Draft Final Report

Regulatory requirements and financial support schemes related to mini-grid applications and village energisation schemes

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UNDP/GEF Project Title

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

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1.0 Abbreviations and Acronyms

DOE	**Department of Energy**
EC	Energy Centre
GEF	Global Environment Facility
GHG	Greenhouse Gases
FSS	Financial Support Scheme
LEC	Lesotho Electricity Company (Pty) Ltd
LREBRE	Lesotho Renewable Energy Based-Rural Electrification
MEM	Ministry of Energy and Meteorology
MG	Mini-grid
NEMP	National Energy Master Plan
NGOs	Non-Governmental Organisations
NES	National Environmental Secretariat
PV	Photovoltaic
REU	Rural Electrification Unit
SREP	Scaling-Up Renewable Energy Program
UNDP	United Nations Development Programme

Key Definition:

Mini grids:

Systems involving small-scale electricity generation (from 10kW to 2 MW), and the distribution of electricity to a limited number of customers via a distribution grid that can operate in isolation from national electricity transmission networks and supply relatively concentrated settlements with electricity at grid quality level. “Micro-grids” are similar to mini-grids but operate at a smaller size and generation capacity (1-10 kW).

A modern mini-grid is scalable, so that additional generation capacity can be added to meet growing loads without compromising the stable operation of the existing mini-grid.

2.0 Executive Summary

Mini-grids offer a sustainable solution to rural electrification, combat poverty, and grow local economies. Despite a huge market of un-electrified rural communities in Lesotho, the mini-grid sector is in a nascent state, with only one existing initiative currently operational in Lesotho. Successful implementation of mini-grids requires the right technology, access to financing, an appropriate policy and regulatory environment, and an effective business model.

Lesotho legal and regulatory framework relating to mini-grids is not well developed in the sense that there is no dedicated policy or legislative regime that directly speaks to mini-grids. This is not to say that mini-grids are not regulated at all under the existing legislation administered by the Lesotho Electricity and Water Authority (LEWA).To some extent they are; but that is through the use of processes applicable to "grid-oriented" regime and not so much under a clearly delineated framework specific to mini-grids. And herein lies the problem – to date there has not been a dedicated min-grid regime with which developers can easily identify and which provides the necessary clarity in terms of regulatory approach and methodology.

Of those countries that have developed mini-grid regulations, there seems to be a general tendency to follow a light-handed regulatory approach, typically by registering smaller mini-grids or developing a light-handed licensing framework dedicated to mini-grids. It is thus useful to consider developing a licensing approach and framework that are better suited to mini-grids and that take regional and Lesotho specific requirements into consideration.

It would thus be useful for Lesotho to extensively review and consider various approaches to mini-grids that have been followed elsewhere, noting, inter-alia, the rationale behind the choices, and which of those fit in with local considerations or could be feasibly adopted to Lesotho's socio-economic environment. The question then needs to be asked: Are Electricity Act (EA) of 1967, Electricity Regulations (ER) of 1970, LEA Act of 2002 and accompanying Regulations, Codes and Licences in their present format suitable for the proposed regulatory approach for mini-grids; and if not, what should be done to augment or change the law to facilitate the regulation of mini-grids? Hence as a first step, a detailed analysis of the LEA, EA, ER and the Licensing Regulations promulgated under these Acts were reviewed in order to gain a better understanding of the structure, scope and limitations imposed under existing law and regulations.

As such, legislation is supposed to take its guidance from policy. Laws need not be deviated from unless subject to or amended by another law. Regulations need to take their guidance from the enabling law and not move outside its ambit. More so, the LEWA's jurisdiction ought to be consistently restricted to what is directly allowed under the law. (LEWA is authorized to issue licenses, codes and directives in the law itself, but may not move outside its jurisdiction.)

From this perspective it is hence useful to consider what falls directly under the LEWA's jurisdiction, as that would not necessarily need a legislative or regulation-changing process but would be within the LEWA's own powers to determine. It is for example within the LEWA's jurisdiction to determine

licence conditions[1]. Thus, if the proposed regulatory framework for the demonstration projects could be fully couched in terms of licences and licence conditions, no regulation or law may be necessary.

Experience has shown that significant private investment will not be forthcoming if a country's policy and regulatory rules of the game are unclear or overly burdensome. Of all the rules and policies that can affect private investment in isolated rural mini-grids, the one most frequently cited by potential private investors concerns what happens to their operations after the main-grid arrives.

Regulators in a number of countries are already addressing this concern. Nigeria, Rwanda, and Tanzania have all issued rules or regulations that offer several post-interconnection business options for developers of isolated mini-grids. These regulations typically state that after the main grid arrives, a previously isolated mini-grid has the right to become a small power distributor, a small power producer that sells exclusively to the national grid, or some combination of the two. The regulations also specify compensation rules or principles for deciding how much mini grid developers 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.

Regional and international tendencies and practices regarding mini-grid regulatory approaches were investigated in order to get a perspective on how other countries deal with mini-grid licensing and what tendencies seemed to be emerging best practice, especially in the region.

As Lesotho has no existing mini-grid regulatory framework, licensing and regulatory concepts emerging from stakeholders consultations will be discussed with all energy stakeholders convened for this purpose.

