

National Stakeholder Consultation



National Stakeholder Consultation Report - Lesotho

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ABBREVIATIONS

AfDB	African Development Bank
CAR	Conformity Assessment Report
DoE	Department of Energy
EU	European Union
GCF	Green Climate Fund
GWP	Global Warming Potential
HEPS	Higher Energy Performance Standard
IMF	International Monetary Fund
LEC	Lesotho Electricity Company
LED	Light emitting diode
LNDC	Lesotho National Development Corporation
LSI	Lesotho Standards Institute
LSL	Lesotho Loti
MDG	Millennium Development Goals
MEPS	Minimum Energy Performance Standard
MV&E	Monitoring, Verification and Enforcement
ODS	Ozone Depleting Substances
PWG	Policy Working Group
SADC	Southern African Development Community
TBD	To Be Determined
UA	Units of Account
U4E	United for Efficiency

1 INTRODUCTION

The ‘Leapfrogging to Energy Efficient Appliances and Equipment in Lesotho (Refrigerators and Distribution Transformers)’ project is funded by the Green Climate Fund (GCF) and being implemented under the guidance of the government of the Kingdom of Lesotho (Lesotho). The project is also being implemented simultaneously within 7 other countries of the Southern African Development Community (SADC) region, namely Botswana, Zimbabwe, Namibia, Malawi, eSwatini, Zambia and Tanzania. Lesotho is one of the few countries in the world that is completely encircled by another country. Lesotho is completely contained within the borders of South Africa. Thus, Lesotho has no access to the coast/sea. Therefore, it is heavily reliant on trade with South Africa be it for equipment or for commodities such as oil, petrol and even electricity. The electrification rate in Lesotho is currently under 45% [1] but it is on the increase. The government of Lesotho has embarked on an electrification campaign, which also targets rural areas. The electrification is also expected to drive economic growth in the country. Currently however, Lesotho imports over 60% of its electricity from South Africa [2]. For this reason, the average price of electricity (generation + import) in Lesotho is quite high and any losses are hence expensive. Refrigeration appliances (and distribution transformers), in particular household refrigerators, are appliances that are constantly operating. As such they always consume energy (24 hours per day, 365 days per year). Therefore, energy efficiency improvements in these appliances have a continuous impact on energy efficiency improvements for Lesotho.

The aim of the project was thus to focus on distribution transformers and household refrigeration appliances and attempt to establish a framework in order to improve the energy efficiency of these appliances. This was done through the establishment of national standards for both refrigerators and distribution transformers and development of Minimum Energy Performance Standards (MEPS) as well as an energy labelling scheme for refrigerators. During the project engagements were held with all of the key stakeholders within the country to create a system through which the necessary legislation can be developed related to the implementation of the MEPS and also to create a national implementation plan that will both enable the implementation of the MEPS but also create a framework within Lesotho for future development of related standards and legislation. One of the most important parts of the project therefore is the creation of the MEPS and the national standard (and the consultations accompanying labelling schemes) for both refrigerators and distribution transformers. In order to do this successfully a high level of engagement and trust is required from the major national stakeholders.

This report outlines the national stakeholder consultations that have taken place during the project and the outcomes of these consultations and workshops as related to the national standards and the MEPS for refrigerators and distribution transformers.

2 Background

The electrical energy layout of Lesotho is one in which, at the moment, there is a reliance on imports of power from South Africa and a general lack of energy efficiency within household appliances. The legal, regulatory and standardisation frameworks are generally inexperienced and untried with regard to energy efficiency matters. Additionally, the general population is largely unaware of the benefits of energy efficiency and much work will need to be undertaken on the public awareness campaigns related to this issue.

However, there are also a number of opportunities for a successful implementation of MEPS in the refrigeration and distribution transformer environment. These are:

- Successful implementation of MEPS in the refrigeration and distribution transformer sectors could open up a pathway to implement similar projects in other sectors and with other appliances (e.g. washing machines and dishwashers, stoves and ovens, air conditioners, etc.)
- Successful training of the customs officials of the Revenue Services Lesotho (RSL – previously known as the Lesotho Revenue Authority - LRA) in relation to energy efficiency compliance will make them more capable of enforcing other governmental initiatives related to energy efficiency and quality on a variety of products (e.g. air conditioners, power cables, etc.)
- Development of energy efficient appliances could lead to a green building revolution in Lesotho and align with the national energy policies
- Increasing public awareness related to energy efficiency would be beneficial to the general behaviour of the population towards energy use and could provide general energy saving benefits and an energy conscious behaviour beyond the confines of this project.

