

Ghana's Green Energy Policy Drive: Case study

Successes & Lessons

The Gambia National Forum on RE Energy
Regulation

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Presentation outline

- Functions of the Energy Commission
- The green energy policies
 - ✧ Renewable energy law
 - ✧ The Bio-energy policy
 - ✧ Energy conservation & Energy efficiency
- Important lessons



Functions of the Energy Commission

- Created by Act 541, 1997
- Regulatory function
 - prescribes legislative instruments and standards and technical operational rules of performance for the regulation of the utilities
- Advisory function
 - Energy policy advisor to government
- Promotional function
 - energy efficiency and productive uses of electricity, natural gas and petroleum products

Clean energy policies in Ghana

- Target of 10% renewable energy in the generation mix by 2020
- The promulgation of Renewable Energy Law
- Feed in tariff
- Establishment of Renewable Energy Fund
- Fiscal incentives for solar panels
- Bio-Energy Policy
- Appliance standards and labelling regime



The Renewable Energy Law

- **The objectives:**
- to promote the sustainable development and utilization of renewable energy resources for electricity and heat generation;
- to provide a framework for government support for the development and utilization of renewable energy resources, and
- To provide an enabling environment to attract investment in renewable energy resources;



The Renewable Energy Law

- encouragement of the use of renewable energy;
- diversification of supplies to safeguard energy security;
- improved access to electricity through the use of renewable energy sources;
- building of indigenous capacity in technology for renewable energy sources;
- increasing knowledge and awareness of renewable energy production and consumption; and
- regulation of the production and supply of woodfuel and biofuel.



Highlights of the RE Law

- Feed in tariff
 - Rate fixed and guaranteed for 10 yrs and thereafter, renewable every 2 years
- RE purchase obligation
 - Electricity distribution utilities
 - Bulk customers of electricity
- Establishment of RE fund
 - to provide financial resources for the promotion, development and utilization of renewable energy sources
 - To provide financial resources for R&D

Bio-energy policy – Wood fuels

- Improved stoves for mostly urban users
 - Gyapa technology, with efficiency rate of 36%
 - Over 200,000 deployed



Bio-energy Policy-Woodfuels



Bio-energy policy-woodfuels

- Woodlots
- 20 hectares of woodlot
- R&D project



Bio-energy policy-woodfuels

Traditional technology



Conversion ratio 8:1

Improved technology



Conversion ratio 5:1

Bio-energy policy-woodfuels

- Challenge

- High cost of technology

- Regulation of the charcoal market

- ✓ Production

- ✓ Transportation

- ✓ marketing

- ✧ To ensure sustainable production of biofuel

Draft bio-fuel policy

- 10% substitution of diesel and petrol by 2020
- Local production encouraged and import restricted
- NPA to designate biofuel blend as petroleum product
- NPA to set the blend of biofuel in petroleum product

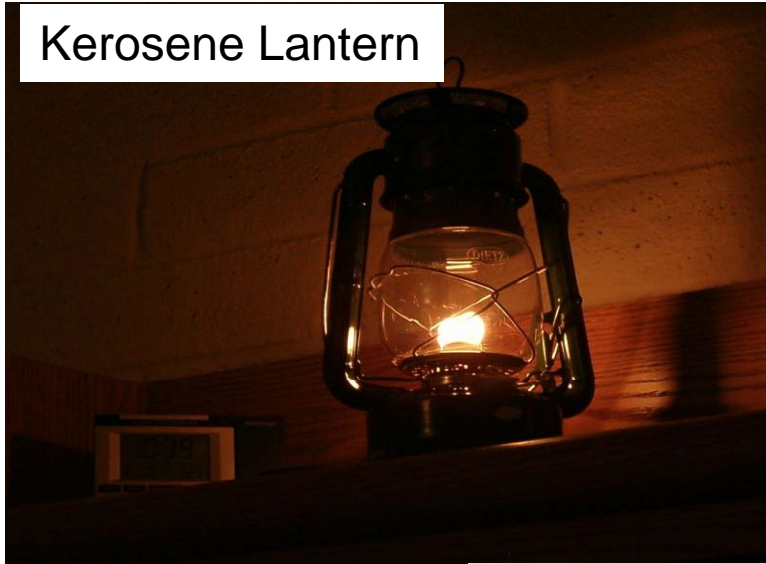


Residential & commercial water heating



Lighting – no grid

Kerosene Lantern



Solar lantern



Street light



Energy efficiency standards & labelling regime

- Efficient Lighting – backed by legislation
- Efficient RAC – backed by legislation
- Efficient Refrigeration – backed by legislation



