Tariff for domestic customers in 2019-20 is M 1.4872 per kWh (USD 0.10 per kWh) for consumption above 30 kWh, and M 0.7273 per kWh in the block 0-30 kWh⁸. The latter serves as a lifeline tariff for poor customers⁹. These tariffs are below

⁴ Data: LEC Annual Report 2015-2016 (2016) and Lesotho Country Action Plan (draft SE4All-UNDP/GEF; SREP Final report (LEC purchases 2012-2016)

⁵ Load Forecast Report of the Electricity Supply Cost of Service Study (LEC, 2018)

⁶ Lesotho Electricity Company (LEC) is the national utility; LHDA: Lesotho Highlands Development Authority

⁷ According to the draft Lesotho Country Action Plan, it mainly runs on diesel due to technical issues and lack of maintenance in the hydro

⁸ Converted at Oct 2019 exchange rate: USD 1 = M 14.5

⁹ Lesotho Electricity Company's Tariff Review Application for 2019-20 (LEC, Apr 2019)

the actual cost of electricity (as indicated in Box 2. If subsidies (and levies) were not included, the economic tariff for households would be about M 2.0-2.8 per kWh. The current tariff-setting process appears to generate a level of revenue for LEC to cover its annual operating costs, but not enough to have a return on investment on assets. However, Lesotho has been moving over the years to more cost-reflective tariffs.

Electrification and rural energy

In Lesotho, currently, 66% of the population lives in rural and scattered areas, with the remaining 34% living in urban areas. Electricity access is quite low at 38% nationally with a sharp difference between urban electrification (68%) and rural energy access (11%)¹⁰. Extending the national grid to rural areas remains a challenge in the country which in large parts is comprised of sparsely populated areas with rugged mountains and deep valleys with small scattered villages.

In terms of energy consumption, rural households of Lesotho require energy mainly for lighting and appliances, cooking, and space heating. In many (rural) households, electricity (solar energy, torch batteries)

Box 2 Electricity tariffs and cost of electricity

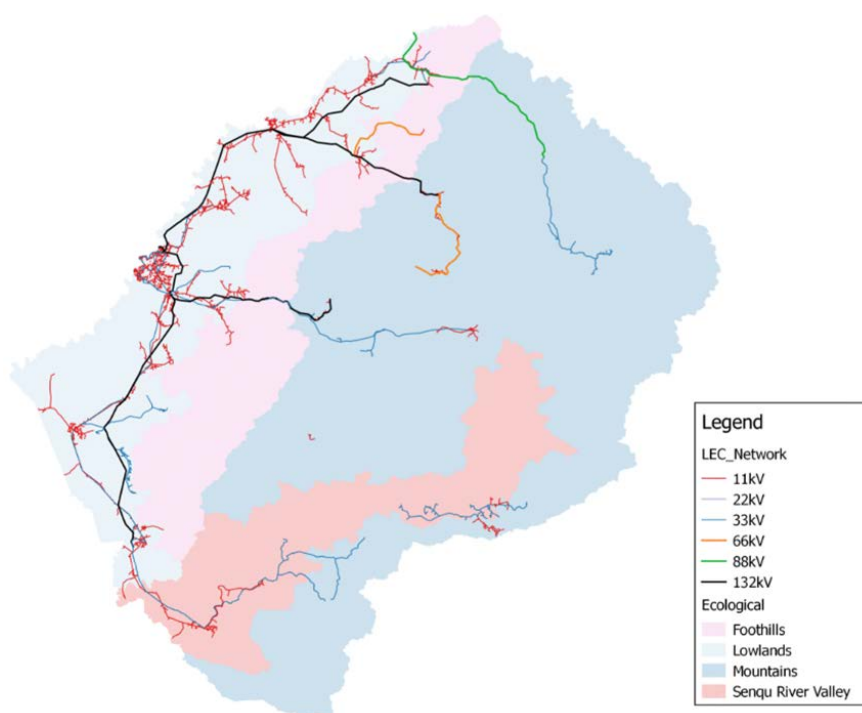
Tariff category	Energy charge (M/kWh)
Industrial HV	0.2559
Industrial LV	0.2767
Commercial HV	0.2559
Commercial LV	0.2767
General purpose	1.6608
Domestic	1.4782
Lifeline domestic	0.7273
Cost of electricity	(M/kWh)
Generation (G)	1.473
G + transmission (T)	1.987
G + T + distribution	2.878

Sources:

Lesotho Electricity Company's Tariff Review Application for 2019-20 (LEC, Apr 2019)

Generation: long-run marginal cost;
Transmission+distribution: average incremental cost, taken from *Electricity Supply Cost of Service Study – LEWA Lesotho* (2018)

Box 3 Lesotho electricity transmission network



Source: *Grid Power Development Plan* (2018), report by AETS Consortium for EU

and paraffin lamps are mostly used for lighting rather than for cooking and therefore represent a small share of the domestic energy consumption. Paraffin is mainly used for cooking and space heating. However, most (rural) households rely on traditional fuels (such as biomass for their energy needs. Biomass (wood and dung) is used for cooking and space heating.

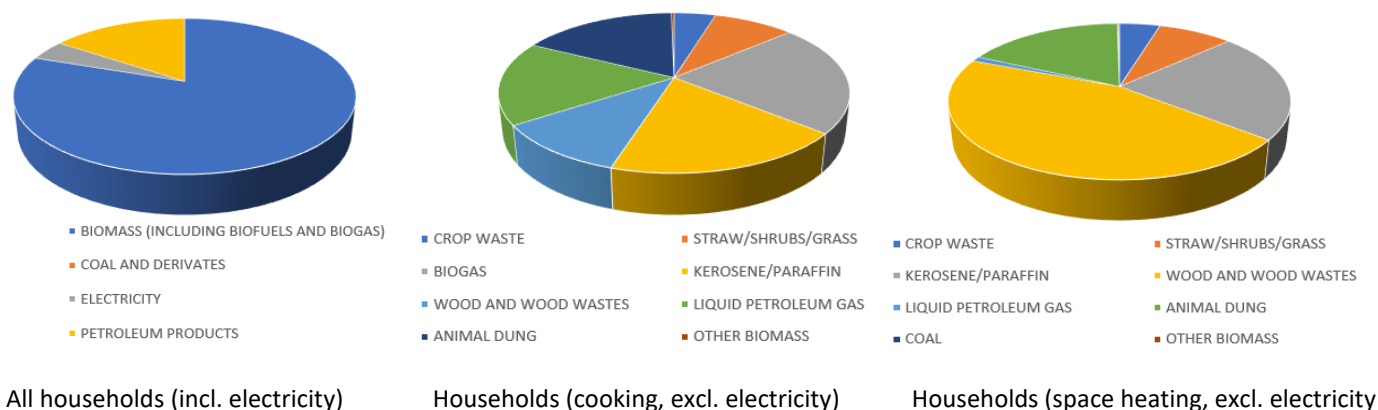
Lesotho has very low rates of forest cover. Deforestation is a serious problem in Lesotho. From 1990 to 2010, the country lost forest cover at the rate of 0.5% a year. In 2012, Lesotho's forested areas made up only about 1.6% of the country's land area¹¹. With demand for wood outpacing its

¹⁰ *Households Energy Consumption Survey* (BoS, 2017). Rural electricity access includes solar energy (2%). Another difference in electrification is between ecological zone: lowlands, 48%, mountains, 15%, SRV, 15% and foothills, 6%

¹¹ *SREP Investment Plan* (2017); *Lesotho's INDCs* (2015)

supply¹², households often turn to substitutes. Use of other biomass sources, like crop waste and dung, deprive agricultural land of manure and organic matter, contributing to a loss of soil fertility, and thus further exacerbating deforestation (see Box 4). Heating is essential in wintertime. While temperatures may reach 30 °C in summer, in winter

Box 4 Household energy consumption (winter 2017)



Source: *National Household Energy Survey* (2018)

temperatures can drop as low as -7 °C in the lowlands and -18 °C in the highlands (mean summer and winter temperatures are 25 °C and 15 °C respectively)¹³.

Box 5 Current electricity sector framework

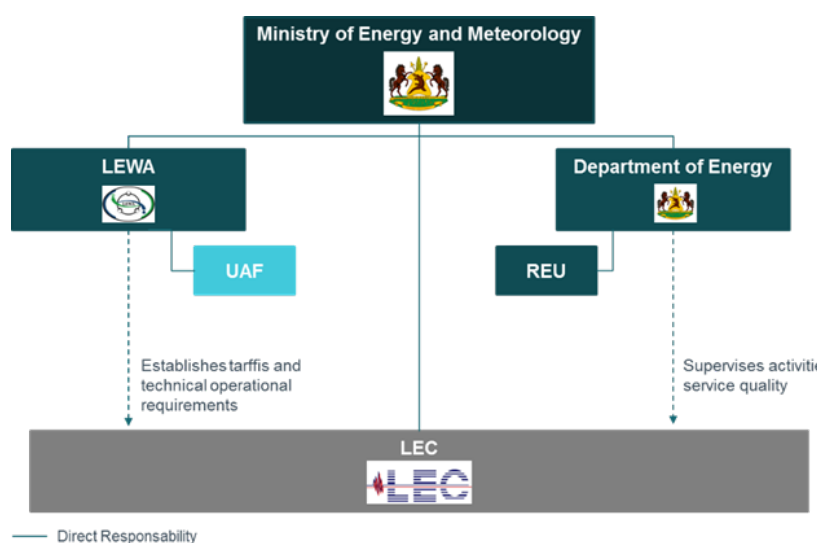


Figure copied from SE4All Country Action Agenda

The current process for grid electrification involves the Rural Electrification Unit (REU, under the Department of Energy) receiving applications from schemes, a group of customers in the same area that wish to be connected to the grid and have started collecting connection fees, and evaluating these on the basis of number of customers in a scheme, distance from the grid and funds collected. REU projects are funded through a Universal Access Fund (UAF) that is managed by the LEWA. UAF is funded with proceeds that come from the electrification levy collected by the public utility the Lesotho Electricity Company (LEC). The levy currently is M 0.02/kWh for large customers (industrial and commercial), and M 0.035/kWh for domestic customers¹⁴.

¹² Gathering wood is time-consuming for households. According to the 2017 survey of households in Lesotho, urban households spend 77 minutes travelling and collecting wood while peri-urban and rural households spend 118 and 93 minutes respectively on average. This burden disproportionately falls on women and children.

¹³ *SE4All Country Action Agenda* (draft, 2018)

¹⁴ See *LEC Tariff Review Application for 2019-20* (Apr 2019)

Box 6 Relevant policy, planning and regulations

Lesotho Vision 2020 is the overarching framework for the country's development by the year 2020, identifying seven pillars: democracy, unity, peace, education and training, economic growth, management of the environment, and advancement in technology. Vision 2020 foresees the development of electricity networks as an important component in establishing strong economic infrastructure in Lesotho, and it calls for expanding electricity access to households and utilizing renewable energy. Vision 2020's roadmap is the *National Strategic Development Plan (NSDP)*. A new version of NSDP 2018/19-2022/23 has been completed.

The national Energy Policy 2015-2020 aims to align energy sector policy with the goals described in Vision 2020. Policy objectives include introduction of an appropriate institutional and regulatory framework for the sector; sufficiency and availability of energy sector data; sustainability of bioenergy resources; improved access to RE services and technologies; promotion of energy efficiency; security of electricity supply; development of a reliable and efficient transmission network; increased access to electricity for all socio-economic sectors; development of a transparent and competitive electricity market; creation of an enabling environment attractive to investment and financing; and introduction of a transparent price-setting structure that ensures cost recovery.

The Nationally Determined Contribution (NDC) (2017) outline the country's commitments towards mitigating and adapting to climate change. Policy objectives related to the renewable energy and access include: continued development of hydropower resources and the promotion and development of renewable energy, particularly wind and solar. The Lesotho NDC also sets certain targets for the energy sector including targets to improve energy efficiency, increase electricity coverage (to 50%), and increase renewable energy generation by 2020 (incl. adding 50 MW of hydro, utility-scale wind power of 35 MW).

The European Union (EU) has provided support for the formulation of the Lesotho Electrification Master Plan (2018), which consists of a *Grid Development Plan* and the *Off-grid Master Plan*. The plans aim at achieving 155,127 new connections in household and other sectors (over a 20-yr period; at a cost of M 2.33 billion in total) and new 213,260 off-grid household connections (over a 20-yr period; at a cost of M 600 million). The Master Plan still is in draft form and hopefully can be endorsed by the Minister (of Energy and Meteorology) soon.

The Scaling-Up Renewable Energy Investment Plan (SREP) (formulated with support from the Climate Investment Funds, CIF, through World Bank) includes investment in 20 MW grid-connected solar PV plants (in addition to the 0.32 MW currently in operation) at a USD 30 million cost, as well as investment in mini-grids (at USD 4 million) and distributed/stand-alone renewable energy technologies (at USD 0.9 million). This would be part of overall plans to establish 50 MW of utility-scale solar, 51 MW of utility-scale wind, and 88 MW of small (grid-connected) hydropower, as well as of plans to establish (solar-powered) mini-grids and floating hydropower systems.

The African Development Bank (AfDB) and the EU have supported the elaboration of the regulatory framework in the electricity sector. In 2015, LEWA, with the support of AfDB, developed a draft Regulatory Framework for the Development of Renewable Energy Resources in Lesotho ("RE regulatory framework") for expanding the use of renewable energy resources. The framework specifies the procurement and regulatory approaches for both on-grid and off-grid RE. Specifically, the RE regulatory framework includes: feed-in-tariff rules; procurement guidelines; and templates for various licenses, tenders, and power purchase agreements (PPAs). The proposed regulatory framework has not been adopted by Government, but LEWA has published the PPA template to guide prospective power producers and off-takers who are interested in buying or selling electricity to the Lesotho grid. However, the framework *does not* cover mini-grids.

Lesotho does not currently have an Energy Act in place that formally enacts energy policy and establishes the mandates of sector institutions. As part of the EU capacity building programmes, the DoE is planning to formulate an Energy Act. In the absence of an overarching law, the sector is currently governed through several pieces of legislation:

- *Lesotho Establishing and Vesting Act* (2006), Establishes the Lesotho Electricity Corporation as the Lesotho Electricity Company;
- *Lesotho Electricity Authority Act* (2006) and *LEA Amendment Act* (2011), establishes LEA as the regulator for electricity sector, while the Amendment includes the areas of water and sanitation and renames LEA as the Lesotho Electricity and Water Authority (LEWA);
- *Electricity Price Review and Structure Regulations* (2009), regulates tariff structure and prices;
- *UAF Rules* (2011), establishes the fund for electrification and sets rules;
- *Application for Licenses Rules* (2012), Sets procedures and requirements for license applications and exemptions.

Regarding energy access, the Government set (as part of the roadmap to implement the Energy Policy 2015-2025) the short-term goal of 75% of households getting access through grid and off-grid solutions by 2022 and 100% electricity access by 2030. Regarding access to modern clean cooking technologies, the Government aims to create a market for clean and efficient household cooking solutions with the short-term goal of 50% LPG use and at least 70% of households using efficient stoves by 2020¹⁵.

As the statistics at the beginning of the Section indicate, these lofty goals are far from being achieved. The Nationally Determined Contribution (2017) therefore mentions a more realistic goal¹⁶, namely “50% of households will have access to electricity by 2030” and “efficient stoves to reach a penetration rate of 30% in 2030”. In fact, in 2017, access stood at 39% in 2017 representing 207,000 households, leaving about 330,000 households to be electrified.

Electrification plans that have been formulated propose an annual budget of M 150 million, of which 80% is going towards grid electrification and only 20% towards off-grid solutions. Grid electrification is challenging because of the costs of extending grids to mountainous areas and to populations spread out in small clusters. Even if these challenges could be overcome, it would still take several decades to achieve universal access for all¹⁷. The budget in off-grid focusses on M 25.5 million for stand-alone systems, with M 1.8 million for mini-grids and M 2.7 for other costs (maintenance, replacement and training). It is rather surprising that a relatively small proportion of the electrification budget is going toward mini-grids; which is however reflective of the fact that until recently, mini-grids were not taken seriously as a viable option in electrification. Projects, such as the UNDP/GEF SE4All and efforts by other developing partners, are helping to put mini-grid (and other off-grid options) on the map of political decision-making.

Role of mini-grids and private sector

It is thought that this long timeframe could be considerably shortened if there was a greater focus on off-grid solutions and the establishment of an appropriate market mechanisms that centres on private sector participation with the Government facilitating an adequate enabling environment, consisting of a clear off-grid electrification policy target, a functioning legal-regulatory framework, accompanied by appropriate funding and financing schemes.

Renewable energy technologies can be utilised as stand-alone applications (for example, solar home systems or solar water pumps), or in mini-grid configurations (powered by hydro, solar, or wind and/or in hybrid configuration with diesel) to provide the rural population with electricity services.

There are some experiences with solar home systems. These have been promoted by development partners in the past, for example through the UNDP/GEF Lesotho Renewable Energy-Based Rural Electrification Project (LREBRE). Although some 1,500 systems were installed, a significant proportion failed after a while (due to lack of maintenance), while the subsidy offered had a market distortion effect (see [Box 10](#) for a description of LREBRE).

It is mentioned in the SE4All ProDoc that these efforts may have failed because people need an energy service, not a particular technology. After these experiences, it was felt that new approach to off-grid electrification is needed in the form of renewable energy (RE) mini-grids (see [Box 7](#)) filling the niche area between grid electrification (allowing full electricity service) and stand-alone PV system (offering electricity, but limited service).

Three mini-diesel and mini-hydro pilot projects were implemented by the Government of Lesotho (at 0.65 MW in total), but have been decommissioned or are out of service with the Semonkong plant in operation, but struggling with the hydro component. There are currently no solar PV mini-grids in Lesotho, but in recent years there has been substantial private sector and development partner interest in developing them, (as will be discussed in Section 4.2). Apart from wind pumping, there is little or no experience with wind power systems.






¹⁵ See *SE4All Country Action Agenda* (draft, 2018) and *Lesotho Electrification Master Plan* (2018)

¹⁶ Proposed mitigation actions include upscaling the use of solar home systems (SHS) from 1000 in 2015 to 10,000 by 2030 and installation of 10 mini-grids by 2030 (with an average capacity of 100 kW each)

¹⁷ *Formulation of the Lesotho Electrification Master Plan* (draft, 2018), European Union / AETS Consortium. With an annual investment of M 120 million an average of 7,756 grid connections can be provided each year. The annual budget of M 30 million for off-grid solutions can provide an estimated 10,663 households a year with electricity.

Box 7 What are energy mini-grid systems?

A mini grid, also sometimes referred to as a "micro grid or isolated grid", can be defined as a set of electricity generators and possibly energy storage systems interconnected to a distribution network that supplies electricity to a localized group of customers. These involve small-scale electricity generation (10 kW to 1 MW) which serves a limited number of consumers via a distribution grid that can operate in isolation from national electricity transmission networks. This power delivery architecture can be contrasted to a single customer system such as in the case of a solar home system (SHS). Mini-grids operate autonomously without being connected to a centralized grid. However, the mini-grid may be designed to interconnect with the central grid which means it operates under normal conditions as part of the central grid. The mini-grid can in this case operate as power generator (selling to the grid as an independent power producer, IPP) or as distributor (selling to its clients), or both. A mini-grid can be supplied by all sorts of energy resources and power plants, as indicated in the table below. Reliability of supply can be greater from hybrid (e.g. solar-hydro) mini-grid systems as compared to a single technology. This not only lowers the net costs over the lifetime of a project, but also ensures availability of power when one system is not working.

	 Mini-micro hydro	 Solar battery	 Solar-battery and diesel	 Wind battery	 Diesel
Definition	Pico: <5kW, Micro: <100kW Mini: <1000kW				
Typical investment cost mini-grid (USD/kWh)	500-10,000	4,000-7,000	5,000-10,000	4,500-13,000	400-1,000
Operation and maintenance (USD/yr)	5%	2-3%	2-5%	5-15%	
Cost (LCOE) in USD per kWh	0.10-0.30	0.40-1.00	0.50-1.00	0.50-1.00	0.6-1.20
% of local technology	40-70%	5%	5%	20-40%	5%
Local availability of parts	+++	-	-	+	++
Resource assessment	Measure water level and flow (1 year); software modelling	Worldwide databases on solar irradiation		Measure wind speeds (min 1 year)	Affordability and accessibility (transport to remote areas)
Main cost driver	Head and flow; Civil works; Distance hydro-site and demand	Battery investment (and replacement after 7-10 yrs)	Battery cost and diesel fuel cost	Battery capacity depends on wind volatility	Fuel price and transport

The mini-grid models can be distinguished into four types: utility model (local or national private or state utility), private model (developer), community model, and public-private model. The community may be organized in a cooperative that can function as local utility. Various hybrid forms are possible, in which one party owns the system and another operates. For countries where the grid system is not well developed and there is a vibrant private sector, mini-grids provide an opportunity for electrification. Economic assessments indicate that mini-grids in developing countries form potential least-cost generation options in comparison with building expensive main grid transmission system over a large distance to remote areas with relatively low electricity demand. Common challenges for the implementation of mini-grids include the lack of maintenance or the use of poor quality or untested technology or the shortage of local skills for maintenance of the mini-grid. Often tariffs are kept lower than the actual cost per kWh (levelised cost of energy), leading to a lack of sufficient funding to sustain the project over its lifetime. While the energy resource availability can be assessed, estimating the (future) demand of households, businesses and social services poses more difficulties, and mini-grid system are often either under-sized or over-sized. This is crucial in the case of renewable energy (RE) systems that require high upfront investment in the system's capacity. The RE system design often focuses on the supply side (capacity needed in kW to meet the demand of clients) without due attention to developing this demand. The system needs to provide for peak demand (usually lighting in early hours and the evening) but with capacity sitting idle during the day with lower energy and power demand. Adding productive uses of energy (PUE), businesses, agro-processing, workshops, will allow selling more during the day while the peak load (in the evening) remains the same. This increases electricity revenues and thus improves the RE system's viability. Supplementary programmes dealing with issues such as market access, small medium enterprise (SME) and PUE development and working with local financing institutions contribute to energy demand stimulation and to system viability.

Source: J.H.A. van den Akker (UNDP/GEF Myanmar RURED proposal); www.energypedia.org, SKAT

Other distributed RE technologies can be used to provide households and rural villages with the benefits of modern energy, such as solar lights, solar charging and efficient cook stoves. The African Clean Energy (ACE) Company has designed equipment that combines an efficient stove with a solar light and a USB charging port (e.g. mobile phone), while Solar Lights markets another type of efficient stoves. By 2015, together they had sold about 15,000 devices.

Rationale for SE4ALL Project

Against the above-sketched background, the SE4ALL Project was conceived as a way to support the start-up of RE-based mini-grids and to support setting up energy centres in the rural areas for distributed RE technologies to provide modern energy services to the rural areas, given the very promising potential that RE technologies have to avoid emissions and improve livelihoods of the population. The project has been designed to address a number of policy, regulatory and market barriers that hinder the successful introduction of RE mini-grids and the more widespread dissemination of distributed RE technologies.

Box 8 gives a summary description of these barriers and how the projects of various development partners help to address these barriers, indicating the niche of the UNDP/GEF SE4ALL Project.

Box 8 Summary of barriers to mini-grid and RE distributed technologies and development partner projects

Barriers	Partners
Absence of clear policy-legal-regulatory framework	
<p>The Energy Policy 2015-2025 is an officially approved document, although not legislated. Other documents have been drafted, such as the Regulatory Framework for Renewable Energy, but getting official approval at Ministerial or Cabinet-level has met long delays. One reason is that the implementation of policies and plans is sometimes overridden by political intervention or delayed by changes in Ministers. The draft Regulatory Framework covers grid-connected power production, but not mini-grids or other off-grid options (renewable energy).</p> <p>In the absence of clear policy guidelines and regulatory framework to promote private sector participation in energy service delivery for both grid- and off-grid services, the private sector has been reluctant to invest.</p>	<p>EU Energy Sector Reform Programme</p> <ul style="list-style-type: none"> • Preparation of electrification master plan and resource maps • Development of the Energy Law <p>SE4ALL Project (Outcome 1)</p> <ul style="list-style-type: none"> • Development of SE4ALL country agenda and investment prospectus
Lack of legal-regulatory framework for mini-grid systems	
<p>In the current energy sector institutional setup (for details see Section 2.2.2 and Box 9) there are overlaps and gaps in responsibility that hamper off-grid electrification. For example, LEC is regulated by LEWA, but this is done in such a way (being forced to sell power at tariffs lower than economic cost) that the company cannot develop as a financially viable corporation. LEWA has been allowed to set up a Universal Access Fund (UAF) for subsidizing capital costs of electrification projects. In practice, UAF is used for grid extension carried out by LEC (and partly paid for by UAF through DoE's Rural Electrification Unit (REU). There is not one institution in the energy sector governance structure that is mandated with off-grid electrification. Three entities (DoE, LEWA and REU) are involved in managing electrification, although the areas of policymaking and policy implementation overlap, made worse by the fact that each of the three do not have sufficient human and financial resources. The fragmented institutional and legal framework results in an inadequate multi-sectorial approach in the country in which off-grid is implemented on a project-by-project basis and not as part of an overall long-term programme, characterized further by non-transparent decision-making in the selection of project areas and developers.</p>	<p>EU Energy Sector Reform Programme</p> <ul style="list-style-type: none"> • Redefining mandates of institutions in the energy sector • Development of the Energy Law <p>SE4ALL Project</p> <ul style="list-style-type: none"> • Development of strategies and regulatory framework to promote private investment in mini-grids (and energy centres)
<p>In future interventions with RE technologies, care has to be exercised that only quality equipment and components are allowed for importation into the country and that standards are established for their installation. Therefore, there is a</p>	

Barriers	Partners
need to establish in Lesotho a mechanism for ensuring that renewable energy technologies comply with internationally recognised technical standards	
Lack of baseline data for proper analysis of the access to modern energy services	
A major issue in the energy sector has been the availability of data for energy and climate change policy formulation (in particular thermal applications, rural household energy demand and needs, and productive use at small scale production levels). The last comprehensive energy survey in the country was carried out in 1985 (during the development of the then Lesotho Energy Master Plan).	SE4All Project (Outcome 2) <ul style="list-style-type: none"> Conduct a national energy baseline survey; Harmonization of energy data with national energy policy and climate change policy
On the supply side, there is uncertainty on the resource potential of hydro potential in the country and required assessment of wind, solar and biomass potential.	Government of Italy; AfDB <ul style="list-style-type: none"> Development of RE resource maps (solar, wind, hydro)
Lack of finance for off-grid solutions for off-grid development	
There is some private investment in technologies for cooking and other thermal applications. However, (local) project developers have limited experience with larger electrification projects. Lack of credit is also a major bottleneck to venturing into business opportunities in rural mini-grids. This is augmented by the high upfront capital costs for renewable energy, in particular, the capital-intensive mini-grids. The banks in Lesotho have almost no experience with energy projects, which results in unknown risk profiles and the difficulty in doing due diligence on project proposals coming in. There is inadequate access to finance for the energy consumers combined with a low household income of rural populations thus affecting the willingness and ability to pay for modern energy services by rural communities, be it expensive grid connection or high tariffs in off-grid systems	SE4All Project (Outcome 3) <ul style="list-style-type: none"> Financial Support Scheme (USD million) for 10 mini-grids and 10 energy centres and associated capacity building (e.g. proposal evaluation, due diligence) EU: <ul style="list-style-type: none"> Call for Proposals for mini-grid and energy centres World Bank/SREP: <ul style="list-style-type: none"> Investment Plan supporting mini-grids and distributed RE solutions
Lack of awareness among beneficiaries, capacity at government level and of RE-related skills	
The lack of business in a small economy and limited technical skills are hurdles for the preparation of bankable projects. In general, there is limited awareness about RETs and access to information on RETs amongst the beneficiary households and small businesses in rural areas. The lack of experience and capacity within government (at national, district and local level) is limiting their ability to coordinate and implement RE programmes. There is information on best practices and lessons learned in other countries (in and outside Africa)	Capacity building for both the public and private sector and implementation of outreach/promotional activities form part of the EU Sector Reform, UNDP/GEF SE4All Project (Outcome 4) and the World Bank/SREP programme.