In order to start with the development of the MEPS and the national standards it is critical that the process is aligned with the national standards development processes in Lesotho and that there is sufficient engagement across the various levels and types of stakeholders within Lesotho in order to obtain buy in for the project. The buy-in greatly assists the adoption of the standards and their implementation. In order to achieve this the international consultants from Pegasys partnered with local consultant working on this project to perform a weeklong visit to Lesotho and meet with all of the relevant national stakeholders. Prior to the physical engagements the national stakeholders were identified through a process comprising of the following actions:

- an online search of the various important entities within Lesotho,
- through engagements with the NDE and the NDA related to the most important stakeholders related to the project within Lesotho,
- through similar engagements with the local consultants identifying the most important national stakeholders based on their knowledge of the country

- through experience of the international consultants on the most important stakeholders related to similar projects implemented in other countries (e.g. South Africa)

Based on the above approach the major national stakeholders were identified. The stakeholders were identified across both the public and private sectors and for both refrigerators and distribution transformers. Of course there was significant overlap, in particular in the public sector. Several other categories were identified and these are listed in Table 1 below.

Table 1. Mapping of National Stakeholders in Lesotho

Refrigerators	Distribution Transformers
Private Sector	
Consumers	Consumers
Consumer organisations	Consumer organisations
Suppliers	Installers
Retailers	N/A
Importers	Importers
Wholesalers	Resellers
Manufacturers	Manufacturers
Banks and financial institutions	Banks and financial institutions
Public Sector	
Govt. ministries	Govt. ministries
Standards bodies	Standards bodies
Customs	Customs
Testing labs	Testing labs
Banks & financial institutions	Banks & financial institutions
Regulators	Regulators
Repair shops	Repair shops
Refrigeration technician association	Utility

From this identification the engagement of the national stakeholders began. This is outlined in more detail in section 4 of this report. It was also important to understand the entire background of the relevant MEPS for refrigerators and distribution transformers as well as the background for the proposed national standards and the regional context. This is outlined in far more detail in other reports of this project but a summary is provided in the next section.

3 MEPS and Testing Standard

3.1 REFRIGERATOR MEPS, REGIONAL AND NATIONAL STANDARDS

In parallel with this project, which includes the Lesotho National Project and the same project being implemented in Botswana, Eswatini, Malawi, Namibia, Tanzania, Zambia and Zimbabwe, there is a regional project, which is in the implementation stage. The regional project is aimed at the development of regional MEPS, HEPS and the regional label for the SADC region. The regional project includes cooling appliances such as refrigerators and air conditioners. The participation in the regional project includes all 16 SADC states. The national project includes many of the implementation aspects, such as the NPR, the consideration of financing mechanisms to support consumers and consumer awareness campaigns. The regional project is only focused on the MEPS and the resulting energy labels.

The scope of refrigerators in the regional standard and the national standards is related. The scope is as follows [3]. The following types of refrigerators are included in the scope:

- compression type
- with a rated volume at or above 10 Liters (L) and at or below 1,500 L
- powered by electric mains
- offered for sale or installed in any application

There are also certain exemptions that are listed. These are:

- wine storage appliances
- refrigerating appliances with a direct sales function
- mobile refrigerating appliances
- appliances where the primary function is not the storage of foodstuffs through refrigeration
- other products that do not meet the definition of a Refrigerator, Refrigerator-Freezer, or Freezer, and
- other refrigerating appliances different than vapour compression type

As part of the regional project the regional standard has been developed. It has been commented on and after the final comments MEPS and HEPS have been finalised, together with recommendations for the regional label.

The aim was for the 8 countries of the national project to align as far as possible with the regional project. The MPES of the regional project are presented in Table 1 below:

Table 2. Regional MEPS

Product Category	R (2023)	R (2026)
All categories	1.00	1.25

As is evident the regional MEPS R level is 1 from 2023 until 2026 and from 2026 the R level is 1.25 [3].