Institutional Energy Conservation

Installation of Capacitor Banks

- Office of the President
- State House
- Ministry of Defence
- Foods & Drugs Board,
- Accra Sports Stadium
- Korle Bu Teaching Hospital

Savings

- Total savings 1,851kva
- Total monetary savings (\$27,567/month)
- Simple pay back period Based on project cost of \$258,200 (Less than 10 months)
- Capacitors Installed 7167kvar

Automatic Capacitor Bank



Lighting conservation results

2003

- 58% of all lighting is incandescent lamps;
- 32% are florescent lamps
- 15% were Compact Fluorescent Lamps (CFL)

Oct. 2007-2009

- Incandescent reduced to 3%
- Florescent reduced to 11%
- CFL increased to 79%
- Mean household savings US\$20.66
- Peak savings 172.8 Gwh/yr
- Delayed investment in thermal generation expansion US\$105million
- Total energy cost savings US\$33.3million/yr
- Co2 savings 112,320 tons/yr

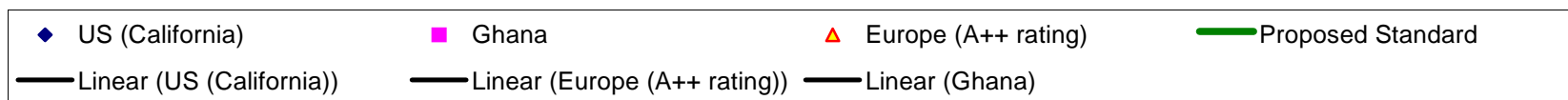
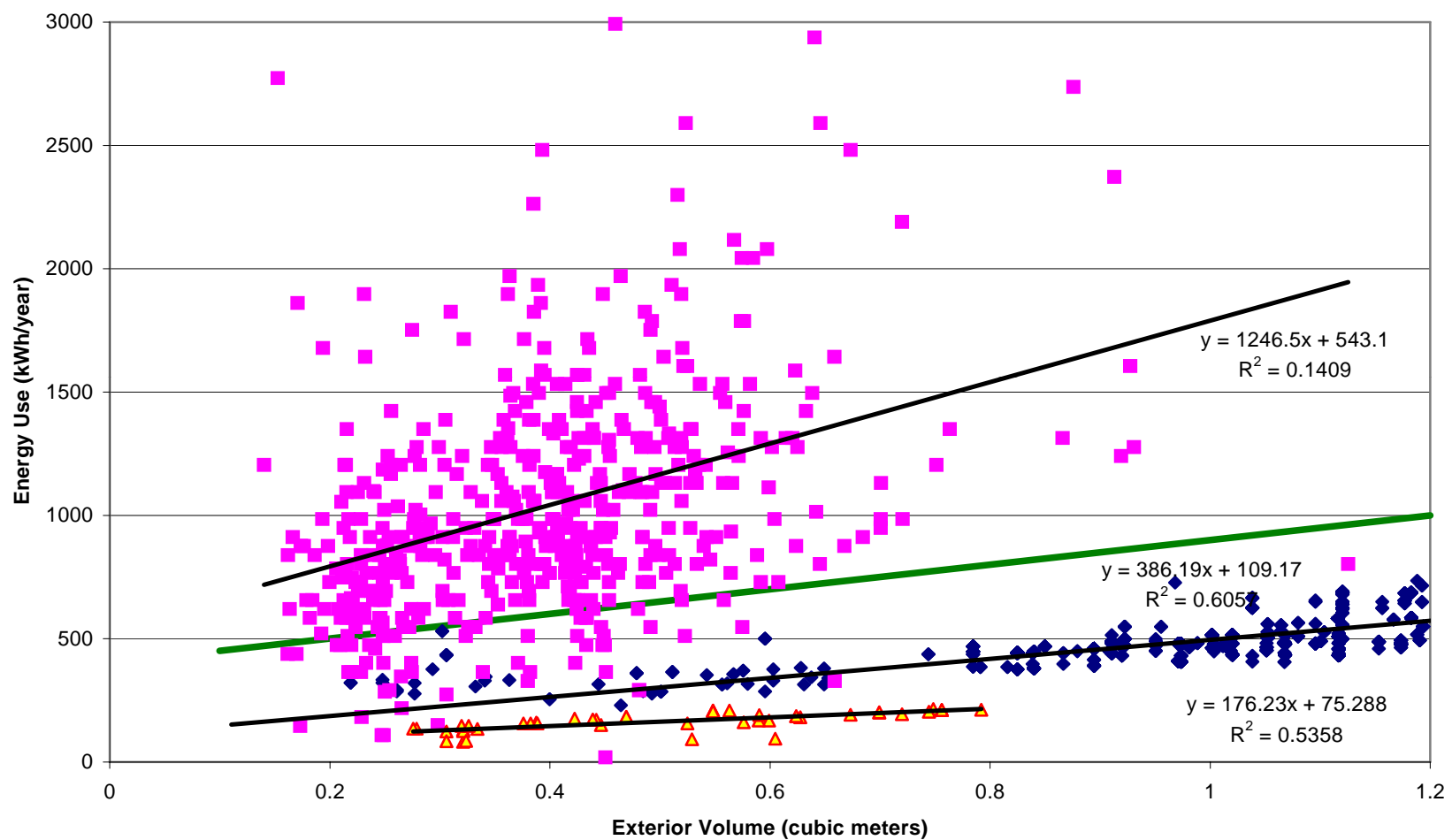
Refrigeration - 2006