2.2 Project description and strategy

2.2.1 Objectives of the project; expected results and established indicators

A summary of the project framework with **objective, outcomes, outputs, and indicators** is provided in **Box 9** below.

Box 10 Summary of the project objective, outcomes, and outputs

Objective	Indicator and target
To catalyse investments in renewable energy-based mini-grids and Energy Centres to reduce GHG emissions and contribute to the achievement of Lesotho's Vision 2020 and SE4All goals.	<ul style="list-style-type: none"> Emission reduction: 3,473 tons of CO₂/year over the 20-year lifetime of the RET systems, based on energy produced (MWh) by RETs: 211 MWh/yr Total of 375 jobs created 1000 beneficiary households in rural areas.

Component 1 *Development of cornerstone SE4All Policies and Strategies to facilitate investment*

GEF: USD 400,000. Co-financing: USD 854,692

Outcome/Output	Indicator and target
<i>Outcome</i> SE4All cornerstone policies and strategies facilitating (increased) investment in RET deployment, particularly isolated mini-grids	Existence of policies and strategies.
1.1 SE4All cornerstone policies and strategies facilitating (increased) investment in RET deployment, particularly isolated mini-grids	Existence of Country Action Agenda and of Investment Prospectus (completed with 12 months)
1.2 Approved/adopted SE4All Investment Prospectus (IP), following extensive stakeholder consultations.	
1.3 Strategies and investment plans related to mini-grid applications and village energisation schemes	Strategies and investment plans related to mini-grid applications and village energisation schemes (to be completed with 18 months)

Component 2 *Baseline energy data collection and monitoring for SE4All.*

GEF: USD 300,000. Co-financing: USD 1.307,193

Outcome/Output	Indicator and target
<i>Outcome</i> Improved capacity of energy stakeholders and government officials for decentralized clean energy planning and decision-making on the basis of quality energy data.	Capacity developed with 1 yr of project initiation
2.1 National survey conducted on energy supply, consumption and demand, disaggregated by sector, district, and application	Completion of national energy survey by end of yr1
2.2 Energy database and information system established for data collected under Output 2.1 above, with clear responsibilities agreed to as regards regular monitoring and annual publication of indicators	Existence of energy database and information system (to be completed within 9 months)
2.3 Energy modelling software in place to analyse the data, model scenarios and produce information that will promote RE policies.	Energy modelling software being utilized (to be completed with 12 months)
2.4 All energy-related data and plans in the country harmonized with the new National Energy Policy and New Climate Change Strategy and in adherence to a standardized GHG emissions tracking system.	Harmonised data available (to be completed within 18 months)

Component 3 *Establishment of village-based energisation schemes.*

GEF: USD 1,500,000 (TA) and USD 1 million (INV)

Co-financing: USD 3,862.588 (TA) and USD 12.2 million (INV)

Outcome/Output	Indicator and target
<i>Outcome</i> Successful establishment of a village-based energy service delivery model for replication nationally	Availability of business model within 1.5 yrs of project initiation
3.1 Completed pre-feasibility studies for mini-grids in 20 village communities, spanning 5 of Lesotho's 10 districts.	Pre-feasibility studies completed (within 12 months)
3.2 Operational mini-grids in 10 village communities in the 5 districts (INV).	10 village-based RET mini-grids and 10 Energy Centres constructed and operational
3.3 Capitalisation of EU-supported Facility for Rural Electrification (FREA) and identification of 50 additional sites for mini-grids and 10 additional sites for Energy Centres for their post-project development under a phased approach.	

3.4	Capacity of national and district-level energy officials developed on best practices and opportunities for decentralized village energisation models in off-grid areas (TA).	Existence of capacity development material (within 24 months)
3.5	Financial Support Scheme established to support private sector investment in village-based energisation through mini-grids/Energy Centres	Evidence of private sector investment (USD 5 million) in village-based energisation through mini-grids/Energy Centres.

Component 4 *Outreach programme and dissemination of results*
GEF: USD 140,000. Co-fin: USD 288,673

Outcome/Output		Indicator and target
<i>Outcome</i>	<i>Outreach programme and dissemination of project experience/best practices/lessons learned for replication nationally and throughout the region.</i>	<i>Existence of outreach programme with increased awareness among stakeholders in place to promote and develop RET-based mini-grids for village energy services</i>
4.1	National Plan to implement outreach/promotional activities targeting both domestic and international investors.	Availability of national plan (within 24 months)
4.2	Capacity development of concerned Ministries/Institutions to monitor and document project experience.	Existence of capacity development material; 10 government staff trained
4.3	Published materials (including video) and informational meetings with stakeholders on project experience/best practices and lessons learned	Existence of published material (completed by EoP-3 months)
4.4	Lessons learned and results dissemination workshops	Availability of workshops proceedings (completed by EoP-3 months)

2.2.2 *Project start and duration; main project partners and stakeholders*

The Project was approved by GEF in May 2016 with UNDP as GEF Implementing Agency (IA) and Department of Energy (DoE) of the Ministry of Energy and Meteorology (MEM) as the GEF Executing Agency (EA) and UNDP Implementing Partner (IP). The GEF contribution to the SE4All Project is USD 3,500,000 (including USD 160,000 project management cost). The committed co-financing was USD 19,267,837 (with contributions from UNDP, government entities and private sector). The approved project was further presented to the Public Sector Investment Committee (PSIC) in June 2016 for approval, which was followed by signature of the Project Document (ProDoc) by MEM and UNDP in October 2016. The project was launched at the Inception Workshop held on 24 November 2016, and is now being implemented with an expected operational closing date of October 2021.

Box 11 List of project partners and main stakeholders

Entity	Function/task/mandate	Involvement in SE4All
<i>Government</i>		
Department of Energy (DoE) of the Ministry of Energy and Meteorology (MEM) DoE – REU	DoE is responsible for policy development, setting policy goals, targets for implementers, inter-ministerial coordination, energy data management, oversight of energy imports and exports.	Responsible for the project implementation and oversight; Chairs the Project Steering Committee (PSC)
	DoE's Rural Electrification Unit (REU) contributes financial resources (from the Universal Access Fund) to LEC to carry out grid extensions village schemes identified for electrification and cross-border rural electrification with bulk supply from ESKOM	

Lesotho Electricity Company (LEC)	LEC is responsible for transmission and distribution of electricity through the national grid (mainly reaching the urban and peri-urban areas)	Operates one off-grid hydro diesel hybrid system (at Semonkong) and operated two other systems (not operational) that served as a learning experience regarding implementation and willingness and ability to pay as well as operation and maintenance
Lesotho Water and Electricity Authority (LEWA)	LEWA regulates the electricity sub-sector in the country; issues of licenses for electricity activities; approves electricity tariffs; handles disputes between suppliers and customers, and monitors the implementation of Quality of Service and Supply Standards (QoSSS) LEWA collects levies charged to LE for the UAF (approximately \$ 2 -3 million/year) <i>Note: LEWA also regulates the water sub-sector</i>	LEWA is a member of the PSC and is particularly involved in Component 1 in issues regarding the legal-regulatory framework for mini-grid (off-grid) systems
Ministry of Development Planning (MDP)	MDP is mandated to coordinate Ministries, Departments, and Agencies towards achieving equitable economic development through developing national policies, plans and programmes	A member of MDP's Project Cycle Management Unit participates in the PSC
Ministry of Development Planning (MDP) – Bureau of Statistics (BOS)	BOS mandated “to set up a system for national official statistics on economic, social, demographic, including human resources, and environmental areas in relation to the development needs of Lesotho; and official statistics for purposes of economic and social planning, research, public information and international cooperation”.	BOS is a member of the PSC, and has been the main counterpart organization in the activities of Component 2
Ministry of Trade and Industry (MTI) - Department of Standards and Quality Assurance (DSQA)	DSQA is the focal point for standards and quality assurance. No national standards have been developed to date and industries in Lesotho have traditionally relied on the South African Bureau of Standards and ISO for voluntary standards facilities and quality assurance schemes.	DSQA is important in the part of regulations that deal with quality assurance of (imported) equipment and components and that standards should be established for their installation.
Ministry of Finance	MoF develops and implements macroeconomic policies that support inclusive growth, public financial management policies, systems and capacity to mobilize, allocate public financial resources.	A member of MoF's Debt Management Unit participates in the PSC
Ministry of Local Government	The Ministry of Local Government and Chieftainship Affairs is tasked with providing policy direction and support for local authorities, i.e. district councils and community councils	Five District Council Secretaries participate in the PSC
Ministry of Tourism, Environment, and Culture	The ministry is responsible for environmentally sound development and promotes tourism and culture to make Lesotho a top destination for visitors	The GEF Operational Focal Point (participates in the PSC)
<i>NGOs, academia and private sector</i>		
Technology for Economic Development (TED)	TED works on decentralized renewable energy production (biogas and solar) and energy-saving technologies (stoves), technical training.	Member of the PSC
Bethel Business and Community Development Centre (BBCDC)	BBCDC is a commercial and technical school located in a remote rural district of Lesotho and provides training in the overall subject of solar energy utilization and sustainable development.	In-kind contribution to the project as a co-financier
National University of Lesotho (NUL) – Energy Resource Centre (ERC)	The ERC is an independent entity in the university and endeavours to conduct studies in EE and RE to identify suitable technologies for Lesotho's needs, develop capacity to assess and implement related projects and promote renewable energy adoption. ERC organizes training modules in BSc/MSc programmes, as well as a full MSc in	The Dean of Faculty of Science and Engineering of NUL participates in PSC

	sustainable energy course (RE technologies, planning and policy, economic, community solutions)	
Lesotho Solar Energy Society (LSES)	LSES acts as a platform for the industry and clean energy expert groups to exchange information and implementation of an industry code of practice.	Mentioned as co-financier to the SE4All Project
Private companies	A number of companies are active in the area of renewable energy for electricity and thermal applications	Participation in the Call for Proposals (Component 3)

2.2.3 Project implementation arrangements

The project is nationally implemented (NIM) by the Department of Energy (DoE) under the Ministry of Energy and Meteorology (MEM), in line with applicable agreements between the Government and UNDP. The UNDP Country Office oversees the management of the overall project budget and is responsible for monitoring project implementation, timely reporting of the progress to UNDP Regional Service Centre in Addis Ababa and the GEF, as well as organising mandatory and possible complementary reviews, financial audits and evaluations on an as-needed basis.

The project is overseen by the Project Steering Committee (PSC), which is accountable for the realisation of the project's outcomes. The PSC reports to the Principal Secretary, Ministry of Energy and Meteorology and the Resident Representative, UNDP. The PSC meetings are chaired by the Ministry of Energy and Meteorology (MEM) and co-chaired by UNDP. The chair and co-chair agrees on the responsibilities regarding their obligations towards the PSC. Other members include LEWA, MDP, MoF, TED, ERC of NUL, District Councils of Thaba Tseka, Mokhotlong, Qacha's Nek, Quthing and Mohale's Hoek.

The Director of the Department of Energy as National Project Director (NPD)¹⁸ has the following responsibilities: (i) coordinate the project activities with other government and non-government entities, (ii) certify the expenditures in line with approved budgets and work-plans; (iii) facilitate, monitor and report on the procurement of inputs and delivery of outputs; (iv) approve the Terms of Reference for consultants and tender documents for sub-contracted inputs; and (v) report to UNDP on project delivery and impact. The National Project Director is assisted by a small Project Management Unit headed by a Project Manager (PM). The PM¹⁹ is responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The PM also closely coordinate project activities with relevant Government and other institutions and hold regular consultations with project stakeholders. In addition, a Project Assistant (PA) supports the PM on administrative and financial issues.

The Project Manager is supported by an international part-time Chief Technical Adviser (CTA)²⁰, while short-term international and national experts/consultants are contracted for specific assignments on an as-needed basis.

¹⁸ Currently, Mr. Jerry Seithleko, a.i.

¹⁹ Ms. Mabohlokoa Tau

²⁰ Mr. Robert Aitken

3. FINDINGS: PROJECT DESIGN AND STRATEGY

This part of the report presents an overview of the mid-term review findings. Due to the size of the main text it has been divided over four chapters that cover a) project design & formulation, b) project results, c) project implementation and d) sustainability. The findings are based around a number of evaluative criteria and questions so that the reader can make a link with what was asked and what was found. The questions in the orange-coloured boxes in this and the other Chapters are taken from the Evaluative matrix (Annex D), corresponding to a particular section in this report.

Chapter 3 looks first at the project relevance and country drivenness (at project design), and links with national development. Second, it looks at the design logic (in the framework of outcomes and outputs to reach the objective) and how the design framework was formulated, including the definition of indicators and target values for outcomes and outputs.

3.1 Relevance and design

Country priorities and project strategy

- Does the project adequately take into account the national realities, both in terms of institutional and policy frameworks in its design? Are project outcomes contributing to national development priorities and plans in accordance with the national local policy legal and regulatory frameworks (country priorities)?
- Consistency with the GEF focal areas in Climate Change/operational program strategies of the GEF CC and with the UN and UNDP country programming in Lesotho?
- Is the Project addressing the needs of the target beneficiaries? Relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions. Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?

The project is well-embedded in the Energy Policy 2015-2025 and it is actually: a) helping to bring the legal-framework regarding mini-grids forward and b) contributing to future policymaking regarding off-grid energy and energy access by means of supporting the drafting of a SE4All Country Action Agenda and Investment Prospectus. These are now under discussion at Ministerial and Cabinet level.

Given the low levels of rural electrification, the project is very relevant to the ultimate beneficiaries, i.e. those currently unserved by reliable electricity and/or having to use biomass for energy (and other energy sources like paraffin, candles, expensive dry-cell batteries) in inefficient ways. The Project promotes innovative ways to reach the unserved, by means of mini-grid electrification and energy centres, offering efficient cook-stoves and portable solar products. The Project aims to do this by mobilising another target group, the private sector, to set up and deliver these energy services.

The project, which aims at mitigating the impacts of climate change through the promotion of off-grid renewable energy in developing countries, is an element of the GEF-5 Resource Allocation Framework. The project idea fits squarely in its Climate Change programme #3 to "Promote investment in renewable energy technologies (CCM-3). The Project responds to three Outcome areas under CCM-3, namely 3.1 Favourable policy and regulatory environment created for renewable energy investments, 3.2 Investment in renewable energy technologies increased, and 3.3 greenhouse gas emissions avoided.

The UNDP Country Program Document (CPD) 2013-2017 served as a guideline for programming of activities of UNDP with the Government of Lesotho at the time of the formulation of the Project. The CPD mentions a number of programme

outcomes of which the following are relevant to the SE4All Project, which fits under Outcome 2 of the UN Development Assistance Framework (UNDAF, 2013-2017) for Lesotho, namely “by 2017 Lesotho adopts environmental management practices that promote a low-carbon, climate-resilient economy and society, sustainably manages natural resources and reduces vulnerability to disasters”. Under this UNDAF/CPD Outcome, it mentions as indicator for the UNDP contribution to the CPD “No. of low GHG installations tested through PPP arrangements” (baseline: >9,000; target: 10,500), as well as “Access to renewable energy in rural areas (no. of rural communities, households (women-led disaggregated) with a baseline: 50 rural communities, target 60 more communities.

It should be noted that energy continues to be referred to in the new CPD 2019-2023. The UNDP/CPD Outcome concern is number 3.2: “By 2023, the people of Lesotho use natural resources in a more sustainable manner and the marginalized and most vulnerable are increasingly resilient” with relevant Country Programme Output 3.3: “Capacities of national government and private sector strengthened to enable universal access to clean, affordable and sustainable energy” with the indicators “(i) Proportion of households using clean and sustainable energy” (target: 56,246; 10.65%) and “(ii) Number of off-grid systems promoting and providing access to clean energy” (target: 20)

Gender

- Review the extent to which relevant gender issues were raised in the project design. Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART ‘development’ indicators, including sex-disaggregated indicators and indicators that capture development benefits.

Gender as such is not reflected in the results framework, because at the time of project conceptualisation (2013/14) there were no clear guidelines on including gender-relevant indicators in the results framework (in the most recent UNDP/GEF ProDoc template a separate section is dedicated to gender issues, while a gender action plan needs to be annexed). This does not mean that the Project has ignored gender issues during implementation. One activity has been to hire a national consultant to ‘support the development of a framework for gender mainstreaming in Lesotho Electrification Masterplan’ (Terms of Reference, August 2019). Gender aspects will also be monitored closely as part of the implementation of the project-supported mini-grid and energy centre investments.

3.2 Conceptualization and results framework

- Are lessons from other relevant projects properly incorporated in the project design? Are perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
- Is the project internally coherent in its design? Are there any incorrect assumptions or changes to the context to achieving the project results or are any amendments to the assumptions or targets been made or planned during the Project’s implementation?
- Is the project’s design (logframe) adequate to address the problems at hand? How “SMART” are the end-of-project targets (Specific, Measurable, Attainable, Relevant, Time- bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- M&E design. Does the project have an effective M&E plan to monitor results and track progress towards achieving project objectives (see also Implementation): See Section 5.1.

Links with previous UNDP-GEF project and other initiatives

A number of development partners support rural (off-grid) electrification and energy access, in particular, UNDP, European Union, World Bank, and African Development Bank. An overview of recent donor-supported activities is given in [Box 8](#). The project has been designed to complement these activities. For example, the European Union issued a Call for Proposals for mini-grids and energy centres in 2017, however, care has been taken that project proponents do not

submit proposals under the UNCDF Call for Proposals in the same villages as in the EU activity. The Project has taken note of some lessons learnt from the Lesotho Renewable Energy-Based Rural Electrification Project (LREBRE), which are summarised in Box 11. The findings of the Terminal Evaluation of LREBRE apparently influenced the Government that a private sector-driven model of isolated renewable energy-based mini-grids for the provision of electricity services to the rural areas should be pursued, where the (private) grid operators will be responsible for proper operation and maintenance of installed equipment²¹.

Box 12 LREBRE project

The “Renewable Energy-based Rural Electrification Project in Lesotho” (LREBRE) was an initiative of the Government of Lesotho (GoL) which was partly financed with a GEF grant of USD 2.72 million and implemented during 2006/07-2013. Although aiming at the installation of 5,000 solar home systems (SHS), a total of 1537 SHS with a capacity of 65 W were installed (and an estimated 500 SHS independently installed as a result of the project's influence).

A central feature and key component of the LREBRE project design was to introduce two financial mechanisms (credit guarantee scheme and a performance grant scheme) designed to address the underlying financial barriers that hamper the adoption of RETs through a market-based approach. However, the Government increased the grant portion in its own programme from 40% to 80% and this led to consumers opting for the heavily subsidised Government scheme. Thus, the market-based approach for SHS under LREBRE had great difficulties taking off.

Some findings and lessons learnt coming out of the Project are:

- 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.
- Installers and other stakeholders interviewed suggested that they viewed mini- and micro- grids as having numerous advantages in terms of hardware cost, energy use and quality, operations and maintenance, and the possibility to integrate productive uses of energy, as compared to individual stand-alone households.
- The Government needs to establish a clear policy for subsidising rural electrification that takes into account private sector participation in service delivery. 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, in which improving access to enabling finance is central to developing a market-based approach and increasing private sector participation.
- There needs to be a policy and regulatory framework developed for private sector participation 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. There is a potential role for local government (District and Community Councils) in rural electrification and especially in off-grid services. Management of decentralised energy service delivery requires local level support.
- There is a need to establish a mechanism for ensuring that technologies comply with internationally recognised technical standards and there is need for focussed technical support to ensure quality assurance of key project products and ongoing capacity development.

Design of the Financial Support Instrument (FSS)

In order to facilitate the uptake of renewable energy-based rural mini-grids by reducing the financial risks to investors and lenders alike, the Project includes the establishment of a Financial Support Scheme (FSS) that will consist of USD 1.2 million (USD 1.0 million from GEF and USD 0.2 million from UNDP) that will be available to private sector investors to:

- (i) Support the establishment of renewable energy mini-grid systems by a) preparation of feasibility studies/business plans (FS/BP) and b) partial grant for the initial investment for 10 isolated renewable energy-based mini-grids,
- (ii) Performance-based grant, i.e. based on actual energy production of the renewable energy system from the installed mini-grid systems and the actual energy services provided by the 10 Energy Centres.

²¹ UNDP/GEF SE4All Project Document, page 17

Unfortunately, it has taken considerable time to find the host for the FSS. The assumption was made implicitly in the project concept that the FSS could be part of the proposed FREA (Facility for Rural Energy Access). Although becoming clear that FREA was not going to be established, the design was not really corrected for this reality. At the project start, it was considered to establish the FSS at a Lesotho institution, e.g. LEWA, but this was not possible. Then, discussions were opened with private banks to host the FSS as a 'responsible party'. However, they cannot hand over grants to recipients ('grantees') that are private sector organisations. The option the Project then considered was to partner with UNCDF, which has a broader mandate within the UN system to host such funds and provide financing to private and public entities. All this caused considerable delay. However, being placed now at UNCDF implies, there is no institutionalisation of the FSS and may prove to be a short-lived intervention rather than being the seed for a Government-managed off-grid electrification fund. Nonetheless, the work and performance of the FSS will still provide insight into the requirements of hosting and operating such a fund. The Project and UNCDF are cognisant of the need to share lessons learnt from the FSS within relevant government entities in Lesotho and host training in this regard.

3.3 Ratings for project design

The UNDP/GEF rating requirements and criteria for MTRs do not include a 'rating on project design and formulation', except for the item "M&E at design". This is surprising because we think that the 'design' is one of the main factors, alongside 'implementation' and 'external factors' that determine the achievement of 'results'. The MTR Team proposes to give a rating for 'design' of SE4ALL Lesotho Project using a six-point rating scheme:

- Highly satisfactory (HS), no shortcomings
- Satisfactory (S), minor shortcomings
- Moderately satisfactory (MS), moderate shortcomings
- Moderately unsatisfactory (MU), significant shortcomings
- Unsatisfactory (U), major shortcomings
- Highly unsatisfactory (HU), severe shortcomings
- U/A = unable to assess.

Box 13 Evaluation ratings of project design and formulation

Evaluation item	Corresponding section	Rating
Design logic and approach; addressing barriers	Section 3.2	MS
Formulation of the log-frame with progress indicators and M&E design	Section 3.2	S
Project integration: stakeholder participation and lessons learnt from other projects	Section 3.2	S
Overall project design and formulation		MS
Relevance	Section 3.1	R

The SE4ALL Project builds on earlier experiences with off-grid (mainly stand-alone) systems in Lesotho and the design tries to promote mini-grids as the identified niche option for electrification (between grid and stand-alone electrification) by addressing the policy-regulatory, high cost, and capacity barriers. It is therefore very relevant. The project concept does address the barriers, but rating is 'moderately satisfactory', because of the design issues regarding the operationalisation of the FSS (Component 3).

