

National Policy Roadmap: Plan for Uptake of Efficient Refrigerators in Botswana.

PROJECT

DEVELOPING A NATIONAL FRAMEWORK FOR LEAPFROGGING TO ENERGY EFFICIENT REFRIGERATORS AND DISTRIBUTION TRANSFORMERS

PARTNERS



AUTHOR

Angellah Wekongo (Associate-CLASP)

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Abbreviations & Acronyms

AEC	Annual Energy consumption
CoC	Certificate of Conformity
CTCN	Climate Technology Centre and Network
BERA	Botswana Energy Regulator Authority
BOBS	Botswana Bureau of Standard
BURS	Botswana Unified Revenue Service
DOE	Department of Energy
EAC	East African Community
EE	Energy Efficiency
EPRA	Energy and Petroleum Regulatory Authority
EU	European Union
GHG	Green House Gases
GIB	Green Issues Botswana
GWP	Global warming potential
ISO	International Standards Organization
MEPS	Minimum Energy Performance Standards
MVE	Monitoring, verification and enforcement
NEES	National Energy Efficiency Strategy
NRCS	National Regulator for Compulsory Specifications
ODP	Ozone depletion potential
PVoC	Pre-Export Verification of Conformity
PRS	Product Registration System
RSMS	Retail Store Market Surveillance
S&L	Standards and Labelling
SA	South Africa
SADC	Southern African Development Community
TWh	Terrawatt hours
U4E	United for Efficiency
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

Executive Summary

The project '*Leapfrogging to Energy Efficient Appliances and Equipment in Botswana through Regulatory and Financing Mechanisms*' supports the development of minimum energy performance standards (MEPS) for refrigerators and distribution transformers and energy labels for Refrigerators. It creates an enabling policy and regulatory environment that will catalyze market transformation to efficient refrigerators and DTs.

The main objective of this national roadmap plan is to increase uptake of efficient refrigerators in Botswana. This roadmap discusses the testing standards, MEPS, and labelling requirements that should be adopted to increase the number of efficient refrigerators in the market. It also lays out consumer awareness, monitoring, verification, and enforcement (MV & E) activities to ensure products entering the market are complying with the regulations once adopted. The roadmap also identifies the different agencies that will lead adoption and implementation of the different components in the roadmap and indicates the level of funding and potential funding mechanisms to ensure the program is well implemented.

This report is based on the

- Botswana Market Assessment Report, which provides evidence for Botswana to adopt an S & L program for refrigerators;
- The report on National labelling scheme and consumer awareness plan for refrigerators in Botswana, which reviews the labelling options for refrigerators to inform an appropriate national energy labelling scheme for refrigerators to complement the adoption of MEPS and the design of a consumer awareness campaign for the refrigerator label;
- The report on the development of MEPS monitoring, verification, and enforcement frameworks for refrigerators and distribution transformers, which provides ways of implementation of the S&L program, including different funding options for the implementation;
- The financing mechanism report which provides possible financing mechanism for adoption of more energy efficient refrigerators and distribution transformers.
- PWG meetings; stakeholder trainings in Botswana; and any direct discussions with the government stakeholders in Botswana.

1. INTRODUCTION

1.1. Project Background

The project 'Leapfrogging to Energy Efficient Appliances and Equipment in Botswana (Refrigerators and Distribution Transformers)' through regulatory and financing mechanisms will result in Botswana having a regulatory framework, agreed MEPS and labelling scheme for refrigerators and distribution transformers. CLASP together with Green Issues Botswana (GIB) contracted as implementing Network partner by UNEP through the Climate Technology Centre and Network (CTCN) as implementing institution and United for Efficiency (U4E) as a technical partner of the project.

The main objectives of this project are to:

- Develop mandatory minimum energy performance standards and labeling schemes
- Create a national policy roadmap and enabling environment for the implementation of standards and labels
- Propose appropriate financing mechanisms to accelerate deployment of energy efficient refrigerators and distribution transformers; and
- Strengthen the national capacity to develop standards and labels for other appliances in future.

1.2. Structure of the Report

The report is divided into seven chapters as per below:

- **Chapter 1:** Introduces the project background, the structure of the report, the methodology used, and the rationale of the roadmap.
- **Chapter 2:** Provides information on the national test standards and the minimum energy performance standards to be adopted in Botswana.
- **Chapter 3:** Provides information on the labeling regulation and approach to be adopted in Botswana.
- **Chapter 4:** Provides information on the communication plan and the consumer awareness plan to be used in Botswana once the standards and the labels have been adopted.
- **Chapter 5:** Provides the MV&E frameworks and measures to be used when implementing the refrigerator S&L program.
- **Chapter 6:** Provides the financing mechanism to be used to promote uptake of efficient refrigerators
- **Chapter 7:** Provides the summary of the implementation plan and budget.

1.3 Methodology and Approach of the policy roadmap

The main objective of this national roadmap plan is to increase uptake of efficient refrigerators in Botswana. This roadmap discusses the testing standards, MEPS, and labelling requirements that should be adopted to increase the number of efficient refrigerators in the market. It also lays out consumer awareness, monitoring, verification, and enforcement (MV & E) activities to ensure products entering the market are complying with the regulations once adopted. The roadmap also identifies the different agencies that will lead adoption and implementation of the different components in the roadmap and indicates the level of funding and potential funding mechanisms to ensure the program is well implemented.

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- The report on the development of MEPS monitoring, verification, and enforcement frameworks for refrigerators and distribution transformers, which provides ways of implementation of the S&L program, including different funding options for the implementation.
- The financing mechanism report which provides possible financing mechanism for adoption of more energy efficient refrigerators and distribution transformers.
- PWG meetings; stakeholder trainings in Botswana and any direct discussions with the government stakeholders in Botswana

1.4 Institutional Framework

The institutional framework in the energy efficiency sector involves policymaking, regulation, standards development, and enforcement of laws. The institutions that are most relevant on this roadmap include the Ministry of Minerals Resources, Green Technology and Energy Security (MMGE), Botswana Energy Regulatory Authority (BERA), Botswana Unified Revenue Services (BURS) and Botswana Bureau of Standards (BOBS).

The Ministry of Minerals Resources, Green Technology, and Energy Security through the Department of Energy (DOE) is responsible for directing and coordinating the overall developments in the energy sector. The DOE is therefore the leading policymaker in the development of the MEPS and foreseeing the implementation of the Proposed standards and labels. However, the Botswana Bureau of Standards is the custodian of all national and international standards that are applicable in Botswana. Botswana Energy Regulator (BERA) is the energy regulator, and the mandate of Botswana Unified Revenue Services (BURS) is to perform tax assessment and collection functions on behalf of the Government and to take appropriate measures to counteract tax evasion on the one hand, and to improve taxpayer service to a much higher level on the other. The Table 1 below provides general brief overview of the role of the different Agencies in Botswana.

TABLE 1: INSTITUTIONS AND THEIR ROLES IN BOTSWANA

Institution	Role
Ministry of Minerals Resources, Green Technology, and Energy Security (MMGE)	<ul style="list-style-type: none"> • Set the government’s overall strategy and targets on ALL energy efficiency matters • Formulate/solicit for, screen, and approve energy initiatives • Develop a policy on the Standard Offer with differentiated approaches for the approved energy efficiency initiatives • Develop implementation procedures for each initiative • Endorse standards on energy efficiency and Demand Side Management. • Monitor, evaluate, and report on the achievement of energy efficiency interventions by various implementation agents using the approved protocol and accredited teams • Ensure sufficient communication and understanding of energy efficiency among all stakeholders • Serve as the single point of contact for concessionary funding for project developers with initiatives.
Botswana Unified Revenue Services (BURS)	<ul style="list-style-type: none"> • Tax collection • Enforcing compliance of customs law and other related legislation at the customs and all point of entry into the country.
Botswana Energy Regulatory Authority (BERA)	<ul style="list-style-type: none"> • Determine energy efficiency tariff component following prevailing law • Determine the generation avoided cost concerning the energy efficiency intervention, to determine the level of standard offer rebate • Determine and publish each EEDSM initiative rebate level • Develop a verification protocol for each initiative • Ensure that a cost recovery mechanism is in place for all disbursements by BPC/System Operator according to the Energy Efficiency and Demand Side Management rules;
BOBS	<ul style="list-style-type: none"> • Lead the development of National Standards and MEPS • Enforces standards • Understand the initiative policy and procedures • Source the required capital expenditure, at risk, to implement the EEDSM intervention • Implement an intervention that complies with Energy Affairs Department and Regulator rules • Submit a claim to the regulator to redeem the capital investment over the life of the investment

2. National Standards and MEPS.

2.1. National Standards

2.1.1. TEST STANDARD

Test standards are well-defined protocols (or laboratory test procedures) by which to obtain a sufficiently accurate estimate of the performance of a product in the way it is typically used, or at least a relative ranking of its performance compared to that of other models. Energy performance test standards determine the energy performance of an appliance. The IEC 62552:2015 parts 1, 2 and 3 were identified and proposed as the energy performance test standards to be used in Botswana's refrigerator S&L program. They were then approved by the TC-ref, published for comments and now are in the process of being gazetted as the national standard. BOBS will lead this process until it is finalized. The test standard shall be the cornerstone for the Minimum energy performance standard (MEPS). Here is the scope of parts 1, 2, and 3 of the IEC 62552:2015.

Characteristics and test methods-Part 1: General requirements. This part defines the scope of the new standard, definitions, instrumentations, test rooms and setting up of refrigerating products.

Characteristics and Test methods –Part 2: Performance requirements. This part of IEC 62552 describes the general performance of refrigerating appliances and methods of testing them.

Characteristics and Test methods-Part 3: Energy consumption and volume- This part of IEC 62552 describes the methods for the determination of energy consumption characteristics and defines how these can be assembled to estimate energy consumption under different usage and climate conditions. This part of IEC 62552 also defines the determination of volume.

It is recommended that Botswana adopt and use the IEC 62552:2015 part 1,2 and 3 as a mandatory test standard for refrigerators once finalized.

2.1.2. MINIMUM ENERGY PERFORMANCE STANDARDS.

Minimum energy performance standards (MEPS) are the cornerstone of market transformation programs, they are critical not only to reduce energy consumption by establishing a minimum threshold that must be met but also to address the quality of the product. CLASP recommended that Botswana first adopt the IEC 62552 Part 1, 2, and 3 test standards for refrigerators and then to adopt the draft regional harmonized standards developed by U4E, SACREEE, and EACREE with technical support from the Berkeley Lab. CLASP calculated the impact of introducing these regional standards in Botswana by evaluating customers' discounted cost and payback periods, national energy savings, and CO₂ reduction through 2022–2030. The results show that introducing the draft regional MEPS for these products in Botswana will result in significant energy and CO₂ savings for the nation. The cumulative energy savings under the MEPS from 2022–2030 for refrigerators, refrigerator-freezers, and freezers were estimated to be 39 GWh, 212 GWh, and 156 GWh, respectively¹. The energy savings over time will lead to lower capital investments in energy supply infrastructure; an improved national economy due to lowered energy bills; and increased energy independence. The cumulative CO₂ emissions savings through 2030 (MT) under the MEPS scenario for both the refrigerators, refrigerator-freezers, and freezers were estimated to be 0.58MT¹, which will help the country achieve its national climate goals due to the reduced emissions. In terms of the customer, buying energy-efficient refrigerators showed positive benefits for consumers, with payback periods for refrigerators, refrigerator-freezers, and freezers being six years, six years, and three years, respectively, under the MEPS scenario. This means that, in a few years, consumers will have recouped all of their initial investment through energy savings¹. The energy savings will translate into a low operating cost of the appliance, allowing consumers to reap the benefits of purchasing an efficient appliance.

Adopting regional energy efficiency standards has many benefits, including:

- safeguarding markets from being used as dumping grounds, which arises when countries have less stringent regulations than others.
- push in the economy as manufacturers and importers only need to comply with one set of regulations.
- improved quality of appliances as only more efficient products can circulate which costs less over time.
- It enables easier policy monitoring for governments, as the same policy is adopted for the whole region (s).
- and strengthened competitive markets for appliances

¹ Botswana Refrigerator Market assessment, 2021.

The recommended draft regional harmonized standard applies to all refrigerating appliances of the vapor compression type, with a rated volume at or above 10 Liters (L) and at or below 1,500 L, powered by electric mains and offered for sale or installed in any application. The MEPS value in the regional MEPS is defined by the R value. R is a dimensionless metric of the efficiency of the refrigerator which accounts for differences in capacity or other factors by comparing the Maximum annual Energy consumption that is based on the refrigerator and freezer Adjusted volume to the Annual Energy Consumption.

$$R = \text{Maximum Annual Energy consumption (AECMax)} / \text{Annual Energy Consumption (AEC)}$$

Table 2 below includes the proposed MEPS levels and scheduled increases over time for Botswana. The MEPS start at R=1 in 2022, or when the S&L program is launched, and later in 2026, the new MEPS should be defined at R=1.25 for the three products as described in Table 2 below.

TABLE 2: MINIMUM R REQUIREMENTS FOR REFRIGERATING APPLIANCES

Category	R (2022)	R (2026)
Refrigerators	1.00	1.25
Refrigerator-Freezers	1.00	1.25
Freezers	1.00	1.25

It is recommended that Botswana continue to participate in and adopt the regionally harmonized refrigerator MEPS that is being developed by the UNEP team for the EAC and SADC countries as a mandatory standard. This adoption process should be led by the BOBS until the MEPS is adopted as the Botswana standard. When the MEPS is introduced into the country, the minimum MEPS level should be defined at R=1. After three years, the minimum MEPS level should be increased to R=1.25.

