

# Independent Technical Review of the Investment Plan for Lesotho

1. Title of the investment plan: **Investment Plan for Lesotho**
2. Program under the SCF: **Program for Scaling up Renewable Energy in Low Income Countries (SREP)**
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## Introduction

The o c k " q d l g e v x g " q h ' y k u ' s w c r k v { " t g x l g y " k u ' v q " u w r r q t v ' y g ' f g x g n r o g p v ' q h ' y g " N g u q y q a " U T G R " Investment Plan and to facilitate the process of endorsement. The review was done without visiting the country and participating in the meetings with stakeholders. This may have an impact on some interpretations. The final report of the review will reflect all the clarifications and details received. The review was done based on the draft provided on October 30, 2017. All abbreviations used in this report are the same as provided in the IP. The review report is structured according to the requirements of the TOR for Independent Review. The Section 5, provides information on compliance with the general criteria and the Section 6. presents whether the investment plan meets the SREP specific criteria.

## Background

According to the IP the energy sector in Lesotho faces challenges which include:

- i) low access to modern and clean forms of energy;
- ii) reliance on imported electricity and fuels (an energy security problem);
- iii) dwindling forest reserves.

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The proposed SREP IP aims to overcome the mentioned challenges through the following activities supported by SREP under the IP respective components:

- a) Component 1: On-grid RE technologies.
  - a. Investment in utility-scale solar PV plant
  - b. Development of RE integration study
  - c. Solar PV site specific studies
- b) Component 2: Off-grid RE technologies
  - a. Investment in microgrids
  - b. Investment in SHS or other stand-alone systems
  - c. TA for preparation of microgrid tenders

- c) Component 3: SHPP Technical Assistance
  - a. Preparation of two feasibility studies for hydropower plants

The exact financing modalities will be determined at the time of appraisal, but it is expected that:

US\$5.6 million of SREP funding, in the form of grants or concessional loans, would be used to leverage US\$11.5 million in grants and private concessional loans (or a PRG) from AfDB, \$7.5 million in equity contributed from the developers of a 20 MW solar PV project, and \$6.9 million in additional financing from either a private lender or other DFI.

US\$12.9 million of SREP funding would be used to leverage US\$ 10 million in financing from the World Bank, and US\$20 million in investment from other private sector investors in microgrids and other distributed RE technologies.

US\$1.5 million in SREP funding would be used towards the preparation of two hydropower pre-feasibility studies.

The GoL will contribute by facilitating fiscal incentives for services associated with the financing plan. These incentives will possibly include: waiving corporate profit tax for the first 10 years of operation and excluding RE technology sales from VAT.

## Part I: General criteria

Vj g"Nguy qai"fxguo gpv"Rcp"ku"e"eqo r tgj gpukg"fqewo gpv"y kj "ko r tguukg"lphqto cvkg"cpf " analytical details about the country, energy sector, IP preparation processes, prioritization of RE vgej pqmji lgu." OFD" cpf " f gxgnr o gpv" r ctvgtuø" tgrxcpv" ce vkkkgu." r tkcvg" ugevqt" cpf " PI Q" participation, etc. It is consistent with the general criteria and SREP operational criteria. Comments and concerns aim to further strengthen the GoL commitment to promote RE in Lesotho. Below the results of the review is presented according to the general and specific criteria stipulated for the SREP.

### 1.1. Compliance with the principles, objectives and criteria of the relevant program as specified in the design documents and programming modalities

The Investment Plan generally complies with principles, objectives and criteria of the SREP<sup>1</sup>. It was prepared through broad participatory process, it takes into account the strategies and long-term policies of the GoL, it envisages private sector participation, seeks wider economic, social and environmental co-benefits, etc.

### 1.2. Does the IP take into account the country capacity to implement the plan?

The IP is quite ambitious both for on-grid and off-grid technologies. At the same time, the IP mentions a lack of implementation capacity in the country or it does not reflect all institutions involved in the project preparation and implementation. During the IP preparation the GoL has not identified institution that will be responsible for implementation of the proposed projects. The decision was postponed to the project preparation stage. This creates risks for smooth commencement of the relevant activities envisaged in the IP. Proposed MDB administration (implementation) and engagement of consultants reduces the implementation risk but at the same

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<sup>1</sup> The aim of the SREP is to pilot and demonstrate, as a response to the challenges of climate change, the economic, social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy.

time it hinders promotion of country institutions growth and enhancement of the institutional capacity, which is critical for sustainability of the efforts under the IP and overall transformational change success.

### 1.3. Has the IP been developed based on the sound technical assessments

The Investment Plan was developed based on the solid technical, analytical studies and the most recent data available in the country. It provides detailed analytical information about all aspects of the IP. It introduces the country context and macroeconomic indicators, energy sector situation and challenges, demand and supply study, f Hgtgpvtgpgy cdrq"gpgti {"gej pqrqi lguø'equ'cpcn{uku." projections, etc. It contains information about all RE technologies, not only on those included in the proposed projects. Detailed review and prioritization of all technologies based on agreed evaluation criteria allows assess the reasons of selecting priority technologies and activities under the SREP IP. During preparation of IP the information, surveys and studies conducted by MDBs and development partners were taken into account.

