

ECOWAS Regional workshop Initiatives on Standards and Labeling, Efficient Lighting and Energy Efficiency in Buildings

Towards efficient Lighting Market, the case of Ghana.

Ouagadougou, Burkina Faso

22 April 2013

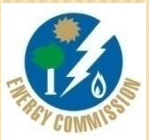
Kofi Agyarko

Energy Commission



Presentation Outline

- Country overview/Background
- Current status Energy Efficient Lighting in Ghana
- Description of standards
- How we did it
- Additional steps
- Ghana's interest in regionally harmonized MEPS
- Lessons



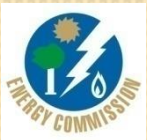
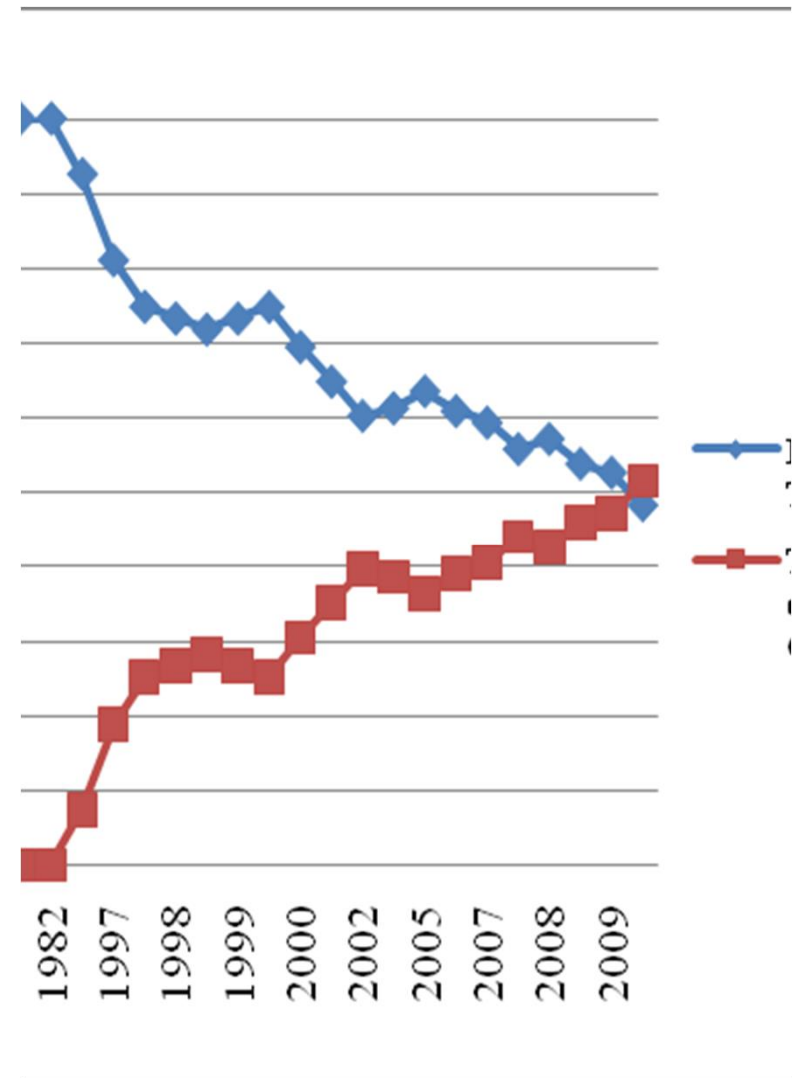
Background

- Ghana has experienced several periods of power shortfalls: 1984, 1994, 1998, 2007 and 2012
 - Domestic electricity demand is growing at 7% p.a. whereas generation is lacking.
 - A significant proportion (30%) of total electricity generated goes waste as a result of the use of inefficient appliances.
- “ System losses in electricity distribution are about 25%
- “ The most efficient tool for energy efficiency is the adoption of Standards and Labelling Programme