The table below summarizes the key activities to be finalized and the different roles for the agencies involved on the development of the standard. A more detailed implementation plan and timelines to see the Standard as a mandatory are described in 7.1

TABLE 3: ACTIONS FOR THE NATIONAL STANDARD ADOPTION

Action	Lead Agency	Internal Support	Timeline
The refrigerator technical committee (TC-ref) endorsed IEC 62552:2015 parts 1, 2 and 3 as the test standard. The standard went through public comment. The outstanding action is the presentation of the final draft standard to the Board of BOBS for their approval and publication of the MEPS as a final standard.	BOBS	BERA and DOE	3months. The board approval meeting is planned for November 2022 and the publishing of the final standard is scheduled for Q1 2023.
The TC-Ref endorsed the draft regional harmonized refrigerator MEPS to become Botswana's MEPS. The MEPS is at the public commenting stage. The outstanding actions are the inclusion of feedback and comments into the draft after public commenting, the presentation of the final draft standard to the Board of BOBS for their approval, and the publication of the MEPS as a final standard.	BOBS	BERA and DOE	3months. The board approval meeting is planned for November 2022 and the publishing of the final standard is scheduled for Q1 2023.

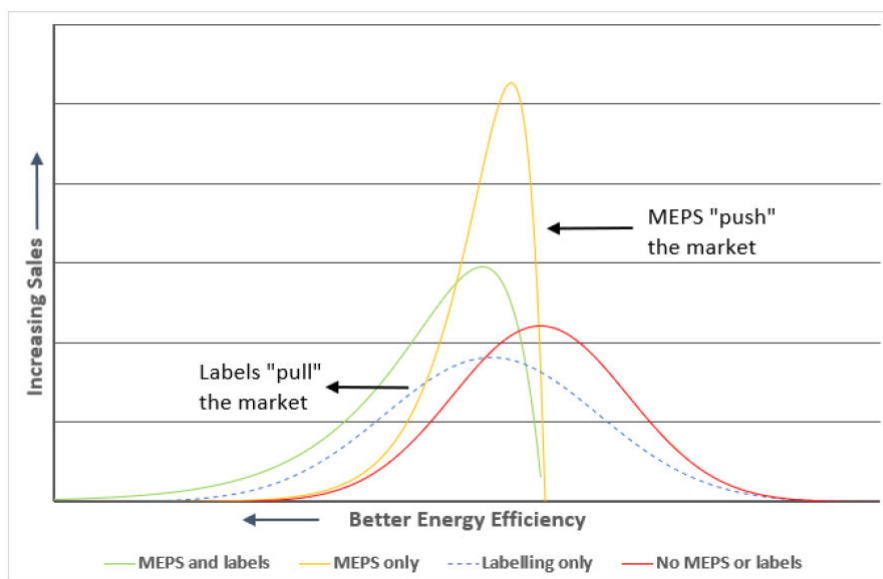
3. Regulations on Labelling

3.1. Labelling Approach in Botswana.

Labels and standards are an effective tool to transform markets by eliminating energy inefficient products. Over 120 countries globally have adopted, or are developing, labels to indicate the energy efficiency of energy using equipment and appliances to consumers. The schemes that stimulate the greatest shift towards higher efficiency products are those which follow good practices in the energy label design, amongst other policy measures². Minimum Energy Performance Standards (MEPS) and energy labels, if well-designed and implemented, are some of the fastest and most effective approaches to transition markets towards more energy-efficient products³. Given the realities of climate change and the decreasing timeline to meet environmental targets, the combined approach of introducing both MEPS and labels is recommended for Botswana to achieve maximum impact in minimal time.

Energy labels alone (without MEPS) can increase demand for higher efficiency products, but inefficient products will persist in the market. MEPS alone (without energy labels) drive suppliers to replace non-compliant products with alternatives that just meet the threshold. When MEPS and energy labelling are used together, the least efficient products are 'pushed' out of the market and the energy label 'pulls' higher efficiency products in, causing an overall market shift as illustrated in Figure 1 below⁴:

FIGURE 1: MARKET TRANSFORMATION THEORY OF MEPS AND ENERGY LABELLING



Product labelling is designed to inform end-users of the energy consumption levels of regulated products. Energy labels serve to empower consumers to make informed choices about the appliances they purchase and manage their energy bills. Amplifying demand for products with higher efficiency will encourage suppliers to introduce more efficient products, which can yield economies of scale and bring down the cost of these products. When implemented well, labelling is one of the most cost-effective energy efficiency policy measures for consumers, industry, and government⁵. In addition to giving information that allows consumers who would be interested to purchase more efficient models, labels also provide a common energy-efficiency reference that makes it easier for utility companies and government energy-conservation agencies to offer consumers incentives to buy energy-efficient products.

The consultant teams, CLASP, and the local Consultant the Green Issues Botswana (GIB), presented the proposed approach to the Policy working Group (PWG) of Botswana on the way forward for the labelling based on the market assessment, Botswana labelling and consumer awareness report and stakeholder interviews. The PWG accepted the proposed approach. The *TABLE 4* below summarizes the proposal for a national labelling scheme for Botswana.

TABLE 4: PROPOSAL FOR BOTSWANA REFRIGERATOR LABEL

Label Type	Mandatory
Categorical or Continuous	Categorical label

² U4E Labelling Guidance: https://united4efficiency.org/wp-content/uploads/2021/01/U4E-Labelling-Guidance_20210125.pdf (Accessed 10 December,2021)

³ U4E Model Regulations: https://united4efficiency.org/wp-content/uploads/2019/11/U4E_Refrigerators_Model-Regulation_20191029.pdf (Accessed 10 December,2021)

⁴ U4E Labelling Guidance: https://united4efficiency.org/wp-content/uploads/2021/01/U4E-Labelling-Guidance_20210125.pdf (Accessed 10 December,2021)

⁵ U4E Policy Guide: <https://united4efficiency.org/resources/model-regulation-guidelines-for-energy-efficient-and-climate-friendly-refrigerating-appliances/> (Accessed 10 December,2021)

Energy performance scale	A Closed Scale Comparative label is recommended for Botswana for its simplicity and its proven success in moving markets towards higher efficiencies.
Bars or stars	Bars. Proposed label samples are presented in mock designs below.
No of bars	5 (A – E) with top level A left open for appliances that will evolve to future HEPS. This will save Botswana money in recalibrating or reprinting new labels as the market evolves.
Test methods, product categories, efficiency metrics and label class thresholds	Aligned with regional MEPS. Label will have 5 classes. The lowest threshold (E) will be the MEPS and they will move upwards towards HEPS as the highest class.
No of efficiency classes	With regional harmonization as a factor, the recommendation is 5 classes to minimize confusion.
Principal indicator	Efficiency as the performance metric
Label design elements	These have been harmonized with the regional proposal. Visually, some mock design proposals have been provided below and Design 3 was the preferred option due to the inclusion of the Botswana flag and the bold colours used.

Table 5 below provides the labeling classes to be used in Botswana where the ranges represent the value of R, a constant measuring efficiency as defined in the MEPS. The labelling options are a direct adoption of the proposed regional labelling which is being developed by the UNEP team. This labeling option is to be used in conjunction with the proposed MEPS and should be mandatory for importers.

TABLE 5: LABELING REQUIREMENTS FOR REFRIGERATING APPLIANCES

Category	Low	Intermediate 1	Intermediate 2	High
Refrigerators	$1.00 \leq R < 1.25$	$1.25 \leq R < 1.50$	$1.50 \leq R < 1.75$	$1.75 \leq R$
Refrigerator-Freezers	$1.00 \leq R < 1.25$	$1.25 \leq R < 1.50$	$1.50 \leq R < 1.75$	$1.75 \leq R$
Freezers	$1.00 \leq R < 1.25$	$1.25 \leq R < 1.50$	$1.50 \leq R < 1.75$	$1.75 \leq R$

To represent above on the visual label, The ranges proposed are to be used.

- E = 1.00 (MEPS)
- D = 1.00 – 1.25
- C = 1.25 – 1.50
- B = 1.50 – 1.75
- A = >1.75 (HEPS)

3.2. Labelling Regulation.

Dimensions: The experience from other countries indicates that an area of possible resistance from manufacturers relates to printing of Energy Efficient labels that are not standardized in size across appliances. To address this issue, the proposed label is recommended to be of similar dimensions across appliance types but also to have the same number of bars across the various appliances.

Principal indicator: In response to the feedback received from the Technical Committees and the public stakeholder consultation, the principal indicator on the Botswana label will be the efficiency as the performance metric to be reported as they are already familiar with the South Africa label and they would prefer to have the same metric as in the proposed regional labelling scheme.

A **Closed Scale Comparative Energy Label** is recommended for Botswana for its simplicity and its proven success in moving markets towards higher efficiencies. This is important as Botswana is introducing labels for the first time. It is also recommended to align with the regional proposal.

Mnemonic and colour choice: For Botswana a combination of both letters and a chromatic scale are proposed to reinforce the ranking. The letters are A to E and the chromatic scale has green for the highest efficiency class and red for the least efficient class. From the consumer research the visual appearance of the label with bars, letters and colours was familiar to about 30% of the respondents as they stated they had previously encountered the EU or South African label. For this reason, the same visual markers were used to design 3 mock

designs. The traffic light system in Botswana makes most people associate green with good and red with stop or danger and thus the same colour choices were made on the label. Lastly, the length of the bars was selected with the longest showing the use of more electricity and the shortest showing the use of less electricity. This visual guidance was immediately understood by the consumers during the research process.

Layout: The label design includes a header banner with the words “*Energy Efficiency*” to signal to the consumer what the label is for. The proposed layout for Botswana has governance at the top symbolized by the national colours. This is appropriate since the label design is using bars not a dial. We recommend including the flag of Botswana to demonstrate that the labelling is endorsed by the Government of Botswana and is an initiative by a government agency. This is considered more trustworthy and objective by consumers. The energy performance scale then occupies a significant amount of space below the governing agency and manufacturer details. The additional information on noise and climate impact is then contained at the bottom of the label.

Language: From stakeholder consultation, we confirmed that the literacy levels among the buyers of household appliances in Botswana is high as they are mostly citizens working in formal sectors who purchase the appliances. It was then agreed that having English alone on the label would be sufficient. In the case of translation, the retailers and distributors at the point of sale would serve as translators for buyers.

QR codes: There was a low understanding of QR codes among the respondents during the consumer research. Further, during the stakeholder consultation, there were concerns about the additional cost of maintaining the database that would contain the information on the QR code as the product registration system does not exist yet in Botswana. For these reasons, the proposed label design for Botswana does not include a QR code.

The original equipment manufacturer shall provide a label to the importer, product retailer, or installer before the product enters the market. The label shall be affixed on the product in a location that is **readily visible** for the consumer. For harmonization, this is aligned with the regional labelling scheme proposal.

The label shall indicate:

- 1) Model name / number;
- 2) Type of unit;
- 3) Country where the product was manufactured;
- 4) Volume of the different compartments and an indication of whether they are frost-free;
- 5) Rated performance grade;
- 6) Yearly energy consumption in kWh at ambient temperature in °C or °F;
- 7) Reference ambient temperature[s] used in performance rating;
- 8) Refrigerant and foam-blowing designation in accordance with ISO 817 or ASHRAE 34, including ODP and GWP.

All representations of energy performance shall indicate that the performance rating is an indicative value, and not representative of actual annual energy consumption in all situations.

Finally, from South Africa’s experience, consumers were unanimous in not wanting to see unpopulated lower classes on the label as this would mislead their decision towards an ‘average’ performer when in fact they were purchasing at the minimum level available. Figure 2 ,Figure 3 and Figure 4 below illustrate various proposals for the label⁶.

⁶ Please note any numbers included in the label designs are purely illustrative and do not show any actual information about a product at this stage. The designs are meant to provide a visual aid that will help in understanding the various elements covered within the labelling scheme but the specific details, icons, fonts and units used must be agreed upon after Consumer Awareness to eliminate the risk of misunderstanding or confusion.

