Impact Assessment on Kenyan Minimum Energy Performance Standards and Energy Labels for Cold Chain Appliances

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Abstract. In addressing climate change and meeting countries National Determined Contribution (NDC) and national cooling action plan (NCAP) on energy ambitious targets in the year 2030, Kenya made several strides in drafting the appliances energy performance and labelling regulations of 2016. Energy efficiency enables distributed off-grid renewable energy systems, from solar home systems to renewable micro-grids, to deliver energy services that otherwise might be economically or technically infeasible in resource-constrained settings. This paper reviews specific multivariate econometric models over the period of 2016 to 2022 and summarizes the impact of minimum energy performance (MEPs) and the energy labels policies and regulations enacted. This paper assesses the energy efficiency label for cold chain appliances and identifies issues, potential improvements, and challenges for successfully nudging consumers towards highly energy efficiency cold chain appliances.

1 Introduction

It is philosophical that regulating electric appliances through developments of standards and labelling schemes eliminate the infiltration of counterfeit products and underground economies. It, however, drives the market towards high-quality and higher efficiency products, while safeguarding the ozone depletion and lowering energy tariffs for consumers. The Energy and Petroleum Regulatory Authority (EPRA) developed the minimum energy performance standards (MEPS) and labelling regulations on electric equipment and home appliances in a move to cushioning consumers of poor efficient and quality products infiltrating the Kenyan market hence also at the same time empowering them in making informed purchasing power decisions by identifying high-efficient products from medium and low-efficiency products [2].

According to the standards and labelling regulations it sums up that, “The high-efficient ranking of a 5-star appliance shown on the label, the less money customers pay per month on their energy bills. Most of energy efficient appliance are scribed with more stars in comparison with same size and operability appliance which attributes to more energy savings” [2].

According to EPRA, the Standards and Labelling (S&L) program covers home electric appliances such as refrigerators, air-conditioners, motors, and lightings which are mandatory under the Standards and Labelling scheme. The applicable standards for the current Standards and Labelling Programme are as provided in Table 1 [2].

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Applicable Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballasts for fluorescent lamps</td>
<td>KS-2447-1:2013</td>
</tr>
<tr>
<td>Double capped Fluorescent Lamps</td>
<td>KS 2448-1:2013</td>
</tr>
<tr>
<td>Non-ducted air conditioners</td>
<td>KS 2463:2019</td>
</tr>
<tr>
<td>Refrigerating appliances</td>
<td>KS IEC 62552-1:2015</td>
</tr>
<tr>
<td></td>
<td>KS IEC 62552-2:2015</td>
</tr>
<tr>
<td></td>
<td>KS IEC 62552-3:2015</td>
</tr>
<tr>
<td></td>
<td>KS 2464:2020</td>
</tr>
<tr>
<td>Self-ballasted lamps</td>
<td>KS 2446-1:2013</td>
</tr>
<tr>
<td></td>
<td>KS 2446-2:2013</td>
</tr>
<tr>
<td>Three – phase case induction motors</td>
<td>KS 2449-1:2013</td>
</tr>
<tr>
<td></td>
<td>KS 2449-2:2013</td>
</tr>
</tbody>
</table>

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According to the Energy Act of 2019, EPRA is mandated [3] to enforce the S&L regulations by ensuring all stakeholders in the sector from manufacturers/importers comply and/or all their operations are within the stipulated regulations, that is provided in table 1. The table provides energy performance testing standards and allowable laws for Kenya.

EPRA is required to perform this exercise with an understanding that Kenya is a consumer of the listed appliances and not a producer. The S&L regulations made it mandatory that, the importer or country dealer shall ensure, the importing country test through laboratories accredited to assess as per to the specific country standards [2]. EPRA regulation states that, “…S&L regulations outlines the procedures on registration of the tested model and issuance of energy labels to appliances that comply with the minimum energy performance standards (MEPS) on which the manufacturer/importer affix on the appliance before shipping or during manufacturing” [2].

The EPRA as a regulator does not work independently though an authority, do work with other government agency such as Kenya Revenue Authority (KRA) to restrict entry into the market of non-compliant appliances, Counterfeit Authority to restrict underground economy and surveillance inspections are conducted in the market to ensure compliance.