In conjunction, the two Electricity Act of 1967, Electricity Regulations of 1970, LEA Act of 2002 were viewed both from a procedural (process) point of view and a substantive point of view (grid encroachment, tariffs, standards) in order to differentiate between process-type issues and substantial-type issues that are of importance to developers.

3.0 Key Recommendations

Following this, a suggested licensing and regulatory framework for mini-grids was then developed. This framework will then be discussed with key Energy officials, whereafter it will be presented to stakeholders to be convened for this purpose.

These proposals will then be further refined and discussed with key Energy officials. The preliminary key recommendations can be summarised as follows:

Recommendation One: That LEWA accepts three categories of mini-grids, namely Small Mini-grids (<100 kW), Medium Mini-grids (between 100kW and 1MW), and Large Mini-grids (>1MW). This

[1] i.e. no external process such a making a regulation by a Minister or a law by Parliament needs to be followed.

division according to size takes into account regional best practice and the concept of light-handed regulation, in that it offers the opportunity to regulate three categories differently based on size and complexity.

Recommendations Two: That the different sizes of mini-grids all be licensed, but that there is differentiation in the *manner* how they are regulated. Mini-grids <100kW will be licensed in a "very light-handed manner", between 100kW and 1MW in a "light-handed" manner, and >1MW in a manner similar to the grid. The differentiation would lie especially in how tariffs are regulated, what standards need to be complied with, and compliance and monitoring requirements for the different sized grids

Recommendation Three: That all mini-grid licences are issued as combined generation, distribution and supply licences. This is possible under the current LEA Act of 2002. Individual developers would still have the choice to apply for separate licences should the need dictate. Nothing in the law prevents a combined licence to be issued, i.e. a mini-grid that performs all three activities can be issued with a combined generation, distribution and supply licence.

Recommendation Four: That in order to address one of the key concerns for developers and financiers, namely the possibility of grid encroachment, the LEWA addresses this to the extent possible via the licensing framework and determines that a) mini-grid licences will be issued for a fixed term (maximum 20 years) b) the geographical licensed area for the licensed term will be defined and set out in the licence and c) the mini-grid on application may be given exclusivity of supply in greenfield areas for a period at least equal to the period it needs to repay its loans

Recommendation Five: That the LEWA/DOE considers process-type issues that could be simplified and developed within the constraints of the present DOE/LEWA to assist mini-grid developers: 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 and the procedures to be followed about the permitting and licensing process, among other aspects. The one-stop shop should offer assistance with the administrative procedures the developers have to.

Recommendation Six (Affordable tariff and cost reflective tariffs): That the government has an ability to promote closing the gap between affordable tariff and cost reflective tariff, by the following mechanisms:

- Direct subsidy using funds from e.g. development partners or Universal Access Fund (however note that from developer's perspective, rather than subsidize the mini-grid capex 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 with a risky "top-down" mechanism)
- Tax relief for service providers (reduction of VAT, import duties, withholding tax, corporate tax etc.). There is a public interest in electrification that should override the interest of the Treasury in redistributing money from electricity service providers. Especially because taxes are priced in to a cost reflective tariff, meaning they are not actually paid by the investors

(who will make their benchmark returns) but are rather ultimately paid by the rate payers. This is effectively an additional tax and extraction of wealth from poor consumers to Treasury. If Government eliminates tax and regulators enforce benchmark returns to investors, then the beneficial cost reductions are directly passed on to the consumers.

Recommendation Seven: Light-handed regulations are necessary to allow mini-grids to implement essential cost-reflective and flexible tariffs. In addition, it is important that such regulations are easily accessible and understandable, so that developers do not spend too much time and effort complying with them. Nonetheless, governments have to be careful that those light-handed regulations are well designed to prevent counter-productive competition arising.

Technical Standards Recommendations: 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) unless these Regulations set other codes or standards. Mini-Grid Developers can in absence of national standards refer to international accepted recommendation, codes and standards.

Tariff Recommendations: Consistent with the licensing, three categories of tariffing processes are proposed. These are summarized in the table below.

	Category I: 0-100 kW	**Category II: 100 kW - 1 MW**	**Category III: > 1 MW**
Licensing	• Very light-handed licensing	• light-handed licensing	• Full licensing requirement
Tariffs	• Exemption from formal tariff regulation; • Submission of financial data and tariff to be applied for LEWA to consider • LEWA may review tariffs upon receipt of a petition on the tariff charged signed by 60% of the consumers of a community served	• 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	• Tariffs are approved by the LEWA based on the business plan and the tariff methodology; • MG can only charge approved tariffs and can differentiate between different customers. • Interim review can be triggered under exceptional circumstances, depending on a "Materiality threshold".
Tariff level	Cost-reflective	Cost-reflective	Cost-reflective
Tariff structure	Unregulated	• LEWA sets principles only. • Operators apply for tariff levels	• LEWA sets principles only. • Operators apply for tariff levels

To this end it needs to be realised that there are other legal and regulatory policy and regulatory aspects impacting mini-grids that fall outside the ambit of the LEWA's and DOE's jurisdiction but nevertheless have an impact on the development of mini-grids.

Policy and laws can be divided into primary, secondary and tertiary measures viewed from the perspective of how directly or critical its impact is on mini-grids.