FIGURE 2:MOCKUP DESIGN 1

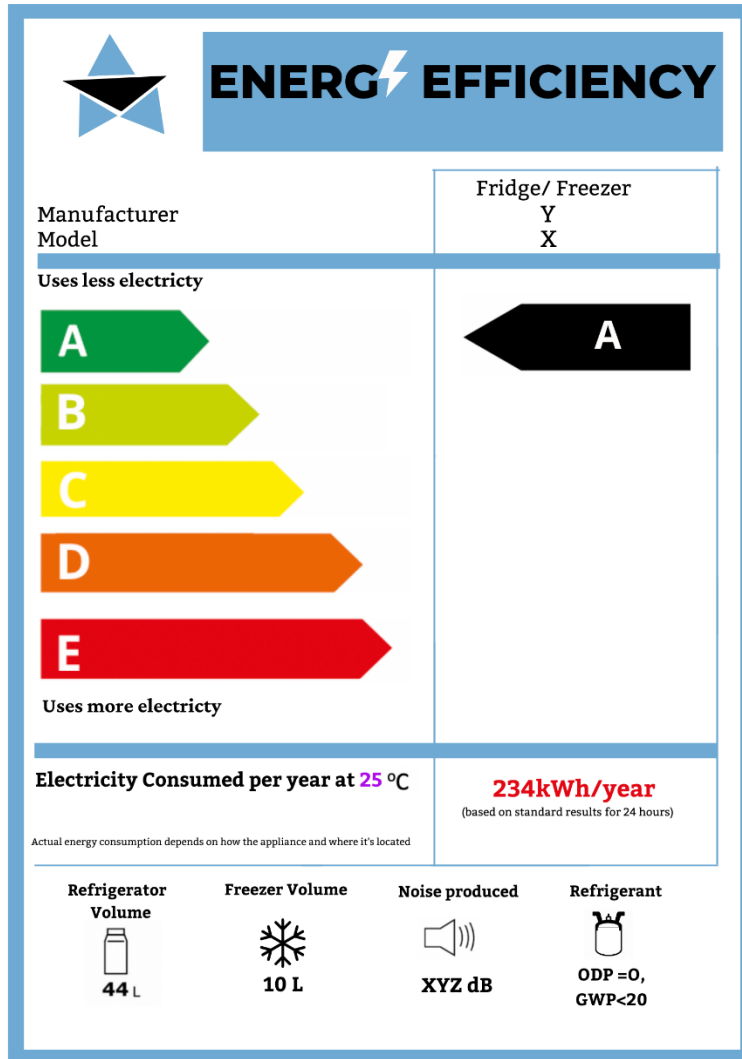


FIGURE 3:MOCK UP DESIGN 2

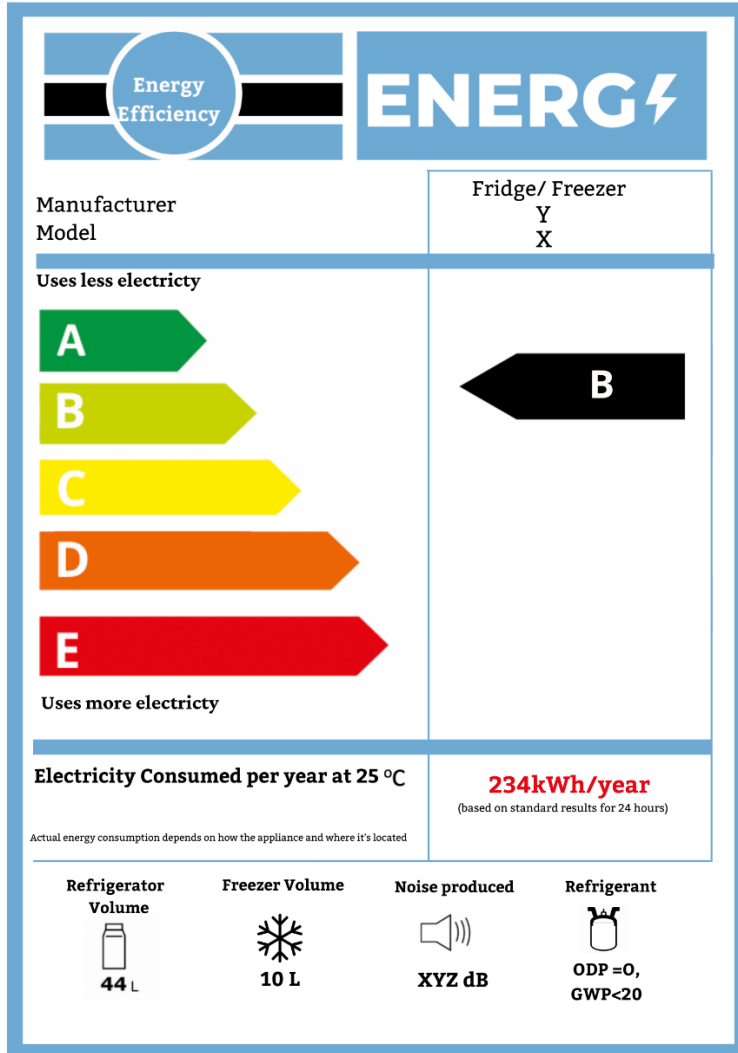
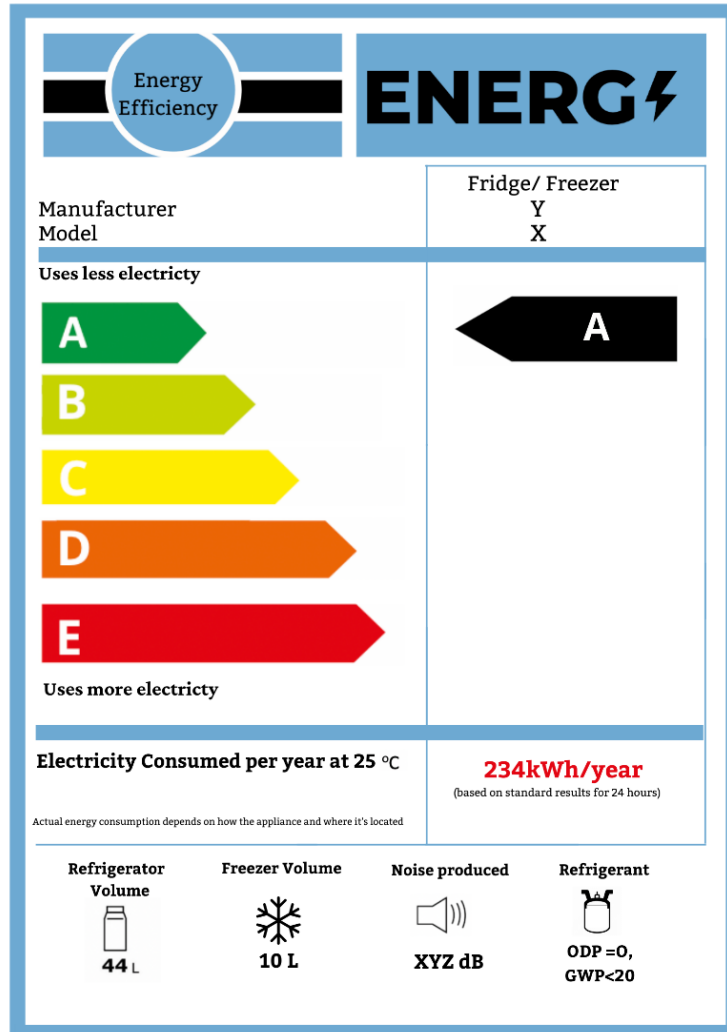


FIGURE 4: MOCKUP DESIGN 3



The proposed mock designs were presented to consumers across 9 towns during the research phase to test for comprehension and motivation to use the labels. The consumers were interested in using the labels for comparison across models. It is worth noting that of the sampled group, more than 65% bought their appliances in cash and only less about 1/3 of the group paid for the refrigerator in instalments. As previously mentioned, the initial price of an appliance is one of the top 2 considerations for Botswana consumers. 56% of respondents stated that they would not be willing to pay more for a higher efficiency class even if they understood from the label that A would be better than E. This highlights the need for an extensive consumer awareness campaign on the benefits of a higher efficiency products with a focus on lifetime cost savings.

At the national road mapping workshop held in Gaborone on the 11th of August, different stakeholders indicated that since Botswana is a landlocked country that entirely depends on importation, especially from South Africa, the introduction of their own labels might limit trade. They suggested that we just provide regulations governing the labels without necessarily finalizing the design of the label to allow importers to use their own labels including even the South African label provided their test reports indicate that they have complied with the stipulated Botswana labelling scheme and MEPS. The project consultants developing the roadmap strongly advised against that approach as their market might be flooded with various labels leading to consumer confusion.

Since the implementation cost of the national labelling scheme was a concern of the Botswana officials, the inclusion of 5 levels allows for some time before the market transitions enough to require them to rescale the label which has a cost implication. Additionally, SACREE is considering developing a regional label as well and Botswana has expressed interest in potentially adopting the regional label as opposed to introducing their own national label for ease of trade.

3.3 Recommendations

It is recommended that.

- **Botswana should introduce mandatory labels to supplement the MEPS** as it would be more impactful as it has minimal impact on manufacturers. Additionally, since both MEPS and labelling requirements are harmonized at a regional level, it allows for the region to share infrastructure for testing as well as learning experiences. Lastly, given the potential electricity savings and climate mitigation potential standards and labelling programs have been shown to have, Botswana will be well placed to meet their ambitious national targets by adopting a mandatory EE label for refrigerators.
- **Botswana to use the proposed labeling classes as indicated in Table 5 above** where the ranges represent the value of R, a constant measuring efficiency as defined in the MEPS. The labelling options are a direct adoption of the proposed regional labelling which is being developed by the UNEP
- **Before the refrigerators enter the market, they should have a label fixed on them. The label should have all the details as described in section 3.2 above.**
- **BERA, BOBS, and DOE should together have a consultative process to decide between the three mock design labels to be used should they agree that they only need one label design for the country.**

The Table 6 below provides a list of actions and the lead agency to be involved in the design and production of labels.

TABLE 6: ACTION FOR LABELLING

Action	Lead Agency	Internal Support	Timeline
<p>The Design & Production of Labels to help with Compliance Checks at Port of Entry should the consultative process between BOBS, BERA, and DOE lead to a consensus that they need one label design to enter the market.</p>	<p>BERA</p>	<p>BOBS and DOE</p>	<p>Energy label design and production are scheduled for Q2 and Q3 of 2023, should BERA, BOBS, and BERA agree that they need only one label design in the market. as indicated in section 3.2 above</p>

4. Communication Plan & Consumer awareness Plan

4.1. Communication Plan

Throughout the project, the industry was involved. We had industry representation in the Refrigerator Technical Committee, in the policy working groups, and in both physical and virtual workshops that we held on the different reports. This was very important so that the introduction of the S&L program in Botswana would not come as a surprise to the industry. After the process of adoption of both the national standards, MEPS, and the labels has been finalized, we strongly recommend that both BOBS and BERA should again communicate this to the importers. This can be done through channels such as public gazette, radio, and public television channels. Communicating this to the industry allows the importers to prepare enough to adhere to these new standards and labels.

4.2. Consumer Awareness plan.

Consumer awareness campaigns support national strategies to promote energy-efficient refrigerators through MEPS and labels. In addition to these, changes in end user behavior can also contribute to energy savings, by making end users more “energy aware” through communication and education programmes⁷. Changes in energy conservation, through awareness and behaviour changes all contribute to the overall energy savings.

This section gives various steps that the Government of Botswana through BERA should take to conduct a consumer awareness campaign on the refrigerator label. The campaign should focus on publicizing the refrigerator label, as well as establish brand recognition around energy efficiency labels for subsequent campaigns. Based on the findings from the market assessment for refrigerators⁸ a consumer awareness campaign is proposed to sensitize consumers on the importance of purchasing energy-efficient refrigerators. The campaign should incorporate messaging about the cost savings of purchasing higher-efficiency products, despite the slightly higher upfront product costs. The campaign should also include webinars or online training for retailers to ensure that salespeople are equipped to educate customers on label usage.

The following sections recommend a plan for the Government of Botswana to implement a successful consumer awareness campaign on the refrigerator label. The campaign will focus on publicizing the Botswana refrigerator label, as well as establish brand recognition around energy efficiency labels for future campaigns.

4.2.1. Crafting the message

The planned campaign incorporates messaging about the cost savings of purchasing higher-efficiency products, despite the slightly higher upfront product costs. The campaign also includes webinars and online training for retailers to ensure that salespeople are equipped to educate customers on label usage.

Message testing is the process of testing out different versions of your awareness raising messages to better understand your audience. During the development of the plan, stakeholder consultation was conducted to ensure that the recommendations ensure that consumers would relate to the messaging, the slogans were clear with easily understood language and that the graphics on the label were easily understood.

The key campaign messaging proposed is directly tied to monetary savings in response to the finding that cost is the main driver for most respondents when they purchase an appliance. The below slogans are recommended:

- ***‘Go Green, Save More’***
Proposed for the banners and brochures and other printed materials that would have the visual aid of the label for easy association by consumers. These advertisements would be in retail shops and government energy agencies such as BPC, BERA and the DoE offices countrywide.
- ***‘The greener the label, the more the savings’***
Simplest message for easy translation to local language and for use mostly on radio and print media to appeal to mature audiences in both urban and rural areas.
- ***‘Eco friendly=wallet friendly’***
Targeted for younger, more environmentally conscious audiences such as university students who are generally more aware of climate change.

4.2.2. Language

The official languages of Botswana are English and Tswana. English is used for official business and most written communication while Tswana, the language of the Tswana people—Setswana—is the country's national language and is spoken by most of the population. In 2013, the adult literacy rate for Botswana was already at 86.82 %. For effective communication, we advise that all three slogans **use both English and Tswana** to ensure as many consumers as possible have been reached. The objective of the targeted messaging in both

⁷ U4E Policy Guide

⁸ CLASP, 2021. Market Assessment report on residential refrigerators and distribution transformers in Botswana.

languages is to encourage consumers across all ages to buy products that **are green** in colour (symbolizing the highest levels of energy efficiency) to reap long-term financial savings.

4.2.3. Communication Tools/Channels to use

Due to the COVID 19 pandemic and the safety measures still being taken by most governments, physical roadshows –which are the most common channel for carrying out consumer awareness campaigns, - may not be ideal, therefore we recommend using digital, broadcast, and print media to carry out this awareness campaign. However, if by 2024 the threat of COVID 19 has substantially reduced, we recommend that BERA agents participate in physical open days across their regional offices to further enhance the awareness campaign.