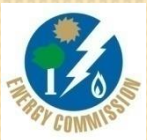
Background-Electricity Generation

- Annual production: 10,000GWh
- Access rate: 64%
- Thermal capacity is gradually exceeding hydro
- Increasing cost of generation from more expensive fuels
- Increasing environmental impact from carbon-rich fuels



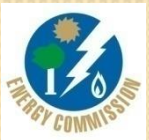
Current status of EE standards

- Energy Efficiency Standards and Labelling (Non-Ducted Air-conditioners and **Self-Ballasted Fluorescent Lamps**) Regulations, 2005 (LI 1815)
- Energy Efficiency (Prohibition of Manufacture, Sale or Importation of **Incandescent Filament Lamp**, Used Refrigerator, Used Refrigerator-Freezer, Used Freezer and Used Air-conditioner) Regulations, 2008 (LI 1932)



Labelling requirements

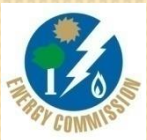
- ◆ The label shall;
 - ✦ be printed in colour on a water proof material and pasted conspicuously on the appliance.
 - ✦ have gold background appliance and all stars on the label shall be black.
 - ✦ be in English language
 - ✦ include the energy efficiency star rating determine in accordance with GS 323:2003
 - ✦ Include the luminous flux of the lamp in lumens measured in accordance with GS 323:2003



Labelling

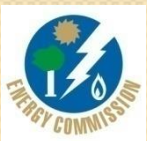


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Description of standards

Lamp Configuration	Lamp Power Rating (LP, Watts)	Minimum Efficacy (Lumen/W)
Bare Lamp	Less than 15; More than or equal to 15	More than or equal to 45 More than or equal to 60
Covered Lamp <u>Without</u> Reflector	Less than 15; More than or equal to 15 But less than 19	More than or equal to 40 More than or equal to 48
	More than or equal to 19 But less than 25; More than or equal to 25	More than or equal to 50 More than or equal to 55
Lamp <u>with</u> Reflector	Less than 20; More than or equal to 20	More than or equal to 33 More than or equal to 40

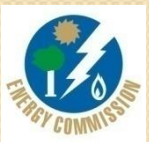


Policy Direction

- Support a sustained and comprehensive public education and awareness creation campaign on the methods and benefits of energy conservation; and
- Promote the establishment of Centres of Energy Efficiency.

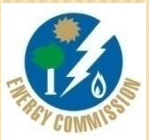
Electricity

- Discontinue, through legislation, the local production, importation and use of inefficient electricity consuming equipment and appliances.



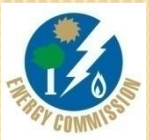
Key Stakeholders

- Ministry of Energy
- Ministry of environment, Science & Technology
- Ministry of Trade & Industry
- Energy Foundation
- Council for Scientific & Industrial Research
- Customs Excise & Preventive Service
- Business community
- Consumer Associations



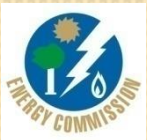
The Efficient Lighting Project 2007

- The Government of Ghana with the advice of the Energy Commission procured and distributed for **FREE 6million CFLs** as direct replacement of 6 million Incandescent Lamps
- Replacement was Load Reduction measure to reduce impact of Power Shortages in Ghana in 2007
- Ghana is the first country in Africa to take such action.
- All 6 million lamps were distributed and installed in 3 months



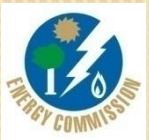
Objectives of Efficient Lamp Project

- Peak electricity demand reduction 200-220MW
- Stabilisation of Electricity Grid System
- Reduction of Brownout and transformer overloads
- Reduction of Diesel and other Thermal generators to supplement the existing power generation mix



How it was done

- National Project Implementation Committee, chaired by the Minister for Energy
- Members:
 - Executive Secretary . Energy Commission
 - Chief Executive . Energy Foundation



Transportation



Public Education Bill Boards



Project Launch- Stakeholder Participation



Retrieved Incandescent Lamps

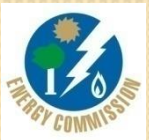


Retrieved Incandescent Lamps



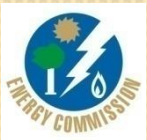
Prohibition of Incandescent Lamps

- LI 1815
- A person shall not import, manufacture, store, offer for sale or distribute an incandescent filament lamp.
- Contravention attracts a fine of 250 penalty units or 12 months imprisonment or both.