The regional standard is based on the model regulation guideline as presented by the U4E. This guideline, and the regional standard are largely aligned with international best practices.

Additionally, the regional manufacturing capabilities were taken into account. Furthermore, South Africa is a major role player in the region as the largest economy and with the largest number of manufacturers. This is particularly important to Lesotho as it is landlocked and completely surrounded by South Africa. As a result the vast majority of refrigerators that enter the country do so via South Africa or come from South African manufacturers. Therefore the decision was made to align the level for tier 1 with South Africa and as a result R was increased from 0.75 to 1 and for tier 2. This is critical as it shows intent and a commitment to move towards higher energy efficiency in the future both regionally and through the adoption of the various countries, including Lesotho.

The testing of the regional standard is based on the IEC 62552:2015 version. The energy consumption is therefore measured according to IEC 62552-3:2015 - Household refrigerating appliances: Characteristics and test methods Part 3: Energy consumption and volume [4]. As per this standard energy consumption is determined from measurements taken when tested as specified at 16° C and at 32° C. This is an extremely important point as this means that the refrigerator only needs to undergo one set of tests (2 tests, one at each temperature). After that calculations can be made to evaluate its consumption and R value for any ambient temperature within the range.

The previous version of the standard is IEC 62552:2007 [5]. In this version the testing is only performed at one ambient temperature. Therefore, if a specific country or region utilises an ambient temperature of, for example, 25° C then the testing would be performed at that ambient temperature. If the same refrigerator model is then to be sold in another country or region with an ambient temperature requirement of 22° C the testing would have to be repeated at that specific ambient temperature. In the new version of the standard one would simply recalculate using weighting factors. Through testing and various calculations an R value (efficiency value) is obtained. This process is explained further in other reports in this project but the important point to note for this report is that the higher the R value the better the energy efficiency of the refrigerator that has been manufactured.

The MEPS and HEPS for refrigerators are therefore determined by this R value. In the regional standard the MEPS have been set to R = 1 unit 2023 and then to R = 1.25 from 2026 as mentioned previously and shown in Table 2. The HEPS have been set as shown in Table 3 below:

Table 3. Regional HEPS

Product Category	Low	Intermediate 1	Intermediate 2	High
All categories	$1.00 \leq R < 1.25$	$1.25 \leq R < 1.50$	$1.50 \leq R < 1.75$	$1.75 \leq R$

The majority of these requirements are taken directly from IEC 6225:2015. Importantly, the IEC 62252:2015 standard also has other requirements, specifically ones related to refrigerants and these would be discussed with the national stakeholders so that they can be adopted into the Lesotho National standard.

These requirements for Refrigerant and Foam Blowing Agent Characteristics are shown in Table 4 below (the numbers are upper limits):

Table 4. Upper limits of refrigerant in the regional standard [4]

Product Class	GWP	ODP
All types	20	0

This is a very important point. The previous version of the IEC standard IEC 62552:2007 makes no mention of the refrigerants. Therefore, with the regional standard aligning with the new version of the IEC standard (IEC 62552:2015) there is also alignment with the prohibition of refrigerants with ozone depleting substances (ODS).

The Regional Standard also provides guidelines as to the labelling of the refrigerator, or the use of the Energy Label. In terms of conformity assessment and market surveillance the regional standard provides guidelines and the aim is to ensure that the Lesotho National Standard also has alignment with the Regional Standard but has also specifics related to conformity assessment and compliance in Lesotho. Importantly it is important to stress to the national stakeholders in Lesotho that the results with IEC 62552:2015 cannot be easily compared to results according to IEC 62552:2007. It is therefore critical to move towards the adoption of the new IEC standard as part of the Lesotho National Standard. Equally, with South Africa being the biggest market in the region and the biggest supplier of refrigerators to Lesotho it is also important to understand South Africa's position as to the new standard and their current situation. South Africa uses the old version of the IEC standard as its base for the national standard and its regulations. However, South Africa has committed to moving to the new standard by 2023 and this is promising and means that Lesotho can proceed with alignment with the regional standard and hence the new version of the IEC standard. The above understanding of the regional and international situation related to standards and energy efficiency levels is important. This is the information that needed to be explained to the relevant national stakeholders. This was done in a stakeholder meeting process initially and then in detail during standard development. Finally, the national standard and the Lesotho MEPS that were developed through this process were explained in detail during the Policy Working Group (PWG)

meetings that were held upon the finalisation of the draft standard. The entire process is explained in section 4 in detail.