In the Botswana context, the public government sources are most trusted. Therefore, it's easier to convince customers to buy energy-efficient refrigerators if government channels are used. Considering this, we recommend:

- **Traditional Media**
 - **Radio and Television** – 85% of the Botswana population has access to the national (government-owned) radio. The 3 national privately-owned radios listenership is unclear. Broadcast dominated by state-owned BTV. Hosting informative shows and placing advertisements there is one of the surest ways to reach many consumers. A 15-minute interview session with a BERA agent on radio station RB2 (private) and BTV (public) is recommended to reach a wide audience in the 18-35 age group who would likely be the initial consumers of labelled products as many of them would be purchasing their first appliances. Radios were proposed instead of TV advertisements due to their massive reach in Botswana.
 - **Newspaper advertisements** – These will allow for the visual explanation of what an energy-efficient label looks like and guide customers on what to look for. We recommend the placement of an advertisement 2 to 3 times a week for the first 3 months in the government newspaper accessed by most of the public (Botswana Daily) and the private Botswana Guardian and Voice newspapers (preferred by affluent urban working class). To complement the radio sessions, the advertisements are expected to reach both urban and rural populations especially those between the ages of 35-65 years who still consume their news in print.
- **Social Media Channels** – As of January 2021, Botswana had approximately 1.2 million registered social media users with a 47.0% internet access. The most common channels used were Facebook (48.8%) and Twitter (11.7%). The number of social media users in Botswana was equivalent to 50.5% of the total population in January 2021.
 - **Facebook** - As of December 2021, there were over 1.2 million Facebook users from Botswana. This accounted for 48.8% of its entire population. Of the 1.2 million users, 50.4% were women while people aged 25 to 34 were the largest user group. Therefore, using Facebook could reach almost half the population. We recommend that BERA and the DoE use the “*eco friendly = wallet friendly*” slogan together with a picture of the label and a short educational message and schedule posts that are published thrice a week from their official handle for the first 4 months after the MEPS and labels are introduced. This would support visual familiarity especially for audiences between 25-34 years. Boosting the posts through paid Facebook advertisements will target and reach more users from Botswana. This (paid advertisement) allows one to narrow down to their age group, gender and even region. Further, online live streaming sessions are recommended twice a week with BERA hosting discussions with various stakeholders on the labels and their use. The guests could be members of environmental lobby groups, respected government officials, social media influencers who have a strong climate influence or even consumers who have made the switch to a more efficient appliance. The advantage of this approach is to make the information recordable thus more easily available but also easy to reference later as it will be archived on BERA’s social media pages in case people want to watch and listen later.
 - **WhatsApp Messenger** – One of the most common channels of communication used across all age groups in Botswana. We recommend that BERA create short, targeted messages that can be distributed through WhatsApp messenger. However, this involves working through local telcos to send the push messages which will be more expensive than the use of Facebook above.
- **Working with MPs** – Botswana legislators hold quarterly briefings with their constituents to update them on the development projects they are working on. As they are part of the government and therefore a trusted source, we recommend involving them in the awareness . DoE and BERA would hold workshops with them at the start of the campaign to educate them on labelling and how they can benefit their constituents in order to bring them on board as ambassadors of energy-efficient products. With their influence, they would be an important channel advocating, educating, and pushing for the adoption of energy-efficient products at the consumer level.
- **Using retailers and shops as advertisement spaces** – It is recommended that BERA places print advertisements and brochures in targeted shops and with graphics and easy-to-understand messages. This will increase the reach of the information especially at the point of purchase. Additionally, it encourages the use of retailers as translators in case the material on the brochures is not entirely understood by a potential customer.

4.2.4. Partners

For a campaign to be successful, it is crucial to have implementing partners across the various sectors. This includes:

- Government Partners- Including Ministry of Energy, Botswana Power Corporation, Botswana Energy Regulatory Authority and Members of Parliament
- Brand ambassadors – These are celebrated public figures such as athletes, entertainers, or other social media influencers
- Retail shops and distributor outlets that sell refrigerators – To use their space for advertisements and their human resource as educators for end consumers

To aid in having consistent messaging, it would be beneficial to create a toolkit to share with partners to disseminate on the suggested channels below. The toolkit shared with partners should have the information contained in Table 7 below:

TABLE 7: MEDIA TOOLKIT FOR CONSUMER AWARENESS

Social Media Toolkit	Radio	Retailer Brochures
<ol style="list-style-type: none"> 1. Hashtags to use 2. Images and easy to understand text 3. Brand and Identity guidelines to guide the partners on how to use the toolkit 4. Short Videos explaining: <ul style="list-style-type: none"> -what is an energy label -How to know/pick the most energy efficient label -What are the savings/benefits -Testimonials? 	<ol style="list-style-type: none"> 1. Detailed easy to understand information for sharing/being announced on the radio 2. Statistics for dissemination 3. Benefits of labels 4. Quotes/testimonials from consumers 5. How people can get more information: Contact information for BERA help desk 	<ol style="list-style-type: none"> 1. Short description of the Energy Label 2. Benefits of energy efficient refrigerators - Cost savings 3. How to know and choose between energy labelled products 4. How to get in touch for more information: Contact information for BERA help desk

The Table 8 below provides a list of actions to be conducted to communicate the coming into force of the MEPS and raise awareness to inform consumers of the benefits of more efficient refrigerators.

TABLE 8: ACTION FOR COMMUNICATIONS

Action	Lead Agency	Internal Support	Timeline
<p>Communication to the Public: Communication on the effective date of the national test standard, MEPS and Labels (S&L program) This can be done through channels such as public gazette, radio, and public television channels. The government should give enough allowance before the mandatory implementation comes into effect to allow the importers to prepare enough to adhere to these new standards and labels.</p>	BOBS, BERA and DOE	BURS	This is scheduled for Q1 2023 immediately the MEPS and test standard are adopted.
<p>Consumer awareness Campaign: The consumer awareness campaign which aims at publicizing the refrigerator label, empowering consumers to make informed purchasing decisions and driving them towards high-efficiency products, empowering importers, retailers, government agencies, and any other stakeholder.</p>	BOBS and BERA.	DOE, BPC, and other relevant partner stakeholder as described in the consumer awareness report	This is scheduled for 6months in Q1 and Q2 2024.

Training of the industry on how to comply with the MEPS and label regulations.	BOBS, BERA	DOE	At least two workshops in Q2 and Q3 of 2023
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5. MV&E Framework and Measures

5.1. Objectives and results of the MV&E Framework

Strategic compliance programmes are critical to safeguarding energy savings, CO₂ emissions reductions, and other benefits accrued from appliance S&L programme. A holistic compliance framework enhances the credibility of government energy efficiency programmes, protects consumers, and creates a fair playing field for suppliers of energy-efficient and quality products.

Therefore, ensuring compliance is necessary for the realization of Botswana's energy efficiency, climate change and other related goals. In addition to broadening the scope of S&L programmes to cover more product categories, programme outcomes can be significantly increased at the implementation level. This includes making the selection criteria progressively more stringent and ensuring that set thresholds are adhered to.

The overall objective of the MEPS MV&E framework is to safeguard energy savings of Botswana's S&L programme by ensuring that the targeted products meet the specified standards and labeling requirements.

The following are the expected results

- Increased stakeholder support for S&L programmes
- Improved compliance rates among market players
- Consumer confidence and increased purchases of energy efficient products
- Increased investments and sales in the energy efficient market
- Overall increase in the country's energy savings
- MV&E information and knowledge used for learning, continuous improvement and evidence-based decision making and policy formulation
- Protecting the domestic market from imports of products with poor energy performance
- Strengthened MEPS accountability system

5.2. Institutional Framework

CLASP, the PWG and other government agencies identified the following key agencies that will play a critical role in the refrigerator MV&E implementation.

5.2.1. Customs agencies

Systematic monitoring of all ports of entry into the country helps to control legal imports and prevent illegal imports of non-compliant products through mislabeling or false documentation. Inspection of imports by dealers known to import for sale or their own use should be mandatory in order to verify compliance with regulations. The energy agency, licensing agency and customs administration should aim for compliance by monitoring imports and exports of controlled substances through border and document checks.

Some of the agencies that will be involved in customs clearance include:

5.2.1.1. BOTSWANA UNIFIED REVENUE SERVICE (BURS)

One of the key agencies involved in customs procedures is the Botswana Unified Revenue Service (BURS). This is the main revenue service agency of the Botswana government and is responsible for tax collection and administration of the BURS Act.

As enforcement officers at the borders and all points of entry for cargo, customs officials are responsible for examining respective documents and cargo. The initial examination is for identification of shipments of appliances and to distinguish between imports of qualified products and disqualified products.

Some of the roles that the customs department should play in effecting the MV&E scheme include:

- Verification of paperwork: Import papers can be verified with supervisors and agents from BURS.

- Check for mislabeling. Officers should inspect and analyze the goods in question if the shipment papers are suspect or incomplete information is provided
- Examination and seizure of disqualified products labelled as compliant with the new Botswana's MEPS/BOBS

Importers are required to check if they are subject to any prohibitions or restrictions for any goods imported into Botswana. The Customs Officials are required to ensure compliance with customs law and other related legislation. Once the MEPS and labelling regulations are adopted, they will form part of the import legislation requiring importers to comply with specific labeling and energy performance requirements of targeted appliances.

5.2.2. Energy and environmental ministries.

Government ministries play leading roles in policy development, monitoring and evaluation. Generally, ministries in charge of environment or energy establish the legislative framework and sets out responsibilities, delegating authority on compliance verification and enforcement actions.

5.2.2.1. MINISTRY OF MINERALS AND ENERGY

The MME is the lead policy-making authority of Government of Botswana on all matters pertaining to mining and energy. It coordinates development and operational activities for the whole energy sector. The Department of Energy (DOE) is the lead policy-making authority of Government on all energy supply and demand matters. Other departments of the Ministry are:

- Department of Corporate Services
- Department of Mines
- Mineral Affairs Division
- Diamond Hub
- Projects & Energy Development Unit

The Department of Energy (DOE) is broadly responsible for the following functions.

- To lead policy-making authority of Government on all matters of energy supply and demand management.
- To formulate and coordinate national energy policy and programmes.
- To facilitate the availability of effective, reliable and affordable energy services to customers in an environmentally sustainable manner

In close coordination with BERA and BOBS, the DOE roles in implementing the MV&E scheme would include:

- Supporting BOBS on securing testing services using third-party test laboratories having appropriate capabilities and accreditations
- Supporting BOBS on developing and maintaining test report templates
- Supporting BOBS on monitoring test laboratories so as to ensure adherence to prescribed test procedures and established quality assurance or quality control programmes.

5.2.2.2. Botswana Energy Regulatory Authority

Botswana Energy Regulatory Authority (BERA) has the overall mandate and a central role in the management of energy efficiency initiatives. The Authority has direct compliance and enforcement responsibilities. BERA is well positioned to positively implement compliance to energy efficiency practices in the following ways:

- Participate in working committees that allow collaborative decision making on MV&E policies and compliance activities. For example, the technical working group on the implementation of the MV&E programme, PVOC committee for prerequisite import documents

- Approve and issue import certificates for compliant refrigerators
- Organize nationwide campaigns on MEPS and labels
- Facilitate training and capacity building programmes for importers, dealers and other agencies like BOBS/BPC to increase compliance.

During consultative meetings with stakeholders and possible MEPS agencies, there was a general consensus that whereas BERA has the legal authority to enforce compliance, it does not have the required human capacity to implement the scheme currently⁹.

5.2.3. Botswana Bureau of Standards (BOBS)

BOBS has the legal mandate to develop standards and coordinate quality assurance activities in Botswana. BOBS is currently implementing health and safety standards for refrigerators imported into Botswana. As BERA builds its human and technical capacity, BOBS is currently well placed to enhance compliance with MEPS in the following ways:

- BOBS agents can participate in compliance stewardship groups and other outreach programmes. These can include initiatives that encourage the procurement of products that are energy efficient. They can work closely with consumers, importers, manufacturers and other stakeholders to educate, inform and raise awareness about opportunities for improving energy efficiency through purchasing MEPS compliant appliances.
- it will also be the lead agency in development of the PVOC program
- Lead agency in implementation of the S&L program
- Lead agency in development of product registration systems
- Conduct market surveillance to ensure only compliant appliances are sold in retail outlets

Experts from BOBS can provide technical advice to back-up field inspections by agents and serve as expert witnesses during prosecution, when necessary.

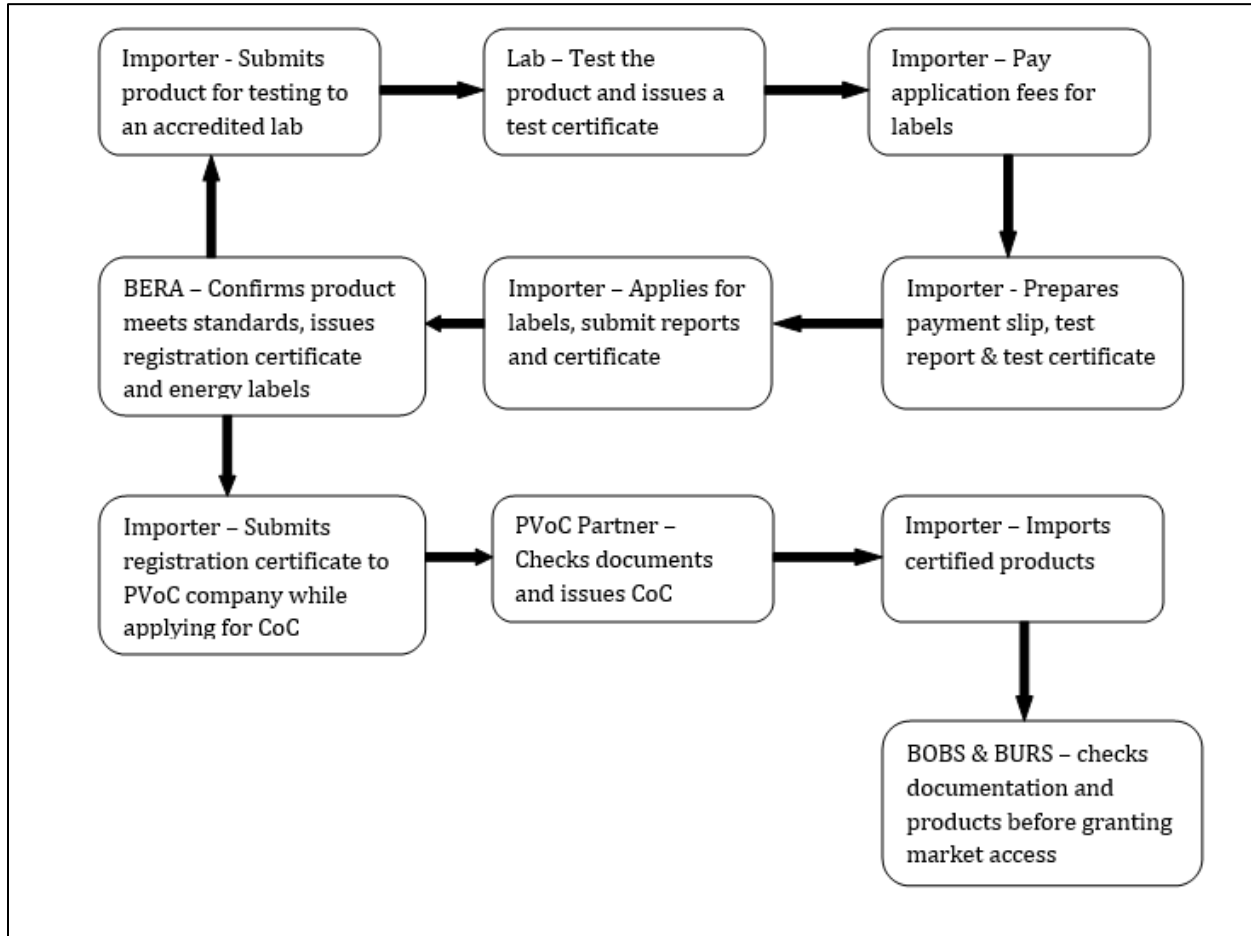
5.3. MV&E Implementation for Refrigerators

From the Market Assessment Study undertaken as part of the S&L development in Botswana, all refrigerators offered for sale in Botswana are imported from other countries. Therefore, it is imperative to ensure imported refrigerators meet the requirements specified under Botswana's MEPS for refrigerators. This could be done at the country of origin or point of import that the products arrive at the port of entry already having an approved energy label. This can be achieved by having a third-party organization contracted by Botswana responsible for verifying that the products comply with Botswana regulations before actual shipment.