The focus of this article is to summarizes or review major trends in the MEPS and labelling regulation effects for on-grid and off-grid appliance, establish the sector’s position in a fast-growing and attractive market, and seeks to mobilize investment and policy support to accelerate the Refrigeration and Air-Conditioning (RAC) sector’s growth. This paper seeks to provide the first review of the country’s on and off-grid appliance market via data-driven analysis of the scale, market trends, and barriers for RAC appliances. The review of 2016 Global Off-Grid Lighting Association (GOGLA) impact analysis on efficiency for access coalition survey data on cold chain appliances sales and the up-to-date interviews focusing on off-grid equipment for Kenya that shows the wide range of challenges on the sector and opportunities [2, 4].

This article aims at following:

i. Build on the evidence base established in the 2016 State of the Off-Grid Appliance Market report to share the latest information and insights about the rapidly evolving off-grid appliance space.

ii. Make a case for why off-grid appropriate appliances are critical to energy access.

iii. Attract technology start-ups and major appliance manufacturers into the appliance space.

iv. Mobilize capital for off-grid appliance R&D, growth equity, working capital, and consumer finance support continuous improvement in the quality of product offerings.

v. Identify pathways to accelerate growth in the off-grid appliance market.

vi. Raise a call to action to industry actors for greater investment, collaboration, and innovation in the spirit of building a thriving off-grid appliance market.

The scope of this journal focuses on the market impact assessment for MEPS and labelling on efficient for on and off-grid and weak-grid household appliances specifically cold chain appliances. Three of the off-grid household appliances most in-demand globally are televisions, fans, and refrigerators. This paper focuses specifically on refrigeration and air conditioning appliances as a broader target for overall off-grid household appliance trends. These appliances are appropriate for off-grid and weak-grid energy settings because they require less energy than other household appliances that households find desirable, such as electric off-grid cookers, air conditioners, and clothing irons. For the same reason, they are the furthest along in product development, but are still characterized by very nascent market development and fast-growing sales.

Air conditioning is immensely popular in Coastal, Eastern, and North-Eastern counties due to the hot and humid temperatures, and demand in select markets in Nairobi, Nyanza and central is growing [2, 4]. Refrigerators are the next most desired appliance. However, they remain unaffordable for most off-grid and weak-grid customers, even when financing is available. The review limited to the three-core appliance and would not cover appliances which are also beginning to pique market interest and consistently rate highly in off-grid and weak-grid consumer surveys – most notably these include off-grid laptops and tablets, connectivity devices (e.g., Wi-Fi routers), and electric pressure cookers and induction stoves.

In addition to these household appliances, agricultural off-grid appliances appropriate for smallholder farming (e.g., off-grid appliances for irrigation, cooling, processing, and drying) and off-grid productive-use equipment for small-scale industrial uses (e.g., welding, carpentry, construction) are likewise generating significant interest and growing research & development (R&D) spending from off-grid and mini-grid developers and several donors most notably the World Bank Group, the Germany Corporation for International Cooperation (GIZ), the UK Department for International Development (DFID), and the US Agency for International Development (USAID), and philanthropic funders such as IKEA Foundation and Shell Foundation; all members of the Efficiency for Access Coalition [5, 4].
The organization of the rest of the paper is as follows. Section 2 discusses labelling standards. Section 3 assesses the impacts of labelling standards. Section 4 and 5 discusses the findings and 7 concludes the work respectively.

2 MEPS and Labelling

There is more effort on energy policies that emphasizes on end of mile electrification through application of renewable energy sources than promotion of off-grid electrical appliances and their related quality standards, tax incentive regimes, and end-of-life management [6]. Policy reforms through strategic policy departments is needed to have centralized coordinated policy reforms [7]. The design of Mini-grid, funding, and policy regulation must include strategy that would see a higher uptake of energy efficient appliances [8]. Schleich and others noted that, “the transition to energy-efficient appliances and meeting of energy efficient targets can be accelerated through the enactment of policies and development of minimum energy performance standards (MEPS) and energy labels” [9]. Ayala and Sola suggested that the EU energy efficiency (EE) label for appliances was a key instrument for driving consumers towards more energy efficient purchase [10]. While addressing the implementation of MEPS application on home appliances for residential, Rahman and associates [11] acknowledged that home appliances with MEPS in context are more efficient on energy saving compared to those without MEPS and energy labelling, while Schencking and Stamminger [12] sum up that “energy labels provides relevant information to the consumers to help them make an environmentally beneficial choice when purchasing a new appliances.

