

# Climate Change Mitigation through Standards and Labels

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*Abstract* - The Standards and Labeling Programme in Kenya is a 5-year Government of Kenya initiative being implemented under the Ministry of Industrialization. This Climate Change Mitigation Programme jointly funded by the United Nations Development Programme (UNDP) and Global Environment Facility (GEF), is designed to remove barriers to market transformation of energy efficient products and services in Kenya thereby reducing electricity related Carbon Dioxide (CO<sub>2</sub>) emissions in Kenya and the EAC countries. This will be done through a coordinated removal of barriers to rapid and widespread uptake of energy efficient motors in industrial sector; refrigerators in residential; display refrigerators and air-conditioners in commercial and residential sectors; and lighting in the residential, commercial and industrial sectors. The project will enhance energy security through energy savings from utilization of energy-efficient appliances and equipment. Energy Performance Standards (MEPS) are a set of regulations prescribing minimum energy performance for appliances and equipment in the market. Energy Efficiency Labels can be mandatory or voluntary and are attached to appliances and equipment to indicate level of energy performance. Energy Efficiency Standards and Labels are particularly cost-effective for conserving energy. They fit well with most energy policies and can be the backbone of a country's energy policy portfolio. MEPS and Labels have proven to cause a shift in uptake of energy efficient technology and dramatically improve national energy efficiency.

Keywords: Energy Efficiency, Energy Efficiency Standards, Energy Efficiency Labels

## I. INTRODUCTION

Energy is a critical input to any social-economic development of any nation as well as protection of environment. It therefore follows that, in pursuit of energy satisfaction any nation must strike a balance between, energy safety and environmental care. Energy fuels, commerce, transportation, agriculture, tourism and other economic activities. Thermal Power Plants emit CO<sub>2</sub>, which is one of the green house gases. CO<sub>2</sub> contribution to green house effect is between 9 – 26 % in volume. For its electricity, Kenya gets 48% from Hydro, 13% from

Geothermal, 0.2% from Wind, 2% from Cogeneration and 38% from Thermal Power Plants.

Kenya's electricity generation is well over 1,500MW, with a peak demand of 1107MW recorded in 2010. This is still below the country's demand required to drive economic growth rate which recorded 4.5% in 2009/10.[1]\* This means that the country has to come up with ways of bridging the gap and at the same time taking care of environment. There is a wide range of solutions being employed for combating Climate Change effects associated with electricity generation. These may broadly be divided into two categories; solutions for Generation side and those on the demand side. Whilst, many efforts and resources have been put in place to boost electricity generation, not much is being done to boost energy saving and conservation efforts on the demand side. This project is mainly concerned in Climate Change mitigation on the demand side and entails introduction of Energy Efficiency Standards and Efficiency Labels. It is estimated that this project will force a shift in consumer perception on energy efficient equipment and appliances from a cost based into a benefit based decision, thus driving mass uptake of energy efficient equipment and appliances.

## II. BACKGROUND

Many countries all over the world, have realized the benefits accrued by introducing Energy Efficiency Standards and Labels and many have taken it up and implemented. The process of implementing the project was commissioned by GEF through UNDP back in 1998. This was a follow up programme after the GEF funded and implemented under Kenya Association of Manufacturers (KAM), "GEF-KAM energy Efficiency Project" that was started in 2000. A feasibility Study funded by GEF and UNDP was conducted and a project document was made to govern the implementation of the programme.

## KENYA ELECTRICITY GENERATION OVERVIEW

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\* 2009/10 Central Bank Annual Report, page iii

Kenya has a wide variety of Energy sources; biomass accounts for 68% of the total primary energy consumption, followed by petroleum at 22%, Electricity at 9%, and others take the remaining 1% [2]. Kenya's total electricity generation is currently 1,590MW as stipulated in Table 1 below.

Source	Installed (MW)
Hydro	758
Geothermal	198
Thermal	590
Wind	5.1
Cogeneration	26
Interconnected System	1,573
Off grid	17.1
<b>Total Capacity</b>	<b>1,590</b>

Table 1

Kenya Electricity Mix is as in table 2 below and as shown in the pie chart alongside.