3.2 NATIONAL STANDARD AND MEPS FOR DISTRIBUTION TRANSFORMERS

The distribution transformer aspect of the project is also being implemented in 7 other countries in the region and there is also a regional project that is being implemented simultaneously. This project is also in Botswana, Eswatini, Malawi, Namibia, Tanzania, Zambia and Zimbabwe and the regional project is in the implementation stage. During the early stages of the project a market assessment was performed. The Market Assessment Report shows that there are significant advantages to be gained by promoting the procurement of higher efficiency transformers and by developing and implementing MEPS in Lesotho. It is important that the development of MEPS is underpinned by a thorough implementation plan, which will allow the national stakeholders to sustain the implementation and develop the required legislation. The Lesotho National Standard and the related MEOS therefore needed to be developed. The scope of the National Standard for Efficiency of Distribution Transformers in Lesotho [6] relates to liquid-immersed distribution transformers that are manufactured in, or imported into Lesotho, and are either sold, installed or put into service as standalone equipment or as a component of a system, and which meet the following criteria:

Distribution transformers within scope have:

- 2 windings per phase.
- a rated capacity equal to or between 5 kVA and 3150 kVA.
- a primary voltage greater than 1,1 kV, but not exceeding 36 kV; and
- are designed for use in electricity networks or industrial applications.

Distribution transformers regardless of when they were first placed on the market or put into service, shall be reassessed for conformity, and comply with this standard if they are subject to replacement operations both of the core (or part thereof) and one (or more) of the complete windings. It was important to understand the purchasing processes of the main buyers of transformers in Lesotho and to understand whether they follow or are aware of the total cost of ownership (TCO) principles. From this understanding the national standard and the relevant MEPS could be implemented. The scale and type of the transformer fleet in Lesotho also needed to be understood as well as their main suppliers and their capabilities. The majority of this research was performed during the market assessment and the initial engagements with the national stakeholders. The national standard and the MEPS were developed during the course of the project. The standard was workshopped extensively with the nominated stakeholders of distribution transformers in Lesotho and was drafted during the Technical Committee Meetings, under the guidance of the Lesotho Standards Institute (LSI).

The final version of the standard was decided upon in June 2022 and further discussed amongst the national stakeholders in the PWG. The standard was then sent for public comment. The details of the engagements and the process of the standard development as well as the final adoption of the national standard and the MEPS are outlined in the next section.

4 Consultation Process

4.1 INITIAL CONSULTATIONS

Initially a stakeholder mapping was performed and the results shared with the Lesotho National stakeholders that were present at the initial kick-off meeting and in particular the DoE representatives, who would be the main contact points during the project, as well as the local consultants. Based on the feedback meetings were arranged for the international consultants/experts and the local consultants, together with the DoE representatives to meet with the national stakeholders. This happened between the 5th of July 2021 and the 9th of July 2021 During the visit the following entities were visited:

- Ministry of Energy and Meteorology (both departments visited)
- Ministry of Trade and Industry
- Ministry of Communications, Science and Technology
- Lesotho Standards Institute
- Lesotho Revenue Authority (initial contact established and a follow up online meeting held)
- Lesotho Central Bank
- Lesotho Electricity and Water Authority
- Lesotho Electricity Generation Company

Table 5 below shows a summary of the initial engagements.