4.0 Mini-Grid Regulatory Framework

4.1 Lesotho Electricity Act, 2002

In exercise of the powers conferred on it by Part III Sections 21 – 23 and Part IV Sections 41 – 43 of the Lesotho Electricity Authority Act, No. 70 of 2002 and all other powers enabling it, the Authority hereby makes the following Regulations for Renewable Energy Mini-Grids in Lesotho.

4.2 Citation and Commencement

These Regulations shall be called the Mini-grid Renewable Energy Generation, Distribution and Supply Regulations, 2019 (*hereinafter referred to as the Mini-grid Regulations, 2019*), and shall come into operation on such a date as the Authority may appoint.

4.3 Arrangement of Regulations

Part I: Purpose and Application

4.3.1 Purpose of Regulations

1. The purpose of these Regulations is to provide for:
   a) the promotion, development and utilisation of mini-grid systems in off-grid communities, and
   b) a regulatory framework for private sector involvement in the development of mini-grids towards the achievement of the universal access to energy.

4.3.2 Application of Regulations

2. These Regulations apply to:
   a) the development and operations of all Mini grids with a Generation Capacity of up to 2MW;
   b) the owners;
   c) the developers;
   d) the operators;
   e) users;
   f) all other public or private stakeholders such as the Distribution Licensees for the supply of electricity to off-grid communities of mini grids;
   g) any national institution or agency as the case may be interacting with Mini-Grid owners, operators and users in Lesotho.

3. A mini-grid may be any one of the following:
   a) Isolated mini-grid
   b) Interconnected mini-grid

4. A mini-grid is required to have a generation facility in its network which may be operated by the mini-grid licensee or a third party.

Part II: Application and Grant of License or Permit for Mini Grids

5. A person shall not install or operate a mini grid for the supply of electricity to a person in any part of the country unless that person is licensed or holds a permit issued by the Authority.

6. The Authority may grant a license or permit to a person for the construction and operation of a mini grid upon submission of an application in the prescribed form to the Authority.

4.4 Category II: Isolated Mini Grids larger than 100 kW of Distributed Power and up to 1 MW of Generation Capacity

7. The Authority may grant a license to a person to construct, own, operate and/or maintain a mini grid larger than 100 kW of distributed power and up to 1 MW of generation capacity in a designated unserved area upon the fulfilment of the following conditions:
   a) submission of an application in the prescribed form to the Authority stating the intended area of operations;
   b) submission of an accurate description of the proposed generation and distribution system, including technical specifications and characteristics, detailed "to be built" drawings, cost estimates, geographical location;
   c) prior written consent of the Authority written in consultation with the distribution licensee of the intended area, where the proposed operational area of the Applicant is within the expansion plan of the utility and is scheduled to be connected to the national grid within two years from the date of the consent;
   d) submission of copies of agreements executed between the Applicant and the head of the community and at least 50% of the members of the Community confirming their willingness and acceptance of the services of the Applicant under the terms of the agreement (*Authority to draft a standard agreement*);
   e) submission of evidence that all the required land for construction and installation of all assets has been acquired or leased;
   f) submission of all other necessary permits granted to the Applicant by the relevant agencies or institutions; and
   g) submission of all other requirements for the acquisition of a licence in accordance with procedures established for the granting of licences by the Authority.

4.5 Category I: Isolated Mini Grids up to 100 kW of Distributed Power:

8. A person who intends to install a mini grid with a distributed power of up to 100kW may apply for a licence in accordance with Regulation 7, following all procedures as described with all rights and obligations of a mini grid licence holder as described in these Regulations or register as a mini grid operator.

9. Upon receipt of an application, the Authority shall acknowledge receipt within ten days and inform the applicant of the decision within a further sixty days.
10. The mini grid shall be inspected and certified by the Authority or a third party appointed by the Authority, before the commencement of commercial operations.
11. Notwithstanding 8 above, the registered mini grid operator shall not charge tariffs above approved tariffs.
12. Licence conditions would include:
    a) the right to supply in a pre-defined geographical area of supply (*amendable on justified application to the LEWA*);
    b) the obligation to supply customers that are willing to pay, subject to equipment constraints;
    c) the tariffs charged under the project – it is envisaged that these would be an up-front tariff approval (*including escalations*), with no requirement for interim tariff approvals, unless in exceptional circumstances;
    d) compliance with annual reporting obligations;
    e) compliance to applicable health, safety, equipment, grid connection (if applicable) standards;
    f) compliance to service standards proposed by the developer;
    g) customers being informed of and understanding the services they are entitled to (including quality of supply and service standards);
    h) customers being informed of and understanding the cost of services provided;
    i) dispute resolution and complaints;
    j) inspections on receipt of complaints.

4.6 Category III Mini Grids larger than 1 MW of Generation Capacity

13. The Authority may grant a license to a person to construct, own, operate and/or maintain a mini grid larger than 1 MW in accordance with the procedure described in regulation 7 upon assessment of the energy demand of the unserved area or community.
14. In addition to a similar licensing approach and conditions as for projects between 100 kW and 1 MW, the following "enhanced" licence conditions would be included:
    a) the tariff methodology applied by the licensee, and the amendment of tariffs applied under the project, will be specified (and approved under the allowed tariff approach or methodology set down by the LEWA);
    b) compliance with reporting obligations similar to grid activities;
    c) inspections on receipt of complaints as well as periodic scheduled inspections.