An import conformity assessment process is proposed as below.

⁹ Meeting Notes – Annexe 9.1

FIGURE 5: PROPOSED BOTSWANA IMPORT & CONFORMITY ASSESSMENT PROCESSES FOR REFRIGERATORS



Components of the proposed framework include the following:

5.3.1. Pre-export verification of conformity (PVOC)

A clear PVoC programme should be implemented to ensure that targeted products comply with the applicable MEPS and other approved specifications. PVoC programmes are facilitated in partnership with third-party agents from the country of origin. The role of these agents is to undertake conformity assessment activities in the country of origin for products being imported to another country. Botswana’s MV&E scheme would require importers to submit PVoC documents from accredited institutions before their goods are cleared for imports. BOBS is well placed to be the leading agency in implementing the PVoC programme. PVoC programs is used successfully in other Africa countries such as Kenya.

5.3.1.1. Developing Botswana’s PVOC Programme

BOBS is ideal to be the leading agency in implementing the PVoC programme. Ideally, BOBS should collaborate with other government agencies such as the Ministry of Trade and BERA in effecting the PVoC programme. Key actions involved in the development of Botswana’s PVoC programme include but are not limited to:

- Selecting conformity agencies – Stakeholders involved should be allowed to select agents that match their criteria, such as location, fees and processing period
- The government should designate a directorate within BOBS responsible for implementing the programme. Staff managing the PVoC programme should be assigned specific roles and responsibilities.

- The directorate managing the PVoC programme should develop an implementation strategy as a priority. The team should also provide training on the PVoC programme and inspection requirements
- The conformity agencies shall establish PVoC country offices to handle conformity assessment for products imported into Botswana. In the absence of local testing facilities, Botswana can leverage the existence of testing facilities within the region, such as ISERT in South Africa
- There should be a clear communication plan and infrastructure to facilitate communication between the implementing agencies and other stakeholders. For example, the implementing agency should set up a programme website, a customer database and clear communication channels to facilitate communication updates the customers and other stakeholders. The communications channels include social media accounts, posts on the website, and newsletters sent via email

5.3.1.2. Financing the PVoC

BOBS can fully finance the programme by charging the exporter a percentage of each shipment's Freight on Board (FOB) value, subject to a minimum charge. The exporter may incur other administrative charges depending upon the option to demonstrate conformity. At its inception, the government of Botswana can set aside a budget to finance the implementation of the programme.

5.3.2. Product Registration System

A Product Registration System (PRS) provides an initial compliance gateway wherein importers register eligible products with BERA/BOBS. The registration process should require importers to submit test results to certify that the product performance meets Botswana's minimum energy performance standards (MEPS) and any labelling requirements before BOBS can authorize the product entry into the market. The refrigerator product registration system can offer the following features to users:

- An online database of eligible refrigerators, with general information on the model, energy performance metrics and other metrics as necessary:
- Information on which refrigerators comply with Botswana's MEPS
- Information on new regulations, revisions or amendments to existing laws
- Provides the regulator with confidential product-related data, including product details, test results and any proprietary information

It offers the option for manufacturers/importers to be provided with (digital) data frameworks and transfer protocols to submit their product data, while market intermediaries may be able to rely on application programming interfaces (APIs) or other means to extract the information they need from the registration system

5.3.3. Market Surveillance

These are the activities carried out and measures taken by BOBS to ensure that refrigerators in the Botswana market comply with the requirements set out in the approved specifications. There should be a clear and concise market surveillance programme. Such a programme involves various well-defined processes and procedures to ensure that refrigerators offered for supply in Botswana meet Botswana's MEPS and appliance registration requirements

5.3.3.1. Retail Store Market Surveillance

The BOBS should adopt a Retail Store Market Surveillance (RSMS) Programme. The RSMS programme involves a regular broad market review of retail shelf products in major retailers across Botswana. This will assist to identify products that are improperly labelled as MEPS qualified. It also includes a more focused review of retail shelves and online sources in order to identify any disqualified models that continue to be advertised or labelled as having met Botswana's MEPS.

5.3.3.2. Roles and responsibilities

The roles of those carrying out market surveillance need to be stated clearly. The staff allocated the roles should be well-trained and have the necessary legal authority to execute their mandate. The government should set out what is expected of the importers and retailers in the regulation's guidelines. The following are issues to consider when defining the roles and responsibilities of the market surveillance team:

- Whether the existing compliance authorities have both the human capacity and financial resources required to efficiently conduct market surveillance inspections. This includes finance to facilitate the travel expenses to different stores around the country, appropriate levels of staff members, resources such as software's used in document checks.

5.3.3.3. FUNDING FOR MARKET SURVEILLANCE

BOBS can explore different options to fund the market surveillance programme. Ideally, the directorate can fully support the market surveillance programme from its budget. Additionally, other funding sources that the programme could explore are:

- Penalties – Penalties or fines may enable the authority to recover the costs of any successful prosecution; or if a product is found to be non-compliant, the responsible program participants can refund the costs of testing (also known as cost-sharing).
- Product registration fees – Fees generated through product registrations can contribute to or comprise the market surveillance budget.
- Stakeholder contributions – Collaboration and cooperation with industry or civil society may provide additional resources – through joint testing programs, by providing expertise, supporting data collection and sharing, or even providing testing facilities – that reduce the cost of program management.

Ultimately, the budget and scale of the market surveillance efforts depend on the type of conformity assessment process required to place the product on the market. Investment can be lighter if the government implements a more rigorous approach at the beginning to assure greater product compliance as products are imported into the country. Additionally, the government can leverage market surveillance results from neighboring countries or within the SADC & EAC region, saving on their investment in a comprehensive market surveillance programme

5.3.3.4. Conducting Market Surveillance

BOBS must develop a detailed market surveillance guideline. The guideline will serve as a practical resource for the market surveillance team to follow when conducting, revising, and strengthening existing programs. When planning a market surveillance strategy, compliance authorities should consider:¹⁰

- Identifying realistic and achievable goals for market surveillance
- Targeting products at risk of non-compliance to accomplish more with less
- Starting with lower-cost and lower-resource efforts to identify non-compliance

Using the results of these activities to initiate enforcement discussions with the relevant stakeholders before launching into more resource-intensive activities to prove non-compliance.

5.3.4. Check testing policy

There is need to have a well-defined check testing policy that outlines the principles used by MEPS regulators to verify through laboratory testing among other methods that refrigerators offered for supply in Botswana meet the MEPS level requirements and the energy efficiency claims for manufacturers and suppliers. The results of check testing and market surveillance activities should be made available at a centralized government database with access permission to consumers and other stakeholders. BOBS will be the lead Agency in implementing the check test policy.

5.3.4.1. Check testing process

¹⁰CLASP, 2020

The check testing process involves three major steps:

- Selecting models
- Acquiring products of the selected models
- Testing of the products

Selecting models–There should be a data driven and risk-based approach for selecting refrigerator models. For example, priority should be given to refrigerator models commonly used by households in Botswana.

Acquiring products of models – There should be well defined procedures to acquire refrigerator products from the market. BOBS and other regulatory authorities should ensure proper sampling is used to select products from the market

Testing–Check testing should be conducted by accredited laboratories. In the absence of local testing capacities regional testing laboratories should be considered. The laboratory should ensure the integrity of the check test results via strict controls relating to product identification and product access and ensures that all check tests are conducted in accordance with the relevant MEPS determination and test standard.¹¹

¹¹PwC. (2016). *Development of standard and labelling (S&L) inspection guidelines for state designated agencies*. Shakti Foundation.

The following figure highlights the proposed check testing process for the refrigerators.

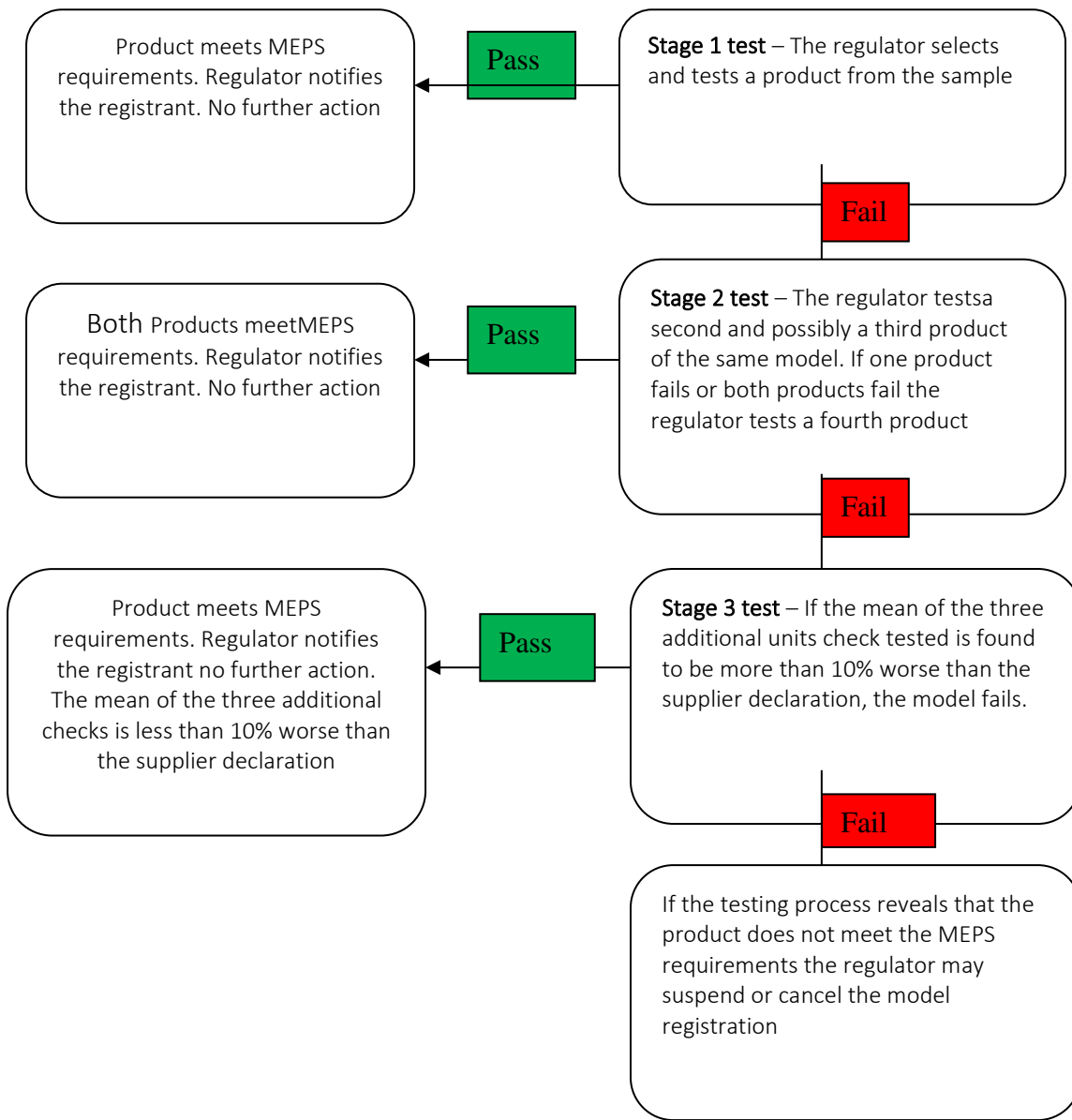


Figure 5-6: Check testing process for refrigerators

5.3.4.2. Standardizing check testing templates

BOBS should ensure templates used to report the check testing results are standardized and tailored to Botswana's MEPS needs. These templates may be made available to manufacturer or commercial test facilities to download and use. The templates should reflect the type of information that the implementation authority considers necessary to comply with Botswana's MEPS test procedures.

5.3.4.3. Testing with limited resources

In the absence of accredited testing facilities within the country options for low-cost, high-quality testing would include

- Pooling resources with neighboring countries to establish a regionally funded and managed test laboratory
- Relying on existing test facilities from the country of origin if most units of an appliance are imported.
- Establishing energy-efficiency testing as part of wider government programs covering product safety, quality, and environmental acceptability.
- Cooperating with existing test laboratories in the private sector or at technical universities. Care must be taken, however, to avoid potential conflicts of interest. For example, it may not be appropriate for test laboratories that are doing research for regulated companies on a contract basis to also act as program-designated test center.

