



Climate Change Mitigation Through Electrical Appliance Transformation in Ghana



Project Objective

- To reduce carbon emissions through the adoption of MEPS
- To increase the uptake of energy efficient appliances by the use of market intervention policies

Approach

- Adoption of lighting and refrigeration appliance standards;
 - GS 326:2001
 - GS IEC 62552: 2007
- Market Intervention policies
 - Free deployment of CFLs
 - Refrigerator rebate scheme

Background-Problem

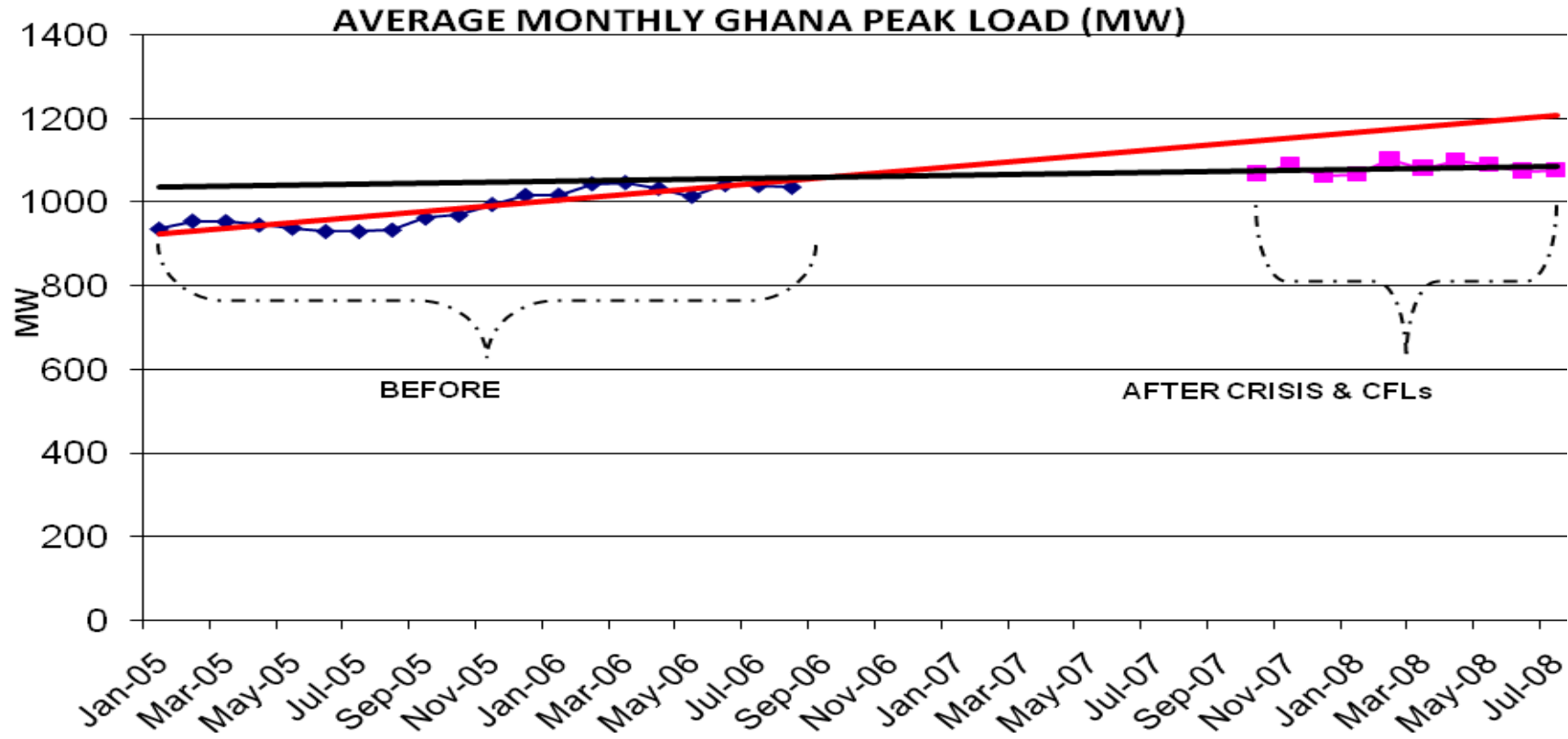
- Shortage of power arising from:
 - Draught induced low levels of dam;
 - Population growth and economic expansion;
 - Power generation deficit – demand outstripping supply;
 - Importation of substandard appliances;
 - Large market for imported used, obsolete and inefficient appliances consuming 30% of power generation;