2.1 Off-grid appliances

The developed regulations for off-grid appliances of 2018 are met with gaps that cannot facilitate the control of low energy efficient appliances. The availability of such regulations sets a bar of standards on quality management, customer protection and management of energy efficient homes [13]. This article take note that, country standards bureau’s both at national level and international level have invested in resource and time to set product testing and compulsory standards for off-grid appliances [14]. The enactment and implementation of energy efficient appliances regulations and standards affects appliance price with negative effects on nascent markets.

D. golden in his article on promoting energy efficiency in the utility sector through coordinated regulations and incentives stated that, “integration of energy efficient appliances is met with lack of good will from the enforcement agency and developers of regulations and policies.” [15] it is therefore important for the governments to spearhead the process by investing in capacity building.

The World Bank report on access to electricity(population) states that, “the access of reliable energy supply would result to technological shift with families increasing in purchasing power on cold chain appliances.” [5] therefore, to meet this rapid growth and acquisition of electrical appliances off-grid and mini-grid are critical to close this energy access gap in the coming years. According to energy agency (2015), state that energy efficient regulations unlock consumers power in benefitting from universal energy access [1].

Gabriel further commented that, “mini-grids and off-grids increases household economic index hence increasing uptake of electrical appliances that consumes energy efficiently [1].

According to F.S Salleh and others on the article, impact of minimum energy performance standards(MEPS) regulation on energy saving in Malaysia (2018) states that, “ an average on-grid liquid crystal display(LCD) television of 50W consumes excess energy for mid-sized solar home system, however an average conventional alternating current (AC) refrigerator may need a solar panel and battery that is 8-9 times bigger than those required to energize a super-efficient direct current(DC) off-grid refrigerator”[16]. Figure 1 shows the energy system requirements to power a super-efficient off grid versus conventional refrigeration.
Making productive use of mini-grids through energy efficient, high quality off-grid household appliance and productive use increase energy demand and balances load. The growth of mini-grids sector highly depends on off-grid appliance market growth which the network is complex and continues to change [11].

2.2 Case Study Quality Assurance Testing

The national accreditation standards (NAS) approve organizations to carry out testing and inspection of energy efficient product infiltrating the market. Intertek is one of such organisations in the country that is active in Testing, Inspection, and Certification (TIC) authorized by governments to provide these services to importers. Intertek is assisting Kenya bureaus of standards and other jurisdiction in preventing the importation of sub-standards goods into the countries. Intertek also provides Total Quality Assurance where they perform testing and certification, as well as system assurance [13]. The Governments National Bureau of Standards are mandated to enforce specific standards of quality and safety on imported electrical appliances and to define the list of products that must comply. In this case the Kenya Bureaus of Standards appointed Intertek to undertake testing at any one of its centres globally. The terms of reference for Intertek are to provide test services to exporters and issues certificates of conformity, a mandatory document required by customs, for products that pass its tests [13].

2.3 Case Study Myanmar

The case of Myanmar is picked in this review because, Myanmar records high usage of cold chain appliances in their market. The high uptake of this appliances is attributed to the national electrification initiative that prioritized on an off-grid energy sector energy efficient appliance. The plan was strategic setting higher distribution targets and set the sale at 800,000 quality-verified off-grid products, including appliances, for solar home systems and solar mini-grids by 2022 [13].
According to Smith and others, “Myanmar's off-grid appliances market is extremely dominated by local distributors, with vertically integrated businesses demonstrating an increasing interest in these products” [13]. In this article, also Smith demonstrate that TVs take a sizeable segment in Myanmar, however with high number of cheap generic products available in the market.

In figure 2 and 3 shows Myanmar market having high consumption of refrigerators among the homes despite economic difficulties. Figure 2 shows a low penetration, caused by large base of off-grid and weak grid customers, increasing incomes, and strong mobile phone coverage, sales of off-grid refrigerators are likely to grow rapidly [13]. This article identified the two enabler and disabler to domestic appliances in Myanmar’s as follows [13].

i. **Consumer financing**: the introduction Micro-finance institutions in the country in collaboration with local dealers providing financial services to consumers.

ii. **Policy**: Myanmar case changed due to the focus on standards and policy development designed to regulate the product quality and safety through the national electrification project or initiatives that had collaborated with lighting global.

### 2.4 Technology Innovation

Emphasis is made on the importance of improving the efficiency of off-grid efficient appliances to reduce panel array requirements, as well as ensuring longer product lifecycles and increasing availability of after-care services. Also, it is recommended that its necessary to foster efficiency as the backbone of off-grid appropriate appliance technology advancements, because the more efficient a product can be, the smaller the solar panel and battery needed to power it, and the more affordable the product will be for a customer [13] [4].