Part III: Technical Requirements of Mini Grids

15. A mini grid system shall have an electricity generator or generators from one or more renewable energy sources in its network.
16. At least seventy percent of electricity supplied over a mini grid in a calendar year shall be from renewable energy source(s).

17. Where different feeders are connected to the same generating source, the Authority may define each feeder as a separate mini grid or all feeders together as one mini grid as long as the aggregate power generated and distributed through the feeders does not exceed 1 MW.
18. A mini grid shall be designed, constructed and operated in accordance with same standards as used for rural electrification schemes and the National Grid Code such that the system can be connected to the Distribution Network at a later date without major modifications.

4.7 Obligations of the Mini Grid Licence or Permit Holder

19. A mini grid licence or permit holder shall construct, operate and maintain its distribution network in accordance with the relevant rules, regulations, codes and standards.
20. A mini grid licence or permit holder shall comply with the Act, terms and conditions of the licence or permit, the agreement with the community, customer contract, the rules and Regulations, as well as the decisions, orders and directions of the Authority as applicable.
21. A mini grid licence or permit holder shall comply with all other Regulations unless expressly excluded in this Regulation, including the Regulations specified by the Authority regarding utilisation of the distribution assets for a business other than distribution of electricity.
22. A mini grid licence or permit holder shall grant the Authority and its duly authorized representatives access to any facilities, assets and/or information that are relevant to fulfil the tasks assigned to the Authority under the Act and these Regulations.
23. A mini grid licence or permit holder shall use land acquired for the purpose of mini grid development for that specific use only.
24. A mini grid licence or permit holder shall as much as possible avoid the use of arable land for the development of mini grid.

Part IV: Compliance with the Distribution Code

4.8 Installation and Maintenance of the Mini Grid

25. Where there is any inconsistency between these Regulations and the Distribution Code, the provisions of the Distribution Code shall prevail.

4.9 Quality of Service

26. A mini grid licence or permit holder shall comply with the provisions of Lesotho Rural Electricity and Quality of Service and Supply Standards of 2008, and Lesotho Electricity Authority Act (2002) Article 22(1) (c) and 22 (1) (e).
27. A mini grid licence or permit holder shall supply electricity in accordance with the agreement executed with the Community.

4.10 Health and Safety

28. (**a**) A mini grid licence or permit holder shall apply safety guidelines as prescribed in the Distribution Code for the design, construction, commissioning, operation and maintenance of their generation and distribution assets.
(**b**) The mini-grid licensee shall comply with the health and safety code as approved and amended from time to time by the Authority;
(**c**) Each mini-grid licensee shall take reasonable steps in protecting persons and property from injury and damage that may occur as a result of carrying out the licensed activity.

Part V: Environmental protection

29. A mini grid licence or permit holder shall comply with the existing environmental legislation.

Part VI: General Provision for Connection to Customers

30. A mini grid licence or permit holder shall enter into the standardized connection agreements (similar to LEC connection agreement Forms) with every customer who accepts to connect to the mini grid.
31. Compliance with the Metering Code shall be mandatory for all registered mini grids and isolated mini grids operated under a licence or permit.
32. The tariff and mode of billing of consumers within mini grids operated under a licence or permit shall be described in the standardized contract between the Mini-Grid Operator and the customers in the Community.

Part VI: Arrival of the main-grid utility's network to an area served by a mini-grid and Mini-Grid Interconnection Rules

33. Each mini grid licence or permit holder shall operate in the geographical area specified in its permit.
34. Where a main-grid utility intends to connect or extends its distribution network to an area served by an isolated mini-grid, a mini-grid developer who has built a distribution system to standards that allow interconnection with the main-grid shall apply to the Authority for the right to operate as:-
    a) a Small Power Producer selling electricity to a Distribution Network Operator;
    b) a Small Power Distributor that purchases electricity from a Distribution Network Operator connected to the Main-Grid under a bulk supply tariff and then resells some or all of that electricity to the Small Power Distributor's retail customers;
    c) a combination of an Small Power Producer and Small Power Distributor
35. Without prejudice to the options available under regulation (34), the mini grid developer may pursue the option of removing its distribution and generation assets, or transferring some or all of its distribution assets to the connecting Distribution Network Operator in return for compensation
36. Unless the generation and storage systems are valued and compensation paid to the mini grid developer, the generation and storage system shall be integrated and treated as an embedded generation system.

37. The compensation shall be based on the fair market value of the assets at the time of transfer.
38. Where the parties fail to agree to the terms of the interconnection or compensation the parties shall submit the matter to the Authority for final determination in accordance with its complaints procedure and in so doing may hire a third party entity to assist it in making of the determination.
39. Where a Small Power Distributor owns and operates an isolated Mini-Grid that is not built to Distribution Network Operator's standards it may continue to operate its Mini-Grid even after the Distribution Network Operator's Grid is extended within the connection range.
40. The mini grid licence or permit holder shall remove and recycle (if possible) or dispose of the assets and equipment that are fully depreciated in an environmentally friendly manner in accordance with environmental legislation.