- Average Electricity Consumed per Refrigerator in Ghana is 1,200kWh/year
- Average Electricity Consumption in EU – 500kWh/yr
- Minimum Efficiency Standard in USA – 493kWh/yr



Energy Consumption in Refrigeration in Ghana, 2006

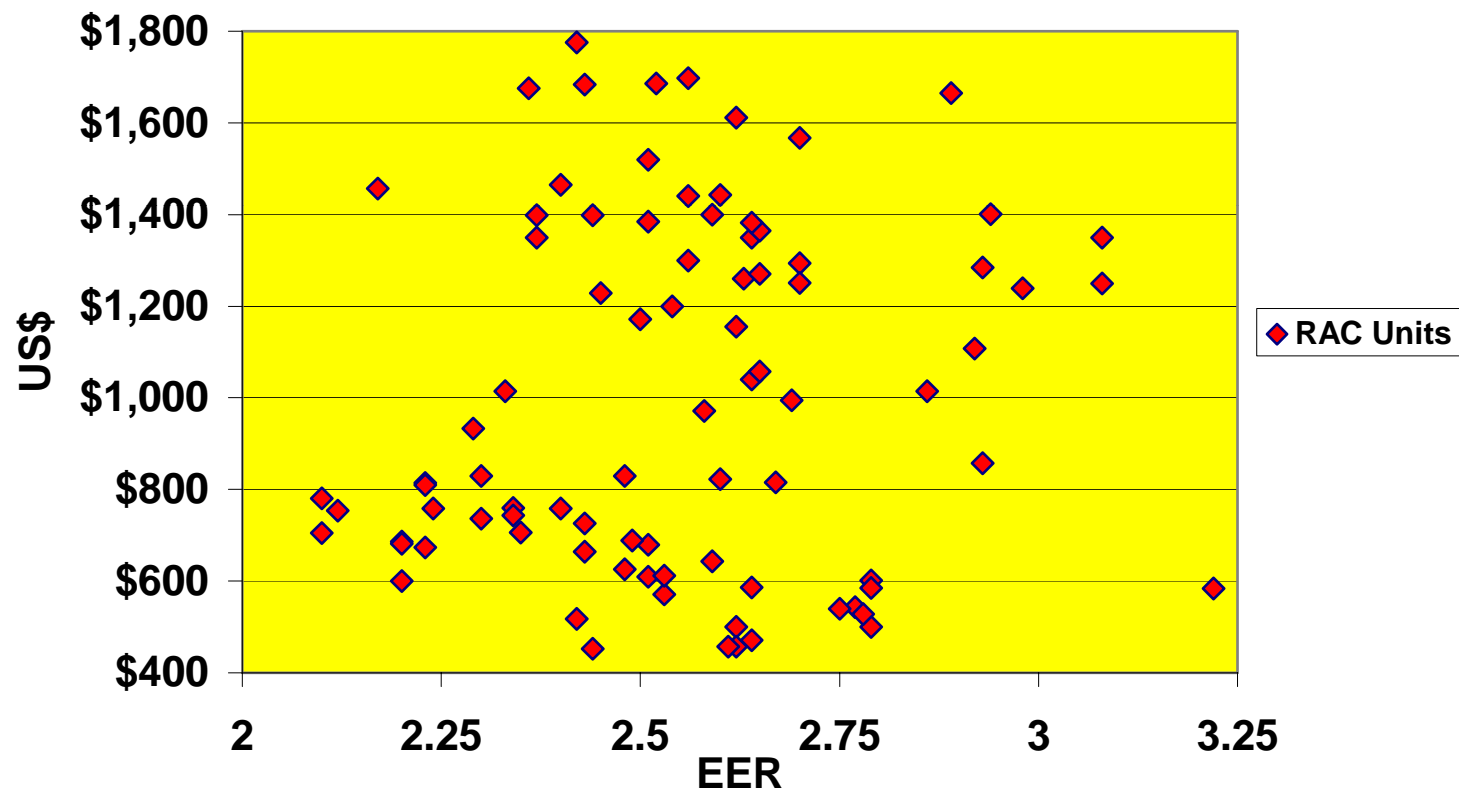
Comparative Energy Use



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Energy Consumption of Refrigerators in Ghana