Myanmar RACs appliance is at the cusp of finding a more efficient and affordable solution, providing an exciting inflection point in the industry. This analysis is key as affordability is still the top constraint and efficiency improvements that can improve affordability are, thus, a top opportunity for driving (see figure 2&3). The Myanmar case concludes to suggest that, Off-grid appliance life cycles should continue to be prolonged, both for financing and environmental purposes and this way will contribute to the growth of the sector [4].
Myanmar government advocated for financial investment to the sector research and development that can benefit both AC and DC appliances and critically on appliances that are optimized for hybrid AC/DC environments. The impact of S&L can rapidly increase if donors are more than ready to support in technological advancements through direct program support as well as industry coordination [13]. Myanmar Initiatives such as the modern electric cooking schemes (MECS) Program were vital in bringing together academics and industry to move a new technology forward. The Myanmar government in 2019 launched the Access to Energy Institute (A2EI), which received the initial funding from the IKEA Foundation and other donors to establish a pre-competitive R&D and innovation platform with a focus on off-grid appliance design, testing, and market research. A2EI is well equipped with an amazing in-house engineering and R&D capacity that complements the appliance sector facilitation efforts of multi-donor platforms like the Efficiency for Access Coalition.

3 Impact Assessment Results

After an extensive literature review using the desktop research design method, this paper has categorised findings of its impact assessment results based on four strata’s as follows: consumers’ behaviour, RAC sector importers and dealers, national level, and international level shaped by the development and enactments of energy policies, MEPS, and labelling schemes. According to Kenya Revenue Authority (KRA) report, a positive indication was demonstrated on the effects of MEPS and S&L on market size. In addition, the CLASP report on energy efficiency standards and labels of cold chain appliances summarised holistic the impact assessment of the MEPS and labelling regulations.

An effective energy efficient policy and regulatory framework for Kenya would require a know how of the market size, types, characteristics, and energy performance of the cold chain appliance.

This article assesses the Kenyan cold chain market landscape and investigate the bottom-line technical parameters and characteristics of cold chain appliances using quantitative and qualitative data through conducting desk research. The investigator collected the following secondary data which includes:

i. RAC sector stakeholders, sources, and supply chain.
ii. The cold chain market landscape and customer behaviour or attitudes.
iii. Categorise of cold chain appliances, cooling capacity and coefficient of performance (COP).
iv. Cold chain initial cost, installation cost, salvage cost and operational and maintenance costs.
v. Assessment of energy, environmental and economic utilization impact on Kenyan RAC sector.

3.1 Impacts to Consumers

This article summarises the impact assessment on the MEPS and labelling regulation framework to the consumer based on two policies as follows:

3.1.1 MEPS Increase Proposed by KEBS

According to KEBS report the cold appliances with higher energy efficiency and capacity at 18,000Btu/hr and 24,000 Btu/hr recorded higher and lower life cycle cost of $68.29 and 64.963 respectively [4]. The payback period of this individual appliances, the 12,000Btu/hr was longer than that of 18,000Btu/hr therefore, it can be concluded that, the KEBS proposal of increasing MEPS to higher energy efficient rating suggest a positive impact on the cold chain appliances capacity under review. This will also translate a big save on energy and electricity bills for consumer using the 18,000Btu/hr [4].

3.1.2 Potential Best Available Technology (BAT)

According to Njuguna, on potential best available technology, he commented that, cold chain appliances with higher energy efficient rating have good returns on LCC savings and shorter payback period [4]. In comparison of scenario 1 and 2 the payback period is minimal for all cooling capacities in consideration for this article and the LCC saving for scenario 2 is the highest.

The two-policy scenario reviewed can be summarised that all the consumers with ability to pay an upfront cost of both 3.1W/W and 3.75W/W, would get a good value of money and service if they procure a higher energy efficient cold chain appliance.
3.2 Sensitivity Analysis

In line with KEBS and CLASP report, the sensitivity analysis on LCC savings was carried out on the appliance initial cost its lifetime and energy consumption. The two reports revealed a small change of 20% reduction on the lifetime of the appliances and 20% increase on energy consumption, hence affecting the LCC savings. The increase in energy consumption led to an increase of 33% in LCC savings for the 12,000Btu/hr units and 40% increase in LCC savings for the 18,000Btu/hr and 24,000Btu/hr units see Figure 4, Figure 5, and Figure 6.