4. FINDINGS: PROGRESS TOWARDS OUTCOMES

4.1 Introduction





- To what extent have the expected outcomes and the objective of the project been achieved? (review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix; comparison and analysis of the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review)
- What outputs has the project achieved (both qualitative and quantitative results, comparing the expected and realized end-project value of progress indicators of each outcome/output with the baseline value)?
- Were there any unplanned effects? Which external factors have contributed or hinder the achievement of the expected results? Can the project take advantage of new opportunities, adapting its theory of change to respond to changes in the development context?
- Write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits

This chapter presents progress towards results. For each of the four project components (see Section 2.2.1), an overview is given of the progress in the implementation of the project's outcomes and outputs, following the 'project results framework' format and as reported by the Project Team in the annual UNDP/GEF Project Implementation Reports (PIRs, 2017, 2018), Quarterly Progress Reports (QPR; Q1 and Q2 2019) and based on discussions with stakeholders during the MTR mission to Lesotho. Section 4.2 describes the progress achieved in outputs and activities for each Component/Outcome, following the outline of outcomes and outputs of [Box 9](#). This section provides a quantitative and descriptive overview of the achievements of outputs and outcomes, covers a re-assessment of results in terms of progress towards attaining the objective and outcomes. Under each 'main activity', it reports the sub-activities that have been carried out to date or planned.

Section 4.3 presents a summary of the achievements of the project up to now as shown by the progress indicators. The baseline and target values of the indicators are taken from the project's logical framework (as reported in the ProDoc and PIRs), while the achievements are based on progress reported in the PIRs, supplemented by additional information obtained during the mission (including interviews with respondents) and analysis of the project technical outputs produced during 2017-2019. The greenhouse gas emissions reported in the GEF Tracking Tool have also been reviewed; these are discussed in Section 4.3.2. The Chapter ends with Section 4.4, which gives a summary of the MTR Team's ratings towards results.

4.2 Progress in achieving outputs and outcomes

The following provides an overview of progress against the indicators reported in the project's results framework and subsequent PIRs. The achievement is colour-coded, according to:

-  Green: a completed indicator shows successful achievements,
-  Yellow: indicator shows expected completion by EoP (End of Project)
-  Red: unlikely to be achieved by EoP
-  Orange: unable to assess (U/A)

Component 1 Development of cornerstone SE4All Policies and Strategies to facilitate investment

In the absence of a clear policy and regulatory framework to promote private sector participation in energy service delivery for (both grid- and) off-grid services, the private sector has been reluctant to invest in the provision of modern energy services for the rural areas. As discussed in [Box 6](#), a number of policy documents provide overall guidance on

energy and electrification, namely the Energy Policy 2015-2025, and the Lesotho Electrification Master Plan (which has an on-grid and an off-grid part). AfDB and EU have provided support for the formulation of a regulatory framework for the electricity sector. In 2015, LEWA, with the support of AfDB, developed a draft Regulatory Framework for the Development of Renewable Energy Resources in Lesotho ("RE regulatory framework") for expanding the use of renewable energy resources. The framework specifies the procurement and regulatory approaches for both on-grid and off-grid RE. Specifically, the RE regulatory framework includes: feed-in tariff rules; procurement guidelines; and templates for various licenses, tenders, and power purchase agreements (PPAs). The proposed regulatory framework has not been adopted by Government, but LEWA has published the PPA template to guide prospective power producers and off-takers who are interested in buying or selling electricity to the Lesotho grid. However, the draft RE Regulatory Framework mainly concentrates on grid-connection independent power producers (IPPs), with only one page devoted to off-grid concessions. There is a clear need to expand the regulatory text to cater for mini-grid IPPs.

Project intervention

Outcome/Output	Indicator and end-of-project target	Mid-term status (Q3 2019)
<i>Outcome: SE4All cornerstone policies and strategies facilitating (increased) investment in RET deployment, particularly isolated mini-grids</i>	<i>Existence of policies and strategies.</i>	See main text
1.1 SE4All cornerstone policies and strategies facilitating (increased) investment in RET deployment, particularly isolated mini-grids 1.2 Approved/adopted SE4All Investment Prospectus (IP), following extensive stakeholder consultations.	Existence of Country Action Agenda and of Investment Prospectus (completed with 12 months) .	SE4All Country Action Agenda (CAA) and Investment Prospectus (IP) for Lesotho developed and validated by stakeholders. However, they are pending Cabinet approval, and are therefore not official as yet.
1.3 Strategies and investment plans related to mini-grid applications and village energisation schemes	Strategies and investment plans related to mini-grid applications and village energization schemes (to be completed with 18 months)	Development of a Regulatory Framework for RE-based Mini-Grids (and Energy Centres completed in April 2019 (still draft)

Implementation status

SE4All Country Action Agenda (CAA) and Investment Prospectus (IP) for Lesotho were developed²² and validated by stakeholders in October 2018 and are now with the Cabinet for approval. The CAA is a holistic document acting as an umbrella for energy sector development at the national level with a focus on sustainable energy. The IP provides an approach to operationalize the CAA by identifying and developing a set of implementable programmes and projects, including their investment requirements. The Project has sensitised the Principal Secretary and Minister of Energy to present the documents to the Cabinet for approval before December 2019. The regular changes of Ministers are likely to delay the process as sensitisation has to be done to the new minister every now and then. Since January 2019, the Ministry of Energy has been headed by three different ministers.

The consultancy on regulatory framework for mini-grids and village energization ended with a draft version that was validated by stakeholders in April 2019. The framework is now with MEM for approval by the Minister. Concerns were expressed by some mini-grid developers that the current text of the Regulatory Framework is too technical and should receive inputs from legal experts. One developer had the text of the Framework checked by the UK-based company Covington & Burling and a revised version was sent to UNDP-SE4ALL Project and DoE for their consideration.

²² Regulatory requirements and financial support schemes related to mini-grid applications and village energisation schemes (April 2019), developed by the Ministry of Energy and Meteorology with SE4ALL Project supported by Mabohlokoa Tau (project manager) and Carlos Matos Gueifão (international expert).

Box 14 Regulations for mini-grids and energy centres

Like many countries in the region, the electricity sector legal and regulatory framework in Lesotho has not been formulated having mini-grid systems in mind. Current licensing and permit procedures and proposed “RE regulations” (see main text) are grid-oriented and apply to large-scale investments, while the smaller mini-grids typically require a more light-handed approach to avoid discouraging the mini-grid developers by the rules of the game that are overly costly or burdensome. Another issue for the framework to address is the situation of the mini-grid when the main grid arrives in areas served by mini-grids.

The draft **Mini-grids Regulatory Framework**, developed with SE4All Project support, covers isolated and grid-connected mini-grids. Any mini-grid shall have an electricity generator or generators from one or more renewable energy sources in its network provided that such mini-grid may also have a back-up generator or generator from one or more non-renewable energy sources, but at least 70% of electricity supplied over a mini-grid in a calendar year shall be from renewable energy source(s). The Framework distinguishes between three categories of mini-grids. Small Mini-grids (<100 kW), will be licensed in a “very light-handed manner”, Medium Mini-grids (between 100kW and 1MW) in a “light-handed” manner and Large Mini-grids (>1MW) in a manner similar to the grid. The differentiation lies in how tariffs are regulated, what standards need to be complied with, and in the compliance and monitoring requirements for the different sized grids. This is summarised below:

	Category I: 0-100 kW	Category II: 100 kW – 1 MW	Category III: > 1 MW
Licensing	<ul style="list-style-type: none"> • Very light-handed <ul style="list-style-type: none"> ○ Registration as ‘exempt’ mini-grid operator ○ In unserved area scheduled not to be connected within 2 years (no objection from LEC) 	<ul style="list-style-type: none"> • Light-handed <ul style="list-style-type: none"> ○ Mini-grid permit needed (combined generation, distribution, and supply) ○ In unserved area scheduled not to be connected within 2 years (no objection from LEC) ○ Community agreement 	<ul style="list-style-type: none"> • Full licensing requirement <ul style="list-style-type: none"> ○ Mini-grid permit needed ○ In unserved area scheduled not to be connected within 2 years (no objection from LEC) ○ Community agreement
Tariffs	<ul style="list-style-type: none"> • Cost-reflective • Exemption from formal tariff regulation; • Submission of financial data and tariff to be applied with LEWA for consideration • LEWA may review tariffs upon receipt of a petition on the tariff charged signed by 60% of the consumers of a community served 	<ul style="list-style-type: none"> • Cost-reflective • LEWA sets principles and operators apply for tariff levels • Shall provide LEWA with proposed tariff design, tariff levels and escalation rates, along with an explanation of how they contribute to the recovery of reasonable costs; • LEWA uses an in-house modelling tool to check the reasonableness of tariff request; • LEWA may trigger a detailed tariff review, if it considers tariffs unreasonable 	<ul style="list-style-type: none"> • Cost-reflective • LEWA sets principles and operators apply for tariff levels • Tariffs are approved by LEWA based on the business plan and the tariff methodology; • Operator can only charge approved tariffs and tariff structure differentiate between different customers. • Interim review can be triggered under exceptional circumstances

Where LEC intends to connect or extend to the isolated mini-grid (and provided that the distribution system of such a mini-grid has been constructed to standards that allow interconnection with the main grid), the mini-grid Permit Holder or Exempt Mini-Grid Operator may apply to LEWA for the right to operate as: (i) a Small Power Producer selling electricity to LEC; (ii) a Small Power Distributor that purchases electricity from LEC’s main grid under a bulk supply tariff and then resells some or all of that electricity to the Small Power Distributor’s retail customers; or (iii) a combination of a Small Power Producer and Small Power Distributor. The regulations also specify compensation rules or principles for deciding how much the Permit Holder/Operator should be paid for some or all of their distribution and generation assets if they want to exit the mini grid business at a particular location.

Mini-grids in Lesotho shall comply with the Technical Codes of Lesotho (Lesotho Grid Code 2015, Rural Electricity and Quality of Service and Supply Standards 2008, Solar PV code of practice and equipment specifications and installation standards, 2003). Mini-grid developers can in the absence of national standards refer to international accepted recommendation, codes and standards.

The commercial operation of **Clean Energy Centres/Energy Kiosks** in Lesotho is governed by and must comply with the following legislation: Trading Enterprises Regulations 1999, Legal Notice No. 107 of 1999. This means these are not regulated as such, but must comply with basic requirements (Specialised Trading Licenses, Standard Specifications, Code of Practice, and requirements for inspection) and, thus, the law currently requires that all commercial Energy Kiosks need to be licensed.

The MTR Team wants to stress that this type of legal-regulatory framework is considered of vital importance by project developers and without certainty on the set of procedures to follow (licenses, permits, standards, future grid connection) few, if any, will invest in renewable energy mini-grids²³.

The SE4All report further recommends that:

- LEWA/DoE considers process-type licensing that could be simplified and developed within the constraints of the present DoE/LEWA to assist mini-grid developers, by means of the creation of a One-Stop-Shop for private developers which informs private developers about the available (financial) support for off-grid projects or electrification by disseminated technologies (e.g. small PV products) and the procedures to be followed about the permitting and licensing process;
- The following financial mechanisms will be used to close the gap between affordable tariff and cost-reflective tariff: (i) *tax relief* for service providers (reduction of VAT, import duties, withholding tax, corporate tax etc.), and by providing (ii) *direct subsidy* using funds from e.g. development partners or Universal Access Fund (UAF).²⁴

4.2.1 Component 2 Baseline energy data collection and monitoring for SE4All

Baseline

The formulation of good policies with quantified targets needs to be based on good data. While electricity supply data can be collected from LEC and fossil fuels from import registries, data on traditional (biomass) fuels and energy consumption are more difficult to get, often by surveys. The last comprehensive energy survey in the country was carried out in 1985 during the development of the Lesotho Energy Master Plan (LEMP). Since then, no new energy surveys have been undertaken.

Project intervention

Outcome/Output	Indicator and end-of-project target	Mid-term status (Q3 2019)
<i>Outcome: Improved capacity of energy stakeholders and government officials for decentralized clean energy planning and decision-making on the basis of quality energy data</i>	<i>Capacity developed within 1 yr of project initiation</i>	The project facilitated capacity building of 25 Bureau of Statistics and Department of Energy personnel on drafting energy survey questionnaires, data collection, data cleaning, building energy balance, and the use of the LEAP modelling software
2.1 National survey conducted on energy supply, consumption and demand, disaggregated by sector, district, and application	Completion of national energy survey by end of yr1	Households Energy Consumption Survey (HECS) was completed in November 2017. Technical Report and Analytical Report drafted and validated by stakeholders. Sector Energy Consumption Survey (SECS) took place in November 2018 with subsequent data processing and report writing in the process of finalization
2.2 Energy database and information system established for data collected under Output 2.1 above, with clear	Existence of energy database and information system (to be completed within 9 months)	The households' energy database and information system were established and approved in early 2018

²³ There will be no separate 'investment plans' as this is covered by Output 1.2 (Investment Prospectus) and the investment proposals submitted by developers in the UNCDF Call for Proposals.

²⁴ The report authors add the observation that "rather than subsidize the mini-grid capital expenditure it would be better to subsidize consumption directly through e.g. vouchers/Free Basic Electricity to consumers while keeping the cost-reflective tariff intact for transparency / finance-ability of the operator. This keeps the subsidy "results based" and avoids distorting the economics of the project's financial structure

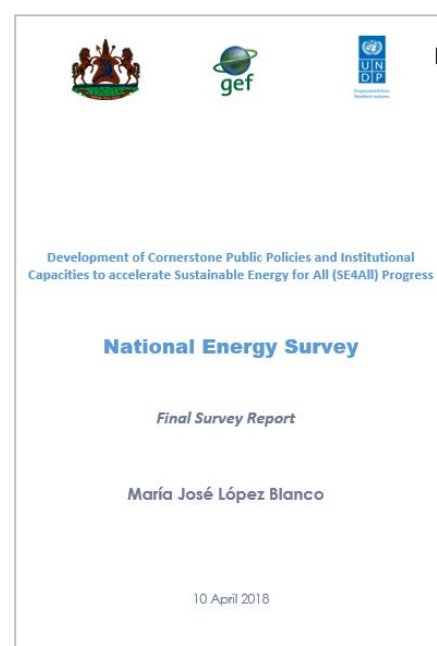
responsibilities agreed to as regards regular monitoring and annual publication of indicators		
2.3 Energy modelling software in place to analyse the data, model scenarios and produce information that will promote RE policies.	Energy modelling software being utilized (to be completed with 12 months)	LEAP software was identified as the most suitable for Lesotho.
2.4 All energy-related data and plans in the country harmonized with the new National Energy Policy and New Climate Change Strategy and in adherence to a standardized GHG emissions tracking system.	Harmonised data available (to be completed within 18 months)	Harmonization of data with existing National Energy Policy and Climate Change Strategy is ongoing

Implementation status

The Households Energy Consumption Survey (HECS) was completed in November 2017. The survey provides baseline information for the project and will assist in planning, tracking of progress towards SDG 7 and SE4All objectives. The technical Survey Report was submitted in March 2018 and validated by stakeholders in April 2018 and the Analytical Report has been drafted and validated too. The households' energy database and information system were established and validated by stakeholders in April 2018.

Due to budget constraints, the survey for sectors other than households (Sector Energy Consumption Survey, SECS) had been delayed until 2019 and is now scheduled to be finalised by Dec 2019.

The survey provides baseline information not only for the project (SE4All objectives) but provides valuable inputs for policy formulation in Lesotho in general. In this context, harmonization of data with existing National Energy Policy and Climate Change Strategy is being carried out in 2019. For this purpose, LEAP²⁵ software, which assists in energy planning was identified as the most suitable for Lesotho. Other modelling software being utilized by the DOE and BOS staff include Mead, Message, Simplex and Simplan.



4.2.2 Component 3 Successful establishment of a village-based energy service delivery model for replication nationally

Baseline

Renewable energy technologies can be utilised for off-grid power generation as stand-alone applications (for example, solar home systems or solar water pumps) and in mini-grid configurations (powered by hydro, solar, or wind and/or in hybrid configuration with diesel, as explained in detail in [Box 13](#)) to provide the rural population with electricity services. A relatively new approach is to set up Energy Centres (also called Energy Kiosks or Energy Hubs). These are centres for electricity production and supply of energy services, generally located in rural or peri-urban zones. In order to be considered as an "Energy Centres", an electricity charging service and/or selling devices (such as efficient stoves or charged devices) form part of the business model, targeting households without access to grid electricity.

²⁵ The Long-range Energy Alternatives Planning System (developed by the Stockholm Environment Institute) is an integrated modeling tool that can be used to track energy consumption, production and resource extraction in all sectors of an economy.

Charged devices can range from mobile phones, batteries of different sizes or various other items containing a battery. Examples for such devices are lanterns, torches, radios, or solar home systems (SHS). A common approach for Clean Energy Centre businesses is the offer of other services next to charging, for example, provision of internet access, entertainment services or printing, that often require electricity in the first place. Another option is the sale of energy-related products such as panels, lanterns, batteries, or SHS next to the charging service. These can be supplemented with small retail of cooled food and drinks, telecom products (airtime cards).

Box 15 Efficient wood stoves

Approximately 5,000 African Clean Energy (ACE) and 10,000 Solar Lights cook stoves have been sold in Lesotho; the estimated total available market is about 353,000 households. The Government through its research and development centre, Appropriate Technologies Services (ATS), is also developing affordable efficient cook stoves that have a dual function for space heating and lighting.

African Clean Energy (ACE), based in Maseru, is the manufacturer and distributor of the ACE 1 Solar Biomass Energy System (see picture). More than 20,000 stoves have been sold since 2014, of which 5,000 have been sold in Lesotho. The system comes with a stove, which burns most solid biomass (although biomass pellets are recommended), a battery, small PV panel (10 W) and a LED lamp with possibility for mobile charging.

ACE Efficient stove and electricity charger



Financing purchases in this way makes the product highly accessible. According to ACE, a typical rural household spends on average M 325 on energy each month (wood, kerosene). The cost of an ACE stove is USD 120, or M 1,750. An initial down payment of M 250 is required for the stove while the remainder is collected in monthly payments of M 150 over the course of 10 months. ACE works together with micro-finance organisations for rural customers in Lesotho, managing the loans for the customer through its in-house loans team. With significant energy cost savings (80% or M 260), they can be used to cover the value of the monthly instalment. Over the coming 5 years, ACE plans to establish 25 Energy Centre (also in the main text of this Section) and a few more with UNDP SE4All support (see Box 16). Once the hub network is complete, ACE should be able to sell more than 40,000 units each year.

SAVE80 stove cooking set (Solar Lights Pty)



Another Maseru-based company, Solar Lights, has sold about 10,000 efficient stoves in the market, supported by the CDM-registered project "Efficient Wood Fuel Stove-Cooking Sets". The stove deployed is the SAVE80 system which consists of custom-fit pots, pans and a heat retaining box (referred to as the 'Wonderbox'). The SAVE80 system saves up to 80% of fuel wood. Costs are M 1,630 – M 3,600 depending on the size of the devices and the number and type of pots. The basic philosophy is to empower rural communities through the establishment of RE User Groups (REUG) and expansion of existing Stove User Groups (SUG)s, allowing for development paths prioritised by the beneficiaries themselves.

When implementing the CDM project, it was found that users had demand for other RE technologies, e.g. solar lights (likely because the company's name is Solar Lights), such as SunKing PV lantern line (see picture). The idea is to make efficient stoves and portable PV products available at Energy 'Shopping' Centres (ECS). With EU support (2017 Call for Proposals), the company will set up energy centres in Leribe ESC (serving Butha-Buthe and Leribe Districts), the Berea ESC will serve Berea district and the Mhales Hoek ESC will serve certain villages in Mhales Hoek district. With UNDP SE4All support, the company will service other village clusters (see Box 16).



Sun King PRO 300. Cost: M 1,100 (with mobile charging connection; mobile shown not included in the price)

In Lesotho, there is a high demand for (biomass) fuel and appliances for heating and cooking. With demand for wood outpacing its supply in this deforested country, the dissemination of efficient stoves is very important. Improved cookstoves are up to 50 percent more efficient compared to traditional stoves (or cooking practices, such as three-stone/open fire) and provide health benefits by reducing indoor air pollution. The African Clean Energy (ACE) company has designed equipment that combines an efficient stove with a solar light and a USB charging port (e.g. for mobile phone), while Solar Lights markets another type of efficient stoves. These are sold through Energy Centres set up by these companies.

One challenge to the Clean Energy Centres is that establishing energy kiosks generally requires a substantial initial investment, to cover building expenses, the cost of the electrical system and the cost of the electrical products proposed. The low purchasing power of the populations who benefit from the scheme also limits the potential financial viability of the Energy Centres; thus, the correlation between the investment and the return on the investment is crucial. The cost estimates contained in the pre-feasibility study were based on this type of solution, but are not the solution. Energy centres do not have to be fixed locations, made of bricks and mortar, and manned by a number of permanent staff. They can be innovative, lower-cost, distribution hubs that piggy-back on existing businesses, etc. For instance, setting up a 'spaza' shop does not require huge capital investment in the premises.

Private sector investors consider the availability of the high upfront capital costs for renewable energy and limited project finance from local banks (that do know the rural energy business or deem it too risky) as a major bottleneck to venturing into business opportunities, which is augmented by concerns about the willingness and ability to pay (WTP/ATP).

In order to facilitate the uptake of renewable energy-based rural mini-grids, thus minimising the financial risks to investors and lenders alike, a number of development partners are committed to make financial support available. The European Union (EU) issued a Call for Proposals in 2017 for "Energy efficient household devices, distribution, after-sales structures and Mini-grids for exploring economic growth potential in rural areas" as part of its "Support to Reform in the Energy Sector in Lesotho (Phase I)". Some seven proposals were received for the 'energy centre' part and about seven for the 'mini-grids'. However, the final grant decision has only been awarded to the 'energy centre' proponents: a) Rural energy hubs (to Africa Clean Energy, EUR 1 million); b) Renewable energy access solutions (Positive Planet, EUR 1 million); c) RE Women Empowerment (KESI, EUR 0.35 million), and d) RE User Groups (Solar Lights, EUR 0.71 million)²⁶.

With debt financing support from EU's ElectrIFI facility and a UK-based foundation and equity financing (with Lesotho Pension Fund), a solar-battery mini-grid has recently been built by OnePower at Ha Makebe selling electricity to about 200 households using the mobile money banking system M-PESA, smart meter technology and solar PV trackers²⁷.

The World Bank-SREP Investment Plan mentions that USD 12 million of SREP funding (USD 4 million in grants, USD 8 million in concessional financing) will be made available to leverage USD 10 million in financing from the World Bank, and USD 20 million in investment from other private sector investors in mini-grids and other distributed RE technologies²⁸.

Project intervention

Outcome/Output	Indicator and end-of-project target	Mid-term status (Q3 2019)
<i>Outcome: Capacity developed among relevant stakeholders on technical, financial, regulatory and socio-economic aspects of small-scale wind projects.</i>	<i>Availability of business model within 1.5 yrs of project initiation</i>	Private-sector led model proposed in the Call for Proposals

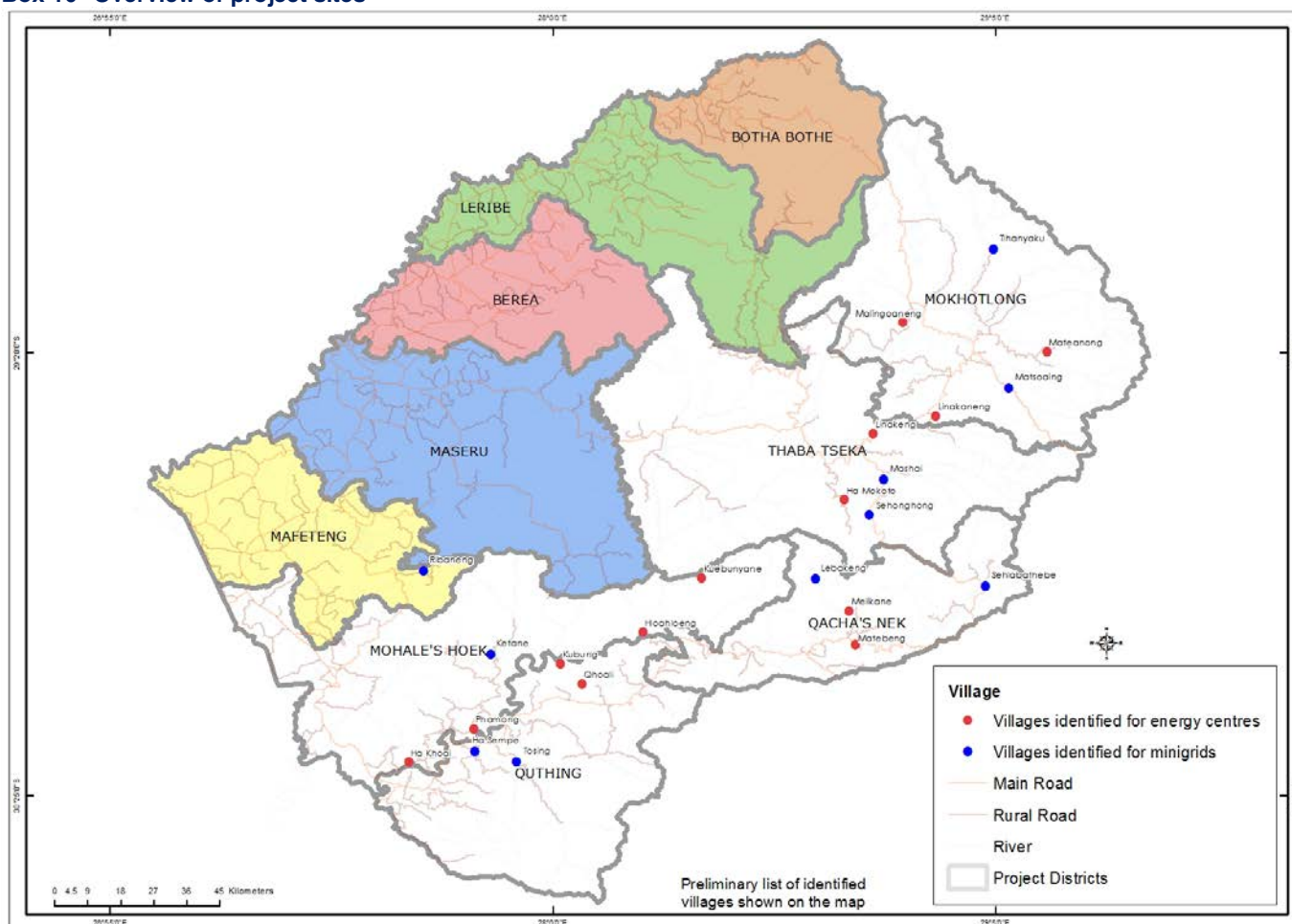
²⁶ J.H.A. van den Akker, p.c.