Room air-conditioning

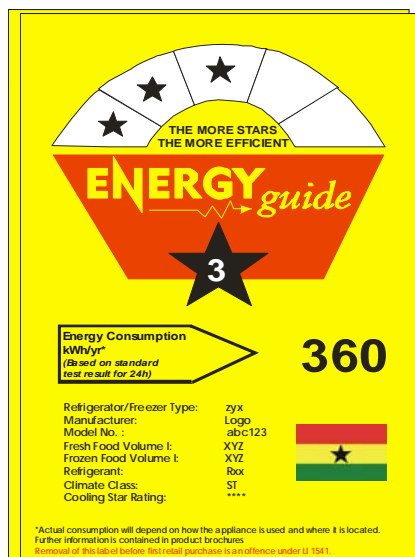


Energy efficiency labels

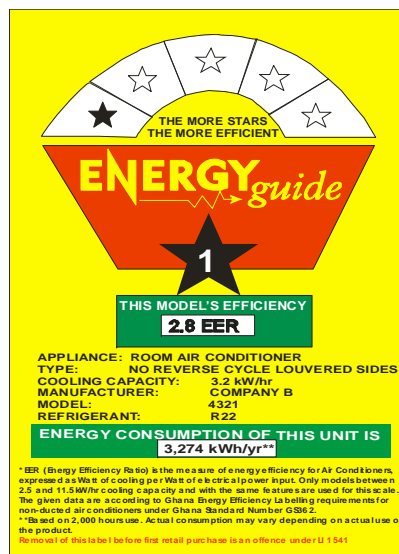
LABELLING REQUIREMENTS FOR IMPORTATION OF NEW REFRIGERATORS, AIR CONDITIONERS AND COMPACT FLUORESCENT LAMPS (CFLs)

ALL IMPORTED NEW REFRIGERATORS, AIR CONDITIONERS AND CFLs SHOULD BE PROPERLY LABELLED IN ACCORDANCE WITH THE PROVISIONS OF LIS 1958, LI 1970 & 1815

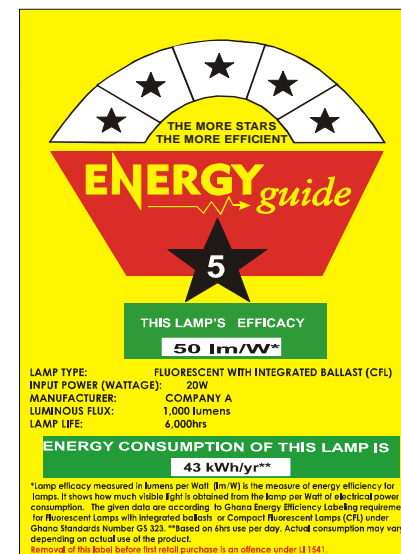
REFRIGERATORS



AIR CONDITIONERS



CFLs



THE IMPORTATION OF UNLABELLED NEW REFRIGERATORS, AIR CONDITIONERS AND CFLs IS PROHIBITED BY LAW



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Ghana Standards Board: Telephone: 0302-500231, Email: info@gsb.gov.gh, Website: www.gsb.gov.gh



Proposed Standards for Refrigerators in Ghana, 2007

Appliance	Annual Energy Consumption, kWh/year				
	***** 5-Star	**** 4-Star	*** 3-Star	** 2-Star	* 1-Star
Refrigerators and Refrigerator/Freezers	<250	250 – 300	300 – 350	350-400	400 – 500
Freezers	<300	300-350	350-400	400 – 500	500 – 650



The dumping cycle



The face of standards labelling



Importance of standards labelling

- Economic Sustainability,
- Climate Change Mitigation and
- Energy Security
- If there is no Label, the Appliance is probably not Good, Avoid it!



Important Lessons

- Get your facts and figures right and be prepared to defend your position at all times - consistency
- Stakeholder consultations
- Talk to those “who matter most”
- Build strong institutional collaboration



Thank You.

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