![Figure 1: LCC savings sensitivity analysis for 12000 Btu/hr. RACs](image)

![Figure 2: LCC saving sensitivity analysis for 18.000Btu/hr. RACS](image)

![Figure 3: LCC savings sensitivity analysis for 24,000 Btu/hr. RACs](image)

3.3 Impacts to Importers and Dealers

The articles review on the two policies and its implementation can conclude that, the appliances with lower energy efficient rating will be declared obsolete technology and allow importers and dealers to import higher energy efficient rating for the Kenyan market framework. In table 4. 30 % of less energy efficient rating were eliminated in 2018 using the prevailing MEP and labelling regulations. Therefore, increasing the energy efficient rating would see rendering 3.1W/W out of service or obsolete technology by 73% based on 2018 data.
According to Njuguna, the less energy efficient appliances with fixed speed and inverter would be declared obsolete and out of service, and rate small portion to a 2 degree star rating, but the 2018 cold chain appliances would fail to meet the MEPS if the review of the regulations is increased to the potential BAT [4].

### Table 4: Compliance and star rating distribution under current MEPS

<table>
<thead>
<tr>
<th>Star Rating</th>
<th>Non-compliant</th>
<th>1 Star</th>
<th>2 Stars</th>
<th>3 Stars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>50%</td>
<td>25%</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>1 Star</td>
<td>10%</td>
<td>5%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>2 Stars</td>
<td>5%</td>
<td>2%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>3 Stars</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Table 5: Compliance and star rating distribution under MEPS proposed by KEBS.

<table>
<thead>
<tr>
<th>Star Rating</th>
<th>Non-compliant</th>
<th>1 Star</th>
<th>2 Stars</th>
<th>3 Stars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-compliant</td>
<td>70%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>1 Star</td>
<td>10%</td>
<td>4%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>2 Stars</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>3 Stars</td>
<td>0%</td>
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### 3.4 Impacts at the National level

#### 3.4.1 Energy Savings

The cold chain sector in Kenya at current state claims 972 GWh of electricity in 2030 accounting for a proportion of 3-5% of the projected total energy demand. Therefore, if MEP and BAT scenario are implemented Kenya will save 59.6GWh and 203.4GWh respectively. In one decade, the country could save a cumulative of 321GWh and 1100GWh in both scenarios.

![Figure 4: Energy savings in 2030 under two policy scenarios](image)

#### 3.4.2 Sensitivity Analysis on Energy Savings

In this article a review was done on the CLASP sensitivity analysis to determining the energy saving sensitivity of the appliances by changing RAC parameters such as operating hours, lifetime, and sales/imports by +/- 20%. It can be concluded that, energy savings are most sensitive to key parameters such as operating time and the sales/imports see Figure 8 [4].

The article also noted that a slight change in operating time and sales/imports by 20% results to a 20% change in energy savings and notably a change in product lifetime by 20% results into 11-13% energy savings.

![Figure 5: Sensitivity analysis on site energy savings in 2030](image)

#### 3.4.3 Emissions Reduction

The review article, it states that, the cold chain sector accounts for 0.409MT of CO2 emissions by 2030 see figure 9. However, CLASP report demonstrated opportunistic that a review of MEPS and BAT regulations would greatly help the country meet its NDC goals towards emissions as follows[4]:

i. The proposed higher energy efficient appliances by KEBS, the country would save 0.03 MT CO2 which account for 6% (0.14 MT) of total emission reduction through 2030.

ii. The implementation of BAT scenario, the country would save 0.09 MT CO2 emission savings in 2030 that account for 21% (0.46 MT) of the total emission reduction over the entire period.
Findings and Recommendations

The findings and discussion in this article are based on the literature review done on the Kenyan Room Air Conditioner Market Assessment and Policy Options Analysis by Njuguna scenarios [4] as an authority to suggest reasons that are factual technically to revise the MEPS and labelling for cold chain sector. In addition, a baseline for future tracking of the impacts of the standards and labelling program for cold chain, because the data collection process occurred just before and during the period that the MEPS came into effect in 2018. The CLASP report should aid Government agencies involved in generation, transmission, distribution, and regulations in outlining the energy efficiency levels for cold chain appliances, determine threshold of energy saving and reduction on GHG emission while referring to NCAP energy efficiency targets or NDC commitments, and analyze the effectiveness of MEPS policy and their regulations on market trends upon implementation.