### 1.4. Does the IP demonstrate how it will initiate transformative impact?

The IP envisages engagement of private investors, IPPs, vendors and service providers for on-grid and off-grid RE generation. It also involves local banks for financing of RE investments. These are the key preconditions to initiate transformational changes in the country. Another precondition is creation of institutional mechanisms to support sustainability and replication of the efforts and activities. Here the IP does not provide adequate information to show how the GoL will ensure results of the proposed projects and continue the development of the sector, particularly it is not clear what institutions will be responsible for tenders for on-grid and off-grid technologies. The lessons from the previous solar home system installations shows that as a result of the lack of capacity the installed systems stopped their operation. Extensive capacity building is important not only to ensure quality of the tender processes for different components of the IP, but also to develop vj g"o ctngv'd {"gpj cpekpj "r qvqvkn' uwr r ngtuø' ecr cekv{0' The other critical component of the transformational change is the legal regulatory framework that enables investments in the RE sector. The IP presents in details the current legislation regulating the sector. It has serious lacks, including the absence of the Law on Energy. Nevertheless, the IP describes also activities initiated by MDBs and donor institutions toward improvement of the energy sector legislation.

### 1.5. Does the IP provide for prioritization of investments, stakeholder consultation and engagement, adequate capturing and dissemination of lessons learned, and monitoring and evaluation and links to the results framework?

The Investment Plan was prepared through the extensive participatory process in Lesotho, including meetings with participation of the MDB representatives. An assessment of technical potential for various RE technologies that can be used in Lesotho was carried out to support the preparation of the SREP IP. Each of the potential RE resources were then evaluated against national and SREP criteria, and prioritized accordingly. The criteria and prioritisation ranking is included in the IP. The national priority criteria preferred technologies that would result in job creation, improved energy security, and increased private sector investment. The IP reflects previous experience in Lesotho with regard to the RE development, including pilot projects implemented by different organizations during the past years. The IP also mentions that the MDBs will take into account the experience and lessons learned in other countries during the preparation of the projects. An M&E system will be established by the GoL, in cooperation with MDBs and other donor partners to track and report the Rtqi tco øu progress and results. The monitoring and

evaluation framework will be coordinated by the Renewable Energy Division of the Department of Energy. The gender disaggregated indicators should be introduced.

#### 1.6. Does the IP adequately address social and environmental issues, including gender?

The IP identifies the main social and environmental risks and benefits for all planned technologies. The IP prioritizes technologies that will prevent the deforestation of the country, reduce local pollution and health issues due to the replacement of the paraffin and kerosene with clean energy. Gender issue is also reflected in the IP. Vj g"öi gpf gtö"y cu"qpg"qh"vj g"etkgtk"lqt"tcpnki "vj g" technologies to include into the IP. Technologies that directly promote gender inclusiveness and increase opportunities for women were ranked higher.

#### 1.7. Does the IP support new investments or funding additional to on-going/planned MDB investments?

The IP presents the on-going projects in RE development financed by private sector, NGOs and development partners. All activities are described in the IP. The main partners, EU, AfDB, UNDP/GEF and Government of Italy provide about \$58.1mln financing for TA for enabling environment and investments. The China-Africa Cooperation funded project will build a 70 MW solar park. Regarding the latest there is no information about possible intersection of the solar PV development approaches.

#### 1.8. Does the IP take into account institutional arrangements and coordination?

The IP presents the institutional structure of energy sector. There is serious legislative gap for regulation of responsibilities and relationship between energy sector institutions. The overlapping institutional mandates is one of the barriers for private investors. The IP clearly mentions that the overall coordination of the SREP IP activities will be coordinated by the Department of Energy of the Ministry of Energy and Meteorology. However, there is no designated institution for implementation of the preparation and implementation of the SREP projects.

#### 1.9. Does the IP promote poverty reduction?

One of the key objective of the IP is the increased access to modern clean energy services in urban and rural areas. It will help to reduce energy expenses of the families given the energy poverty situation in the country, as well as to address some issues related to the human poverty, such as health improvement due to the cleaner options for heating, lighting and cooking, opportunities for women and child to have more time for self-development. The extensive development of standalone RE systems will create new opportunities for business, as well as create sustainable jobs thus fighting unemployment and poverty.

#### 1.10. Does the IP consider cost effectiveness of investments?

The IP has a detailed analysis of the LCOE for all potential RE technologies applicable in Lesotho. All assumptions and methodologies are presented in the IP that helps to assess a viability of the selected technologies. Presented LCOE for solar PV, wind and hydro are different from those published by IRENA for 2016. Although it is clarified that the cost of technology adapted to Lesotho, and it includes cost of connection and necessary investments in the grid infrastructure, however the relative costs are also different. In the assumptions the capital cost of the solar PV is 2-4 times less than the costs of wind and hydro. Additional clarification may be useful to understand the reasons for costs difference. The cost analysis confirms the selection of solar PV

as a priority project under the IP, however it raises question regarding the need for feasibility study for hydropower plants given the much higher capital cost needed for hydro power plant option.