Installed Electricity Sources	
Hydro	48%
Geothermal	13%
Thermal	38%
Wind	0.3%
Cogeneration	2%
<b>Interconnected Capacity</b>	<b>100%</b>

Table 2

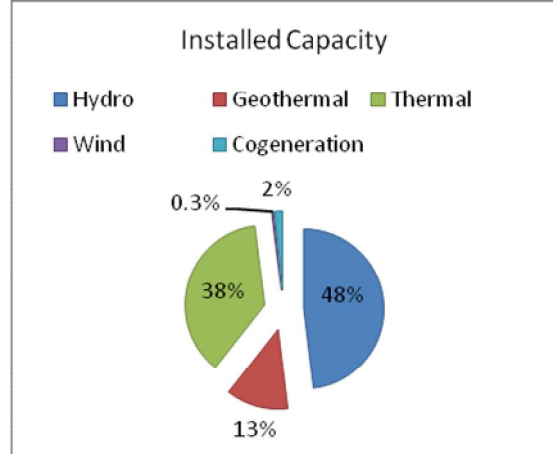
### III. CLIMATE CHANGE

Climate Change Definition : Climate Change may be defined as “*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*”<sup>†</sup>. Thus the definition may be expanded as a long-term change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. It may be a change in the average weather conditions or a change in the distribution of weather events with respect to an average, for example, greater or fewer extreme weather events. Climate Change may be limited to a specific region, or may occur across the whole Earth<sup>‡</sup>.

A lot of research work has been done in determining the effects of Climate Change. Although, the exact effects are hard to quantify, there is sufficient evidence that Climate Change if unchecked will characterize devastating social

<sup>†</sup> UNFCC

<sup>‡</sup> Wikipedia



and environmental impacts. Already, experts have raised serious concerns about these effects in; food security, water resources, human health, settlements, infrastructure and desertification. The World Bank has estimated that even a minimum rise in temperature, could cause permanent GDP losses of 4-5% for Africa<sup>§</sup>, whilst IPCC estimates that by the year 2020, 75-250million across sub Saharan

Africa could face water shortages and rain fed agriculture could contract by close to 50% in some African countries.

### IV. ENERGY EFFICIENCY

Energy Efficiency (EE) is broadly defined as decreasing the amount of energy consumed per energy service without substantially affecting the level of services. Standards and labeling of electrical equipment and appliances is one of an EE initiative identified as cheap to implement and fund. Introduction of the EE standards and Labeling will effectively reduce the electricity consumption which will lead to reduced generation from fossil fuel, thereby reducing the CO<sub>2</sub> emissions from these power plants.

#### Standards and Labeling

##### Standards

Energy-Efficiency Standards are procedures and regulations that prescribe the energy performance of manufactured products, sometimes prohibiting the sale of products that are less efficient than a minimum level<sup>\*\*</sup>.

##### Labels

Energy-efficiency labels are informative labels affixed to manufactured products to describe the product's energy performance (usually in the form of energy use, efficiency, or energy cost); these labels give consumers the data necessary to make informed purchases.<sup>††</sup>

#### Contribution to Climate Change Mitigation in Kenya

<sup>§</sup> World Bank

<sup>\*\*</sup> CLASP Guide Book, 2<sup>nd</sup> Edition, Page 9

<sup>††</sup> CLASP Guide Book, 2<sup>nd</sup> Edition, Page 9

Over the next 20 years, the introduction of these Minimum energy performance standards and labels will see a reduction of 9.53T of CO2 emitted<sup>††</sup>.

[4] Project Document, pg 23

[5] *United Nations Framework Convention on Climate Change*, UNFCC

### **Project Rationale**

The average efficiency of electrical appliances and equipment currently sold in Kenya and the region is generally below that of the best products on the international market. Consumers are more likely driven by; reliance on “*initial purchase cost*” as the basis for a purchase decisions at the expense of life-cycle cost considerations, lack of awareness and information regarding equipment performance and operating costs, inability to check the entrance of low-quality products by authority and lack of appropriate Energy Efficiency incentives and regulations.

Introduction of EE Standards and Label have been associated with any benefits such as; reduced capital investment in energy supply infrastructure, enhanced national economic efficiency by reducing energy bills, enhanced consumer wealth, strengthening competitive markets, meeting climate change mitigation goals, averting regional/urban pollution. Standards and labeling programme also helps countries reduce or eliminate dumping of substandard goods in their countries.

This project is in line with the government policy as contained in session paper #4, 2004 that reads in part “*the government recognizes the need to remove barriers and constrains to adoption of energy efficiency and conservation technologies and will therefore put appropriate measures in place including: (vii) development of standards and codes of practice on cost effective energy use*”

### **Project Outcomes**

The programme is expected to have the following Outcomes:-

1. Selection and Adaption of International Test procedures, Minimum Energy Performance Standards and Label Classifications.
2. Development and Implementation of a verification and enforcement system.
3. Awareness raising campaign for Standards and Labels, targeting distributors, retailers and end users.
4. Development of voluntary agreement for efficient commercial display refrigerators and hotel conditioners.
5. Policy support and Policy framework.

### **REFERENCES**

[1] Central Bank Annual Report, 2009/10, pg iii

[2] Kenya Vision 2030, pg 13

[3] CLASP Guide Book, 2nd Edition, Page 9

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<sup>††</sup> Project Document, pg 23