²⁷ OnePower is currently planning the roll-out of 25 mini-grids in Lesotho that will provide i24/7 Pay-as-you-go AC electricity setup connected at the household level. The plan will be implemented, where possible, with development partner support. However, the basic idea is that these projects are fully market-driven: revenue from electricity sales should cover capital costs (via debt repayment) and operating costs. It is worth noting that OnePower, partnering with Scatec Solar, will build Lesotho's first utility-scale solar project, called NEO-1, a 20 MW PV grid-connected facility in Mafeteng District with financial support from Norway (Norfund) and AfDB's Sustainable Energy Fund for Africa (SEFA)

²⁸ Investment Plan (2017), Scaling-up Renewable Energy Programme (SREP) of the Climate Investment Funds (CIF)

3.1 Completed pre-feasibility studies for mini-grids in 20 village communities, spanning 5 of Lesotho's 10 districts.	Pre-feasibility studies completed (within 12 months)	Preliminary assessment of the 20 sites earmarked for mini-grids and energy centres was undertaken during Q4 of 2018 and the reports were validated by the stakeholders.
3.2 Operational mini- grids in 10 village communities in the 5 districts (INV). 3.3 Capitalisation of EU- supported Facility for Rural Electrification <i>Note: Output 3.3 has not been relevant since FREA was never established</i>	10 village-based RET mini-grids and 10 Energy Centres constructed and operational	An Agreement by UNDP with UNCDF to be the Managing Agent of the FSS signed in Q1 2019. A Call for Proposal was published in May 2019 resulting in six companies selected to establish and operate 10 mini-grids and 10 energy centres (see Box 16)
3.5 Financial Support Scheme (FSS) established to support private sector investment in village- based energisation through mini- grids/Energy Centres	Evidence of private sector investment (USD 5 million) in village-based energisation through mini-grids/Energy Centres.	
3.4 Capacity of national and district-level energy officials developed on best practices and opportunities for decentralized village energisation models in off-grid areas (TA).	Existence of capacity development material (within 24 months)	In 2020, the project will sensitise and train national and district-level energy officials on best practices and opportunities for decentralized rural energisation models in off-grid areas

Box 16 Overview of project sites



Box 17 Characteristics of the project sites (described in the pre-feasibility studies)

The Pre-Feasibility Studies of Component 3 provide rich details on the prospective project sites. Villages were selected based on a number of criteria, such as location (government plans for electrification, distance to the main grid, population density, accessibility), economic potential (SMEs, agriculture, anchor customers), community expectations and ability and willingness to pay (ATP/WTP; see also Box 22). Some relevant numerical information on investment, energy demand, size mini-grid tariffs are given in the tables below, as well as data on current and projected energy demand.

MINI-GRIDS

District	Village	HH	Demand (kWh) 2019-2030	Size PV (kW) 2019-2030	Size (kWh) storage 2019-2030	Power lines (km) 2019-2030	Initial investment ('000 M) 2019-2030	Required tariff (M/kWh) 2019-2030
Mohale's Hoek	Ketane (Ha Nohana)	180	111,400 - 418,500	131 - 302	397-762	7.2 - 8.0	4,578 - 15,216	6.55 - 5.21
	Ribaneng	250	119,220 - 495,700	120 - 307	431 - 873	15.9 - 17.8	5,057 - 17,613	6.74 - 5.06
Mokhotlong	Matsoaing	200	93,830 - 381,800	114 - 286	339 - 730	7.2 - 8.0	3,805 - 14,443	9.00 - 7.32
	Thanyaku	200	98,370 - 399,420	129 - 291	352 - 696	3.2 - 3.6	4,009 - 14,426	8.99 - 6.91
Qacha's Nek	Sehlabathebe (Mpharane)	180	109,110 - 411,500	164 - 313	388 - 734	6.7 - 7.4	4,928 - 15,093	9.48 - 6.99
	Lebakeng	300	156,310 - 592,450	196 - 453	562 - 1,027	5.2 - 5.9	6,288 - 19,182	8.93 - 6.30
Quthing	Sebapala (Ha Semphe/Lefikeng)	200	82,630 - 360,000	95 - 258	300 - 663	7.8 - 8.7	3,648 - 14,171	9.42 - 7.47
	Tosing (Dalewe)	200	110,200 - 421,950	129 - 306	395 - 792	4.4 - 4.9	4,222 - 14,978	8.71 - 6.95
Thaba-Tseka	Sehlonghong	250	123,200 - 491,400	161 - 361	444 - 881	11.9 - 13.3	5,567 - 17,067	9.49 - 6.67
	Mashai (Moreneng, St. Theresa)	200	113,800 - 437,000	151 - 327	406 - 770	10.79 - 12.04	5,334 - 16,175	9.67 - 6.98

ENERGY CENTRES

District	Village	HH	Demand (kWh) 2019	Size PV (kW) 2019/30	Size (kWh) storage 2019/30	Initial investment ('000 M)
Mohale's Hoek	Phamong (Central)	350	10,860	15.3	50	2,048
	Koebunyane	150	4,480	6.4	20	792
Mokhotlong	Linakaneng	450	12,660	23.0	55	2,232
	Malingoaneng	250	7,200	11.8	18	1,255
Qacha's Nek	Matebeng (Ha Lelignano)	250	7,150	12.0	33	1,259
	Melikane (Thuoeleng)	100	3,170	5.6	15	750
Quthing	Kubung (Ha Majara)	120	3,750	5.6	17	760
	Qhoali	450	13,490	17.9	60	2,150
Thaba-Tseka	Linakaneng	180	5,300	10.9	26	1,201
	Ha Mokoto (Litsoetseng)	200	5,840	9.2	28	1,178

Cost assumptions for solar PV mini-grids are capital cost (CAPEX), USD 1,800/kW (or M 23,400/kW) with annual operational cost of USD 25/kW (or M 325/kW). The cost of energy centres are in building cost and vehicles (M 200,000-400,000), PV system (site-specific) stockage of products (e.g. solar lantern, bulb, batteries, solar panels, efficient wood stove, plugs and sockets, other products) ranging from M 235,000-800,000, and cost of staff and training.

District	Village	HH	Current (2018) – average per household (HH)				Demand 2019		Demand 2030	
			Energy consumption kWh/yr	Energy expenditure M/HH/yr	Income M/HH/yr	Willingness to pay M/HH/yr	HH 2019	Payment M/HH/yr	HH 2030	Payment M/HH/yr
Mohale's Hoek	Ketane (Ha Nohana)	180	799	265	26,172	2,556	182	2,122	203	1,354
	Ribaneng	250	1,016	200	?	6,900	253	2,182	282	1,357
Mokhotlong	Matsoaing	200	827	272	28,561	1,920	202	2,944	225	1,358
	Thanyaku	200	3,192	911	24,096	2,448	202	2,912	225	1,358
Qacha's Nek	Sehlabathebe (Mpharane)	180	836	293	?	?	182	3,070	203	1,354
	Lebakeng	300	1,007	189	19,001	3,120	303	2,886	338	1,361
Quthing	Sebapala (Ha Semphe)	200	1,377	943	12,316	3,840	202	3,051	225	1,358
	Tosing (Dalewe)	200	1,208	406	14,770	3,780	202	3,051	225	1,358
Thaba-Tseka	Sehlonghong	250	972	410	?	3,000	253	3,055	282	1,385
	Mashai (Moreneng)	200	1,045	384	?	2,244	202	3,132	225	1,358

Source: Pre-Feasibility Studies for Mini-Grid and Energy Centres in Lesotho (2018; Kratos Consulting; Langniss Energie & Analyse)

Implementation

The project commissioned the companies Kratos Consulting (Lesotho) and Langniss - Energy & Analyse (Germany) to undertake the pre-feasibility study for micro-grids and Energy Centres in 20 village communities, starting April 2018 and concluding in August 2018. The studies span five of Lesotho's 10 districts, namely Mohale's Hoek, Mokhotlong, Qacha's Nek, Quthing and Thaba-Tseka (see [Box 15](#). A summary of main characteristics of the sites coming out of the pre-feasibility studies is presented in [Box 16](#)).

Key to the success of Component 3 has been the establishment of the Financial Support Scheme (FSS), targeting allocation of grant funding to qualifying project developers focusing on both mini-grids and energy centres. The establishment of the FSS was met with long delays (as described in Section 3.2). The appointment and signing of an Agreement with the FSS Managing Agent (MA), UNCDF, took place in January 2019.

The Call for Proposals for the establishment of renewable energy-based mini-grids and energy centres was published by UNCDF on May 2019. At the close of this Call for Proposals on June 2019, a total of 74 proposals were received with 34 for mini-grids and 40 for village energy centres. The text of the Call for Proposals is provided in Annex D. The FSS Investment Committee (IC) was established in the second quarter of 2019. Chaired by DoE, the FSS further consists of representatives from UNCDF, Ministry of Finance, NUL, Lerotholi Polytechnic, and UNCDF with UNDP represented by the SE4All Project's CTA and by the Project Manager (as the body's Secretary). UNCDF, with the Investment Committee as the advisory body, has evaluated and approved projects for technical support and forecasted funding, eventually resulting in a shortlist of four companies/NGOs that cover the 10 energy centres, and three companies that cover the 10 mini-grid sites. For details, the reader is referred to [Box 17](#). This is now followed by a period of negotiating the Grant Agreement with the project proponents, who also need to conclude a Concession Agreement with DoE.

The SE4All FSS will provide the following services:

- Support the preparation of feasibility studies/business plans (FS/BP) and partial investment for isolated renewable energy-based mini-grids, by providing a grant at an amount of up to 50% for each of the costs involved for the feasibility study/business plans and the investment grant, with a maximum per project allocation not exceeding USD 60,000.
- Establish a performance-based incentive (PBI, also referred to as OBA – output-based aid) that will be paid directly to the project developer, based on actual energy production of the mini-grid and energy services of the energy centre with a maximum per project annual allocation not exceeding USD 7,500 for a period of up to 4 years.

While probably an energy centre can be set up in half a year, getting the mini-grids constructed and up and running will take one to 1.5 year, adding four years gives a FSS implementation period of 4 or even 5 years, i.e. up to end of 2023 (or even 2024), which is way beyond the implementation period of the SE4All Project, supposedly ending by mid-2021. This important issue will be discussed further in the next Section and as part of the Recommendations section.

With preparations for the FSS-supported projects only starting in 2020, so will the planned activities of Output 3.3. During the implementation of this Output, the project will sensitise and train national and district-level energy officials on best practices and opportunities for decentralized rural energisation models in off-grid areas. It will also work with the Department of Standards and Quality Assurance (DSQA) of the Ministry of Trade and Industry to ensure that only quality RE technology products that meet approved standards are used.

4.2.3 Component 4 Outreach programme and dissemination of results

Baseline

Private companies and NGOs, such as Africa Clean Energy (ACE) and Solar Lights have experience with the distribution of some RE technologies, namely efficient stoves and people have some awareness on efficient and solar PV devices.

Box 18 Details of project sites and proponents selected in the Call for Proposals

The table provides the basic data on mini-grid and energy centre investment by the seven companies chosen. Average installed capacity is 64 kW at average investment is USD 6,400 per kW. The initial investment cost of the energy centre is less in comparison with mini-grids, but their cost is more in the annual operation relative to the initial investment. Hence, energy centres are given a performance-based grant only. The investment costs of Solar Lights' centres are lower than of ACE, because operations are more centrally based with sales through user groups in comparison with the more fully equipped and manned ACE centres.

Project name/place	Sites	Proponent	Investment cost (USD)	Initial grant (USD)	Performance-based grant (USD)	Expected tariff (Maloti/kWh)
Mohale's Hoek	Phamung (Central)	Rural Self-Help Development Association (RSDA)	21,600	60,000	30,000	81.10
Mohale's Hoek	Koebunyanane	African Clean Energy Pty Ltd (ACE)	60,963	60,000	30,000	TBD
Mokhotlong	Linakaneng	African Clean Energy Pty Ltd (ACE)	61,062	60,000	30,000	74.29
Mokhotlong	Malingoaneng	Solar Lights (Pty) Ltd	15,000	60,000	30,000	69.00
Qacha's Nek	Matebeng (Ha Leilingoana)	African Clean Energy Pty Ltd (ACE)	82,349	60,000	30,000	50.00
Qacha's Nek	Meikane (Thuoeleng)	African Clean Energy Pty Ltd (ACE)	60,995	60,000	30,000	69.00
Quthing	Majara	African Clean Energy Pty Ltd (ACE)	61,061	60,000	30,000	69.00
Quthing	Qhoali	African Clean Energy Pty Ltd (ACE)	84,209	60,000	30,000	51.00
Thaba-Tseka	Linakeng	Solar Lights (Pty) Ltd	15,000	60,000	30,000	64.00
Thaba-Tseka	Ha Mokoto (Litsoetse)	KESI Business Solutions (Pty) Ltd	13,666	60,000	30,000	52.00
Total			475,904	600,000	300,000	
Investment co-financing			175,904			

Mini-grids	District	Sites	Proponent	Investment cost (USD)	Initial grant (USD)	Performance-based grant (USD)	Expected tariff (Maloti/kWh)
		Ketane (Ha Nohana)	Tsoelopele Consultants and Contractors	345,554	60,000	30,000	81.10
		Ribaneeng	Yarona Civil Contractors (Pty) Ltd	367,188	60,000	30,000	TBD
		Lebakeng	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	74.29
		Sehlabathebe (Mpharane)	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	69.00
		Thankayu	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	50.00
		Matsoaing	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	69.00
		Sebakala	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	69.00
		Tosing (Dalewe)	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	51.00
		Sehong-Hong	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	69.00
		Mashai (Ha Semphe / Lefikeng)	OnePower Lesotho Pty Ltd	430,401	60,000	30,000	64.00
Total				4,155,946	600,000	300,000	52.00

It can be noted that average size of 64 kW per mini-grid is less than proposed in the Pre-feasibility Studies (PFS). The MTR Team does not have the details of the mini-grid proposals submitted. Looking at OnePower data (648 kW in total), and assuming the number of households of the PFS (1,950 in 2019 in the 8 sites), we assume a load utilisation factor of 12% (implying an energy consumption of 245 kWh per household. Thus, at a tariff of M 5 per kWh, an average household would pay M 1,330 per year which is within the range of willingness to pay values mentioned in the PFS.

Based on the above figures, we can calculate the annual energy production in the mini-grids and based on this the cumulative energy production (over the assumed lifetime of 15 years). Assuming the same grid emission factor as mentioned in the ProDoc (0.8925 tCO₂ per MWh for the alternative of diesel generation), we can then derive the cumulative direct emission reduction of the mini-grids, as given in the table below. For the energy centres, the energy production is more difficult to calculate as it depends on the sales of renewable energy products and service. Conservatively, we base on the PV system installed to provide the centre with energy at 1 kW generating 1,402 kWh/yr.

District	Energy production (kWh/yr)	Cumulative over 15 yrs (kWh)	Cumulative GHG reduction (tCO ₂ /yr)
Mohale's Hoek	85,247	1,278,710	1,119
Mohale's Hoek	78,089	1,171,337	1,025
Qacha's Nek	72,533	1,087,992	952
Qacha's Nek	52,560	788,400	690
Mokhotlong	72,533	1,087,992	952
Mokhotlong	72,533	1,087,992	952
Quthing	53,611	804,168	704
Quthing	72,533	1,087,992	952
Thaba-Tseka	67,277	1,009,152	883
Thaba-Tseka	54,662	819,936	717
	681,578	10,223,671	8,946
Energy centres (10)	14,016	210,240	184
Total	695,594	10,433,911	9,130

Thus, the expected cumulative energy substitution of the successful implementation of the 10 mini-grids and 10 energy centres (assuming a lifetime of 15 years) is 10,434 MWh with resulting lifetime GHG emission avoidance of 9,130 tCO₂.

It is interesting to calculate mini-grid tariff without GEF grant support. In the OnePower proposals, the grant constitutes 17% of initial investment, implying that the tariff should be increased from M 5 to M 6.3 per kWh.

In the case of any experience with private sector-implemented renewable energy-based mini-grids, there is evidently a low awareness among a wide range of stakeholders on the benefits that RE mini-grids can provide to improve livelihoods in the rural areas and of the limitations in energy services the mini-grid can provide. Once the implementation of the Call for Proposal project has started, this situation will be remedied through roadshows, workshops, local awareness meetings, as well as the compilation and publication of project experience and best practices in electronic/printed form.

Project intervention

Outcome/Output	Indicator and end-of-project target	Mid-term status (Q3 2019)
<i>Outcome: Outreach programme and dissemination of project experience/best practices/lessons learned for replication nationally and throughout the region.</i>	<i>Availability of business model within 1.5 yrs of project initiation</i>	Private-sector led model proposed in the Call for Proposals
4.1 National Plan to implement outreach/promotional activities targeting both domestic and international investors.	Availability of national plan (within 24 months)	Communication Strategy formulated, but not officially approved yet (although some activities have been initiated). Other activities to be implemented according to progress with implementation of Call for Proposal investments and in accordance with the Communication Strategy
4.2 Capacity development of concerned Ministries/Institutions to monitor and document project experience.	Existence of capacity development material; 10 government staff trained	
4.3 Published materials (including video) and informational meetings with stakeholders on project experience/best practices and lessons learned	Existence of published material (completed by EoP-3 months)	
4.4 Lessons learned and results dissemination workshops	Availability of workshops proceedings (completed by EoP-3 months)	

Box 19 SE4All Project communication actions and target audience

Target audience	Channel/action
Donors; general public; partners investors; UNDP	<ul style="list-style-type: none"> Results oriented-reporting; Annual review reports Newsletter; visibility on websites Project Steering Committee (PSC) meetings Selected publications News/Articles on UNDP Lesotho website and other local media Project descriptions and articles on UNDP Lesotho website Twitter, Facebook and Instagram (tagging donors and partners) Produce and publish short videos on YouTube Joint press events Billboards Donor and partners visits to projects site Contribution to donors' or partners' communication products such as newsletters, events (e.g. Sustainable Energy Week etc.) Radio programmes and adverts
Policy makers; partners; beneficiaries	<ul style="list-style-type: none"> Press conferences Formal interviews and vox-pops (interviewing random people on the streets) Training sessions and other capacity building initiatives Find experts to speak to media and at events on specific topic concerning affordable and clean energy; Organise exhibitions Public gatherings of project beneficiaries in the five districts
Media	<ul style="list-style-type: none"> Twitter and Facebook Human stories YouTube

Source: Draft Communications Strategy 2019-2021

Implementation status

Draft SE4All Project Communication Strategy was developed this year (see [Box 18](#)). There are a number of awareness activities that are already being implemented, including a high profile demonstration day, radio announcements (Radio Lesotho, Moafrika, Peoples' Choice, Majoli FM), a full page press release published in two weekly newspaper, a publication on UNDP Lesotho website, Social media (3 tweets), informational materials distributed to District offices, project banners at public meetings, community mobilisation workshops, a roadshow 'Taking Lesotho beyond the grid', taxi branding campaign (100 taxis), another recent publication in Sunday Express Newspaper, 500 Sesotho language project brochures distributed, 500 T-shirts and 500 caps distributed. The Project produced video broadcast on Lesotho television for two weeks. 18 District representatives and 11 members of the parliamentary Portfolio Committee (on natural resources) participated in workshops (3 Oct and 4 Sept 2019).

4.3 Climate change and other impacts

4.3.1 Emission reductions

The MTR Team has tried to make an estimation of the lifetime energy substitution (assuming the baseline is formed by diesel-powered diesel generation) of implementation of the 10 energy centres and 10 mini-grids. The calculation method is explained in [Box 17](#). If all energy infrastructure investments will be carried out as planned and assuming the energy service is provided over the assumed lifetime of 15 years, the total cumulative energy saving would be 10,434 MWh with resulting lifetime GHG emission avoidance of 9,130 tCO₂.

The *Guidelines for Greenhouse Gas Emissions Accounting and Reporting for GEF Projects* (GEF/C.48/Inf/09, May 2015) replace 'indirect emissions' with a new terminology, 'consequential emission reduction', defined as those projected emissions that could result from a broader adoption of the outcomes of a GEF project, plus longer-term emission reductions from behavioural change'. In GEF-7, the GEF Tracking Tools (Excel-based) are replaced by GEF Core Indicator Tables. Now here, it can be observed that the SE4All-promoted investments in mini-grids would be the first in Lesotho. If successful, this will no doubt invite other (private) investors, so the 'consequential emissions' in the post-project period due to SE4All's pioneering role in demonstrating off-grid solutions and capacity-strengthening can be substantial.

4.3.2 Gender and socio-economic impacts

As the project is implemented and mini-grids and energy centres become operational, women, who are primary domestic energy users, will become empowered through the increasing availability of modern energy sources which will be cleaner (women and girls less exposed to indoor air pollution) and will reduce reliance on biomass resources through energy efficiency (for instance, improved cook stoves). This will further enhance the quality of life of women and girls, who are responsible for the collection of firewood for households, as they will have more time to engage in other productive activities. One of the Call for Proposals project proponents, KESI, works specifically with rural women entrepreneurs to operate the energy centres (energy kiosks) and in the process knowledge of rural women on (energy) entrepreneurship skills will be increased.

It should be noted that the Project has recruited a gender specialist to promote gender mainstreaming. It will be worthwhile also to include other data, where possible, e.g. data on direct employment creation (due to installation and operation of the energy centres and mini-grids) and indirect employment (due to the creation or expansion of local businesses or services made possible by the services provided by the energy centres and mini-grids).

4.3.3 Ratings of progress towards the objective and outcomes

The table below gives a summary of the ratings of the 'progress towards results', based on the findings presented in Chapter 4. In assessing the progress towards results of the SE4All Lesotho Project at its mid-point, a six-point rating scheme is used:

- Highly satisfactory (HS), no shortcomings
- Satisfactory (S), minor shortcomings
- Moderately satisfactory (MS), moderate shortcomings
- Moderately unsatisfactory (MU), significant shortcomings
- Unsatisfactory (U), major shortcomings
- Highly unsatisfactory (HU), severe shortcomings
- U/A = unable to assess.

The motivation for giving the ratings mentioned in the Box is as follows:

- The SE4All CAA and IP policy documents have been formulated, as well as the mini-grid regulatory framework. While the official endorsement is strictly speaking outside the Project's decision-making, nonetheless, without official endorsements their influence will be limited. The MTR Team rates it as 'satisfactory'.
- In Component 2, the realization of the energy demand survey and data generated form an important information tool for policymaking, and the Team rates it as 'highly satisfactory'.
- Component 3 has long been held up by the uncertainty on how to operationalise the FSS. However, the response by project proponents to the Call for Proposals was encouraging. Now the proof of the pudding will be in eating it, in other words in the implementation of mini-grids and energy centres and their successful functioning. Without FSS working, the Team would have rated it as 'unsatisfactory', but now with companies selected, the basis is there, and we rate it as 'moderately satisfactory', although based on the assumption that the Call for Proposal investments will be implemented.
- Component 4 is just starting as it is linked with progress in Component 3. Although the Communication Plan has been formulated, it has hardly started implementation and results are too early to tell, hence the Team rates a 'satisfactory'.

Box 20 Evaluation ratings of progress towards results

Evaluation item	Corresponding section	Rating
Objective achievement		MS
Component 1	Section 4.2.1	S
Component 2	Section 4.2.2	HS
Component 3	Section 4.2.3	MS
Component 4	Section 4.2.4	S
Overall progress towards results		MS

5. FINDINGS: PROJECT IMPLEMENTATION

This part of the Evaluation Report describes the assessment and rating of the quality of the execution by the GEF Implementing Agency (IA), UNDP, and the national Implementing Agency MEM. Building on the previous Chapter's critical look at project results, an assessment is made of the partnerships established and stakeholder interaction during implementation and the important role of adaptive management. The Mid-Term Report presents an assessment and rating of the project monitoring and evaluation (M&E) plan design and implementation. A special section is dedicated to the budget, expenditures, and co-financing of the SE4All Lesotho project.

5.1 Implementation and management

5.1.1 Management arrangements and adaptive management

- Are adequate project management arrangements in place at project entry? Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- What is the quality of execution of the Executing Agency/Implementing Partner(s) and the GEF Partner Agency (UNDP) and are there recommended areas for improvement?
- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved. Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?

Management arrangements and execution

The project is implemented through the NIM execution modality by the Department of Energy (DoE) under the supervision of the Ministry of Energy and Meteorology (MEM) as the national implementing partner (NIP). The Director of Energy has been assigned as the National Project Director (NPD). The Project is overseen by the Project Steering Committee, chaired by DoE (Director) and UNDP (Dep. Resident Representative) with representatives from DoE, Ministry of Planning (Project-Cycle Management Dept.), MoP - Bureau of Statistics (BOS), Ministry of Finance (Debt Management), Ministry of Tourism, Environment and Culture (Department of Environment), National University of Lesotho (NUL; Dept. of Physics and Electronics); Ministry of Trade and Industry (Dept. of Standards and Quality Assurance) as well as representatives from the five Districts Councils involved in the Project (Mogale's Hoek, Mokhotlong, Quthing, and Thaba-Tseka). The PSC has met on a quarterly/biannual basis since Dec 2017 and has been effective in providing strategic direction and management guidance. It is worth mentioning that at the presentation of the preliminary findings of the MTR team (25-10-2019), most PSC members were present.