Part VIII: General Provision for Connection to Distribution Licensee's Network

41. The mini grid operator shall sign a Power Purchase Agreement with the distribution utility of the area of operation and account for all monies collected to the utility.
42. Where the amount collected is over the true cost of service, the mini grid operator shall pay the difference to the utility.
43. Where the amount collected is less than the true cost of service the distribution utility shall reimburse the mini grid operator with the difference.
44. The distribution utility shall file for the consideration of the mini grids in its application for tariffs with the Authority which shall factor the cost of operations of the min grids into the tariffs.

Part IX: Accounts of the Mini grid Licence or Permit Holder

45. The mini grid licence or permit holder shall:
    a) at all times charge not more than the tariff approved by the Authority for electricity supply;
    b) maintain separate accounting records of operations of the mini grid including the business of utilizing the assets of a distribution licensee's network, in such form and containing such particulars as may be specified by the Authority and in accordance with the relevant accounting standards;
    c) keep proper records with respect to the financial position and changes and cash flows therein and with respect to the control of and accounting for all property acquired by the Institution in such form as to enable financial statements which show true and fair view to be prepared in accordance with the Companies Act 25 of 1967 and the International Financial Reporting Standards (IFRS) for each financial year comprising a profit and loss account and a balance sheet; and
    d) cause the audit of the books of records and financial statements referred to in paragraph (c) in accordance with section 96 to 127 of the Companies Act 25 of 1967 and the IFRS and ensure that the accounting statements prepared in accordance with the foregoing sub-sections are duly certified by an independent auditor in respect of each financial year, stating whether in the opinion of the auditor, the statement has been

properly prepared and giving a true and fair view of the revenue, costs, assets, liabilities and reserves reasonably attributable to the business to which the statement relates.

Part X: General provision for connection of consumers

46. (1) A mini-grid licensee shall file for approval by the Authority:
    a) a consumer service agreement defining the terms and conditions of the licensee's level of service to consumers as well as each party's rights and responsibilities;
    b) such other agreement as may further explain and enhance understanding of consumers regarding the licensee's terms and conditions of service.

    (2) Each mini-grid licensee shall:
    a) post a notice in a conspicuous place in each business office of the licensee where applications or payments for service are received and inform the consumers about new tariffs;
    b) provide consumers with an information packet containing the following information
        i. grounds for disconnection of service;
        ii. how the consumer's billing disputes can be resolved;
        iii. steps necessary to have service reconnected after disconnection;
        iv. the appropriate place to register a complaint and how to contact them;
        v. the means how bills may be paid, and how the tariff information may be obtained;
        vi. the consumer's rights to be instructed by the licensee on how to read his meter, how to use electricity efficiently and safely, and the process by which the consumer may exercise such rights.

Part XI: Tariff setting for mini-grid licensees and Principles for determination of tariffs for mini-grid licensees

47. The Authority has the power to set or otherwise determine retail tariffs for electricity services;
48. A mini-grid licensee may, in order to achieve commercial sustainability, and subject to the Authority´s approval:
    a) propose retail tariffs for specific consumer categories that take account of the ability to pay of the respective consumers; and/or
    b) propose a retail tariff structure, including conventional kWh tariffs, flat rate tariffs, power tariffs or a combination of the above, based on the amount of electricity sold and/or the number of connections and/or the power provided or consumed, excluding any technical losses of power generation, power distribution and metering.
49. In making any determination on the setting of electricity retail tariffs for mini-grid licensees, the Authority will apply either the standard tariff determination methodology or such other methodology requested by the mini-grid licensee and approved by the Authority;
50. The standard tariff determination methodology is applied by the Authority to determine the retail tariffs to be charged by mini-grid licensees based on costs related to private financing of the regulated services (power generation, distribution and sales activities), the sum of their operation costs, depreciation on capital and capitalized cost, specific reserves for

repair, replacement and extension, taxes, plus a reasonable return on the privately financed regulatory asset base that adequately reflects the risks faced by the mini-grid operator. The tariff shall be calculated based on historic data for the last year (wherever reasonable) and shall be applied in the current year.

51. Notwithstanding the provisions of these regulations, cost-reflective does not imply that all booked costs are approved automatically. Also, the stated consumer demand is not accepted automatically. The Authority shall ensure that the proposed costs for the regulated service reflect prudently incurred costs at a reasonable level of efficiency and that the underlying consumer demand is based on either verifiable data or reasonable demand projections based on verifiable data

Part XI: Tariff setting methodology for mini-grid licensee

52. (**a**) The Authority shall use as the standard tariff determination methodology a cost of service approach using a revenue requirement methodology in determining tariffs for mini-grid licensees.

(**b**) The revenue requirement methodology shall be framed on the principle that revenues of the mini-grid licensees shall be based on costs related to private financing of the regulated services (*power generation, distribution and sales activities*), the sum of their operation costs, depreciation on capital and capitalized cost, reserves for repair and replacements, taxes, a reasonable return on the privately financed regulatory asset base that adequately reflects the risks faced by the mini-grid operator plus a performance related profit margin dependent on the quantity of electricity sold. Any grant financed activity or assets shall not be included in calculating the revenue requirement. The tariff shall be calculated based on historic data for the last year and shall be applied in the regulatory year (*except for the first tariff application for which projections based on reasonable assumptions shall be used*). The revenue requirement shall be determined by the following formula:

$$RR = O\&M + D + T + (r \times RAB) + (PRPM * E)$$

Whereas:

RR	revenue requirement for the regulatory year
O&M	operation and maintenance expenses
D	depreciation expense for the year (of all regulated capital and capitalized assets)
T	taxes, duties and charges, including non-recoverable GST paid
r	rate of return
RAB	regulatory asset base (residual value of the capital and capitalized assets, including capitalized development cost)
PRPM	Performance Related Profit Margin (LSL/kWh) reflecting grant financing
E	Electricity sold (kWh)

(c) For the purpose of section (b):

i. Operation and maintenance expenses shall include all expenditure just and reasonably incurred for the provision of regulated activity, including but not limited to local operation cost, corporate overhead costs, special reserve for repair and replacement, fees and levies for public permits and licences, and auditing costs. In special

circumstances, the Authority may approve projections of costs instead of historical cost.

ii. Depreciation expense of the allowed revenue requirement shall be computed on the historical cost of the regulatory asset base using an annuity method on the depreciation and return over the respective useful life of the asset or project. Project development cost shall be capitalized and amortized over the licence period.

53. The general tariff terms are as follows:
    a) A tariff shall remain in effect until it is superseded by a new Decision.
    b) The tariffs approved by the Authority may be lowered or its structure may be changed during the effective period after special approval from the Authority, in case it can be reasonably argued that the changes will be beneficial to the consumers.

4.11 Inspection of Records

46. Any Person authorised by the Authority shall be entitled to inspect and verify the accounts of a mini grid operator at any reasonable time and the mini grid operator shall be under obligation to render all necessary assistance, including provision of required documents to the Person so authorized to inspect the accounts.

5.0 Interpretation

47. In these Regulations, unless the context otherwise requires:

"**Act**" means the Lesotho Electricity Authority Act 2002;

"**Applicant**" means any person submitting an application for any licence or modification or renewal thereof under the Act, to the Authority;

"**Application**" means an application for a licence, or for a modification or renewal of a licence under the Act;

"**Authority**" means the Lesotho Electricity Authority established under section 3;

"**Community**" means a group of people within the same geographic location organized under a local leadership structure or a legally recognised corporate entity and in both cases capable of entering into contracts and being capable of suing and being sued;

"**Connected Community**" means Community connected to the distribution network of a Distribution Licensee;

"**Connection**" means the electrical equipment and materials that allow the transfer of electricity between the distribution system and an electrical system that is not part of that network and

includes any transformers, switchgear, switch or relay at the point of interconnection that are necessary for the transfer, but does not include the lines and switchgear at the connection that form part of the transmission or distribution system;

"**Connection Point**" means an entry or an exit point on a distribution network;

"Distributed Power" means the active electric power fed into a Distribution Network on average within any 15 minutes time interval of its operation period;

"**Distribution Code**" means the distribution code required to be maintained by a licensed distributions) system operator pursuant to the terms of its licence which prescribes standard technical rules to be observed by all those connected to a distribution system for the connection to the use and operation of that system;

"**Distribution Network**" means any connection of cables, service lines and overhead lines, electrical apparatus/equipment and having design voltage of 33kV and below used to transport electric power on a distribution system;

"**Feeder**" means a low voltage or medium voltage line of a distribution network being capable of supplying or absorbing at least 30 kVA of electricity in compliance with the Distribution Code;
"Generation" means the production of electricity to be fed into a distribution network or supplied to the consumer directly;

"**Distribution Network Operator**" means a network operator responsible for the operation of a distribution network at 33 kV or below

"**Generation Capacity**" means the guaranteed active power that a generation plant can supply to a load or network at any point in time under the given environmental constraints (temperature, humidity, etc.) and a power factor of 0.8 (inductive) for at least one hour under the assumption that the plant is well maintained and fully functional;

"**Interconnected Mini grid**" means a Mini grid which is connected to a Distribution Licensee's network;

"**Isolated Mini Grid**" means a mini grid which is not connected to any Distribution Licensee's network;

"**Licence**" means a Licence granted by the Authority under the Act;

"**Licensee**" means any Person who holds a Licence issued by the Authority;

"**Metering Code**" means the Lesotho Metering Code approved by the Authority for use in measuring the flow of energy within the transmission and distribution systems in the Electricity Supply Industry;

"**Mini Grid**" means any electricity supply system with its own power Generation Capacity, supplying electricity to more than one customer through a distribution network, and which can operate in isolation from or be connected to a Distribution Licensee's network. Within these Regulations, the term mini grid is used for any isolated or interconnected mini grid generating between 0 kW and 2 MW of generation capacity;

"**Mini Grid Developer**" means any entity legally established which has applied for Registration or a Permit by the Authority to operate an Isolated Mini Grid

"**Mini Grid Operator**" means any entity who operates an Isolated Mini Grid and is registered or holds a Permit or who operates an Interconnected Mini Grid under a Sales License;

"**Mini Grid License or Permit Holder**" means a Mini Grid Operator which holds a Permit issued by the Authority under this regulation;

"**Mini Grid Permit**" means a permit granted by the Authority to an Isolated Mini Grid Operator, who applied, for the construction, operation and/or maintenance and where applicable ownership of a Mini grid;

"**Small Power Distributor**" means an entity that generates and sells, or purchases electricity under a bulk supply tariff from a Distribution Network Operator or some other bulk supplier and resells it at retail prices to Customers;

"**Small Power Producer**" means an entity producing electricity with a generating capacity between 100kW up to 10MW at a single site using renewable energy, fossil fuels, a cogeneration technology, or some hybrid system combining a renewable fuel source with other fuel sources mentioned above and either sells the generated power at wholesale to a Distribution Network Operator or at retail directly to a customer or customers;

"**Technical Codes**" means Grid Code, Distribution Code; Metering Code, and other codes approved by the Authority for the technical regulation of the electricity supply industry;

"**Unserved Area**" means an area within a Distribution Licensee's Network without an existing distribution system otherwise called off-grid.