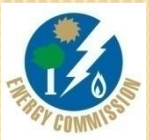
Implementation of ban

- Porous borders allow for smuggling of incandescent into Ghana
- Market surveillance have led to the seizure of two major hauls which have been destroyed at the cost of the importers
- Permitting regime has been instituted for the importation of limited amount for special purposes



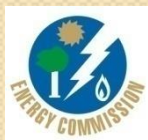
Results - 1

- ◆ By September 2009
 - CFL penetration rate had increased from 20% in 2007 to 79%.
 - Incandescent lamps had also decreased from 58% in 2007 to 3% in 2009.
 - Empirical evidence? Fly by night!



Results - 2

- Peak Saving of 124 MW or 172.8GWh/annum
- Delay in thermal energy generation expansion investment of US\$105million
- At US\$120/bbl, energy cost saving is US\$3.3million per month or US\$39.5million per annum.
- Between October 2007 and June 2008 Savings of US\$29.6million.
- CO2 savings of 105,000tons per annum.
- 2 Factory established to produce CFLs in Ghana

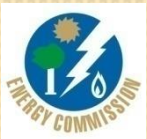


2010 EE Global Award



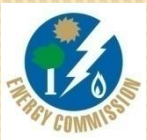
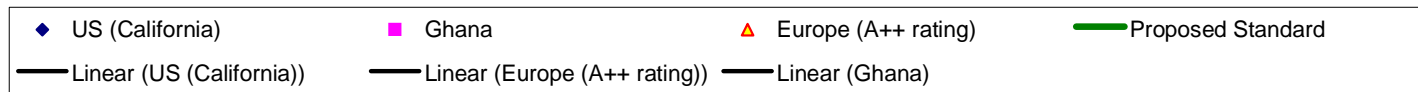
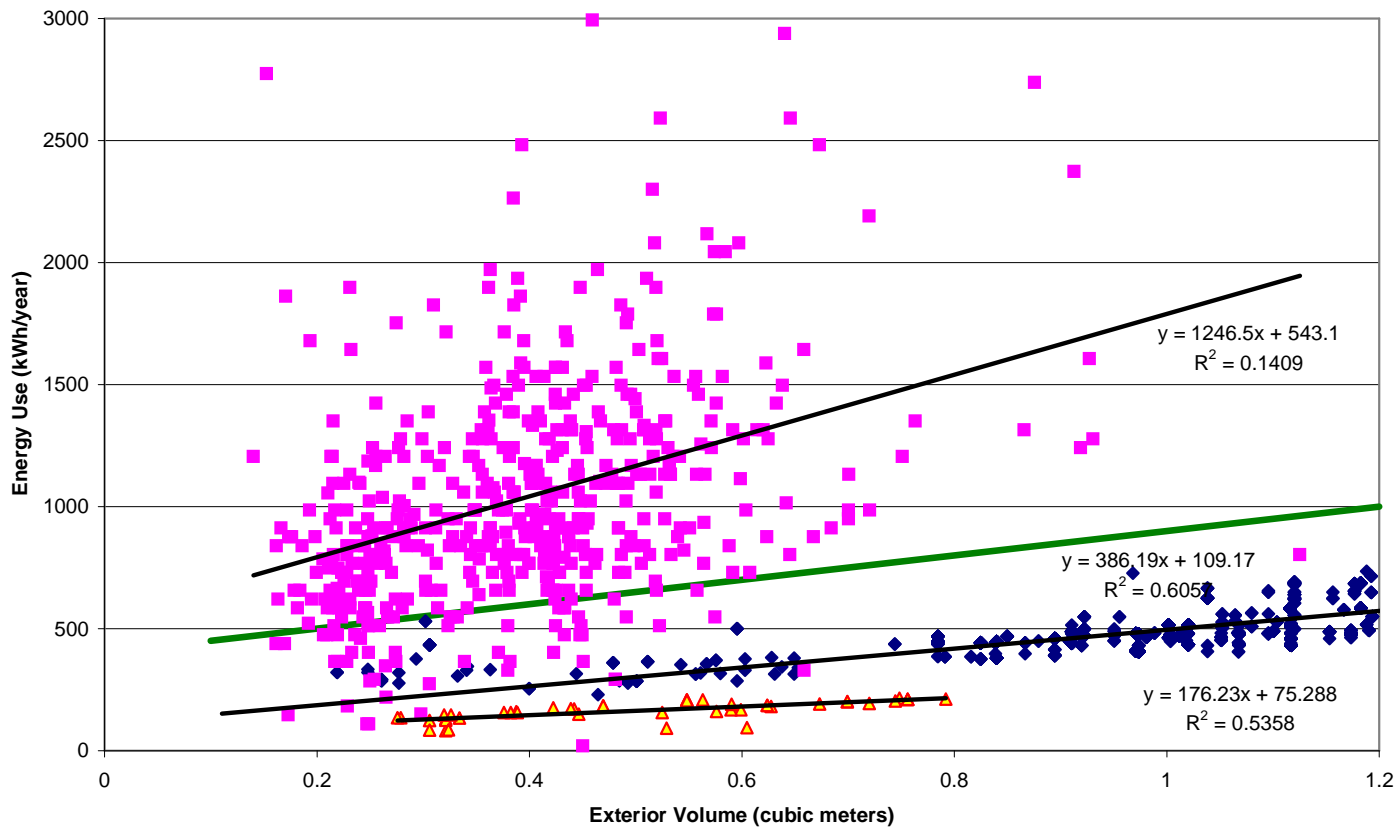
Additional Steps - Refrigerator Efficiency Project