5.3.5. Non-compliance

5.3.5.1. Investigating non-compliance

BOBS should assess each instance of suspected non-compliance and where appropriate perform an investigation to determine:

- whether it is an instance of non-compliance with Botswana's S&L programme
- the circumstances relating to the non-compliance
- the responses that should be considered to address the non-compliance.

Assessments and investigations incorporate the views of relevant internal and external subject matter experts and provide transparent and defensible conclusions and recommended response options for the appropriate delegate to consider and authorize.

5.3.5.2. Response to non-compliance

Responses to noncompliance should start with the least severe action and escalate to more severe actions depending on the type of non-compliance and the responsiveness of the offender. Responses to non-compliance include but not limited to:

- Suspending a registration
- Cancelling a registration
- Enforceable undertakings
- Infringement notices
- Civil penalty order
- Injunction

5.3.5.3. Communicating enforcement actions

MV&E reinforces compliance, especially if the application of sanctions is communicated effectively. Disclosure of results gives praise to suppliers who comply with requirements, identifies suppliers who fail to comply, and enables governments and programme managers to take more effective action to strengthen the programme and enforcement action against non-compliance.¹²

¹²IEA. (2010). *Monitoring, Verification and Enforcement: Improving compliance within equipment energy efficiency programmes*. Paris: IEA.

In this regard, the Government of Botswana can utilize government communication channels such as TV stations and newspapers to communicate MV&E results to stakeholders. Notwithstanding its benefits, the implementing authorities must balance the risk of reporting against the potential use of reporting. Additionally, there must be a detailed communication guideline articulating what the authority can and cannot publish.

5.4. Recommendations

5.4.1. General recommendations

- The Government of Botswana should establish a joint task force among all relevant institutions identified including BOBS, BURS and BERA to facilitate the implementation of the MV&E framework.
- The MV&E framework should be participatory and inclusive. This ensures that all stakeholders understand their obligation. It also ensures that stakeholders understand the importance of their contribution towards the overall success of the MEPS. There will be need for continued and sustained public awareness on the benefits and requirements of the S&L programme.

5.4.2. Testing and verification

- BOBS should ensure that laboratories authorized to carry out conformity assessment and verification testing are accredited to carry out refrigerator-specific energy performance as required by Botswana's MEPS for refrigerators. Additionally, BOBS should make a list of all accredited labs available to refrigerator importers.

5.4.3. PVOC

- BOBS should utilize best-practices when implementing the PVoC programme. Kenya can be referred to as an example of how to design and implement PVoC enforcement measures. Additionally, it is important to develop an implementation plan that provides recommendations on processes that will guarantee that conformity agencies act in accordance with the requirements of the PVoC programme. The document should include a proposed timeline for contract management, monitoring, annual audits, and quarterly meetings
- BOBS should organize familiarization workshops to inform all stakeholders on the PVoC programme, mainly the private sector, customs clearing agents and other relevant stakeholders. BOBS should ensure that customs officers at all customs entry points in Botswana are well equipped to facilitate PVoC border inspection checks. Given that custom agents tend to change frequently it is important to develop training materials that would high-level employers to train new employees.
- BOBS should also establish a clear schedule for the revision of the PVoC programme. All relevant stakeholders should take part in the revision process

5.4.4. Product registration system

- A PRS system will require the application of expertise from a range of participants. Initially, a project manager should be assigned, who will need to be supported by a project team. Additionally,
- The project team should reference PRS guides such as United for Energy Efficiency (U4E) guide note 4 on implementing a product registration system.

5.4.5. Market Surveillance

- A strong legislative foundation, comprehensive administrative guidelines, and a budget proportional to market needs are critical to establishing a market surveillance program. Before developing new energy efficiency market surveillance legislation and processes for refrigerators policymakers should consider reviewing and amending or adapting existing legislation to maintain consistency across all such programs and avoid repeating work.

- It is also critical to develop comprehensive and flexible guidelines on Botswana’s market surveillance programme for refrigerators. Additionally, it is important to provide stakeholders with comprehensive information to help them develop a clear understanding of the new legislation so they can plan ahead and avoid cases of non-compliance
- To facilitate the implementation of the surveillance programme it is important to develop a comprehensive market surveillance guideline. This document should detail all procedures and activities required to successfully conduct refrigerator market surveillance.

5.4.6. Enforcement

- To respond to non-compliance the BOBS should refer to the pyramid of escalating enforcement featured in section 5.3.5 above.
- The pyramid can be most effective for the national enforcement strategy if populated in accordance with the legal requirements and resources available to the enforcement authority, and the characteristics of the program and its participant and stakeholders.

5.5 Actions

Table 9 below shows the MV&E actions that the different agencies need to do in preparation to start enforcing the S&L program while Table 10 shows the continuous MV&E components of the S&L program which the agencies will be expected to perform while implementing the S&L program.

TABLE 9: MV&E ACTIONS IN PREPARATION TO START ENFORCING THE STANDARD AND LABELLING PROGRAM

MV&E actions in preparation to start enforcing the Standard and Labelling Program			
Action	Lead Agency	Internal Support	Timeline
<p>Testing</p> <ul style="list-style-type: none"> • Securing testing services using third-party test laboratories • Developing test report templates 	BOBS and BERA	DEO	6months. This is scheduled for Q2 and Q3 2023
<p>PVOC</p> <ul style="list-style-type: none"> • Developing Botswana’s Pre-Export Verification of Conformity (PVoC) Programme. • Development of product registration systems • Communicating to the importers and manufactures on the selected accredited laboratory and the test report templates. 	BOBS	BERA, DOE and BURS	This is scheduled for two years, as PVOC involves a lot of activities as indicated above. This will begin in Q1 of 2023 and end in Q4 of 2024.
<ul style="list-style-type: none"> • Capacity building for compliance officers from BOBS and BURS 	BOBS and BURS		3months, scheduled for Q1 of 2023

<ul style="list-style-type: none"> Recruitment of additional staff to support development of the PVOC, certifications and later enforcement at BOBS 	BOBS		6months, Scheduled for Q1 and Q2 of 2023
<ul style="list-style-type: none"> Upgrading of Single Window System 	BOBS	BERA AND BURS	6months, scheduled for Q2 and Q3 of 2023.
<ul style="list-style-type: none"> Coming into force of the Standard 	BOBS	BERA and DOE	Scheduled for Q4 OF 2024

TABLE 10: CONTINUOUS MV& E COMPONENTS OF THE S&L PROGRAM IMPLEMENTATION

Continuous MV& E components of the S&L program implementation			
Action	Lead Agency	Internal Support	Timeline
<p>Testing</p> <ul style="list-style-type: none"> Procuring all refrigerator models selected for verification testing maintaining test report templates Monitoring test laboratories so as to ensure adherence to prescribed test procedures and established quality assurance or quality control programmes. Approving laboratory test reports 	BOBS	BERA and DOE	Continuous process after the coming into force of MEPS
<p>Certification</p> <ul style="list-style-type: none"> Approving laboratory test reports. Enforcement actions including those resulting from the verification programme Maintain accreditation as per the MEPS requirements Certify product performance according to Botswana's MEPS. Issuance of the energy labels. 	BOBS	BERA and DOE	Continuous process after the coming into force of MEPS

<p>Entry at the Customs</p> <ul style="list-style-type: none"> • Verification of paperwork • Checking for mislabeling, this include inspection and analyzing the goods in question if the shipment papers are suspect or incomplete information is provided. <p>Examination and seizure of disqualified products labelled as compliant with the Botswana’s refrigerator MEPS</p>	BURS	BOBS and BERA	Continuous process after the coming into force of MEPS
<p>Market Surveillance Market Surveillance including creation of the market surveillance team, funding of the activity and the actual conducting of the market surveillance.</p>	BOBS	BERA and BOBS	Continuous process after the coming into force of MEPS
<p>Check Testing The selection and testing of a product in the market to verify through laboratory testing among other methods that refrigerators offered for supply in Botswana meet the MEPS level requirements and the energy efficiency claims for manufacturers and suppliers.</p>	BOBS	BOBS and DOE	Continuous process after the coming into force of MEPS

The activities that the industry must take to comply with the MEPS rule are shown in Table 11.

TABLE 11: ACTIONS BY THE INDUSTRY FOR COMPLIANCE

Action	Lead Agency	Timeline
<ul style="list-style-type: none"> • Submission of product for testing in an accredited laboratory • Payment of application fees for certification and labels to BERA • Preparation of Payment slips, test report and test certificate • Application for labels and submission of reports and certificate to BERA for approval • Submission of registration certificate to PVOC company while applying for COC • Fixation of the labels on the refrigerator • Importation of certified products. • Payment of penalties and fines as may be described by BERA in case of non-compliance. 	Manufactures and Importers	Continuous process after the coming into force of MEPS

6. FINANCING MECHANISM

6.1. Objective of the Financing Mechanism

This proposal reviewed financing mechanisms for energy efficiency refrigerators for Botswana with the objective of informing the Government of Botswana the possible financing mechanisms to implement in order to catalyze adoption of minimum energy performance standards and labels in refrigerators. If implemented effectively, the financing mechanisms should influence consumer behavior in procuring energy efficient refrigerators. The financing mechanism will compliment other ongoing initiatives in Botswana and the South African region to transition to energy efficient refrigerators.

The proposal was informed by

- desk research
- the training session held in Botswana with sector stakeholders on June 14th
- interviews held with retailers, BURS.

6.2. Financing Mechanisms Suitable for refrigerators

Some of the financial mechanisms that are frequently employed to purchase efficient refrigerators in other countries and how they relate to Botswana are:

6.2.1. Dealer financing (distributors) of EE refrigerators

Energy efficient technology companies offer financial assistance to their residential consumers through dealer financing. This mechanism adopts a credit-based approach where the customer of the energy efficient refrigerator will get an appliance then customer pays the credit subsequently with or without a deposit. The key players that we found in Botswana implementing dealer financing model are energy efficient technology providers, working with retail outlets and distributors. The two retail outlets (Shoprite trading as OK Furniture and interviewed confirmed to be (i) taking deposits through Lay by model (ii) high purchase and follow up

Dealer financing approaches are of two types, indirect and direct credit dealer approaches with the latter being more common. The credit tenure of direct loans in Botswana ranges from 30 to 180 days. A bank or a third-party financial institution can purchase the credit portfolio. The appliance supplier facilitates the credit application by undertaking data collection from the prospective purchaser and transferring the application to a lender in the indirect lending model. The lender then evaluates the application and provides a credit quote. The retail suggested partnerships with financial institutions would make the financing easier because they are faced with debt collection challenges. A check off system for salaried employees for example was recommended. This model is vital in providing access to energy efficient appliances where credit access is limited. However, most appliance dealers may not have the capacity to undertake this strategy efficiently and effectively. Dealers utilizing this financing model should therefore be supported through credit provision by energy efficient technology providers.

6.2.2. Microfinance/credit line

Microfinance institutions provide alternative financial services especially to the poor with constrained access to banking services. However, the microfinance loan terms are generally characterized by small loan amounts, short repayment periods and high interest rates (15% - 25% per month) according to the Operations Manager at Ok Furniture in Botswana. The main microfinance institutions in Botswana include Letshego, Penridge Employee Benefits, Peo Holdings, Blue Employee Benefits, First Funding, Capricorn, Women's Finance House Botswana, Youth in Development Trust; and Kuru Development Trust.

During a session with stakeholders in Botswana, the feedback received was that, Microfinance has significant effect on household welfare in Botswana including financing refrigerators. Household welfare is also positively and significantly influenced by: education level, household assets and being in paid employment in the public or private sectors. The policy implication is that the Botswana government should continue to explore improvements in the quality of education and creation of employment opportunities in both public and private sectors to improve household welfare in the Country which will strengthen microfinance institutions as a financing mechanism for EE Refrigerators.

The main sources of microfinance loans, the purposes to which the loans were put and the sources of funds for repayment was discussed during the field visit with buyers of refrigerators. The major sources of microfinance loans were: Rotating Savings and Credit Associations,

other microfinance institutions and money lenders. The main purposes for the microfinance loans were to meet household expenditures among them purchase of refrigerators. These findings suggest that microfinance is largely used for consumption smoothing. The majority of beneficiaries generally applied for small microfinance loans of between P10, 000 – P20, 000. This is also based on the weak microfinance balance sheets that cannot support larger amounts payable over longer duration of time. The main sources of funds for microfinance loan repayment were salary, business earnings and borrowing from friends and relatives. This is also confirmed by the market assessment (purchasing power of Botswana citizens).

Due to high transaction costs, perceived risks, low profits, and a lack of security, (MFIs) typically service sectors of the economy that the mainstream banking system considers unbankable. Models of microfinancing are diverse as they are designed to suit specific demographics.

In Botswana, organized groups are coming up strongly as shared by the Ok Furniture Operations Manager who said most of his whole household sales are being negotiated and paid for through organized groups who do bi-weekly shopping. It is recommended that, the Botswana Government through the Ministry of Trade should provide these organized groups with regulatory framework to official registration and operationalization (regulation) to support initiatives like Eco Fridges. Registered groups can also work with micro finance institutions in bridging financing gaps.

Capital can be injected by a donor, Multilateral Development Banks (MDB), governments, or private organizations to a financial intermediary who can then lend to their clients / members through a Microfinance. This provides a ring-fenced source of money that encourages lending, especially when offered at low rates or used to facilitate unsecured lending. The MDB gives money to local banks, who then deposit the money to MFIs to give green loans to eligible borrowers. The loans are then repaid by borrowers through small manageable payments over a reasonable period. This strategy requires robust donor engagement by the Ministries of Trade and Energy for it to realize significant successes.