Table 5. Summary of initial stakeholder engagements in Lesotho

No.	Entity	Discussed points
1	Ministry of Trade and Industry	A meeting was conducted to introduce the project. The project was very welcome and the team from the Ministry indicated that they would provide support and would attend meetings when required.
2	Department of Energy – Ministry of Energy and Meteorology	A meeting was held with the team that will be assisting the implementers during the project. There was great excitement and full support given by the Director of Energy. The team are eager and assisted greatly in the remaining stakeholder engagements. They have been assisting the project greatly ever since.
3	Ministry of Communication, Science and Technology	A very productive meeting was held. During the meeting the background of the project was explained and the reasons why Lesotho is eager to participate as well as the fact that the initial drive for the project approval was from this ministry as well as the Ministry of Energy. A discussion was also held highlighting the importance of the implementation plan and the plea from the Ministry of Communication,

		Science and Technology that the local team is able to continue implementing once the implementers and consultants leave.
4	Lesotho Electricity Company	A meeting was held with the LEC management team. During the meeting the project was discussed in detail. In particular the discussion was focused on distribution transformers and the impact that the project would have and the procurement processes. The LEC understood the importance of the project and committed to sharing all available information with the team. They would also participate in the PWG and the relevant TC.
5	Lesotho National Development Corporation	We attempted to meet with the LNDC on several occasions. We also visited their head office in Maseru. However, due to the Covid-19 pandemic we were informed that they are unable to meet in person. They were mainly working from home and we were provided with contact information for future meetings.
6	Department of Meteorology – Ministry of Energy and Meteorology	A very interesting meeting was conducted with the Department of Meteorology. Although this department is under the same ministry as the Department of Energy they operate on different aspects and have different offices, etc. The meeting was particularly encouraging as the Department of Meteorology is undertaking another project looking at air conditioners and refrigerators (although not only household but industrial too) from a perspective of greenhouse gases and ozone depleting substances. They however have some information on the numbers of refrigerators and types of refrigerants, which they agreed to share with us.
8	Lesotho Standards Institute (LSI)	A meeting was held with the LSI at their premises in Maseru. We were informed that the LSI is a new organisation under the Department of Quality and that they are fully behind the project. We discussed the processes for the development of the standards and the processes for the formation of technical committees and the conducting of meetings. All of these were understood.
12	Lesotho Revenue Authority	Attempts were made to meet with the LRA. Initially, it was not possible to arrange a meeting online or telephonically. However, after a visit to the premises a contact person was found. A telephonic meeting was held subsequently and the LRA understood the importance of the project and their involvement and committed to participating in the PWG.

15	Lesotho Central Bank	Attempts at a meeting were not fruitful. Therefore, a visit was organised to the Central Bank. At the reception we were given the opportunity to speak to a person from the Central Bank of Lesotho, who informed us that we should send them a letter related to the project. This was completed during the visit to Lesotho and submitted by the local consultants.
18	Lesotho Electricity and Water Authority (LEWA)	A meeting was held with LEWA at their premises. The project was described and support received from LEWA. They indicated that they are fully behind the project and would like to participate in the PWG.

In addition a number of meetings were held with retailers and resellers of refrigerators, including Bradlows, Lewis, Game, Bears, Prestige, OK Furniture, Cash Crusaders. Information was gathered on contact personnel that would have sales figures. Furthermore, the Consumer Protection Agency, the Lesotho National Development Corporation and the Lesotho refrigerator repairers were contacted and although no formal meetings could be arranged during the visit follow-up engagements provided valuable information.

These engagements provided us with an excellent understanding of the layout of the Lesotho ministries and their jurisdictions as related to this project. Additional invaluable information was that the Lesotho Standards Institute (LSI) is a newly formed entity. Previously, the standards were governed by the Quality Department but now a new entity has been formed. The meeting was extremely valuable and provided insight into the standards development process. This will in effect be one of the first standards developed under the LSI and all the logistics and administrative processes surrounding the development of the standards were discussed. From the initial engagements the development of the PWG was completed. The national stakeholders had been identified, informed about the project and invitations sent to them to participate in the PWG. The PWG was then formulated with the terms of reference and a membership. The PWG would represent the national stakeholders in the remainder of the project and would be presented with the national standards and the MEPS that were developed. The MEPS and the national standard are however part of one document, as was decided in meetings with the DoE and would be formulated through the processes of the LSI. This process is further outlined in the section below.

4.2 STANDARD AND MEPS DEVELOPMENT

From the initial engagements, particularly those with the LSI the process of standard development in Lesotho was understood. The national standard and the MEPS for both refrigerators and distribution transformers would be developed through the LSI and their processes. A number of meetings were set up as a result.