- 2007 Survey . Average Refrigerator in Ghana consumes 1,200kWh per annum
- New Efficiency Standards limits to 650kWh/annum
- “ Potential Saving per refrigerator is 550kWh/year
- “ Assume 1million out of 2.7million refrigerators are removed in 3 years
- “ Saving is $550 \times 1 \text{ million} = 550,000,000 \text{ kWh}$
- “ 324,000 tons of CO₂ per annum



Energy Consumption in Refrigeration in Ghana, 2006

A comparative study



THE MORE STARS
THE MORE EFFICIENT

ENERGY guide

3

Energy Consumption
kWh/yr*
(Based on standard
test result for 24h)

360

Refrigerator/Freezer Type:	zyx
Manufacturer:	Logo
Model No. :	abc1
Fresh Food Volume I:	XYZ
Frozen Food Volume I:	XYZ
Refrigerant:	Rxx
Climate Class:	ST
Cooling Star Rating:	3

*Actual consumption will depend on how the appliance is used and where it is located.
Further information is contained in product brochures
Removal of this label before first retail purchase is an offence under LI 1541.

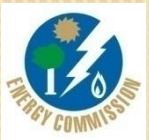
The Ghana Refrigerator Energy Efficiency Label

Refrigerator with Label on Ghana Market



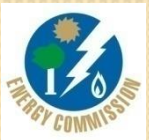
Fiscal Incentives

- Government on the advice of the Energy Commission has removed import duty and VAT on
 - CFLs
 - LED.
- Standards and Labels being developed for LED to protect consumers from inferior products



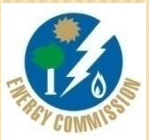
Regionally harmonized standards

- Neighboring countries will no longer be used as transit point for smuggling of incandescent and substandard CFLs into Ghana
- The sub-region becomes ring-fenced from dumping.
- Expanded market which is attractive to investors. Ghana has two assembly plant of CFLs



Lessons

- ◆ Key success factors;
 - Availability of CFLs on the market before any attempt to outlaw incandescent.
 - Effective institutional collaboration
 - There should be a key institution that will drive the policy
 - The politicians should be the first target as the major stakeholder
 - The “stick and carrot” approach to implementation is the best.





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