A Programme Management Unit (PMU) is headed by a Project Manager (PM), responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The PM is supported by a part-time (home-based) Chief Technical Advisor (CTA) and a Project Assistant.

Although envisaged to be housed at DoE, due to office space issues, the PMU is (still) located at UNDP's premises. There is a dialogue between the Ministry and UNDP to resolve this matter, and now that DoE has refurbished its premises, office space is available for the PM and Project Assistant to move to the DoE building. Usually at UNDP Office, projects like SE4All are usually in the portfolio of a programme office (under the guidance of the Energy and Environment Head and/or Deputy Resident Representative). In Lesotho, the Project Manager apparently assumes some 'programme officer'-type of tasks, which can lead to confusion sometimes when certain procedures need to be followed. There should be a clear delineation

and firewall between UNDP's oversight functions, usually carried out by the Programme Officer, and the execution services provided by the project team

Delays and adjustments

There were no delays in the commencement of the SE4All Project. This project had the Inception Workshop in November 2016, while the project document was signed in October 2016. The implementation of the Components 1 and 2 have been largely completed, as explained in Section 4. In Component 3, the Pre-Feasibility Studies (PFS) were carried out, but the establishment of the FSS was met with long delays (as described in Section 3.2). Only by Dec 2018-Jan 2019, an Agreement was reached between UNDP and UNCDF on the management of the Financing Support Scheme (FSS). After a Call for Proposal, the final selection of companies to implement the energy centre and mini-grid projects (at the 20 sites) was made in Q4 2019 with negotiations between UNCDF and the project proponents on-going. This implies that implementation of the (demonstration) projects will not start until 2020 and operations thereof not until 2020-21.

Adaptive management

The engagement of the UNCDF as the FSS managing agent to disburse grants for private sector developers of mini-grids and energy centres is an initiative that, if it had not been considered, would have stalled most activities in Component 3 and 4 with the implication that the SE4All Project would not have been able to achieve its objectives.

5.1.2 Monitoring and evaluation; reporting

- Does the project have an effective M&E plan to monitor results and track progress towards achieving project objectives? Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.
- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?
- Were progress reports produced accurately and timely, and did they respond to reporting requirements including adaptive management changes? In particular, assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

M&E: design at entry and implementation

The Project Document provided an elaborate structure for Monitoring & Evaluation, which follows the 'standard' M&E Plan with an inception activity (workshop, report), annual reporting (PIRs), project steering committee meetings, periodic status, financial and progress reporting, as well as audits, and field visits. A total of USD 102,000 was allocated, about 3% of the total GEF budget, which is deemed sufficient for this type of project.

Reporting

Quarterly reports and annual reports (2018, 2019) provide a good overview of project progress. The first annual GEF-UNDP project review reports (PIR) has been drafted (2018) with the 2019 version still pending at the time of the MTR mission. This report details activities and the status of the progress indicators as listed in the project's results framework (summarised in [Box 9](#)). The MTR Team concludes that reporting so far has been carried out in a diligent way.

5.2 Stakeholder involvement and communication

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?
- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)

Stakeholder involvement

Stakeholders interviewed indicated that the relation of the Project with academic/training institutions could be strengthened, in particular with the National University of Lesotho (Energy Research Centre) or the Lerotholi Polytechnic. Although NUL is represented on the PSC, on a working level the collaboration can be strengthened, and the August PSC meeting suggested that such collaboration should be formalised and a work plan developed. This could be mutually beneficial; for example, MSc students could be attached to the Project for their research on rural energy²⁹ and RE technologies and financial-business models, while NUL or Polytechnic can provide advisory services in the area of monitoring and evaluation, assessments and surveys (e.g. on ability or willingness to pay).

The Ministry of Local Government is an important stakeholder, particularly at district level. The District Councils in the five districts where the project is operational are supporting the outreach programme, disseminating information to the beneficiaries at the community level. The engagement of District Councils will become more important when the implementation of the Call for Proposals projects will start from beginning of 2020 onwards.

With the Grant Agreements with the companies that successfully participated in the UNCDF Call for Proposal being negotiated, the successful cooperation and partnerships with the private sector will be an important element in realising the objective of the SE4All Project. The fact that the European Union Delegation (EUD) in Lesotho has a similar mini-grid and energy centre programme operating in a similar district means that the two programmes require coordination. Project sites (for mini-grids and energy centres) have been selected in partnership with the EUD to avoid concentrating project resources in specific areas and possible clashes/overlaps between EUD and UNDP project developers. In the future, the exchange of information on progress in the investment project will be important, also to derive some common lessons learned.

External communications and knowledge development

With improved access to modern energy services such as electricity generated from solar PV and micro-hydro mini-grids as well as a range of innovative energy products and services such as improved cook stoves, solar home systems, solar-powered lanterns (with cellular phone chargers) will not only improve people's lives, but the energization through mini-grids can also support diversification and strengthening of local businesses. Communities from the five districts as well as district government officials have been engaged and the response has been very positive, as reported by the PMU in the 2018 PIR. However, the MTR Team wants to stress that the beneficiary target groups should also be made aware of

²⁹ A Master's student did submit a research proposal 'Assessing the resilience of Mini-grids in Lesotho' which was intended to focus on the mini-grid, but due to the Project delays the student had to refocus the research

the limitations of the technologies. For example, load limitations will prevent in many cases electric cooking in the mini-grid systems, although this may be the second-most important desired need after lighting. The target beneficiaries should be informed well about the initial (connection cost) cost of electricity consumption (M per kWh), payment methods (e.g. mobile payment options) and load limitations.

Gender

An expert consultant was appointed to develop a gender mainstreaming strategy and guidelines for the project implementation plan. This included a monitoring tool for gender mainstreaming including indicators for assessing progress with gender mainstreaming adapted to the project outcome, outputs and activities. The consultant was tasked with developing a gender database capturing women-led enterprises in the energy sector (which the programme will engage when recruiting project developers). Furthermore, the project team developed draft ToRs for Gender Expert, to mainstream gender in the Electrification Masterplan for Lesotho and develop a framework that will allow energy stakeholders to mainstream gender during programmes and projects implementation. The activity is planned for Q4 of 2019 to Q1 of 2020.

5.3 Project finance and co-financing

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

The establishment of the FSS was met with long delays (as described in Section 3.2). Only by Dec 2018-Jan 2019, an Agreement was reached between UNDP and UNCDF on the management of the Financing Support Scheme (FSS). After a Call for Proposal, the final selection of companies to implement the energy centre and mini-grid projects (at the 20 sites) was made in Q4 2019. With the FSS budget being USD 1.2 million (or 34% of the whole budget), the delays in FSS obviously have a big impact on the actual expenditures, that are summarised in Box 20. Only part of this will be spent in the coming year 2020 (namely the USD 600,000 of the initial grant support for the mini-grid systems), or USD 750,000 if the first-year initial grant could be brought forward for payment by end-of-year 2020.

Box 20 Planned and disbursement, GEF budget

	Budget (USD) (ProDoc)	Expenditure (USD)				Planned 2019-2020	Total 2019-EoP
		2016	2017	2018	2019		
Component 1	400,000	75,763.00	80,000	193,556	182,967	115,000	647,286
Component 2	300,000		260,000	51,499	0	52,100	363,599
Component 3	2,500,000		76,025	100,754	57,754	650,000	884,533
Component 4	140,000		18,000	46,637	69,717	171,000	305,354
Project management	160,000		71,410	64,217	37,286	55,000	227,913
Total	3,500,000		505,435	456,663	347,724	1,043,100	2,428,685

Source:

Based on Project Document and data provided by the Project Management Unit

Box 21 Planned and disbursement, GEF budget

	Planned		Realized (to mid-2019)		Planned
	In-kind	Cash	In-kind	Cash	2020+
MEM-DoE		8,467,837		8,467,837	
EU		7,900,000		3,060,000	
Bethel, SOLTRAIN project		2,000,000		2,000,000	
Private sector	500,000				3,431,850
UNDP		400,000		187,000	213,000
Total		19,267,837		13,714,837	3,644,850

Source:

- MEM-DoE: based on government-supported mini-grid systems in Semonkong (0.18 MW). The off-grid hydro at Tsoelike (0.4 MW) may be refurbished in the future since a cascade dam scheme is being studied for that river (see Country Action Agenda)
- EU: data provided by EUD in 2017 (p.c.)
- SOLTRAIN is a Southern Africa initiative (implemented by the Austrian AEE Intec) that started in 2009 and focus on solar thermal energy applications. Implementing partner in Lesotho is the Bethel Business and Community Development Centre (BBCDC), a commercial and technical school which is in a remote district of Lesotho. BBCDC has installed two solar water heaters at BBCDC at its premises (that further receive power from installed PV) and organises training courses. BBCDC operates a commercial enterprise which sells PV equipment and solar water heaters.
- Estimated investment by Call of Proposal project proponents minus the GEF support granted (USD 4,155,946 minus USD 1.2 million). Data provided by UNCDF

5.4 Ratings of project M&E and project implementation/execution

A summary of ratings is given in Box 22. In assessing ‘implementation and adaptive management’ of the SE4All Lesotho Project at its mid-point, a six-point rating scheme is used:

- Highly satisfactory (HS), Implementation of all components, 1) management arrangements, work planning, reporting, project-level monitoring and evaluation, 2) stakeholder engagement and communications, 3) finance and co-finance, is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”.
- Satisfactory (S), implementation of most of the components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action
- Moderately satisfactory (MS), implementation of some of the components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
- Moderately unsatisfactory (MU), implementation is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
- Unsatisfactory (U), implementation of most of the components is not leading to efficient and effective project implementation and adaptive management.
- Highly unsatisfactory (HU), implementation of none of the components is leading to efficient and effective project implementation and adaptive management.
- U/A = unable to assess.

There have been quite some delays in disbursements of the project funding which has led UNDP officials involved (UNDP Country Office Programme Officer and Regional Technical Advisor, RTA) to give ratings in the 2018 PIR for implementation as ‘moderately unsatisfactory’.

With the FSS taking USD 1.2 million (out of the GEF contribution of USD 3.5 million) it is obvious that this has an impact in the form of slow disbursements. However, these delayed disbursements are a reflection of a number of external factors beyond the direct control of the Project implementation:

- The delay in getting the FSS established and operational, based on wrong assumptions on Lesotho public or private entities being able or allowed to manage (this should have been defined in the ProDoc)
- Implementation of the accepted mini-grid under the Call for Proposals may be delayed if the proposed regulatory framework for mini-grids is not officially in place.

In spite of these issues, Project Management has tried to find solutions that work (e.g. having UNCDF manage the FSS) which the Team finds commendable. Given the above, the Team has the opinion that, against the odds, the project implementation by the Project Management Unit has overall been performing 'satisfactorily'.

Box 22 Evaluation ratings of project implementation and execution

Evaluation item	Corresponding report section	Rating
Adaptive management, management arrangements, M&E, work planning, reporting (UNDP, Project Team, DoE)	Section 5.1.1	S
Stakeholder involvement; communications	Section 5.1.2	S
Budget, utilisation of GEF and co-financing	Section 5.1.3	MS
Overall UNDP implementation and implementing partner execution		S

6. FINDINGS: SUSTAINABILITY

- *Institutional framework and governance risks.* Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency, and required technical know-how, in place?
- *Environmental and social risks.* Are there any environmental risks that may jeopardize sustainability of project outcomes? Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
- *Financial risks.* Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends?
- *Capacity risks.* Have partners and stakeholders successfully enhanced their capacities and do they have the required resources to make use of these capacities?

Sustainability is generally considered to be the likelihood of continued benefits after the project ends. Consequently, the assessment of sustainability considers the risks that are likely to affect the continuation of project outcomes (discussed in detail in the previous Section 5). In fact, many risks are in one way or another related to the “barriers” mentioned in Section 2.1. One can argue that some of the “risks” the Project might face, actually means not being able to lower corresponding “barriers” substantially, thus negatively affecting the likelihood of “sustainability” of the project's interventions. The critical “assumptions” then is that the “internal risks” (i.e. risks that can be mitigated or managed by Project management), and ‘external risks’ have a low incidence and/or impacts, in such a way that sustainability remains (moderately) likely. The quality of adaptive management (mentioned in Section 6.1) is determined by the mitigation response of Project management to these external and internal risk factors as these manifest themselves more intensely and/or more frequently than expected.

In assessing the ‘sustainability’ of the SE4All Project at its mid-point, a simple rating scheme is used:

- Likely (L): negligible risks to sustainability;
- Moderately Likely (ML): moderate risks to sustainability;
- Moderately Unlikely (MU): significant risks to sustainability; and
- Unlikely (U): severe risks to sustainability; and
- U/A = unable to assess.

Three main areas are considered in this section and then rated as to the likelihood and extent that risks will impede sustainability.

Governance and institutional sustainability

Country-related (external risks)

Section 2.1 and [Box 5](#) provides an overview of the current institutional setup of the energy sector. Rural electrification is the responsibility of the Department of Energy (DoE), Rural Electrification Unit, and the Lesotho Electricity Company (LEC). Within electrification, the focus remains on electricity grid extension. Furthermore, an EU-commissioned scoping study³⁰ indicates that “there is no boundary between policymaking and policy execution levels. There are clear institutional inadequacies that need to be addressed between the main stakeholders (LEWA/DoE, REU/LEC, LEC/LEWA), as mandates and activities are often overlapping or placed at the ‘wrong’ institution”.

³⁰ *Scoping of Potential Interventions in the Energy Sector under 11th EDF in Lesotho* (2015), by Atkins Consortium for European Union

The Energy Policy 2015-2025 suggests changes in the institutional setup that would be favourable for off-grid electrification. The Policy targets three distinct, yet supportive functions (1. policy design to provide a strategic framework of operation, 2. implementation of the policy, and 3. regulation of the policy) and it reviews institutional responsibilities from policy design to regulation of single policies, including a proposal of a model for the energy sector governance.

Box 23 New institutional setup proposed in the Energy Policy 2015-2025



In this setup, rural energy development will benefit from a clear distinction between policymaking and policy execution and from a clear separation of grid extension projects from off-grid, bringing electricity and other energy solutions outside the current LEC service territory in the hands of a specific rural “Facility for Rural Energy Access (FREA)”. However, the proposed institutional restructuring has largely remained on paper.

Several policy and planning documents have been formulated that can guide the Department of Energy, such as the Energy Policy 2015-2025, Lesotho Electrification Master Plan (LEMP, 2018), Regulatory Framework for the Development of Renewable Energy Resources in Lesotho and now (formulated with SE4All Project support), the SE4All Country Action Agenda and the Renewable Energy Mini-Grid Generation, Distribution and Supply Regulation. Apart from the Energy Policy and LEMP, none of these documents have been officially approved, let alone have legal status, while not all provisions of the Energy Policy and important off-grid elements of LEMP have been implemented to date.

Unfortunately, in Lesotho, the approval process at Government or Parliament level is often hampered by discussions at the political level, changes at Government posts, and the process gets stalled. One result is that the country cannot be seen as ready to take up the challenges of the energy sector in a coordinated way with clear electrification planning with approved on-grid and off-grid targets and with a conducive institutional framework. This creates high uncertainty for the private sector to invest in capital-intensive mini-grid projects. At this point in time, the MTR Team sees substantial governance-institutional risks and rates sustainability as ‘moderately unlikely’, unless above-sketched institutional reforms accompanied by funding mechanisms for off-grid are implemented.

Project-level

There exists the possibility that the Government may not act soon enough on the mini-grid regulatory framework that will encourage the private sector to invest in renewable energy-based rural energy services; if this were to happen, implementation of the Call for Proposal mini-grid projects may get delayed, as developers may delay their decision to start with the project. The Project is in dialogue with DoE on the issue.

Socio-economic sustainability

Country-level

Off-grid, small-scale, renewable energy has high upfront costs, even though over the whole lifetime of the technology, the lifecycle cost (upfront cost and annual expenditures) may be lower than conventional fossil fuel technology (that often has low upfront but high annual expenditures due to fossil fuel consumption). Nonetheless, the initial investment costs imply relatively high tariffs that rural households (typically among the lowest income brackets of the country) cannot easily afford. Hence, companies like ACE or Solar Lights allow payment of their devices in instalments over time in such a way that the consumer pays less in a month than he or she would otherwise have spent on wood or other fuels (see Box 14 on costs of efficient wood stoves and payment over time).

Mini-grid system may offer a cost-effective alternative to grid extension over large distances to sparsely populated areas with low electricity demand (as explained in Box 25). However, this does not mean that the electricity produced is cheap in absolute terms but it means that it is cheap in relative terms (i.e. in comparison with the alternative of grid extension or using a diesel generator).

Box 24 Characteristics of consumers and typical electrical equipment in mini-grid systems

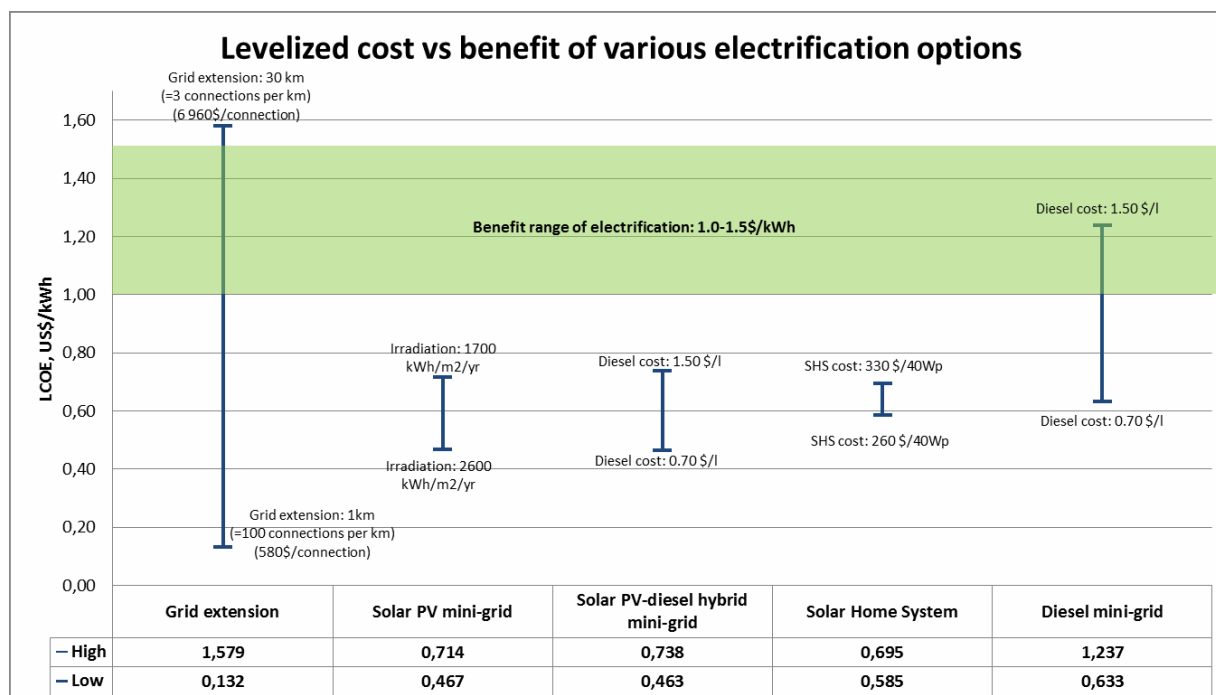
Household Type	Year 2019		Share HH
	Electrical equipment	Power demand kWh/yr/HH (2019)	
Basic	Lighting (1 LED), phone charger, radio	30	65%
Medium	More lights (5 LED), phone charger, radio, refrigerator, iron	500	25%
Affluent	More lights (8 LED), phone charger, radio, TV, refrigerator, electric stove, iron	1,800	10%
Business and anchor customers	Electrical equipment	Power demand kWh/unit/yr (2019)	Willingness to pay (M/year)
Health centre, clinic - 1 per village	Several lights (LED); monitors, laptops, desktop computers, printers; several refrigerators per unit (for vaccines; other); sometimes also freezers; operation lights; basic medical equipment	14,300	M 48,000
School	Computer systems, laptops, overhead projectors, lights, cooking facilities, microwaves, television, air conditioners	500	M 36,000
Government (police, council, court) – 2 per village	Telecommunication, computers, printers, air conditioners, refrigerators, LED lights, fans, electric heaters	1,600	M 12,000
Retail (shop, café, post office, restaurant, pharmacy, guesthouse) – 6-7 per village	LED lights, more refrigerators, cash till machines, cameras, computer systems telecommunication, fans, electric heaters, mills, electric stoves, bar code scanners, phone chargers, microwaves, TV	2,800	M 7,200
Craft (mill, metal workshop, dress-making, wool & mohair) – 1-2 per village	Power tools (for carpentry, sewing), welding, lights, refrigerators	50	M 6,000

The share of business/anchor customers in 2019 electricity demand in mini-grids is 46% (Ketane), 31% (Ribaneng), 30% (Matsoaing), 33% (Tlhanyaku), 54% (Sehlabathebe), 37% (Lebakeng), Sebapala (16%), Tosing (41%), Sehonghong (34%) and Mashai (43%).

For the ten mini-grid villages, in the five Districts, the desired future electric uses by households are lighting and phone charging (95%), radio (87%), TV (90%), refrigeration (70%), water heating (80%), cooking (40%), ironing (40%), and space heating (20%).

Data compiled from the *Pre-Feasibility Studies for Mini-Grid and Energy Centres in Lesotho* (2018), General Part and the District reports.

Box 25 Cost of mini-grids, tariffs and ability/willingness to pay (ATP/WTP)



Source: *Policy Brief: Cost-benefit analysis of rural electrification* (NORPLAN, 2012). Data is based on on- the-ground experience from several developers involved in remote off-grid installations in Africa

On-grid connections can be cost-effective for more dispersed populations living within a reasonable distance of transmission and distribution lines, even allowing for the additional expense of extending the service. If the distance becomes too far and the number of connections per km too small, the costs of grid extensions become too high, tipping the balance in favour of mini-grids or stand-alone systems. The figures shown are indicative, but show that costs per kWh are usually much higher than grid-connected consumers pay. In the main grid, the cost of extension is borne by the system as a whole and the grid-connected new consumer pays a connection fee but not the full cost of extension. This puts mini-grid consumer's grid at a disadvantage, unless they receive some kind of subvention as the newly grid-connected consumers in practice do.

In Lesotho, the national charges are about M 0.72-1.48 per kWh to domestic consumers (about USD 0.05-0.11 per kWh). Even if tariffs in the main grid would be fully cost-reflective (charging about M 2.88 per kWh), the tariff in a mini-grid would still be substantially higher. The Pre-feasibility Studies of Component 3 give estimates in the range of M 5.0-9.50 per kWh for solar mini-grids (or about USD 0.35-0.68) and such tariffs would cover cost of investment and annual operation and maintenance (of which details are given in [Box 16](#)). This raises the question if rural households can afford such tariffs, and if they can, would they be willing to pay. The average incomes and current energy expenditures provide good indicators for the **ability to pay (ATP)**. The actual expenditures on fuels and electricity can be taken as an indication of the maximum amount that a person indicates that he or she is willing to pay for an energy product or services (and is sometimes referred to '*revealed willingness to pay*'). The '*expressed willingness to pay*' is the maximum amount that a person expresses that he or she is willing to pay for electric service, typically registered in monetary units per month (often in response to a specific question in a questionnaire in a rural survey). Determining WTP can be very subjective, because the potential beneficiaries may not know enough about the service and its benefits to be able to offer a realistic response, or base themselves on the low-consumer category tariffs that people pay connected to the national grid, or in subsidised tariffs in other mini-grid facilities. The Pre-Feasibility Studies (see [Box 16](#)) provide data on ability to pay (based on current energy expenditures) that range from M 189 to M 911 and willingness to pay of households that range from M 1,920 to M 6,900.

The presence of business and anchor customers boosts the viability of the mini-grid system, while the availability of reliable electricity will boost in turn the business (and employment) opportunities at the project sites. To give an example, there are 23 institutional and business customers in Ribaneng, Mohale's Hoek, (health, school, offices, retail, crafts) that, together, would have a power demand of 37,300 kWh/yr (113,000 kWh/yr in 2030) and would be willing to pay M 52,900 per month.

The tariff needs to be determined in a way that allows recovery of all investment cost and operation and maintenance cost (including replacement of batteries after 5-10 years of operation) and allow for a small profit margin. The Pre-Feasibility studies give ranges of M 5.0-9.50 per kWh for solar mini-grids (or about USD 0.35-0.68) which is substantially higher than the tariff in the national grid system for households (M 1.48 /kWh, domestic tariff). However, the findings of the Pre-feasibility studies are that actually many households would be willing to pay about M 1,900 – 3,800 a year on average, which is in the range of what they would pay annually for electricity from 100-200 kW solar mini-grid systems, namely M 2,000-3,100 per year (assuming cost-recovering tariffs M 6.5-9.5/kWh and household consumption levels of 800-3,100 kWh/yr). These figures seem to conclude that rural households have a willingness to pay much more than urban customers pay for their electricity. One of the mini-grid developers interviewed, OnePower, is planning to charge M 5 per kWh and is also confident that rural households are willing to pay (see also the discussion in [Box 17](#)).