## Part II: compliance with the investment criteria of the SREP

### 2.1. Catalyze increased investments in renewable energy in total investment

The investment plan envisages engagement of private developer for large scale solar PV project, with possible private lending or PRG from AfDB and equity funding of the private IPP. According to the IP the GoL will contribute by facilitating fiscal incentives for services associated with the financing plan. These incentives will possibly include: waiving corporate profit tax for the first 10 years of operation and excluding RE technology sales from VAT. Although this shows the willingness of government to support RE development, however VAT exemption has negligible impact if there is no VAT exemption on imported PV equipment. It may create administrative barriers for investors. The off-grid component is also designed to have a catalyzing effect through engagement of local banks and vendors, demonstration of benefits and viability of options, creation of market of vendors and service providers.

### 2.2. Enabling environment

Vj g'lxguo gpv't rcp't tguwpv'y g'eqwpt {a'long-term commitment to promoting renewable energy as part of its energy sector strategies and energy access goals. It envisaged some activities to enhance the enabling environment for RE investments. At the same time the IP presents relevant on-going and planned activities of other donors aimed to remove the barriers and increase attractiveness for private investments. There is confusing information in the IP regarding the preference of the FIT approach for the GoL and the current tender for solar PV plant development. Additional clarification will be useful here.

### 2.3. Increase energy access

Nguqj qa'RR'clo u"vq"lpetgcug"vj g"ceegu"vq"o qf gtp"engcp"gpgti {"j tqwi j "qp-grid and off-grid renewable energy technologies scale up. Particularly a 20 MW Solar PV park generation indirectly will support the additional connections. Microgrid and off grid technologies selected under the IP will help residents to replace paraffin, candles and wood by the clean energy options. Results framework provides access level indicators for electricity and modern energy options. It is not clear if the added electricity generation will replace the import or increase the connections given the GoL goals to reduce dependence on imported energy.

### 2.4. Implementation capacity

The implementation arrangements are not specified in the IP. The GoL will identify implementing agency (es) later at the project preparation stage. At the same time IP mentions about the lack of implementing capacity in the country. The preparation of the projects will be implemented by the MDBs. This reduces risk of implementation, but also does not give an opportunity to local institutions to enhance their capacity for implementation of further similar projects.

### 2.5. Improve the long-term economic viability of the renewable energy sector

The IP presents the results of economic viability analysis by comparing on-grid options to the cost of imported electricity and the off-grid options are compared to the cost of off-grid diesel generation. All selected on-grid technologies are viable, except the hydro. All selected off-grid technologies are viable except the SHS, however the latest is viable if compared to cost of paraffin, kerosene, candles. This analysis shows that these options will be even more viable and attractive

for private sector after implementation of the SREP projects due to the demonstration effect, enhanced skills, as well as due to the competitive market development.

## 2.6. Transformative impact

The investment plan demonstrates transformative impact by installation of the first utility-scale solar PV power plant, which will create interest and confidence of private sector investors to invest in RE technologies; by introduction of the business model for off-grid technologies and engagement of local banks in the process. However there is risk that the existing gaps of legal-regulatory framework, lack of implementation capacity and technical/professional capacity, the sustainability of the projects is questioned. It is also important to focus the efforts under the SREP to one or two technologies to have a scale effect.

## Part III. Recommendations

1. It is recommended to identify institutional arrangements for projects preparation and implementation. Designated institution should be involved at early stages of preparation of the projects to gain knowledge and experience benefitting from the consultants to be hired.
2. It is recommended to envisage capacity building activities. It should be designed for all institutions involved in RE development, as well as for technical and engineering staff of private service providers or individuals. This will support the market creation and thus support transformative changes.
3. It is recommended to attach a timeline agreed with the government regarding adoption of the legal-regulatory documents that will enhance enabling environment for RE investments.
4. Examine the situation with the previous off-grid installations to identify the reasons of failure and minimize the potential risks by planning respective actions and measures.
5. Clarify LCOE for solar, hydro and wind.
6. Clarify FIT approach selection as a policy and the on-going tender for solar PV IPP. What method is used for 70 MW solar PV plant.
7. It is recommended to consider replacement of the feasibility studies for two hydro power plants with the site-specific studies for solar or other necessary activities for enabling environment. First of all, the droughts, water stress, agriculture issues are potential climate change impacts for Lesotho, and construction of hydro power plant may have negative impact on environment. Development of HPP requires careful consideration of these issues. Second, the cost of HPP construction is more expensive as shown in the IP. Third, it is not clear if the envisaged hydro power plants are small or large. If they are more than 10 MW, the SREP normally does not finance it. And finally, to have scale effect it is better to focus finance and efforts on one or two technologies.
8. Clarify if the added generation of electricity will increase access through the connection of new households to the grid or it will replace the electricity import.
9. It is recommended to introduce gender disaggregated monitoring indicators where applicable.

10. It is recommended also to include as an indicator the total volume of increased investments in RE to track the leverage and transformative impact.