48. Unless otherwise specified, in these regulations:

    a) Words importing any one gender includes the other gender and the singular includes the plural and vice versa;

    b) Words or expressions used in these regulations but not defined shall have the same meanings respectively assigned to them in the Act;

c) Any reference to a statute or statutory provision includes a reference to that provision as amended, re-enacted or replaced and any regulations or orders made under such provisions from time to time; and

d) If the date on which an event is scheduled to occur by these Regulations is a day which is not a business day, then the event shall be deemed to occur on the next business day.

6.0 Guidelines for operation of Energy Centres/Kiosks in Lesotho

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.

6.1 Definition of Clean Energy Centres / Energy Kiosks

Clean Energy Centres / Energy Kiosks are centres for electricity production and supply of energy services, generally located in rural or peri-urban zones. In order to be considered as **Clean Energy Centres / Energy Kiosks**, an electricity charging service must be part of the business model. 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, or radios. The charging service is targeted to households without access to grid electricity. By the provision of charged lanterns, batteries or other devices the basic needs of electricity for lighting, mobile phone use, and entertainment of these households can be satisfied. A common approach for energy **Clean Energy Centres / Energy Kiosks** businesses is the offer of other services next to charging. Those services, for example provision of internet access, entertainment services or printing, 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.

6.2 Services and products offered in the Clean Energy Centres / Energy Kiosks and Requirements for Trading Licenses

- **Household energy access services**: phone charging, battery charging and swapping, portable light charging
- **Information and communication services**: Internet, printing, scanning; typing, copies, TV/movies, phone, banking
- **Health and hygiene services:** cooling/refrigeration, water
- **Retail:** Telecommunication products (airtime, cards)**,** renewable energy products, grocery product or cold beverage

The principal challenge to the Clean Energy Centres / Energy Kiosks concept is how to set up the financial model. Establishing energy kiosks generally requires a substantial initial investment, to cover building expenses, the cost of the electrical system and of 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 Clean Energy Centres / Energy Kiosks. Thus, the correlation between the investment and the return on the investment is crucial.

Requirements for Trading Licenses: The first issue of note is that all commercial undertakings, regardless of size, must be licensed under the law: **Trading Enterprises Regulations 1999**, Legal **Notice No. 107 of 1999.** "**Undertakings**" include Energy Kiosk, which means that the law currently requires that all commercial Energy Kiosks need to be licensed

6.3 Application procedures and Issuing Authorities:

- Application for clearance of the proposed company name at the Registrar of Companies;
- Application for a certificate of incorporation and of commencement to Registrar of Companies;
- Application for a taxpayer identification number (TIN) with the Lesotho Revenue Authority;
- Inspection by Income Tax of the office site of the new company;
- Application for business licence from the District trade officer (depending on the nature of the business.
- Obtain an inspection certificate from the land or town-planning officer;
- Obtain Health Safety and Environment (HSE) certificate from the Occupational Safety and Health Authority;
- Application for VAT certificate with the Lesotho Revenue Authority
- Receive VAT/stamp duty inspection;

7.0 Recommendations with regard to the subsidy support scheme.

Rapid deployment of high-impact, future-proof mini-grid electrification projects would be possible if a straightforward, repeatable, funding mechanism existed to support such projects in the same way as many main grid connections are supported by bilateral donors.

Results Based Financing (RBF) recommendations of **UNDP/GEF Financial Support Scheme Report, October 2017** and Simple, Measurable, Africa-wide, Repeatable, and Timely (SMART) Results Based Financing (RBF) Policy Recommendation by **Africa Mini-grid Developers Association (AMDA)** have been found to be the most practical and suitable, and hence highly recommended for the this programme.

AMDA SMART RBF recommendations applied to the UNDP/GEF Lesotho programme are summarised in the table below:

Subsidy Amount	• Fixed amount per connection: USD 550 for Isolated Mini-grids (tier 4); USD 400 for Isolated Mini-grids (tier 3), USD 40 for Micro-grids (tier 2).
Mode of Funding	• Disbursed to project developer/owner upon commissioning of the project and verification of connections (truly "results based"). No up-front disbursements. • Funding discernments will take place quarterly commiserate with the connections that have been realized in the prior quarter?
Criteria for Qualifying for Funding	• Connections completed with service levels, safety, and quality up to pre-agreed standards, which will be no less than national standards
Verification Procedure	• Benchmarked to LEC connection verification procedures. • Routine audits and occasional spot checks to ensure developer compliance. • Zero-tolerance policy for any developers who have been convicted of deliberately attempting to falsify connections, and those developers will be disqualified from future use of the program and may be required to return funding.
Project Due Diligence	• Developers will need to pre-qualify in order to access the RBF
Developer Due Diligence to Qualify for Program	• Basic checklist to ensure company legitimacy, upon which RBF program provides something similar to a Letter of No Objection for the developer.
Mode of Project	• First come first serve.