Based on the analysis of the Pre-Feasibility Studies of current energy demand and energy expenditures, the average energy consumption by a household is about 12,300 kWh/yr with a monetary expenditure of M 4,273 a year³¹. One could conclude that the ability to pay is higher. However, most of the demand is for cooking (60%) and space heating (37%) with only 3% for lighting (monetary expenditures: 60%, 28%, 12% respectively). In the surveys undertaken by the PFS, households interviewed indicated that their desired use of electricity (once the mini-grid has arrived) is for lighting and phone charging (95% of interviewed), radio (87%) and TV (73%) but also for high-wattage appliances, such as cookers and water heaters. The power demand of electric stoves (about 1500 W), irons (1100 W), electric pots (1200 W) is much higher than that of a LED lamp (7 W), radio (8 W) or TV (100-140 W) or a small fridge (15 W w/o freezer). One can imagine, that a majority of households switching on their power-consuming cookers at the same peak hour in the morning or evening will result in the system not being able to provide the sudden demand surge resulting in a blackout. Many mini-grids normally apply power use limitations, effectively banning the use of devices, such as cookers or power tools.

The mini-grid project proponents have submitted proposals for mini-grid systems with sizes ranging between 50-80 kW. However, this assumes that high-wattage electric appliances will not easily be used in the mini-grid design for most households. Experiences with other mini-grid projects in the region show that consumption is far lower in the beginning than anticipated so this might not be an issue³². However, over time the situation may change and power limitations can create disillusion among some customers; “why pay M 5/kWh when I cannot even cook, while my cousin in Maseru pays 5 times less and can plug any appliance desired in the socket”. Then households refuse to pay, get disconnected, but fewer households connected imply fewer revenues for the mini-grid system, endangering its financial viability unless tariffs are increased, leading to more dissatisfaction. Such effects have been observed in other (African) countries in mini-grid systems.

The energy centre concept is a business model that has already been pioneered and the first results (by companies such as ACE and Solar Lights) look encouraging. In contrast, the private-sector led mini-grids form a business model that has not been proven yet in Lesotho and, according to the MTR Team, with mixed results in other parts of Sub-Saharan Africa. At this stage, the MTR Team gives a rating of ‘likely’ for energy centre, and ‘moderately unlikely’ for mini-grid system with an overall rating for socio-economic sustainability as ‘moderately likely’. Only when the first mini-grids are functioning for a number of years that we draw some evidence-based conclusions and a different rating. The MTR Team wants to stress that actually the value-added of the SE4All Lesotho Project in the Africa mini-grid discussion is actually to supply such facts based on the evidence of the functioning of the mini-grids supported.

Financial sustainability

Project-related

UNCDF was selected as the management agent for the Project’s Financial Support Scheme (FSS) of USD 1.2 million, which will be used to provide some grant support for feasibility analysis and implementation of mini-grids and energy centres. The FSS is directed at minimising the financial risks that lenders and investors may face in doing business and seven companies have been selected to implement the 10 mini-grids and 10 energy centres.

³¹ Average value calculated for the 10 mini-grid sites, based on data from the *Pre-Feasibility Studies for Mini- Grid and Energy Centres in Lesotho* (2018)

³² See, for example, <https://www.econstor.eu/bitstream/10419/190950/1/1045531871.pdf>

Country-level

A major barrier to the deployment of renewable energy technologies in Lesotho has been a lack of financing mechanisms. The SE4All Project addresses this issue by providing a small grant (with an initial and a performance-based part). Other development partners support mini-grid schemes. The WB-implemented SREP will make some USD 8 million available (grants and loans) to support mini-grids. If the European Union's Call for Proposal (2017) would have supported the mini-grid proposals they would have received a 50% subvention. While the willingness of the international community to support mini-grid and distributed RE technology is laudable, the existence of various projects with different conditions and various levels of subvention can also create issues. One of the issues is the level of grant support given. If these differ too much from each other, these can distort the market and create confusion amongst the beneficiaries (rural consumers) that will not understand why mini-grids supported under different schemes will have different grant support resulting in different tariff structures.

Although the Government in its Lesotho Electrification Master Plan, makes 20% of the electrification budget available for off-grid solutions, the LEMP has not been officially approved yet; and the funds made available so far (through the Universal Access Fund) have been destined for on-grid electrification, leaving mini-grids for private sector financing, such as the projects presented in the SE4All Call for Proposals. However, given the high cost of mini-grids and the resulting high tariffs, it is questionable if this is sustainable in the longer run. Unless the Government enables the private-led off-grid electrification with some financial support (from own budget and supplemented with donor money) as integral part of the off-grid programmatic framework, the MTR Team rates financial sustainability as 'moderately unlikely'.

Environmental sustainability

Project-related

Disposal of batteries from solar lanterns purchased from Energy Centres, which may contaminate the water table and pose health risks to children and the communities at large is a relevant risk for the project. However, this risk will be mitigated starting from next year (2020) when the first Energy Centres become operational. Communities will be sensitized to return batteries to the Energy Centres where they will receive a rebate on the next product they purchase.

Overall sustainability

While this mid-term review focusses on Lesotho, the issue of sustainability should be seen in a wider context of technology innovation and geographical context. The timeframe of subsequent phases of more widespread deployment let alone larger-scale dissemination of the mini-grid technology is much larger than the 4-year period of a project like SE4All Lesotho. In this respect, it may be too early to tell to have a judgement on 'overall sustainability'.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Given the prohibitively high costs of extending the national grid due to the mountainous terrain, the government recognizes the importance of decentralized, sustainable and modern forms of energy for dispersed rural communities. The UNDP/GEF SE4All Project support efforts by the Department of Energy (of the Ministry of Energy and Meteorology) to catalyze (private sector-led) investments in renewable energy-based mini-grids and Energy Centres.

The Project has finalised Components 1 and 2. In Component 1, which focuses on the development of SE4ALL policies and strategies to facilitate investment in renewable energy-based mini-grids, the Project has supported the formulation of the SE4ALL Country Action Agenda and Investment Prospectus, as well as the formulation of Regulatory Framework specifically for off-grid options (mini-grids and energy Centres). The documents have been presented in their draft final form to the Government for official approval. In Component 2, the Project has made an important contribution to having credible and up-to-date data on energy consumption. The national energy survey for households has been completed and validated and an energy database has been established with data sets uploaded to the Bureau of Statistics web portal. The survey has provided input data for the before-mentioned Country Action Agenda and to future updates of Lesotho's energy and climate change mitigation plans. Energy consumption surveys in other sectors have been undertaken as well and results will be published on the website of the Bureau of Statistics (BOS).

The critical risk to the Project's progress has been the operationalization of the Financial Support Scheme (FSS), for which a total of USD 1.2 million in GEF and UNDP funding has been allocated. At the project start, it was considered to establish the FSS at a Lesotho institution, e.g. LEWA, but this was not possible. Then, discussions were opened with private banks to host the FSS as a 'responsible party'. However, private banks cannot on-grant to recipients ('grantees') that are private sector organisations. An agreement was, therefore, reached in early 2019 with the UNCDF (UN Capital Development Fund) to manage the FSS. In the subsequent Call for Proposals, issued in May, a fairly large number of proposals were received, and after evaluation, seven companies were selected to establish mini-grid systems at 10 sites and energy centres at 10 sites. Final negotiations are underway between UNCDF and the proponents to reach a Grant Agreement and, additionally for the mini-grid projects, a Concession Agreement between the proponents with DoE. The implementation of the investment projects can thereafter start, likely by the end of 2019 to early 2020.

In Component 4, a Communication Strategy has been formulated which will aid the implementation of the investment project by capacity building of District and local officials and awareness-raising and information dissemination to the beneficiary target groups in the 20 project sites. An important element will be the monitoring of the Component 3 of investment project and disseminate results and information. As the mini-grid market in Africa is still in its early stages, Lesotho's experience will be invaluable for countries planning to implement similar renewable energy-based mini-grids for rural electrification in general and on the merits of the private-sector-led mini-grid business model in particular.

Most of the activities, as described above, are on track, except for Component 3. Being very important to eventually reaching the overall project objective, the Team gives an overall **'moderately satisfactory'** rating regarding the **progress towards results**, although acknowledging that the FSS investment projects still need to be implemented on the ground and provide results.

Despite facing external factors outside its direct control, the MTR Team has done as much as possible to give an overall rating of **'satisfactory'** for **implementation and adaptive management**. The last PIR (2018) gives a lower rating, partly based on the lack of disbursements in the budget. While this indeed indicates clear lack of progress, a large part of the budget had been locked in the USD 1.2 million FSS scheme, which only became operational in 2019. After the selection of the companies that will implement mini-grid and energy centre schemes, the first disbursements are expected to come in 2020 and rapidly increase. The MTR Team also notes that rather than spending as much as possible, part of the

remaining budget should also be used to allow for a possible extension of the SE4All project, possibly until 2023, to enable bringing all these activities to successful completion.

In the short term, there exists the possibility that the Government may not act soon enough to officially adopt the Regulatory Framework for Mini-Grids that provide guidelines and safeguards for the private sector to invest in renewable energy-based rural energy services. However, if delays will occur, it is likely that the mini-grid proponents that responded to the Call for Proposals will freeze their activities and thus, overall SE4All project implementation would get hampered. The 'concession agreement' is intended as an interim measure (interim in terms of the mechanism rather than the longevity of the specific agreement) given the time it takes to adopt and enact regulatory policy. In the longer-term, the lack of an adequate policy-institutional framework with dedicated off-grid government institutions with sufficient budget allocated to off-grid solutions remains a major barrier to realization of a mini-grid (and to a lesser extent of energy centres) in Lesotho. It is encouraging that in the Call for Proposals a substantial number of companies submitted proposals and this shows the interest by private actors to be involved and confidence they have in mini-grid. However, up to now, no RE mini-grid owned by a non-government entity has been operational for a larger period of time, so the private-sector-led model remains untested. For these reasons, the MTR Team rates **sustainability as 'moderately unlikely'**. However, that this is the case for all initiating mini-grid programmes that, without precedence, these remain untested. Crucial analysis will be at the end of the Project, to assess how the 10 mini-grid and 10 energy centre activities have progressed and how Lesotho's policy-institutional energy sector reform will have advanced. If both aspects will have developed in a favourable way, a future Terminal Evaluation team may want to give a higher sustainability rating.

7.2 Recommendations

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

1. Extension of the project implementation period

Responsible: UNDP, GEF, DoE, UNCDF

Of immediate concern in the short-term is the project duration. The delayed start of the FSS operations (Call for Proposals only carried out in May 2019) implies that the first energy centres will only be constructed by mid-2020 and the mini-grid systems may take even longer to be set up, especially if they would encounter delays in getting Concession agreements, permits or would face local issues (e.g. land issues). The FSS grant is in the form of initial grant for mini-grids at the beginning of year 1, followed by a performance-based grant at the end of Years 1 to 4. In practical terms, this means that the grant mechanism will be implemented over beginning 2020 to the end of 2023, a period that exceeds the planned SE4ALL operational closure date by mid - 2021. In fact, by the time the last mini-grid will be constructed, the Project would have to wrap up its operations. The MTR Team thinks it is essential that the SE4All Project continues for a longer period to be able to provide troubleshooting assistance (if needed) and to monitor the progress of the operation of the mini-grids and energy centres and to be able to derive lessons learnt from these first experiences.

The MTR Team recommends (provided this can be done at no additional cost to GEF) extension of the Project. Ideally, the Project would have to be extended with 2.5 years (to end-2023) to be able to fully cover the FSS grant disbursement period. However, the maximum extension period for GEF-funded project, as per the latest UNDP-GEF project extension guidelines is 12 months (i.e. until Oct 2022). The MTR Team suggests the following possible options:

- Option 1: Reduce the grant period to one year only (de facto converting all grants into initial grants given in 2020) with no extension of the Project (ends by mid-2021)
- Option 2: Reduce the grant period to two years with a one-year extension period (initial grant, 2020 with performance-based parts one year after the initial grant, i.e. in 2021 and 2022)
- Option 3: One-year extension of the Project period, and with a transfer of funds to UNCDF after project closure (grant scheme implemented over 4 years, 2020 to the end of 2023).

It is important that this matter is resolved before signing any Grant Agreement with the mini-grid and energy centre project developers because the Agreement needs to clearly and unambiguously indicate what the grant period is.

Proposals for future direction

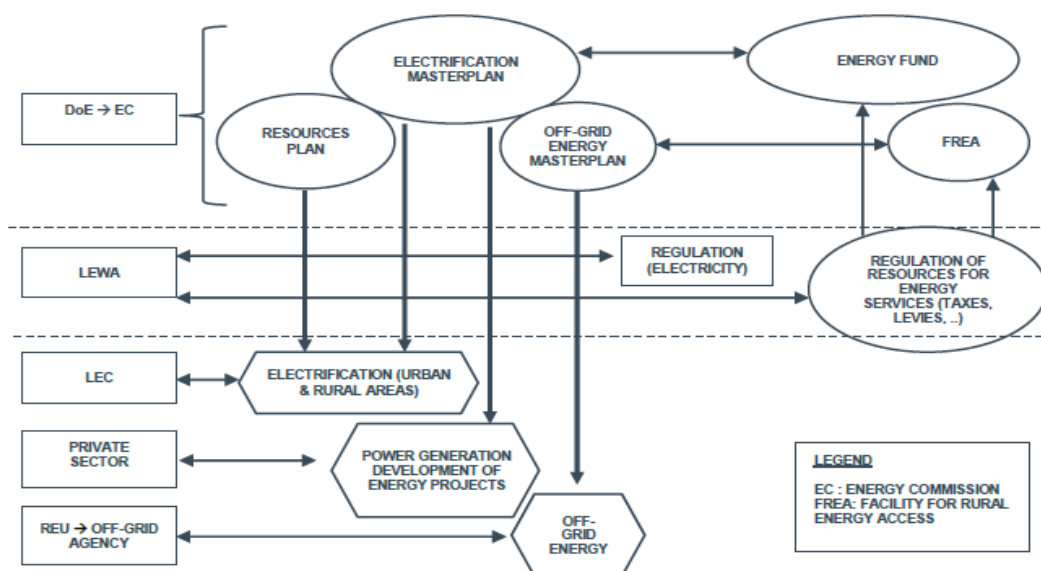
2. **Appropriate institutional setup (e.g. a RE/rural/electrification agency) with an overall programme that integrated various donor-funded initiatives in one funding scheme that is linked with or managed by the 'agency'**

Responsible: Government of Lesotho

A number of documents, including Lesotho's own Energy Policy 2015-2025 and documents elaborated with development partner support (e.g. European Union) propose a reformed 'model for the energy sector'. Box 26 gives a graphical representation of such a model designed by EU-contracted consultants³³. The main elements are:

- Have clearer division of tasks with a) policy formulation as the mandate of MEM's Department of Energy; b) policy regulation in the hands of the Lesotho Electricity and Water Authority (LEWA) as an autonomous government agency; and c) policy implementation the responsibility of public entities (and with private sector involvement) that distinguish between non-electricity and electricity and within the electricity sector between (peri) urban electricity, grid extension, and off-grid electrification;
- The Department of Energy is to be transformed to an Energy Commission (EC) together with the development of the related legal framework, including the development of an Energy Act (see Box 5);
- The Lesotho Electricity Company (LEC) is responsible for managing the main grid and distribution. LEC and the

Box 26 Possible model for the reformed institutional setup of the energy sector



Source: ES-0075: Lesotho in the energy sector - Mandate revision and DoE coordinator function strengthening (2017), by Atkins-led Consortium for the SE4ALL Technical Assistance Facility, European Union

private sector (independent power producers) are the main players in renewable energy power production for the grid, which is regulated by the Regulatory Framework for the Development of Renewable Energy Resources in Lesotho (2015). LEWA regulates the electricity industry as Authority independent from the Government, without operating as a policymaker. It is up to the DoE to guide the whole sector setting policy goals and the Electrification Master Plan.

- Regarding electrification, the tasks of the REU (Rural Electrification Unit) need to be divided up into grid extension, the responsibility of LEC and a new "off-grid agency". Under the guidance of and in cooperation with DoE, such an

³³ Other management consultants (e.g. Genesis Analytics) have also proposed structure/institutional frameworks. These proposals are being discussed and under consideration

entity will update the 'Off-grid Electrification' section of the integrated Lesotho Electrification Master Plan. Under the guidance of and in cooperation with DoE, such an entity updates the 'Off-grid Electrification Master Plan', cross-referenced with the general (On-grid) Electrification Master Plan. On the regulatory side, this setup is accompanied by a special Framework for mini-grid applications, in particular with 'very light' permit and licensing requirements for small mini-grids and other small village energisation schemes (energy centres)

- Even if implemented by the private sector, adequate financial support will be needed to implement the Electrification Master Plan in general, and, in particular, needed to address the high initial (capital) cost of off-grid RE mini-grids. As already contemplated in the Energy Policy 2015-2025, a 'Facility for Rural Energy Access' (FREA) for financing off-grid projects is to be established, alongside or as a subset of an overall Energy Access Fund'. FREA financing schemes (financed from the general budget, proceeds from the electrification surcharge in the electricity tariff, and development partner programmes) should clearly indicate one consistent subvention system, rather than grants provided in different ways on a project-by-project basis. FREA financial support would aim at supplementing the investments by local communities and private sector/NGOs with government and donor-funded resources, as well as innovative approaches involving the stimulation of productive uses of energy. Such FREA support will create an equal playing field for all project proponents (private community, local government entities, NGOs) in that they can apply (in Call for Proposals or on a rolling basis) by having clear rules and application guidelines and a general subsidy level (different per size and type of technology and application), for example. This is to avoid subsidy levels being defined on a project-by-project basis and hereby creating confusion or even distorting the market (as was the case during implementation of the LREBRE project, described in [Box 10](#)).

Actions to follow up or reinforce initial benefits from the project

3. Address mini-grid regulatory issues before FFS scheme starts disbursing

Responsible: MEM, UNDP, SE4All Project

As long as the Regulatory Framework Regulatory for mini-grid applications does not have official status, this situation will shy away investors, while even the companies selected under the Call for Proposal may delay their decision to start with the construction of the mini-grids. The Project should discuss with DoE these dispensation issues as part of the 'concession agreements' to be signed with the mini-grid proponents.

4. More involvement of academic stakeholders in the Project's activities

Responsible: SE4All Project

On a working level, the collaboration of the Project with academic institutions, such as the National University of Lesotho (Energy Research Centre) or the Lerotholi Polytechnic can be strengthened and a work plan for such collaboration developed. This could be mutually beneficial; for example, MSc students can be attached to the Project for their research on rural energy and RE technologies and financial-business models, while NUL or Polytechnic can provide advisory services in the area of monitoring and evaluation, assessments and surveys (e.g. on ability or willingness to pay; demand and resources; training of district/local officials and technicians) and to assist in M&E of the Call-for-Proposal projects.

5. Implement a monitoring and evaluation plan for the implementation of the Call for Proposal mini-grid and energy centre projects.

Responsible: SE4All Project

It is important that a good follow up takes place to allow troubleshooting interventions (if needed), to collect information for dissemination to the public at large and to distil conclusion on the pros and cons of the private-sector-led business model. The MTR Team recommends the following studies to be carried out, based on the experience with construction and operation of the mini-grid and energy centres:

- Assessment of actual energy demand and uses of electricity in the mini-grids and energy centres, actual costs of investment and operation, experiences with willingness and ability to pay (WTP/ATP) and required tariff to make mini-grids economic. The study basically does a post-construction follow up and reality check on the findings of the pre-feasibility study. In the current SE4All setup the mini-grid and energy centres are in different sites/villages. However, to address the issue of efficient cooking, the Project may want to encourage the distribution of energy-efficient wood

stoves in the mini-grid villages. In the longer term, it should be explored if the concepts of mini-grid and energy centres cannot be merged; that is, there is one energy service facility that supplies mini-grid electricity to those households that can be economically connected, and also operates as a service centre, supplying portable PV solutions to the non-connected households in the surrounding further-away villages, while also offering energy-efficient stoves.

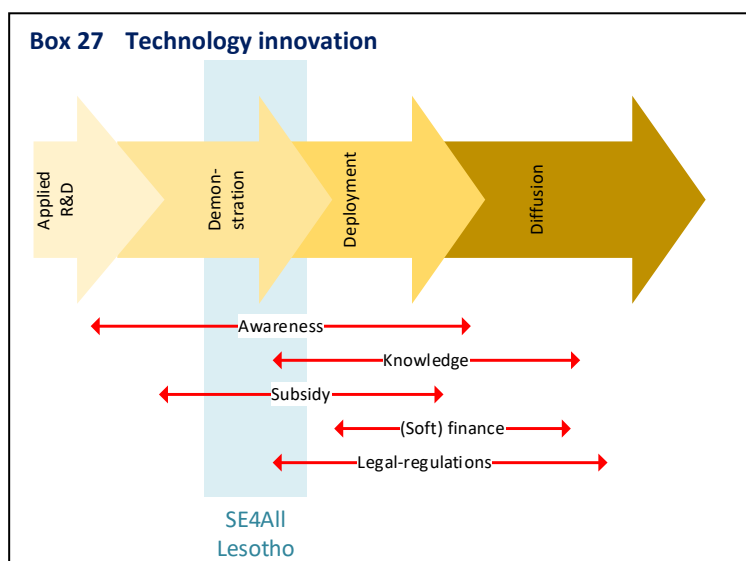
- Assessment of the desirability and viability of the private sector-led business model regarding mini-grids, looking at the actual policy-institutional-regulatory framework, financial availability and options, and comparison with similar mini-grid (government or private-led) initiatives
- Post-project plan for future action (issues/barriers remaining and/or not addressed; proposals or ideas for future rural energy interventions).

6. Future mini-grid activities in Lesotho and the region

Responsible: UNDP, MEM

As the mini-grid market in Africa is still in its early stages, Lesotho's experience will be invaluable for countries planning to implement similar renewable energy-based mini-grids for rural electrification in general and on the merits of the private-sector-led mini-grid business model in particular. The results and lessons of *the Lesotho project can help inform the design and implementation of other mini-grid initiatives in the region*, in particular, the proposed the GEF-7 "Africa mini-grids program". The "Africa mini-grids program", which is currently in the concept phase, and will be lead by UNDP (in cooperation with AfDB) and 11 participating countries³⁴ and executed by the Rocky Mountain Institute, and will focus on; a) policy, regulations, tariff formulation; b) innovative business models and private sector involvement, and c) dissemination and knowledge management.

On its turn, Lesotho can learn from other countries. *The MTR Team suggests some South-South cooperation activities*, e.g. a study tour of officials to countries in the region that have advanced more with establishing an enabling environment for mini-grid systems, or a workshop/seminar on government-enabled, private-sector-led mini-grid development with international participation from Africa and other regions to expose Lesotho to successes in other countries.



The MTR Team likes to stress the strategic importance of a project like SE4All Lesotho to demonstrate the need for an enabling environment with sufficient funding and a legal-regulatory framework to promote off-grid solutions. Policy-makers will not dedicate time, funding and efforts for setting up mini-grid' funds within an appropriate enabling framework until the time (and even then, there is no guarantee) that mini-grids demonstrate their effectiveness and potential. Yet, mini-grids will not be deployed unless adequate funding is available as part of an overall enabling environment. This situation resembles the 'chicken and egg' question. Until there is some progress in proving the effectiveness of mini-grid energy solutions in an under-resourced country like Lesotho, then the Government will be more tempted to set up

a functioning enabling environment with sufficient funds. The timeframe of subsequent phases of more widespread deployment, let alone larger-scale dissemination of the mini-grid technology, is much longer than the 4-year period of a project like SE4All Lesotho. The current SE4All project supports the demonstration of the first mini-grid project. The story does not end here; in contrary, technical assistance will be needed to enter into the next innovation phase of 'deployment' with emphasis on a) knowledge generation and dissemination, b) further refinement of the legal-regulatory framework (including tariff setting; taxes, importation; technical standards), techno-economic analysis; community engagement and

³⁴ Angola, Burkina Faso, Comoros, Djibouti, Eswatini, Ethiopia, Madagascar, Malawi, Nigeria, Somalia, Sudan

productive uses; commercialisation and innovative financing finance (from public and private sources). *The MTR Team proposes to investigate if a successor project could be formulated by MEM and UNDP (where possible with GEF-7 support) that finds a niche between initiatives in Lesotho (such as World Bank's SREP financing for mini-grids) and collaborates with regional initiatives like the before-mentioned proposed GEF-7 Africa Mini-Grids initiative.*

7.3 Lessons learnt

Some lessons learnt from the implementation of the SE4All Lesotho initiative are:

- A good policy-regulatory framework with appropriate institutions needs to be in place to attract private (local or other) investments. Maybe, such a framework cannot be picture-perfect from the beginning and designing it is a bit of trial-and-error. In other countries, it is observed that the enterprises (often socially-oriented) come on board first, they encounter legal-regulatory difficulties, based on their experience, a regulatory framework for off-grid electrification is drafted; more companies come to invest in off-grid, and based on their experiences in licensing and permitting, the regulatory framework is adjusted to smoothen the permit and licensing process for small investors.
- Donor-supported projects often focus on either providing off-grid electricity solutions or addressing cooking and heating solutions, but not both (often, because the donor already pre-determined the initiative's focus). However, the rural populace needs both electricity and non-electricity solutions and if these are not addressed in one initiative this may invoke disillusion as the project only partially addressed their energy needs. The SE4All project rightly addresses both the electricity and non-electricity energy needs of the rural population.
- The timeframe of donor projects is limited, typically to three or five years, and often with ambitious goals to be realized within this timeframe. However, such a period seldom coincides with the length of decision-making at the government level where political influence and discussions need a much longer timeframe. For project design, the implication is that a) that project goals should be realistically formulated in line with the timeframe of government decision-making; and b) there is need for good coordination at government level (between entities), at donor level (between development partners) and between government and development partners in a joint overall programme so that delays in either project implementation or inaction can be absorbed by the national programme as a whole.
- It is difficult to apply ratings for reviewing (or evaluating) a project like SE4All without a benchmarking context that allows comparisons to rate progress and assign sustainability) between mini-grid (and off-grid energy) projects (looking at factors such as enabling environment, capacity strengthening, policy formulations, demonstration, etc.). The question is, if a rating is given, e.g. 'moderately likely' or 'moderately satisfactory' to a project such as SE4All Lesotho, how does this compare with other GEF-supported projects in the region or globally? It might not be right to compare the results regarding mini-grids Lesotho (with no or very few mini or micro-grid systems) with countries that have been advancing for years (such as, for example, Nepal³⁵). It might be more useful to compare the situation in Lesotho regarding the development of off-grid systems different from other countries with the same level of technology maturity? It would be helpful if some compilation of experiences in Sub-Saharan and other regions is made of the status and developments regarding mini-grids in general and regarding the role of (GEF-financed, UNDP-supported) projects in particular. This may help to put the status of mini-grid and putting in place the proper enabling environment in a country in the right perspective. On the project level, this will inform future programme design and allows the comparison of efficiency and effectiveness of the technical assistance projects vis-à-vis one another.