MFIs have access to critical data on low-income households which can enable low-income households to realize energy efficiency through the purchase of energy efficient appliances to break their financial barriers to access these appliances. MFIs also play a key role in educating the masses on energy efficient technologies which aids in increasing uptake of these technologies by leveraging positive socio-economic impacts of these technologies.

6.2.3. Savings groups and cooperative societies

The Government of Botswana recognize and relentlessly supports the development of cooperatives as they have the potential to grow the country's social and economic development. The support is depicted by strong collaboration between the cooperative movement and the Government which is geared towards realizing sustainable growth and development. Thus, cooperatives have been identified as vehicles for poverty eradication and makes a list of government's flagship programmes. The initiatives are also in conformity with the five (5) pillars of Africa Cooperative Development Strategy 2017 – 2020

The Botswana Government through the Ministry of Investment, Trade and Industry has conducted Capacity Building Workshops country wide targeting women and youth. The workshops were aiming at equipping attendants with Cooperative Philosophy and Management. These are opportunities to incorporate the transition agenda to energy efficient refrigerators and mobilizing financing resources through cooperative movement. As a result, there is an increase in membership especially for both women and youth in Co-operatives. Additionally the registered savings groups have and will benefit immensely through the Government procurement processes. This is demonstrated by the increase in the number of business opportunities being awarded through tenders or winning contracts to supply the products and services. This could be distribution of energy efficient refrigerators and a maintenance and service contract. In rural areas Local Authorities use affirmative action principle and directly award tenders to Cooperatives without making them to go through the normal tendering process. The affirmative action is a government initiative to reduce or deal with economic inequalities and support the indigent communities. This has resulted in contribution by cooperatives to income generation, employment creation and infrastructure development especially access to energy efficient refrigerators.

The Government's role in supporting co-operative development among others is provide conducive environment for doing business as stated in transformation pillar 3: "Cooperatives Environment for Doing Business". It aims at creating a conducive regulatory environment for Co-operatives businesses; streamlining Co-operatives businesses processes; ensuring a healthy and productive co-operative business community; and ensuring that cooperatives have access to appropriate education and training. The initiatives include: aligning the current

Policy and Legislation to the co-operation transformation strategy; promoting policies and procedures for transparency and accountability; inculcating entrepreneurship skills and culture. The amendment of the Co-operative Act in Botswana is ongoing, having concluded instructions relating to provisions covering the Non –Financial Cooperatives. The second step is to interrogate the SADC SACCO model Law with the view to adapting and/or customizing it to the local environment. The Botswana Government is financing this under the Financial Inclusion Programme as it is a key milestone in the activities of this programme. Incorporating the energy efficient refrigerators agenda into the Cooperative agenda and increasing awareness will catalyze the transition. Examples of SACCOs in Botswana that could easily adopt the agenda include:

- i. Bank of Botswana Savings and Credit Cooperative Society Limited (SACCOS) founded in 1994;
- ii. Motswedi SACCO established by the staff of the Department for Co-operative Development and Botswana Co-operative Bank in 1985.
- iii. Motswedi SACCOS extended to the staff of the Ministry of Agriculture and to Ministry of Trade and Industry in 2005 and those who have resigned from civil Service, current membership of 3501.

This strategy is a market-based savings-led financing mechanism in which self-selected individuals pool their savings and borrow loans with interest from those savings, then split the gains. Members own, administer, run, and regulate them themselves. Members of savings groups have the chance to save frequently in small amounts, as well as have access to flexible lending and some basic insurance. This strategy is better suited to low-income urban residents, peri-urban middle-income residents, peri-urban low-income residents, and high-income rural residents. In Botswana, the savings groups are not well established and not supported by strong legal and regulatory framework for effective governance. However there is an opportunity as people are willing to save. A regulatory financing framework through savings groups is recommended through the relevant Ministry.

In comparison to the informal financial services available in villages and informal settlement communities, savings groups tend to be more organized, open, and democratic. They augment services provided by regulated financial institutions in addition to providing financial access to those locked out by the formal banking system. Moreover, savings groups are scalable. Savings clubs concentrate on mobilizing local capital to address local needs and developing low-cost self-regulated approaches. Critics of this strategy argue that it is unsuitable due to its small capital base and low loan sizes. The fact that they are also unregulated in Botswana has raised concerns as to whether this financing strategy is credible. This strategy is also over-reliant on subsidies to remunerate field officers during the early stages of savings group development. Finally, utilizing savings groups to address issues other than finances runs the risk of overburdening members with supply-driven activities rather than meeting their needs.

6.2.4. On-Bill financing

On-bill financing allows users to spread out the upfront cost of purchasing an energy-efficient appliance and balance monthly payments with the unit's energy savings. It entails integrating investment costs with existing bills, so that the former does not surpass the latter throughout the payback term (Carbon Trust, 2018). On-bill finance could be utilized to target many different customer segments because most consumers are comfortable with paying their electricity bill as confirmed by participants during the training¹³. This finance mechanism is inclusive as it helps customers who have been locked out of the formal banking institutions as it broadens the eligibility criteria of prospective customers. BPC had a customer base of 497,624 by year 2020 which has significantly increased justifying On Bill financing.

The concept of on bill financing mechanisms for Botswana is recommended based on the ECOFRDGES initiative in Rwanda. BASE worked alongside UN Environment's United for Efficiency (U4E) and partnering with the Government of Rwanda, Rwanda Environment Management Authority (REMA), and East African Centre of Excellence for Renewable Energy and Efficiency (EACREEE) to conduct the "Rwanda Cooling Finance Initiative"(RCOOLFI) technical assistance project aimed to enable the conditions required to mobilize investments in new energy-efficient and climate-friendly cooling technologies in the residential sector and light commercial sector, and motivate households to replace and upgrade their inefficient systems. This was achieved through the development and operationalization of an innovative market-based financing mechanism. The technical assistance was launched in early 2019 and completed in 2021. The project unlocked USD 4 million in financing through a green on-wage financing mechanism (GO) to support the purchase of over 12,000 energy-efficient and climate-friendly cooling products to replace used but operational equipment in the residential sector in Rwanda by 2024. RCOOL GO includes complementary components, notably bulk rebates to support a set of financial incentives and the proper disposal

¹³ Training held at the University of Botswana on possible financing mechanisms for energy efficient refrigerators and DTS

of end-of-life appliances, green credit facilities to ease repayments for end-users, product testing, monitoring, reporting and verification, policy considerations, and awareness campaigns.

The development and implementation of the green on-wage financing in Botswana can potentially help overcome key barriers, including the burden of upfront investment and the need for collaterals in transitioning to energy efficient refrigerators. It reduces the need for stringent credit assessment and collaterals. The program incentivizes households and micro-entrepreneurs to return end-of-life cooling equipment and acquire certified higher-efficiency cooling appliances in exchange through a dedicated take-back scheme in partnership with interested vendors and an e-waste management company. In addition, salaried customers are able to acquire eligible equipment on special credit conditions and pay for it over time through deductions on their salaries (check off system) at partner local financial institutions.

A partner local financial institutions like the National Development bank of Botswana and vendors like OK Furniture work together and serve as facilitators by conducting the initial processing of the customer information and application, aligned to an agreed commercial and technical eligibility criteria and requirements set by regulatory agencies. A similar entity for Botswana like RCOOL GO facilitates the creation of a pipeline for energy efficiency investment, improves the monitoring and reporting of green loans, transforms the market towards higher-efficiency cooling products, significantly eases access to energy-efficient cooling, tackles the issues of collection and disposal of used products, provides open access to new green markets for partners. Given all these benefits, it holds the potential to further attract international funding to scale up the financial mechanism to additional climate technologies.

BPC has the necessary systems and structures to partner in similar initiatives and partnerships for on bill financing. The annual revenue in 2020 at BPC was 4,127,932 Pula against an expenditure of 4,839,824 Pula which translates to operational loss of 658,085Pula. This is based on audited financial statements for year ending 2020. The generation, transmission and distribution expenses which constitute circa 90% of the expenditure could be restructured to incorporate on Bill financing, and if effectively implemented, will be a viable financing mechanism. BPC also has a strong balance sheet with total assets standing at 23,376,505,000 Pula against net assets of 10,540,175.000 Pula. This is a reflection of a viable base to attract partners in financing on Bill financing mechanism being a loan issued to a utility user, such as a homeowner or a business owner, with the revenues going toward energy efficiency improvements.

Until the loan is repaid, the utility collects regular monthly loan payments on the utility bill. An on-bill program can be run by the utility itself or in collaboration with an outside administrator such as a state energy agency or another comparable organization like the environment agency like the case of Rwanda. A program may be restricted to specific sorts of consumers, such as commercial property owners, business tenants, or residential property owners (Henderson, 2013). On-bill financing approaches can be structured in a variety of ways: one way is through the power utility bearing initial capital expenditure which will then be repaid by customers in instalments. The second is by a third-party providing the initial capital then the power utility will play the role of a debt collector for the third party. The third is through binding a debt to a property electricity meter rather than the proprietor of the property so that electricity tariffs can outlive occupancy of a property.

The two unique aspects of on-bill loans, the connection to utility service and the necessity of bill neutrality¹⁴, can work together to provide significant benefits for customers, resulting in increased adoption of energy efficiency measures. An on-bill loan expands consumer eligibility, provides institutions with a new way to invest in efficiency, allows more occupants to invest, and promotes market transformation. Customers of BPC can buy EE refrigerators and pay for them over time with their monthly utility bills.

6.2.5. Financial incentives (rebates, tax credits and/or subsidies)

“Traditionally, one of the biggest hurdles stopping buyers in Botswana from buying new, energy efficient refrigerators has been the initial price premium, and with interest rates over 20 – 25 per cent,,” said Mr. Kesetsenao Molosiwa the Chief Energy Officer Department of Energy and Minerals Botswana “We have seen that if we make affordable financing available and proper oversight and outreach are conducted, we can transform these markets.” As part of the offering, the participants during the training¹⁵ those buying new refrigerators can trade in their old refrigerator for a voucher that is valid for future purchases. This ensures potentially environmentally damaging products are disposed of safely and taken off the market.

Well-designed incentive programs address market barriers and complement mandatory standards like the environmental levy in the electricity tariff is used to fund the implementation of energy efficiency demand-side management in South Africa. Incentive programs

¹⁴ Meaning energy efficiency savings on monthly bills must be greater or equal to a customer's loan payments

¹⁵ Possible Financing Mechanisms for Energy Efficient Refrigerators and Distribution Transformers in Botswana

push market penetration of more-efficient refrigerators, and appliance standards cement these market improvements by eliminating the least-efficient models from the market. In countries with slow-moving S&L programs or weak standards like Botswana, incentive programs can help jumpstart negotiations to achieve higher efficiencies or can reveal real limitations to efficiency improvement. For example in Ghana through the Government Utility (similar to BPC) customers receive Rebate and replacement to energy efficient refrigerators. In rebate and replacement scheme, consumers are offered rebates on efficient refrigerators in exchange for surrendering their old, inefficient units. Under a tax credit design, a manufacturer could receive a tax credit (up to a specified maximum amount) for each unit produced that meets a defined minimum efficiency. This is recommended for the Ministry of Trade in promoting trade imports, the Ministry of Finance in declaration of import duties and extended import credit or waiver and in addition Ministry of Energy in promoting energy efficiency and conservation.

To increase demand for energy efficient refrigerators, business case for energy efficiency can be made more appealing through financial concessions or compensation. Financial incentives are intended to reduce the initial cost of energy-efficient refrigerators and to stimulate end-users to realize energy efficiency. Different financial incentive programs adopt different formulations and different amounts. Governments and power utility companies provide incentives to: encourage the deployment of energy efficient appliances identified through voluntary or mandatory energy efficiency labeling; assist manufacturers and resellers in meeting stricter mandatory energy efficiency standards; increase residential energy efficiency investments, or meet energy savings obligations. The most common types of financial incentives are rebates, tax credits, and provision of subsidies and lowering of value-added tax on energy saving appliances. Carbon credits or government loan guarantee programs could be used to fund incentives (Magallón et al., 2019).

Incentives are a tried and proven strategy of encouraging market adoption of energy-saving appliances. They are appealing to consumers and can be cost-effective in terms of government spending. The most profound challenge is ensuring that financial incentives result in self-sustaining market changes that last after the incentive program has ended. Another obstacle for government programs is ensuring that public funds used for incentives are spent efficiently, socially, and responsibly. These challenges can be overcome by designing effective structures in collaboration with relevant Government agencies (stakeholders). One of the methods applied to incentivize energy efficient refrigerators is a grant from the Clean Cooling Collaborative, UNEP and the Basel Agency for Sustainable Energy who partner with government agencies, local banks and vendors to offer interest-free loans to ensure that wage earners can purchase the most energy efficient and climate-friendly fridges. The Basel Convention and the European Union's Waste Shipment Directive both ban the export of non-efficient refrigerators and Ghana banned the import of second-hand environmentally damaging products in 2013. However, many countries still allow the practice and even in countries where it is banned some products make it through via informal channels. These requires enhanced surveillance, enforcement mechanism.

The ECOWAS Refrigerators and Air Conditioners Initiative (ECOFRIDGES) was launched in Ghana in October 2020, with Senegal following shortly after. The initiative was started to help make new energy efficient fridges and air conditioners affordable to consumers and to combat the dumping of energy inefficient products in Africa. Similar to this, Botswana in close collaboration with South Africa where most of Botswana refrigerators import come from could borrow and implement similar initiatives. Since the launch of ECOFRIDGES, over 1,000 new, energy efficient fridges have been sold in Ghana and a similar ramp-up in Senegal. In Ghana, the Energy Commission heads the project steering committee and overall administration, liaising with partner banks and vendors and runs the website where consumers can find eligible products. Similar opportunities are recommended for Botswana.