Selection for Funding	
Prioritizing Developer Ear marks in the Case of Over subscription	• Maximum of [5] % of program funds to any one developer, unless the rest of the funding is not earmarked within 12 months from program launch.
Technical Standards	• To qualify for RBF, distribution networks must be built up to a quality standard that will enable future commercial growth at the sites.
Tariff Pricing	• Qualification for the RBF and disbursal of funds are NOT linked to any electricity tariff cap but that the tariff shall be subject to regulation
Mode of Developers "Earmarking" Funding in Advance	• To earmark funding, developers would (a) submit a list of sites to be developed, (b) submit number of connection estimates which can be used to manage RBF pipeline/budget, (c) submit an MOU or letter between the developer and the community for each site targeted for development, and (d) submit a bond of 10% of the projected RBF value to be received. • Upon review, the RBF program will provide a letter to the developer stating that a certain amount of funding has been earmarked for their project for a period of 3 years, after which it will be released back to the general pool of capital.

7.1 Funding of Mini-Grids/Energy Centers and Incentive Policy

The incentive policies for mini-grids are:

a) Capital not recurrent incentives: Incentives subsidies should be limited to one-off capital. This will enable many more mini-grid and Energy Centre users to benefit. Incentives are best if non-discriminatory and used as a one-off grant and the project tariffs are set at a level that covers operation and maintenance including depreciation and investment returns.

b) Incentive to catalyse complementary financing: where there are opportunities for private developers of mini-grids, incentives aim to leverage capital contributions from mini-grid developers.

c) Incentive provision will have in-built performance incentive indicators. In other words, the developer only receives the incentive on proof of a tangible output being achieved such as number of customers connected to the mini-grid. While in this scheme, this incentive is designed in phases.

7.2 PBI based on Outcome Model

Operating Policies

a) Incentive will be provided to best available renewable energy technology based on cost per unit of energy output.

b) Incentive is entirely for private sector participation in ownership, operation, and management of RE mini-grid operation.

c) Incentive amounts differ according to technology and village location; incentive amount generally covers 40% of the total costs whether it is in hydro, wind, or solar. The remaining amount has to be assured by the mini-grid developers as an entry point.

d) As stated above, this model is also PBI based; hence, the incentive will be paid in three outcomes (performance) based tranches.

e) The tranches will be based on the following:
   - 40 % of total incentive based on mobilization (signing of agreement)
   - 40 % of total incentive based on after production/delivery of goods on site (connection)
   - 20 % of total incentive based on after approval of customer acceptance of RE developer's service(s).

The following incentive amount will be provided to different RE developers such as mini-grids based on hydropower, wind energy, and solar, based on project outcome:

7.3 Matching Incentive for RE Mini-Grid Business Development

This incentive is aimed for Investment Proposals by private developers for: RE mini-grids based on wind, hydro and solar market development objectives.

a) Eligible activities: The following activities are eligible for project developers:

- Market development activities (e.g. market studies, promotion, education)
- Technical viability activities (e.g. feasibility studies, technical design, costing, business plan development)
- Development of a comprehensive implementation strategy
- Cost of knowledge sharing such as best practices

b) Eligible expenditure: Cost of services of independent consultants or consulting firms, including direct expenses in providing services under a Feasibility and Business Plan Development Terms of Reference.

c) Incentive amount: Maximum 80% of costs of eligible activities but not exceeding US$ 25000 per mini-grid.

Performance Incentive

a) Investment support on a cost-share basis (co-financing) with project developers only.

b) Incentives cannot be used for financing or acquisition of existing assets (including land) or refinancing of existing debts or accrued interest in relation to RE mini-grids.

Performance Incentive Conditions

- Funds cannot be used for financing or acquisition of existing assets (including land) or refinancing of existing debts or accrued interest.
- Fund are eligible for power generators using renewable energy to supply energy to isolated mini-grids, transmission, distribution networks and consumer connections to serve consumers on mini-grids
- Solar photovoltaic systems ranging from solar lanterns to larger systems to meet household and institutional requirements.

Productive Energy Use

Productive energy use promotion seeks to enable the translation of renewable energy provision into positive economic outcomes for rural economic activities. In order to make renewable energy projects sustainable and to increase the livelihood of rural people using renewable energy, the following subsidy provisions are made for village based industries on renewable energy technologies for the productive use of energy. This is defined as incentives to enterprises which are capable of generating income and employment that uses any form of energy from renewable energy sources for the generation of product/services.

- For isolated mini-grid hydropower based enterprises, a subsidy amount of 40% of the total investment cost for energy conversion and processing equipment, and/or hardware part of the enterprise/business but not exceeding US$1500.
- For enterprises based on renewable energy other than mini-grid hydro, an incentive of 50 % of the total investment cost for energy conversion and processing equipment, and/or hardware part of the enterprise/business but not exceeding US$1000.
- The additional incentive of 10% but not exceeding US$200 will be provided to the developer/entrepreneur with a single woman, disaster victim, or poor worker trained in entrepreneurship/business training from any other programs as identified by the Government of Lesotho.