³⁵ More information on the Nepal off-grid electrification programme on <http://www.aepc.gov.np/rerl/public/>. In Nepal, the Alternative Energy promotion Centre (AEPCC) is the key government body (an autonomous agency under the Ministry of Energy and Water Resources, responsible for off-grid systems). The Government had formulated a clear target of adding 12.5 MW off-grid capacity (mini-hydro and micro-hydro mini-grids and larger PV systems (incl. mini-grids). For this purpose, the Central Renewable Energy Fund (CREF) was established under AEPCC which provides subsidy and facilitates credit-based funding (by making funds available to private banks for private sector investment). The legal-regulatory framework for (private) mini-grid systems has been strengthened, including on the issue of future connections to the main grid system, UNDP with GEF funding has supported these developments through the *Renewable Energy for Rural Livelihoods (RERL)* project. The terminal evaluation report (by J. Van den Akker & D. Gautam) can be downloaded from <https://erc.undp.org/evaluation/evaluations/detail/9759>

ANNEX A. TERMS OF REFERENCE (TOR)

Date project document signed	October 2016	
Project dates	PIF Approval Date: May 27, 2014	CEO Endorsement Date: May 29, 2016
	Date of Inception Workshop: Nov 24, 2016	Expected Date of Mid-term Review: Aug 10, 2019
	Expected Date of Terminal Evaluation: Aug 10, 2021	Original Planned Closing Date: Aug 20, 2021
Project budget	\$3,900,000	
Project expenditure at the time of evaluation	\$1,237,861	
Funding source	Global Environment Facility (GEF)	
Implementing party	Ministry of Energy and Meteorology (MEM)	

1. INTRODUCTION

This is the Terms of Reference (TOR) for the UNDP-GEF Midterm Review (MTR) of the full-sized project titled Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress (PIMS# 5367) implemented through the Executive Agency the Ministry of Energy and Meteorology (MEM) and which is to be undertaken from September to October in 2019. The project started on the 13th of September 2014 and is in its third year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated before the submission of the second Project Implementation Report (PIR). This TOR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document [Guidance for Conducting Midterm Review of UNDP-Supported, GEF-Financed Projects](#) (http://web.undp.org/evaluation/documents/guidance/GEF/midterm/Guidance_Midterm%20Review%20EN_2014.pdf).

2. PROJECT BACKGROUND INFORMATION

The electrification backlog and, based on this, the lack of access to modern energy services is particularly marked in rural Lesotho. Indeed, 91.35% of the country's rural population remains un-electrified and in energy poverty, given the low population densities and distributed character of settlement patterns, will remain so for the foreseeable future. This situation is untenable given the developmental importance of access to modern energy services as well as the Lesotho's government and, indeed, international commitment to universal access. Universal Access is an objective that have been championed by the UN's, SE4All, a key objective in the commitment to universal access to sustainable energy. The SE4All's mission to empower leaders and governments to ensure universal access to sustainable energy resources underpins the mutual commitment between the Government of Lesotho, represented by the Ministry of Energy and Meteorology, and the United Nations Development Programme to enhancing access to modern energy services in rural Lesotho.

The Sustainable Energy for All project titled "Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress" is an initiative co-funded by UNDP/GEF as well as the Government of Lesotho to the direct project value of US\$ 3.9 million (secured principally from Global Environment Facility -GEF). The objective of the project is to catalyse investments in renewable energy-based mini-grids and energy services to reduce GHG emissions and contribute to the achievement of Lesotho's Vision 2020 and SE4All goals. The project was conceptualized and submitted to GEF in 2014. A fully-fledged project document (PDD) was developed and submitted to GEF in September 2015. The GEF approved the project in May 2016 for implementation up to the year 2021. The approved project was further presented to Local Appraisal Committee (LPAC) on June 2016 for approval, which was followed by an inception workshop held on 24th November 2016, where the project was launched.

UNDP-GEF Midterm Review

Terms of Reference

Country	Lesotho
Project Title:	Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress.
Location	Maseru, Lesotho
Application Deadline	13 September, 2019
Category	Energy and Environment
Type of Contract	Individual Contract
Assignment Type	International Consultant
Languages Required	English
Start Date	01 October, 2019
Duration of project	2016 - 2021
Duration of Initial Contract	8 weeks contract
Expected Duration of Assignment	32 days
Reporting to	Project Manager
Duty Station	Maseru, Lesotho + Home Office

BASIC PROJECT/OUTCOME INFORMATION			
Project title	Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress.		
Atlas ID	00082649	PIR # (for GEF Projects)	2
Corporate outcome and output	<p>SP Outcome 3: Strengthening resilience and shocks to crises</p> <p>UNDAF Outcome 3.2: By 2023, the people of Lesotho use natural resources in a more sustainable manner and the marginalized and most vulnerable are increasingly resilient</p> <p>Output 3.2: Low-emission and climate-resilient objectives addressed in national, subnational and sectoral development plans and policies to promote economic diversification and green growth</p> <p>Output 3.3: Capacities of national government and private sector strengthened to enable universal access to clean, affordable and sustainable energy</p>		
Country	Lesotho		
Region	RBA, Southern Africa		

The project design is effectively two-fold, assisting with the creation of an enabling framework to support the long-term investment in off-grid energy service delivery and, importantly, piloting various energy service delivery options with a particular emphasis on mini-grids and more distributed energy service options referred to as energy *centres*. The project will be implemented in the five selected mountainous districts of Lesotho namely, Molete's Hoek, Mochabeng, Diba-Ikga, Qutha's Nek and Quthing. Although they are difficult and expensive to reach by the national grid extension, they are generally rich in at least one renewable energy resource. A number of villages in these districts were considered for mini-grid implementation and others for energy *centres* using elaborate selection criteria. The project was designed to lay the foundations of a successful, post-project, rural energisation initiative. Indeed, the project was designed to *enable* investments in renewable energy-based mini-grids and energy *centres*. It will do so by leveraging US\$27.6 million in multilateral and private sector financing over the project; immediate post-project implementation period. Over the project and post-project period, 60 villages will be *energised* through the *application* of renewable energy technologies and 20 energy *centres* will be established to each service at least 5 surrounding villages. *Energisation* of the 60 villages and establishment of the 20 energy *centres* villages will result in a total of 213,680 tonnes of CO₂ being abated during the project/immediate post-project period, resulting in a direct abatement cost of \$ 16/tonne of CO₂. The project will achieve this target by introducing a conducive regulatory framework and by establishing a financial support scheme that together will facilitate private sector participation in village *energisation* through renewable energy mini-grids and establishment of energy *centres* in the country.

Project objectives

The project's objective is to reduce GHG emissions by creating a favourable legal, regulatory and market environment and building institutional, administrative and technical capacities to promote rural electrification through isolated renewable energy-based mini-grids and energy centres.

in the business-as-usual scenario, the expansion of forest deforestation for the majority of the population, selling land in the public sector resources. As a result, the project will support the Government of Lesotho, working with or indirectly, many private enterprises. To enhance the role of privately constructed and operated renewable energy service companies to improve access to modern energy services. The supported technologies and energy service formats include renewable energy based mini-grids and more distributed renewable energy and energy efficient service options offered through energy centres. These objectives will be achieved through the following:

- Streamlining and simplifying policy, regulatory, legislative and financial instruments for renewable energy-based isolated mini-grids for rural electrification;
- Developing capacity of stakeholders for renewable energy-based isolated mini-grids for rural electrification; Creating attractive and competitive business terms and conditions for investors, such as providing financial incentives towards project development and implementation, which will give developers long-term stability and provide for sufficient investment return; and
- Facilitating implementation of renewable energy-based isolated mini-grids for rural electrification in the country through a pool of trained technicians who would ensure high quality construction, operation and maintenance of the systems and ancillary equipment

a) Implementation strategy

Component 1: Development of cornerstone SE4All Policies and Strategies to facilitate investment in renewable energy-based mini-grids.

This component is designed to support the following outcomes; promoting national policies and strategies, including the development of the Country Action Agenda (CAA) and Investment Prospectus (IP), developing a regulatory framework for mini-grids and providing broader strategic policy support to the GoB.

Component 2: Improved capacity of energy stakeholders and government officials for decentralized clean energy planning and decision-making on the basis of quality energy data

This component is designed to improve the capacity of various public sector stakeholders to support and promote on-going investment in and knowledge of the off-grid energy sector. Associated activities include, building capacity within the Bureau of Statistics as well as the Department of Energy regarding energy data collection and processing. A national energy survey was support by the project as part of component 2. A variable database was identified and installed to ensure effective data management and presentation. Energy management support under this component includes energy modeling software and support as well as overall national data harmonization.

Component 3: Successful establishment of a village-based energy service delivery model for replication nationally

This component focuses on developing all the requirements of successfully establishing a pilot initiative for mini- and energy centres. Activities include: pre-feasibility studies of the 20 sites (10 mini-grid and 10 energy centre sites), the identification of a range of suitable business models supporting the operation of mini-grids and energy centres, financially supporting successful mini-grid/energy centre project developers as well as providing capacity development support in the context of best-practice within the off-grid energy support sector.

Component 4: Outreach programme and dissemination of project experience/best practices/lessons learned for replication nationally and throughout the region

Activities within this component include the development of an outreach **programme** which will promote awareness among project stakeholders including village benefactors, traditional leadership, local government as well as national leadership. The component further includes additional capacity development around monitoring project developments going forward as well as producing a range of informational materials and hosting informational meetings amongst targeted communities and stakeholders. Key project results will be published and shared.

b) Key indicators of the project's success;

- 10 mini-grids and 10 Energy Centres operational and providing modern energy services to 1,000 rural households, each consisting of an average of 6 persons.
- An additional 30 mini-grids and 10 Energy Centres developed immediate post-project operational and providing modern energy services to 3,000 rural households.
- Direct project and immediate post-project CO₂ emissions avoided by 213,680 tonnes, under the assumption of a 20-year equipment projected life.
- Indirect post-project CO₂ emissions avoided by 641,040 tonnes, applying a replacement factor of 3.
- Capacity developed within Department of Energy, Bureau of Statistics and other relevant Ministries/ Government Departments to promote investment in renewable energy-based isolated mini-grids for rural electrification.
- 225 jobs created in the mini-grids/ Energy Centres sector and 900 more jobs in income-generating activities during the project/immediate post-project period.
- Lessons learned documented and distributed to potential investors/stakeholders through publications, public awareness campaigns and the project website.

c) **Benefits of the project**

- Ensure the Government of Lesotho adopts the required policies and regulations to facilitate private sector investment in off-grid energy service delivery. This includes SE4All's Country Action Agenda and Investment Prospectus as well as other relevant policy and legislation.
- Pilot the operation of mini-grids and energy centres within Lesotho
- Build capacity and knowledge within relevant public institutions to ensure on-going support to off-grid renewable energy services
- Develop a Financial Support Scheme to facilitate access to finance during the project and lay the foundations for future off-grid financing needs.
- Enhance the role of the private sector in investing in and operating off-grid energy service companies.
- Enhance access to modern energy services in rural areas
- Strengthen the climate resilience of Lesotho through the promotion and utilization of renewable and efficient energy sources.

Budget and planned co-financing

Expenditure head (GEF component)	Amount (US\$)
Component 1: Development of cornerstone SE4All Policies and Strategies to facilitate investment in renewable energy-based mini-grids	400,000
Component 2: Baseline energy data collection and monitoring for SE4All	300,000
Component 3: Village-based energisation schemes	2,700,000
Component 4: Outreach programming and dissemination of results	140,000
Project Management Cost	360,000
Total	3,900,000

Summary of total fund

Donor	Amount (\$) Year 1	Amount (\$) Year 2	Amount (\$) Year 3	Amount (\$) Year 4	Amount (\$) Year 5	Total (\$)
GEF	613,910	875,910	778,910	635,410	573,860	3,500,000
UNDP	40,000	90,000	90,000	90,000	90,000	400,000
National Government	1,000,000	2,500,000	2,000,000	1,700,000	1,267,837	8,467,837
European Union	500,000	1,000,000	1,500,000	2,000,000	2,900,000	7,900,000
Private Sector (Bethel)	300,000	500,000	500,000	400,000	300,000	2,000,000
Private Sector (Lesotho Solar Energy Society)	50,000	100,000	125,000	150,000	75,000	500,000
TOTAL	2,503,910	5,065,910	4,993,910	4,995,410	5,108,697	22,767,837

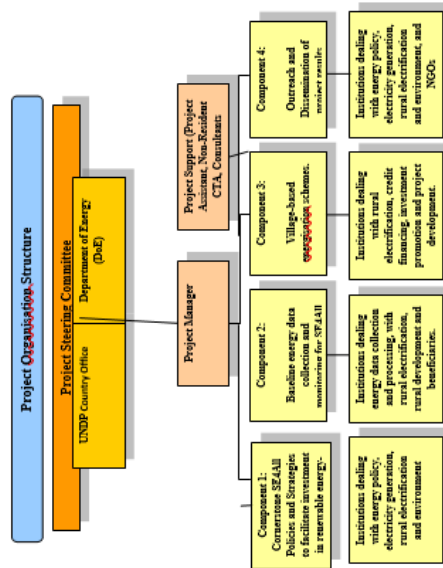
Institutional Arrangement and relevant partners

The project will be implemented through the NIM execution modality by the Department of Energy (DoE) under the supervision of the Ministry of Energy and Meteorology (MEM) as the national implementing partner (NIP). DoE/MEM will assign a senior officer as the National Project Director (NPD) to: (i) coordinate the project

activities with those of other Government entities like the Bureau of Statistics (BoS) of the Ministry of Development Planning, Lesotho Electricity and Water Authority (LEWA), Department of Standards and Quality Assurance (DSQA) of the Ministry of Trade and Industry, National University of Lesotho, etc. (ii) certify the expenditures in line with approved budgets and work-plans; (iii) facilitate, monitor and report on the procurement of inputs and delivery of outputs; (iv) approve the Terms of Reference for consultants and tender documents for sub-contracted inputs; and (v) report to UNDP on project delivery and impact.

The National Project Director will be assisted by a Programme Management Unit headed by a Project Manager (PM). The PM will be responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The PM will also closely coordinate project activities with relevant Government and other institutions and hold regular consultations with project stakeholders. In addition, a Project Assistant (PA) will support the PM on administrative and financial issues.

The Project Manager will be supported by an international part-time Chief Technical Adviser (CTA), short-term international and national experts/consultants who will support implementation of specific technical assistance components of the project. Contacts with experts and institutions in other countries that already have experience in implementing renewable energy-based rural electrification projects, and related policy and financial support measures will also be established.

Project Management Structure

3. OBJECTIVES OF THE MTR

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document, and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. The MTR will also review the project's strategy, its risks to sustainability.

4. MTR APPROACH & METHODOLOGY

The MTR must provide evidence-based information that is credible, reliable and useful. The MTR team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document), project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The MTR team will review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins.

The MTR team is expected to follow a collaborative and participatory approach¹ ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other key stakeholders.

Engagement of stakeholders is vital to a successful MTR.² Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to executing agencies, senior officials, project leadership/management, project developers, local experts, relevant NGOs, Project Board, academia, local government and CSOs, etc.

The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

5. DETAILED SCOPE OF THE MTR

The MTR team will assess the following four categories of project progress. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions.

i. Project Strategy

Project design:

- Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
- Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?

¹ For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see [UNDP Discussion Paper: Innovations in Monitoring & Evaluating Results](#), 03 Nov 2013.
² For more stakeholder engagement in the M&E process, see the [UNDP Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 3, pg 93.

- Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?
- Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
- Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Logframe:

- Undertake a critical analysis of the project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the project are being monitored effectively.
- Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits.

ii. Progress Towards Results

Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix table below and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*, colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table, Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy	Indicator ³	Baseline Level ⁴	Level in FY ⁵ (self-reported)	Midterm Target ⁶	End-of-project Target	Midterm Achievement Rating ⁷	Justification for Rating
Objective:	Indicator (if applicable):						
Outcome 1:	Indicator 1:						
Outcome 2:	Indicator 2:						
Outcome 3:	Indicator 3:						
Outcome 4:	Indicator 4:						
Etc.	Etc.						

Indicator Assessment Key

Green= Achieved **Yellow**= On track to be achieved **Red**= Not on track to be achieved

³ Populate with data from the Logframe and scorecards

⁴ Populate with data from the Project Document

⁵ If available

⁶ Colour code this column only

⁷ Use the 6-point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

In addition to the progress towards outcomes analysis:

- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

iii. Project Implementation and Adaptive Management

Management Arrangements:

- Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
- Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes result-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the project's results framework/ ~~logframe~~ as a management tool and review any changes made to it since project start.

Finance and co-financing:

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used. Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the project management and shared with the Project Board.
- Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)
- For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

iv. Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? To what extent does the project advance gender equality and inclusion of women? Are lessons learned being documented by the Project Team on a continual basis and shared / transferred to

appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

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

Conclusions & Recommendations

The MTR team will include a section of the report setting out the MTR's evidence-based conclusions, in light of the findings.²

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report's executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for guidance on a recommendation table.

The MTR team should make no more than 15 recommendations total.

Ratings

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

Table. MTR Ratings & Achievement Summary Table for Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress

Metric	MTR Rating	Achievement Description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement Rating: (rate 6 pt. scale)	
	Outcome 1 Achievement Rating: (rate 6 pt. scale)	
	Outcome 2 Achievement Rating: (rate 6 pt. scale)	
	Outcome 3 Achievement Rating: (rate 6 pt. scale)	
	Etc. (rate 6 pt. scale)	
Project Implementation & Adaptive Management		
Sustainability	(rate 4 pt. scale)	

² Alternatively, MTR conclusions may be integrated into the body of the report.

6. TIMEFRAME

The total duration of the MTR will be approximately *(22 days)* over a time period of *(8 weeks)* starting *(in October 2019)*, and shall not exceed five months from when the consultant(s) are hired. The tentative MTR timeframe is as follows:

TIMEFRAME	ACTIVITY	RESPONSIBLE
13/09/2019	Application closes	Project Team, UNDP
27/09/2019	Select MTR Team	Project Team, UNDP
01/10/2019	Prep the MTR Team (handover of Project Documents)	Project Team,
02/10/2019 – 04/10/2019 – 3 days	Document review and preparing MTR Inception Report	International, National Consultants
07/10/2019 – 08/10/2019 2 days	Finalization and Validation of MTR Inception Report- latest start of MTR mission	International, National Consultants, Ministry of Energy and Mesecology (MEM), Energy Stakeholders
09/10/2019 – 13/10/2019 – 5 days	MTR mission: stakeholder meetings, interviews, field visits	International, National Consultants, Ministry of Energy and Mesecology, Energy Stakeholders, Project Team, UNDP
16/10/2019 – 1 day	Mission wrap-up meeting & presentation of initial findings- earliest end of MTR mission	International, National Consultants,
17/10/2019 – 23/10/2019 – 7 days	Preparing draft report	International, National Consultants,
28/10/2019 – 08/11/2019 (10 days)	Incorporating audit trail from feedback on draft report/ Finalization of MTR report Preparation & issue of Management Response	International, National Consultants,
21/11/2019	Expected date of full MTR completion	Project Team, UNDP
		International, National Consultants, Project Team, UNDP, MEM

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

7. MIDTERM REVIEW DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	MTR Inception Report	MTR team clarifies objectives and methods of Midterm Review	No later than 1 week before the MTR mission	MTR team submits to the Commissioning Unit and project management
2	Presentation	Initial Findings	End of MTR mission	MTR Team present to the Commissioning Unit
3	Draft Final Report	Full report (using guidelines on content outlined in Annex E) with annexes	Within 2 weeks of the MTR mission	Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OGP
4	Final Report*	Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report	Within 1 week of receiving UNDP comments on draft	Sent to the Commissioning Unit

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

8. MTR ARRANGEMENTS

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project's MTR is UNDP Lesotho. The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within Lesotho for the MTR team. The Project Team will be responsible for liaising with the MTR team to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

9. TEAM COMPOSITION

A team of two independent consultants will conduct the MTR. The first is the international consultant and team leader (with experience and exposure to relevant projects and evaluations in other regions globally) and one local team expert from Lesotho. The consultants cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

The selection of consultants will be aimed at maximizing the overall "team" qualities in the following areas:

- Recent experience with result-based management evaluation methodologies (10%);
- Experience applying SMART indicators and reconstructing or validating baseline scenarios (10%);
- Competence in adaptive management, as applied to *Climate Change and Resilience, Energy* (10%);
- Experience working with the GEF or GEF-evaluations (10%);
- Experience working in Southern Africa (10%);
- Work experience in relevant technical areas for at least 10 years (15%);
- Demonstrated understanding of issues related to gender and *energy*, experience in gender sensitive evaluation and analysis (10%);
- Excellent communication skills (5%);
- Demonstrable analytical skills (5%);
- Project evaluation/review experiences within United Nations system will be considered an asset (5%);
- A Master's degree in *Energy, Environment, Engineering*, or other closely related field (10%).

10. PAYMENT MODALITIES AND SPECIFICATIONS

10% of payment upon approval of the final MTR Inception Report (- with an evaluation design matrix, and a data collection plan and tools and approval of work plan)

30% upon submission of the draft MTR report
60% upon finalization of the MTR report

ANNEX B. ITINERARY OF THE EVALUATION MISSION

Mission agenda and list of people met

	Organisation/entity	Name
Monday 21/10/2019	UNDP SE4ALL Project	Ms. Mabohlokoa Tau (Project Manager)
	Ministry of Energy and Meteorology	Mr. Lenyeta Mabeha (Project Focal Person) Mr. Bokang Shakhane (Senior Energy Officer)
	UNCDF	Mr. Michael Mbowe (Investment Officer)
	LEWA	Mr. Monti Ntlopo (Manager, Technical Regulation)
Tuesday 22/10	National University of Lesotho	Mr. Moeketsi Mpholo (Energy Research Centre) Mr. Zak Thamae (ERC) Mr. Tsita Molapo (ERC) Mr. Makhele (ERC)
	African Clean Energy	Mr. Stephen Walker (General Manager) Mr. Daniel Walker (Cambodia Manager) Mr. Dominik Berg (Project manager)
	Bureau of Statistics	Ms. Malehloa Melato (Director)
	European Union – Lesotho	Mr. Koena Marabe (Project Manager – Cooperation)
Wednesday 23/10	Ministry of Environment	Mr. Motsamai Damane (Director of Environment (GEF)
	UNDP SE4All Project (Skype meeting)	Mr. Robert Aitken (Chief Technical Advisor)
	Solar Lights	Mr. Michael Hoenes (Manager)
	Ministry of Planning	Ms. Tebello Motsoane (Economic Planner)
	TED	Ms. Mantopi Lebofa
	One Power One Power	Mr. Matthew Orosz (Engineer) Mr. Jordan Stephens (Chief Executive Officer)
Thursday 24/10	Rural Self-help Development Association (RSDA)	Ms. Mampho Thulo (Managing Director) Ms. Lineo Lekhanya (Project Coordinator)
Friday 25/10	Presentation of MTR Team’s preliminary findings	Attendance: • Mabohlokoa Tau; Limomane Peshoane; Mamorakane Makthetha; Mabulera Tsuene (UNDP) • Lenyeta Mabeha; Bokang Shakhane, Makhahliso Nokana (MEM) • Molefe Makhbele (NUL) • Stephen Walker (ACE) • Selone Lepolesa; Masechaba Lepolesa • Michel Hoenes (Solar Lights) • Tebello Motsoane (Min. of Planning) • Kopelo Lephole, Jordan Stephens; Kopano Tsenoli (1PWR) • Sina Makana (Positive Planet Int’l) • Kefuoe Matete (RSDA)

Additional Skype meetings

	Organisation/entity	Name
Monday 04/11/2019	District Council, Mokhotlong	Ms. Malerato Phakisi (Administration Manager)
Thursday 07/11	UNDP Country Office	Ms. Christy Ahenkora (Dep. Resident Representative) Mr. Limomane Peshoane (Head, Energy & Environment) Ms. Mabular Tsuene (Monitoring and Evaluation) Ms. Mamorakane Makheta (M&E) Ms. Mathabo Chaoana (M&E) Ms. Matumelo Monoko (M&E)

ANNEX C. LIST OF DOCUMENTS COLLECTED AND REVIEWED

Project concept and progress reports:

- Project Document; GEF CEO ER document
- Inception Report (2016)
- PIR (Project Implementation Review) 2018
- Project Steering Committee Minutes of Meeting (Dec 2017, Apr 2018, Oct 2018, Dec 2018, Oct 2019)
- Quarterly Progress Reports, Q1 and Q2 2019; Annual work plans (AWP), 2018, 2019
- Financial audit report (2016-2018)
- Communications Strategy 2019-2021
- Terms of Reference (Communication expert, RE expert – village survey framework, Off-grid expert and financial support schemes, National Energy Survey Consultancy, Framework for gender mainstreaming in the Electrification Plan for Lesotho, SE4All Country Action Agenda and Investment Prospectus)

Project technical reports:

- *National Energy Survey, Final Survey Report* (2018), María José López Blanco
- *Regulatory requirements and financial support schemes related to mini-grid applications and village energisation schemes* (2019)
- *Sustainable Energy for All Country Action Agenda* (2018)
- *Sustainable Energy for All Country Action Agenda* (2018)
- *Pre-Feasibility Studies for Mini- Grid and Energy Centres in Lesotho* (2018)
 - *Methods and Assumptions*
 - *Mohale's Hoek District, Mokhotlong District, Qacha's Nek District, Quthing District, Thaba Tseka District*
- *Call for Investment Proposals – Financial Support Scheme (FSS)*, UNCDF. UNDP

Other reports and documents:

- *Country programme document for Lesotho, 2013-2017* (UNDP, UNPF, UNOPS)
- *country programme document for Lesotho, 2019-2023* (UNDP, UNPF, UNOPS)
- *Electricity Supply Cost of Service Study – LEWA Lesotho, Final Report* (2018), MRC, prepared for LEWA and African Development Bank (AfDB)
- *Energy Policy 2015-2015* (Government of Lesotho)
- *Formulation of the National Electrification Master Plan* (2018; AETS Consortium, prepared for the European Union)
 - *Grid Development Plan Report*
 - *Off-Grid Master Plan Report*
- *Lesotho Renewable Energy-Based Rural Electrification Project (LREBRE)*, Terminal Evaluation Report; UNDP
- *Lesotho's Nationally Determined Contributions* (2017), Ministry of Energy and Meteorology (MEM)
- *National Climate Change Policy 2017-2027*, MEM
- *National Strategic Development Plan 2018/19-2022/23*, zero draft (Government of Lesotho), MEM
- *Regulatory Framework for the Development of Renewable Energy Resources in Lesotho - Final report* (2015), AF Mercados, prepared for LEWA and AfDB
- *Renewable energy mini-grid generation, distribution and supply regulations, Revised draft* prepared by Covington & Burling LLP (2019)
- *Schedule of Tariffs and Charges* (2019), Lesotho Electricity Company
- *SREP Investment Plan for Lesotho* (2017), Department of Energy-MEM, World Bank
- *Scoping of Potential Interventions in the Energy Sector under 11th EDF in Lesotho* (2015), by Atkins Consortium, prepared for EU Technical Assistance Facility for the "Sustainable Energy for All" Initiative (SE4ALL), European Union
- *Support to the Energy Sector in Lesotho*, 1st Progress Report, Nov 2018-May 2019, by HCL Consortium, prepared for the European Union



Development of Cornerstone Public Policies and Institutional Capacities to accelerate Sustainable Energy for All (SE4All) Progress

Call for Investment Proposals - Financial Support Scheme (FSS)

Background

The Government of Lesotho through the Ministry of Energy and Meteorology (MEM) and United Nations Development Programme (UNDP) call for Investment Proposals is part of the implementation of the *“Development of Cornerstone Public Policies and Institutional Capacities to Accelerate Sustainable Energy for All (SE4All) Progress”* Project in Lesotho. The project aims to catalyse investments in renewable energy-based mini-grids and Energy Centres, to reduce GHG emissions and contribute to the achievement of Lesotho’s Vision 2020 and SE4All goals. Further, the project will create a favourable legal, regulatory and market environment and build institutional, administrative and technical capacities to promote rural energisation through isolated mini-grids and Energy Centres. The project designed a Financial Support Scheme (FSS) and appointed United Nations Capital Development Fund (UNCDF) as the Fund Manager to manage and disburse grants for private developers in order to kick start the market for the renewable energy technologies and minimise the risk associated with capital investment.