Through the import declaration Simba system of Botswana, BURS in collaboration with Ministry of Trade and Ministry of Energy should consider concessionary import duty on energy efficient refrigerators.

6.3 Recommended Financing Mechanism for efficient Refrigerators for Botswana

- i. **Microfinance/Credit Line and Dealer Financing:**
The provision of financial services to low-income households through small transactions. Capital can be injected by a donor, Multilateral Development Banks (MDB), governments, or private organizations to a financial intermediary who can then lend to their clients. During the training, all the participants confirmed to own a refrigerator, however only 2 out of 14 were intentional in buying energy efficient refrigerators. Some went for the design, size, color and make. If the retail outlet employed technical personnel to sell equipment based on energy efficiency backed up by credit terms or soft loan from a micro finance institution, then all the 14 participants would have bought the energy efficient refrigerators.
- ii. **Financial and Fiscal Incentives:**

These are meant to reduce the initial cost of energy-efficient appliances: through rebates, tax credits, subsidies and lowering of value-added tax on energy saving appliances. Financial incentives encourage the deployment of energy efficient appliances identified through efficiency labeling and assist manufacturers and resellers in meeting stricter standards as well as increase residential energy efficiency savings obligations. A discussion with the customs officer at the Botswana Unified Revenue Services confirmed that importation and declaration of goods to Botswana is effectively done through the Simba system. It is possible to integrate energy efficient standards and labels requirements into the Simba system designed with financial incentives to catalyze importation of energy efficient appliance to the market. These however require further consultations with the Ministries of Trade and Finance. During the training, these relevant Ministries did not attend the sessions.

iii. On-Bill Financing

This refers to a loan issued to a utility user, such as a homeowner or a business owner, with the revenues going toward energy efficiency improvements. It allows users to spread out the upfront cost of purchasing an energy-efficient appliance and balance monthly payments with the unit's energy savings. A meeting held with Botswana Power Corporation confirmed this is feasible if done through a presentation to the executive committee of the corporation. It also requires a financial institution or multilateral / bilateral partner to provide the financial and technical support in designing the on-Bill financing facility. A follow up virtual meeting with the executive committee was proposed.

iv. Savings Groups or SACCOs

These are self-selected individuals pool their savings and borrow loans with interest from those savings, then split the gains. Members have the chance to save frequently in small amounts, as well as have access to flexible lending and some basic insurance. An interview with operations manager at Shop Rite subsidiary a retail outlet in Botswana, confirmed that savings groups is working effectively if only they could get regulatory support with registration and a working framework that protects members deposits and good governance.

- vi. In terms of the government's being able to fund and implement the initial phase of the S&L program, it is strongly recommended that the Ministry of Minerals and Energy, through DOE, work closely with the Ministry of Finance to ensure that this project is included in the budget planning exercise as a priority for the next two financial years. In addition, the Ministry of Mineral Energy through DOE can create a proposal to donors such as climate philanthropies to get money for the initial phase of the S&L program implementation.

The table below shows the actions required by the Ministry of Minerals and Energy to get financing for the initial phase of the S&L program.

TABLE 12: FINANCIAL ACTIONS REQUIRED FROM THE MINISTRY OF MINERALS AND ENERGY

Action	Lead Agency	Timeline
<ul style="list-style-type: none"> Ministry of Minerals and Energy through DOE to work closely with the Ministry of Finance, to ensure that this project is included in the budget planning exercise as a priority for the next two financial year. Mineral Energy through DOE can create a proposal to donors such as climate philanthropies to get money for the initial phase of the S&L program implementation 	DOE	This is scheduled for Q1 of the 2023.

7. Proposed Implementation Schedule and Budget

7.1. Implementation Plan

To guide the transition towards higher efficiency refrigerators in Botswana, the following sequence of events is proposed. The speed and scale at which the project can be fully adopted is dependent on the availability of the necessary funds to not only enhance the capacity of the various agencies involved but also create the necessary systems to support the proposed framework. The proposed plan considers a 2-year period before the S&L program is implemented. It is worth noting that the refrigerator standards and labeling program is proposed as mandatory, so the two-year period is proposed to allow for the development of systems such as the PVOC program, product registration systems, market surveillance preparation, accreditation, and so on, in order to have a fully operational MV&E framework for refrigerators. This period also allows for the preparations of the industry stakeholders to be able to adhere to these regulations.

TABLE 13: IMPLEMENTATION PLAN FOR THE REFRIGERATOR S&L PROGRAM

Activities	Before gazetting	Year 1				Year 2				Year 3
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Development of MEPS , national test standard and MV&E procedures										
Legislation/adoption of Botswana National Test Standard and MEPS										
Capacity building for compliance officers from BOBS and BURS										
Recruitment of additional staff to support enforcement at BOBS										
Securing testing services using third-party test laboratories and development of test report templates										
Setting up of PVOC procedures/Product Registration Systems										
Upgrade of Single Window System										
Design & Production of Labels to help with Compliance Checks at port of entry										
Training of the industry on how to comply with the MEPS and label regulations										
Communication & Awareness Raising on the benefits of the higher efficiency refrigerators										
Coming into force of the MEPS and test standard										
Market Surveillance (Contininuous activity once the S&L come into force)										

The plan is presented in quarterly time periods (3 months) where the various activities are scheduled. The plan envisions that for the refrigerator's S&L program to be successful, as it involves very many importers, there is a need for the importers to comply with the regulations even before the refrigerators get into the country. Thus, a lot of emphases has been placed on the processes that must happen before refrigerators are imported into Botswana.

These processes include but are not limited to:

- Securing testing services using third-party test laboratories, rigorous factory testing, and other pre-shipment checks
- Pre-shipment conformity assessment before the refrigerator is exported to Botswana
- Developing and maintaining test report templates, approving laboratory test reports, certification of product performance according to Botswana's MEPS before importation
- Registration of conforming products into the Product Registration System to have a central database that can be used as a reference point for refrigerators models that meet Botswana MEPS specifications

7.2. Budgeting and Planning

Setting up of an MV&E Framework requires appropriate resources and sustainable financing to achieve its objectives. The financing for MV&E framework must be considered for all the elements of such a scheme. This includes funding dedicated to monitoring and verifying products on the market and developing and operating a Product Registration System.

The enforcement regime should be flexible and adaptable to meet Botswana's market needs. The government should also be able to leverage enforcement actions carried out by neighboring countries and within the region.

Budgeting for the MV&E scheme should also factor in the cost and impacts on non-compliance. Resources should be allocated relative to the impact cases of non-compliance. Non-compliance cases that are likely to cause greater harm will require more resources while those that are likely to cause less harm might require fewer resources.

The following are the key cost components incurred for an effective MV&E framework:¹⁶

- i. Establishment cost - These are activities such as setting up new offices, new equipment or software
- ii. Staffing cost – This including recruiting new staff, training and capacity building for the new and existing staff. There is need for a dedicated training programme for customs officers. This means that customs units operating at each border crossing will have adequately trained staff to conduct primary documentation checks and verify that shipments meet the requirements.
- iii. Communication and information technology cost - Significant investment should be made towards developing and operating awareness raising campaigns. These can include promotional materials, travel and participation in trade fairs
- iv. Legal and enforcement action cost –A successful enforcement framework requires sufficient funding for the arising legal issues on non-compliance. It is also important to factor in non-compliance costs which may be applicable for removal and storage of non-compliance goods
- v. Consumer Awareness - Consumers need reliable information on which to base their purchasing decisions. In this regard, it is important to establish consumer education programmes on MEPS.¹⁷Consumer education channels include fairs, workshops, meetings, and mass media campaigns.
- vi. Training costs – There should be a dedicated training programme for different enforcement officers. In addition, there is need for training of stakeholders - Importers, Suppliers, Retailers. This is expected to increase awareness on the regulations and assist suppliers (particularly smaller entities or foreign suppliers not previously engaged in regulatory reporting) to become compliant. ¹⁸

The following table highlights the estimated costs for the proposed MVE Framework for Botswana.

	Activity	Cost (USD)	Timeline (Years)
1.	Setting up Testing Facilities for Fridges/DTs/Offices	2,500,000	2
2.	Additional Staff (BERA, BURS, BOBS) – 6 No.	100,000	1
3.	Capacity Building & Study Visit for Staff	40,000	1
4.	Setting up of PVOC/PRS	60,000	2
5.	Upgrade of Single Window System	25,000	1
6.	Setting up SMS Based Query System for Labels	10,000	1
7.	Design & Production of Labels	10,000	1
8.	Stakeholder Consultations & Training	25,000	1
9.	Communication & Awareness Raising	80,000	1
10.	Market Surveillance	75,000	3
11.	Legal Costs	50,000	1
12.	Non-compliance Costs	20,000	1
Total		2,995,000	
MV&E Cost (without Testing Facility)		495,000	

*For detailed estimates see Annex A

The above figures are estimate based on the expected operationalization of the MVE in Botswana. Timeline may vary due to procurement and recruitment delays.

¹⁶UNEP. (2016). *ENFORCING EFFICIENT LIGHTING REGULATIONS*. UNEP.

¹⁷IEA. (2010). *Monitoring, Verification and Enforcement:Improving compliance within equipment energy efficiency programmes*. Paris: IEA.

¹⁸UNEP U4E. (2021). *ENSURING COMPLIANCE WITH MEPS AND ENERGY LABELS*. Paris: UNEP.

It is possible to implement the MV&E without putting up the testing facility. This would greatly reduce the implementation cost of the MV&E from USD 2.995 Million to USD 495,000.

7.3. Cost and schedule for the Consumer awareness Campaign.

Error! Reference source not found. below provides information on the cost of various channels proposed in the consumer awareness report in Botswana Pula (1 Pula = 0.087 USD) as well as how each of the varied kinds of media can be leveraged to make the consumer awareness campaign a success.

TABLE 14: COST ESTIMATES OF VARIOUS MEDIA OPTIONS

Communication (Medium)	Audience	Goal(s)	Schedule/Frequency	Cost Estimates
Botswana Daily News (Government print)	Mostly ordinary consumers in the countryside/rural areas and those in the city who can't afford commercial private papers.	-to create widespread awareness of the project, its objectives, and the benefits	Twice a week for 2/3 months before the standards are published	28x5 full colour advertorial x3 P21,000
Botswana Guardian	This will target the affluent, working class in the city. Other stakeholders like distributors, wholesalers, and consumers could also learn of the proposed standards and label via this medium.	-to create widespread awareness of the project, its objectives, and the benefits	Once a week for 2/3 months before the standards are published	28x5 full colour advertorial x3 P33,000
The Voice Newspaper	This will target the affluent, working class in the city. Other stakeholders like distributors, wholesalers, and consumers could also learn of the proposed standards and label via this medium.	-to create widespread awareness of the project, its objectives, and the benefits	Once a week for 2/3 months before the standards are published	28x5 full colour advertorial x3 P33,000
RB2 Radio Station	A youthful radio station (commercial), appealing to ages 18-35	-to create widespread awareness of the project, its objectives, and the benefits	A fifteen-minute discussion at P1500 per slot x 8 weeks	P15,000
Online Livestreaming	Techno-savvy young and vibrant heavy users of social media platforms	to create widespread awareness of the project, its objectives, and the benefits	Twice a week discussion of the project and its wholesome objective	P30,000
Engagement of Political Leadership (Virtual Workshops)	Lawmakers who are critical opinion leaders in the community (we could target a parliamentary committee (s) responsibly for energy and environment issues	to create awareness amongst lawmakers as a way of seeking political support for the enforcement of these standards once fully passed. This stakeholder batch would also help create awareness by sharing information with their constituents.	2 rounds of workshops (one per committee)	P24,000

7. References

References

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5. Joseph Njuguna, 2022. *Proposal for Development of MEPS monitoring, verification and enforcement frameworks for Refrigerators and Distribution Transformers in Botswana*.
6. IEA. (2010). *Monitoring, Verification and Enforcement: Improving compliance within equipment energy efficiency programmes*. Paris: IEA.
7. UNEP U4E. (2021). *ENSURING COMPLIANCE WITH MEPS AND ENERGY LABELS*. Paris: UNEP.
8. *PWG meetings in the Country*.
9. *Stakeholder trainings in the country*.

Annex A: Budget Breakdown for the MVE Framework

	Activity	Cost	Timeline	Notes/Comments
		(USD)	(Years)	
1.	Setting up Testing Facilities for Fridges/DTs/Offices	2,500,000	2	Design & Construction of Facility, Purchase, Installation and Commissioning of Laboratory equipment
2.	Additional Staff (BERA, BURS, BOBS) – 6 No.	100,000	1	Salaries/Remuneration for 6 staff members for 1 year
3.	Capacity Building & Study Visit for Staff	40,000	1	Training sessions for 6 staff members and proposed study visit to a country that has successfully implemented S&L MVE
4.	Setting up of PVOC/PRS	60,000	2	Development of of PRS Database
5.	Upgrade of Single Window System	25,000	1	Improvement of the existing Single Windo System and development of an additional Module in the existing system
6.	Setting up SMS Based Query System for Labels	10,000	1	License payment to telecommunication companies for USSD code
7.	Design & Production of Labels	10,000	1	Design for customized Botswana label with serialized code
8.	Stakeholder Consultations & Training	25,000	1	Awareness workshops and training for supplier, importers and retailers
9.	Communication & Awareness Raising	80,000	1	Media awareness campaign using available media-print and electronic

10.	Market Surveillance	75,000	3	Countrywide surveillance visits to main retail outlets. Once every Quarter
11.	Legal Costs	50,000	1	Costs for legal redress for non-compliance
12.	Non-compliance Costs	20,000	1	Costs include transport, storage of non-compliant products every year
Total		2,995,000		