- Initially a meeting with the DoE and the LSI was set up to discuss the standard development process in more detail and the requirements of the standards and all of the abovementioned information in more detail. From this engagement and the PWG engagements a list of potential members of the TCs was drawn up. Invites were sent to the perspective members and based on the responses a draft TC members list was made.
- Further to that a meeting was held with the LSI and all of the proposed members of the TCs. In this meeting the formal terms of reference of the TCs was drawn up. The LSI decided that one TC would be formed as the content was electrical in nature and the number of experts in Lesotho on the subject matters is limited. As such there would be substantial duplication of members. Therefore a single technical committee, called TC 16 was formulated. In the meeting the members were confirmed as was the purpose and the aim of the standards and the MEPS

From the initial meeting a further TC meeting was held. By this point all of the TC members were fully aware of the standard, the regional standard, the impact of the standard and the MEPS and all of the background to the regional standards and regional developments had been discussed. Through this understanding the Lesotho TC decided to align completely with the regional developments. This would mean that the MEPS and the HEPS regionally proposed for refrigerators would be adopted. Additionally, in the TC meeting the decision was made to align with the regional label recommendations and develop the national label based on these recommendations. The TC also decided to adopt the proposed total cost of ownership methodology and the MEPS for distribution transformers. This meant that the draft national standards and the MEPS had been completed. The next step was to allow for national stakeholder consultation on these standards and to allow the process of standard adoption to take place as per the structures of the LSI.

4.3 FINAL CONSULTATIONS AND STANDARD ADOPTION

As indicated above the TC meetings resulted in the draft standard being adopted for both refrigerators and distribution transformers. The draft standard included the MEPS and the details of compliance with the standards, the testing requirements, etc. The draft standard also outlined the labelling requirements for refrigerators and distribution transformers. The draft standard was sent to the TC members for one final round of comments. No comments were received. Following this process a meeting of the PWG was held. The reason was that the national stakeholders were part of the PWG and had been a part of the process throughout. Some of the members of the PWG were also members of the TC. The agreement was that the PWG members would further disseminate the information on the standards throughout their organisations. In parallel the public consultations would take place. The final version of the standard was decided upon in June 2022. The standard was then sent for public comment. The aim was for this process to take 1 month. However, through the requirement to reach more of the public through various means this process was extended by the LSI to 2 months. The final comments were due to be received on the 11th of October 2022. No public comments have

been received and no further comments were received from the PWG members. There is therefore a strong likelihood that the National Standard for Efficiency of Distribution Transformers in Lesotho and the National Standard for Refrigerators will be adopted as drafted in October 2022. If there are any comments the Technical Committee will be reconvened to assess these comments, make decisions on whether to adopt or reject them and then finalise the standard. This will therefore provide Lesotho with its national standards on energy efficiency of distribution transformers and refrigerators and the respective MEPS.

The standards are in line with the recommendations of the Regional Standard for Efficiency of Distribution Transformers in SADC and the regional Standard for Energy Efficiency of Refrigerators in SADC. The standards also addresses the requirements for energy labelling and provide clear guidelines for manufacturers with respect to the information to be displayed on every label.

5 Conclusion

As has been shown in this report the Lesotho National Project related to energy efficiency of distribution transformers and refrigerators has resulted in a number of key developments. Amongst these the most important is the development of the Lesotho National Standards on energy efficiency of distribution transformers and refrigerators. This report outlines the process that was followed during standards development. During all stages national consultations were implemented. The national stakeholders were engaged at the start of the process and the project and in particular the standard development described. From this process the PWG was formed, which comprised the major national stakeholders. The national standards were developed through the LSI processes and through the formulation of the relevant TC.

The national standards were drafted and are very closely related to the regional standards developed within SADC. These standards outline the MEPS for both distribution transformers and refrigerators and HEPS (for refrigerators) for Lesotho. Importantly the energy label has also been developed for Lesotho for both distribution transformers and refrigerators as part of the project. The national standard has therefore been developed and the public consultations and the national stakeholder consultations for the standards were held. No comments have been received on the national standards. Currently, the LSI is required to finalise the publication of the national standards.

6 References

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- [3] SADC Regional Standard, Minimum Energy Performance Standards for Refrigerating Appliances, Draft 2, 26 July 2022
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- [6] National Standard for Efficiency of Distribution Transformers in Lesotho