UNCDF makes public and private finance work for the poor in the world’s 47 least developed countries. With its capital mandate and instruments, UNCDF offers “last mile” finance models that unlock public and private resources, especially at the domestic level, to reduce poverty and support local economic development.

Financial Support Scheme (FSS)

The purpose of the Financial Support Scheme (FSS) is two-fold. First, it is designed to jump-start the market for isolated PV/renewable energy mini-grids and Energy Centres by providing start-up capital and reducing the developers’ financial requirement. Second, it is to minimise any potential risk on the part of lenders in making loans for renewable energy-based mini-grids/Energy Centres to encourage more private finance for this type of projects by demonstrating acceptable levels of risk. Through FSS, the project aims to support

United Nations Development Programme

establishment of 10 renewable energy mini-grids and 10 Energy Centres in the defined geographical areas. FSS services are available for the period of 5 years. Detailed pre-feasibility studies have been carried out for specific locations where the FSS supported projects are to be implemented. These pre-feasibility studies will be made available to the interested applicants on request.

Renewable Energy Mini-Grids

FSS targets renewable energy mini-grids with at least 18 kW of PV (or equivalent in terms of other RETs as indicated in the detailed pre-feasibility studies) installed at each of the 10 pre-identified villages as follows: Ketane (Ha Nohana) and Ribaneng in Mphahle’s Hoek; Matsoang and Tlhanyaku in Mokhotlong; Sehlabathebe (Mpharane) and Lebakeng in Qacha’s Nek; Tosing (Dalewe) and Sebatapa (Ha Sempe/Lefikeng) in Quthing, Sehonghong and Mashai (Moreneng, St. Theresa) in Thaba-Tseka.

A mini-grid is an isolated, community-level system, separate from the main electricity grid network that consists of generation and distribution of electricity to consumers located in the vicinity. For renewable energy grids based on solar and hydro power, a battery storage system is typically included to balance supply and demand and intermittent generation patterns from renewable energy sources. In addition to the power generator, battery, and distribution network, a mini-grid may include a power conditioning unit consisting of junction boxes, charge controllers, inverters, distribution boxes and wiring/cabling, all located within a container or purposely constructed building.

The Financial Support Scheme (FSS) will provide direct support to the investors to:

- design and install a mini-grid that will perform efficiently,
- make it easier for investors to mobilise debt financing through provision of de-risking capital in the form of an investment grant, and
- provide tariff relief to isolated rural consumers, just like those connected to conventional energy-based mini-grids.

Services provided by the FSS to each of the 10 renewable energy-based mini-grids

- support the preparation of feasibility studies/business plans (FS/BP) and partial investment for isolated renewable energy-based mini-grids. This will be achieved through the provision of a grant, to eligible project developers selected on the basis of competitive bidding, with an amount of up to 50% for each of the costs involved for the feasibility study/business plans and the investment grant, with a maximum per project allocation not exceeding \$60,000.
- to establish a performance-based incentive (PBI) fund (a subsidy that is also referred to as OBA – output-based aid) that will be paid directly to the project developer, based

on actual energy production of the PV or renewable energy system with a maximum per project annual allocation not exceeding \$7,500 for a period of up to 4 years.

Energy Centres

FSS will support the establishment of 10 village Energy Centres, with each serving at least 5 surrounding villages in the following locations: Phamong (Central) and Koebunyane in Mohale's Hoek; Mateanong and Malingoaneng in Mokhotlong; Matebeng (Ha Lelignona) and Melikane (Thuoeleng) in Qacha's Nek; Majara and Qhoali in Quthing; Linakaneng and Ha Mokoto (Litsoetseng) in Thaba-Tseka.

Energy Centres present an interim solution to "off-grid" villages while they await the establishment of (mini-)grids in the future by offering access to electric and non-electric energy sources. They can help consumers to save cost of transportation and time facilitating their access to such non-electric energy sources as kerosene, LPG, candles, portable LED lights etc. Energy Centres may also feature power charging facilities. In this project, only renewable energy driven power chargers are covered. Customers living in the vicinity of the Energy Centre may charge their mobile phones, lanterns, radios and other battery driven devices. Also other forms of modern energy and their applications are supplied like e.g. PV-operated portable LED lights, solar mobile phone chargers, solar home systems, energy efficient cook stoves, etc. Energy Centres help to disseminate modern lighting, cooking and heating solutions to rural areas which do not have access to these modern services and technologies.

Services and products offered by the Energy Centres may include:

- **Battery charging** – Battery packs can be recharged allowing community members to bring in batteries for recharging.
- **Renewable energy technologies and appliances**; solar home systems, solar powered LED lanterns, radios, TVs, etc.
- **Energy efficient products** – improved cookstoves, insulated cookers, etc.
- **Internet** – one of the primary revenue generators is selling internet access. The EC can function as an ISP and sells internet WiFi vouchers. An internet router can be installed at each EC creating local hotspots.
- **Airtime** – selling airtime for phone will be critical for generating foot traffic to the EC.
- **Printing** – The EC can also offer printing services. This will be a very popular service for schools, students and local community as it will help with university applications, test printing, job applications etc.

Services provided by the FSS to energy centers

At the end of each year of operation, each Energy Centre will be eligible for a subsidy in the amount of \$7,500 for a period not exceeding 4 years, subject to demonstrating proof that they facilitate access to modernised energy services to the communities they serve.

3

However, the total subsidy to each Energy Centre by the end of the project should not have exceeded 50% of the initial cost of its establishment.

Eligibility criteria for Renewable Energy Mini-Grids and Energy Centres

As the project developer, you are required to be the main designer of your system and its technology. The main project driver should be costs and quality, including consumer health and the environment.

Dimension	Criteria
Geographical Coverage	Qualifying project proposals should be implemented within the identified locations in Lesotho as specified above.
Project type	<ul style="list-style-type: none"> • Solar or hydro mini-grids or Energy Centres (interchangeable) • It is permissible to substitute one type of a project (e.g., a mini-grid) with another type of a project (e.g., an Energy Centre) provided both types are comparable in terms of the overall coverage of facilities/households.
Applicant	<ul style="list-style-type: none"> • A legal person and a specific type of organisation such as: private company, non-governmental organisation or research institute with registration in Lesotho. • Can provide, either from its own resources or in combination with other shareholders, contribution (in kind or in cash) equal to at least 20% of the total cost of the project.
Prior Experience	<ul style="list-style-type: none"> • Track record and requisite skills in delivering energy services in rural communities through isolated renewable energy-based mini-grids or Energy Centres and other energy access schemes.
Renewable energy-based source	<ul style="list-style-type: none"> • Source must be either solar or micro-hydro.
Financing	<ul style="list-style-type: none"> • For mini-grids, the project developer must indicate sources of complementary funding required to cover total project costs including feasibility studies and business plans beyond the maximum grant of \$60,000. • For Energy Centres, the project developer must demonstrate availability and sources and funding for the total project cost.
Qualified management	The proposal should show evidence that the proposed management team has the necessary technical and managerial skills to oversee the successful setup, sustainable operation and maintenance of the mini-grid or Energy Centres.

4

Dimension	Criteria
Business models	The project developer should indicate a sound business model demonstrating that there is a long-term business opportunity with solid after-sales services as opposed to a more short-term project opportunity. Priority will be given to those applications that demonstrate reduction in climatic and ecological impacts.
Socio-economic conditions	Proposal must show how the business will generate positive benefits to the community and local economy at large, e.g. reduction of GHG emissions, job creation, income generation, access to energy equipment etc.
Innovation	Applicants are encouraged to integrate tried and tested 'innovations' in their proposal. Such innovative actions would include, but not be limited to, financial mechanisms such as crowd funding and mobile banking, innovative solutions to after-sales services, innovative household energy solutions and innovative actions for the mobilisation, communication and in-house training of the population (community?) before, during and after installation of an energy solution.
Scalability	The potential for scaling-up of rural energy activities and contributing towards poverty reduction, will be important considerations. Demonstration of the successful deployment, along with proof of capacity to replicate/upscale, will therefore be critical.
Productive Use of Energy	Actions aiming at increasing access to energy services for local productive activities so as to promote economic growth, generating jobs and consequently increasing the affordability of an energy service will also be considered an advantage.
Compliance	Compliance with Lesotho laws and regulations and UNCDF/UNDP Environmental & Social Performance Standards including human rights is a must.

Key evaluation considerations

- Sustainability: the proposed (distributed) energy service strategies and the accompanying business frameworks must be commercial and sustainable. The plan should include longer-term projections, revenues, costs/overheads, breakeven, etc.
- Replicability: the distributed energy service solution should be replicable, representing a business solution that is relevant to and implementable in other districts in Lesotho.

- Product/technology selection: project developers must work with proven technologies that are preferably, where possible, certified. The intention of this CFP is not to test or pilot technologies/products but rather to mature the business strategies that support their dissemination.
- Developer's own contribution: the developer is expected to provide contribution (in kind or in cash) equal to at least 20% of the total cost of the project.
- Project developers are welcome to propose business strategies focused on single or multiple technologies/products and services.
- Impact and cross-cutting issues: project developers are encouraged to develop solutions that have broader socio-economic, environmental, commercial and gender impacts.

Pre-submission workshop for prospective applicants

UNCDF will offer a half-day session to guide applicants on submission requirements on **20th May 2019 at UN Conference Hall**. The purpose of this session is to allow applicants an opportunity to raise questions and for UNCDF to provide guidance on how applications should be submitted and to increase the understanding of the applicants on the eligibility and selection criteria.

If you wish to participate in the pre-submission workshop, please send an email to ls-procurement@undp.org with the subject "FSS Pre-submission workshop".

Please note that you are not required to participate in the session in order to submit a proposal. This is merely a service provided by the FSS management team.

Instructions for submitting proposals

Only properly completed submissions will be reviewed. A complete submission consists of the following submission form where the applicant must fill out all sections:

1. The Call for Proposal **Submission Form (Word)** which can be downloaded at www.ls.undp.org.

Any supporting documentation must be submitted in separate documents. The word submission form **must** be submitted in their original formats (Word) along with any supporting documentation to the following recipient: ls.procurement@undp.org with the subject line "FSS APPLICATION". The lead applicant may submit proposals for more than one site under this call for proposals, and **may** be awarded more than one site.

ANNEX E. QUESTIONNAIRE AND EVALUATION MATRIX

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of information	Sources of verification
<p>Findings: Relevance and design</p> <ul style="list-style-type: none"> • Relevance and country drivenness • Stakeholder involvement • Assessment of logframe and M&E design 	<ul style="list-style-type: none"> • Relevance and design <ul style="list-style-type: none"> ◦ Does the project adequately take into account the national realities, both in terms of institutional and policy frameworks in its design? Are project outcomes contributing to national development priorities and plans in accordance with the national local policy legal and regulatory frameworks (country priorities)? ◦ Consistency with the GEF focal areas in Climate Change/operational program strategies of the GEF CC and with the UN and UNDP country programming in Lesotho? ◦ Is the Project addressing the needs of the target beneficiaries? Relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions. Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes? ◦ Are relevant gender issues raised in the project design? Are broader development and gender aspects of the project being monitored effectively (do SMART 'development' indicators, include sex-disaggregated indicators and address future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis. • Design: <ul style="list-style-type: none"> • Are lessons from other relevant projects properly incorporated in the project design? • Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame? Is the project internally coherent in its design? Are there any incorrect assumptions or changes to the context to achieving the project results or are any amendments to the theory of change/logframe been made or planned during the Project's implementation? 	<p>Relevance:</p> <ul style="list-style-type: none"> • Extent to which Project supports national energy priorities, policies and strategies • Adequacy of project design and implementation to national realities and existing capacities • Extent to GEF climate change focal area is incorporated • Degree to which the project supports aspirations and/or expectations of stakeholders and beneficiaries (incl. females) <p>Design:</p> <ul style="list-style-type: none"> • Coherency and complementarity with other national and donor programmes • Number and type of performance measurement indicators (SMART indicators) • Degree of involvement of government partners and other stakeholders in the Project design process 	<ul style="list-style-type: none"> • Desk review of project design and technical documents; Documents from GEF; national policies and strategies; • Interviews with project staff management, project partners (incl. former staff), stakeholders (local and national government entities, private sector, universities/NGOs) and UNDP staff 	<ul style="list-style-type: none"> • Interviews with project partners and stakeholders and analysis • Document and report analysis*

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of information	Sources of verification
	<ul style="list-style-type: none"> Undertake a critical analysis of the project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary. Review the extent to which relevant gender issues were raised in the project design. Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits. M&E design. Does the project have an effective M&E plan to monitor results and track progress towards achieving project objectives (see also Implementation) 			
<p>Findings: Results</p> <ul style="list-style-type: none"> Global environmental and other impacts Assessment of outcomes and outputs (cf. with baseline indicators) 	<p>Results and effectiveness</p> <ul style="list-style-type: none"> To what extent have the expected outcomes and of the project been achieved? (review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix; comparison and analysis of the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review) What outputs has the project achieved (both qualitative and quantitative results, comparing the expected and realized end-project value of progress indicators of each outcome/output with the baseline value)? Were there any unplanned effects? Which external factors have contributed or hinder the achievement of the expected results? Can the project take advantage of new opportunities, adapting its theory of change to respond to changes in the development context? Write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits 	<p>Results and effectiveness:</p> <ul style="list-style-type: none"> Level of achievement (as laid out in the logframe) Achievement of outputs (qualitative, quantitative) and description of activities Evidence of adaptive management and/or early application of lessons learned 	<ul style="list-style-type: none"> Desk review of project design and technical documents other relevant docs Interviews with project staff management, project partners (incl. former staff), stakeholders (local and national government entities, private sector, universities/NGOs) and UNDP staff Interviews with project experts (national and international) 	<ul style="list-style-type: none"> Interviews with project partners and stakeholders and analysis Document and report analysis* Check with publicly available information
<p>Findings: implementation, and processes</p> <ul style="list-style-type: none"> Management and administration; role of EA and IA Monitoring and evaluation systems 	<p>Implementation and adaptive management</p> <ul style="list-style-type: none"> Are adequate project management arrangements in place at project entry? Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement. 	<p>Implementation and management</p> <ul style="list-style-type: none"> Extent to which project partners committed time and resources to the project 	<ul style="list-style-type: none"> Desk review of project design and technical documents (incl. PIRs; data on budget; other relevant docs; media coverage, official 	<ul style="list-style-type: none"> Interviews with project partners and stakeholders and analysis Document and report

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of information	Sources of verification
<ul style="list-style-type: none"> Stakeholder engagement and communications Budget, expenditures and co-financing; procurement 	<ul style="list-style-type: none"> What is the quality of execution of the Executing Agency/Implementing Partner(s) and the GEF Partner Agency (UNDP) and are there recommend areas for improvement? Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved. Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results? <p>Assessment of M&E system; reporting</p> <ul style="list-style-type: none"> Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start. Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively? Were progress reports produced accurately and timely, and did they respond to reporting requirements including adaptive management changes? In particular, assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?) Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners. <p>Stakeholder involvement</p> <ul style="list-style-type: none"> Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders? Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation? 	<ul style="list-style-type: none"> Extent of commitment of partners to take over project activities Evidence of clear roles and responsibilities for operational and management structure <p>M&E</p> <ul style="list-style-type: none"> Actual use of the M&E system to change or improve decision- making/adaptive management Share of M&E in the budget Quality and quantity of progress reports <p>Stakeholders and communications</p> <ul style="list-style-type: none"> Extent to which project partners committed time and resources to the project Extent of commitment of partners to take over project activities <p>Financial planning</p> <ul style="list-style-type: none"> Extent to which inputs have been of suitable quality and available when required to allow the Project to achieve the expected results; Timely delivery of funds, mitigation of bottlenecks. Level of satisfaction of partners and beneficiaries in the use of funds 	<p>notices and press releases</p> <ul style="list-style-type: none"> Interviews with project staff management, project partners (incl. former staff), stakeholders (local and national government entities, private sector, universities/NGOs) and UNDP staff Interviews with project experts (national and international) 	<p>analysis*</p>

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of information	Sources of verification
	<ul style="list-style-type: none"> Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives? <p>Financial planning and procurement</p> <ul style="list-style-type: none"> Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions. Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions. Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds? Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans? 			
<p>Findings: sustainability</p> <ul style="list-style-type: none"> Risks and external factors Replication 	<p>Sustainability</p> <ul style="list-style-type: none"> <i>Financial risks.</i> Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends? <i>Sociopolitical risks.</i> Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives? <i>Institutional framework and governance risks.</i> Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency, and required technical know-how, in place? <i>Environmental risks.</i> Are there any environmental risks that may jeopardize sustainability of project outcomes? 	<p>Sustainability</p> <ul style="list-style-type: none"> Extent to which risks and assumptions are adequate and are reflected in the project documentation and are still up-to-date Extent to which project is likely to be sustainable beyond the project; Extent to which main stakeholders plan to provide sustainability to the project's results in the future, including commitment of financial resources Extent to which partners and stakeholders are applying new ideas outside of the immediate project context 	<ul style="list-style-type: none"> Desk review of project design and technical documents (incl. PIRs; other relevant docs) Interviews with project staff management, project partners (incl. former staff), stakeholders (local and national government entities, private sector, universities/NGOs) and UNDP staff 	<ul style="list-style-type: none"> Interviews with project partners and stakeholders and analysis Document and report analysis* Check with international practices and publicly available information

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of information	Sources of verification
	<ul style="list-style-type: none"> • <i>Capacity risks.</i> Have partners and stakeholders successfully enhanced their capacities and do they have the required resources to make use of these capacities? 			
<p>Conclusions and recommendations</p> <ul style="list-style-type: none"> • Conclusions on attainment of objectives and results • Lessons learned • Recommendations 	<ul style="list-style-type: none"> • Evaluation conclusions related to the project's achievements and shortfalls (comprehensive and balanced statements which highlight the strengths, weaknesses and results of the project). Where applicable: • Comprehensive and balanced statements (that are evidence-based and connected to the MTR's findings) which highlight the strengths, weaknesses and results of the project. Where applicable: <ul style="list-style-type: none"> ○ Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis. Can the project take advantage of such new opportunities and expand bvenefits, adapting its theory of change, if needed, to changes in the development context? ○ Identify remaining, unaddressed, barriers to achieving the project objective in the remainder of the project. • Summary of ratings (on a six-point scale) • What lessons can be learnt from the project regarding design and implementation? • What recommendations, if any, can be made to o follow up or reinforce initial benefits from the project; Proposals for future directions related to the main objectives 	<ul style="list-style-type: none"> • Perceptions of or actual levels of relative effectiveness and/or efficiency of the project cf. with other projects; Perceptions of partners, and other stakeholders as to tangible development results from activities • Lessons that have been learned regarding achievement of outcomes and efficiency (implementation) • Changes could have been made (if any) to the design to improve the achievement of the results 	<ul style="list-style-type: none"> • Interviews with project staff and partners • Desk review of project docs and reports as well as external policy and other docs 	<ul style="list-style-type: none"> • Interviews with project partners and stakeholders and analysis • Document and report analysis*

* See Annex C

ANNEX F. CONSULTANT CODE OF CONDUCT FORM

Evaluators/reviewers:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners, and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation/reviewer Consultant Agreement Form

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

Name of Consultant: J.H.A. VAN DEN AKKER (Team Leader)

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 Westerhoven, Netherlands

Signature: _____



ANNEX G. ABOUT THE REVIEWERS

Mr. Jan van den Akker is a technology management scientist with a Master's degree from Eindhoven University of Technology (Netherlands), specializing in international development cooperation. He is an expert on sustainable energy policy and technologies. Mr. Van den Akker specializes in studies and analytical work, project design and development, project coordination and implementation, project monitoring and evaluation, knowledge management, capacity strengthening and public-private partnerships in the field of sustainable energy strategies, energy efficiency, energy technologies and supply, climate change and the Clean Development Mechanism. He has lived and worked abroad for over 7 years in Zambia, Mexico, and Thailand. In addition, has undertaken numerous short missions to about 45 countries in Africa, Latin America, and Asia & the Pacific.

In 2003/2004, he founded ASCENDIS, as an independent office, and has been providing consultancy on sustainable energy and climate change, specializing in development issues. ASCENDIS is based in Westerhoven, Netherlands, but offers services in Africa, Asia and the Pacific, Europe and Latin America & the Caribbean, often by associating itself with local freelance experts, professionals, and organizations. As a long-term expert with the United Nations system, Mr. Van den Akker has provided advice to governments and organizations on the design of investment and capacity building programs for UNEP, UNDP and UNIDO (mostly in GEF-funded activities), UNFCCC, European Commission and for NGOs/consultancy companies (e.g., Practical Action Consulting, Winrock, GFA) in the area of renewable energy, energy efficiency, and sustainable transportation.

As an independent consultant, he has reviewed and evaluated about 30 GEF-funded sustainable energy projects and assisted in the design of about 36 sustainable energy projects. He worked as UNDP Regional Technical Advisor on climate change mitigation (in Eastern and Southern Africa) during 2007-2009 and as Key Expert in the European Union Technical Assistance Facility for Sustainable Energy for All (2015-16). He also worked as Technical Advisor in the implementation of individual projects in Guatemala, Peru, and currently, in Malawi.

Mr. Ramochaha Lethola is an agricultural and socio-economist, with extensive experience in project and programme evaluation since 2001. He has particular experience in project cycles, baseline surveys, feasibility studies, evaluations, and assessments. To complement his experience, he has also been trained in results-based monitoring and evaluation, project management, risk management in projects and climate change adaptation. He is currently pursuing a distance learning MSc in Climate Change and Development with SOAS of the University of London. He liaised very well with relevant government departments and NGOs in implementing the projects or carrying out assessments.

He is suitable for this assignment because he has knowledge of the context of the project, experience of over 15 evaluations (that included two GEF funded projects) and 55 Impact Assessments and the necessary skills for delivering the assignment to the satisfaction of the client as required by the terms of reference. In the past evaluations carried out, he used both quantitative and qualitative evaluation approaches and in the recent assignments, Results-Based Management Evaluation Methodologies were used. The experience is complemented by formal training on programme/project evaluation. He has also done assignments for different United Nations Organizations such as FAO, IOM and UNDP.

ANNEX H. AUDIT TRAIL

To the comments received on the draft of the Mid-term Review are provided in a separate file.