The aim of this article was to analyze the impact of MEPS and labelling policy and regulation based on the data collected by CLASP from 103 model product characteristics of 15 stores from the four major cities that is Nairobi, Mombasa, Kisumu and Eldoret [2]. The data from the 103 models concentrated on the manufacture’s approved local distributors or dealer and retail stores for analysis. During the review, CLAP and World Bank demonstrated the importance of enacting and amending the cold chain appliance MEPS and labelling policy and regulations to a greater level [6].

4.1 Main findings

i. The Kenyan cold chain appliances are dominated by imports, from Japan, South Korea, and China brands in the market. Kenya is a consumer of cold chain products designed and assembled in China, Malaysia, and Thailand, this phenomenon is dangerous because it creates optimal MEPS levels that have negative or drawbacks in encouraging local manufacturers/importers but motivating importers in sourcing energy efficient cold chain appliances at considerable cost from manufacturers around the globe.

ii. Energy efficient cold chain appliances rating in Kenya are below threshold despite the invention of inverter technology in refrigerators and air conditioners assume 36% of the entire market. The Kenya risk importing outdated technology that records low energy efficiency measure (EEM) when the exporting countries technology keeps on increasing that leads to better EEM performance cold chain appliances. Therefore, the developed MEPS must be current and update with the dynamics of technology such as the introduction of inverter units in the market implies higher energy efficient appliances.

iii. Revision of the 2016 MEPS to a higher energy efficient cold chain appliance would result to leapfrogging of the market. The review of this article from the anchor paper, reviews that an energy efficient appliance of 3.1W/W would render 73% of the available cold chain appliances obsolete, if the proposed energy efficient appliances MEPS policy and regulations is implemented, only a few units would qualify for a 2-star rating. To create competition and incentive to dealer and distributors, the energy efficiency policy and regulation must be implemented and enforced.

4.2 Recommendations

This article has arrived at the following summation after a through scrutiny of the primary and secondary data found in the desktop research materials from the various government agencies and research institute as tabulated in table 2. However, the policy impacts assessment done by CLASP a research and development institute on Kenyan cold chain appliances as enumerated below that, implementation of the MEPS proposed level of 3.1 W/W would result with, the consumers benefitting from payback periods of less than three years on new cold chain appliances as EEM for all the popular cooling capacities. However, the government on revision of the MEPS and labelling schemes, would lead to a 4% reduction in cumulative energy consumption between 2020 and 2030, equivalent to 321 GWh
and 0.14 MT of CO2. The avoidance of 0.03 MT CO2 in 2030 translates to 0.07% of the intended target emissions reduction outlines in Kenya’s Nationally Determined Contribution submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

It is the articulation of this paper that revision and edition or updates on cold chain policy and regulations for a period of 2 to 3 years to change consumer attitudes. The policy and regulations which addresses appliances efficiency levels aims at curtailing obsolete technology from infiltrating the country due rapid change in the cold chain technology. According to CLASP’S analysis, they suggested that, transitioning of consumers from less efficiency cold chain technology to higher energy efficiency appliance as proven in the BAT policy scenario, the consumer payback period is greatly reduced, however the life cycle cost greatly increases. This adaptation would help the country meet its NDC by saving energy to 203.4GWh and reduce carbon di-oxide emission 0.46MT CO2 which accounts for the% by 2030 targets.

4.3 Conclusion

The government of Kenya to undertake a amendatory consumer campaign general public on the new labelling program for cold chain appliances. This article understands that to have a positive impact of the assessment of the S&L program the public involved in its implementation stage. A deliberate marketing strategy by the regulatory agency (EPRA) with aim of providing supplying to the public efficient cold chain appliances available in the market should be a top priority. This therefore makes the assumptions that, if the public informed on the availability of more energy efficiency management cold chain appliances, then improves on uptake hence in turn transforming lives of Kenyans through the supply chain appliances.

A labelling scheme is key in empowering and cushioning the public from exploitation by rogue vendors, from making the wrong power of purchasing out a poor performing energy efficient appliance but rather purchasing a highly efficient performing appliances.

Additionally, to improve or encourage 100% transition from conventional cold chain appliances to highly energy efficient cold chain appliance, this article makes a view that the government needs to create and operationalize a labelling incentive scheme for purpose of encouraging importers comply with the MEPS and labelling. This will lead to importation of highly efficient compliance products hence building highly efficient compliant market products thus, creating levelled competition for all players in market that may drive down the prices of unquestionable efficient cold chain appliances.

References