Strategy

- Adoption of MEPS for lighting and refrigerating appliances;
 - Lighting : 33 lumens per watt;
 - Refrigerating appliances : 600kWh/yr;
- Prohibition of importation of used refrigerating appliances and incandescent lamps
- Deliberate market intervention policies to facilitate uptake of efficient appliances
- Trained personnel and laboratory for effective MVE

Results 1

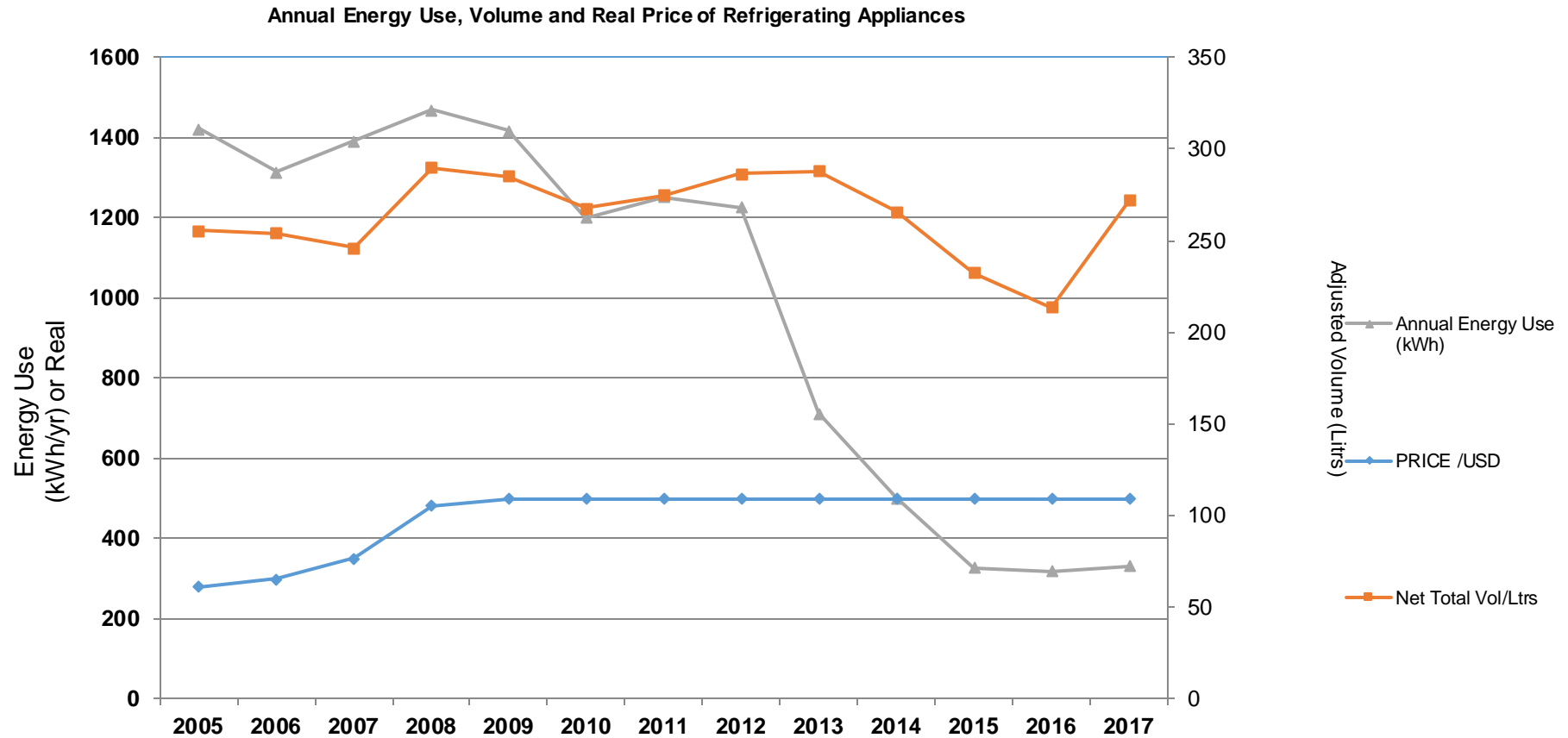
- Lighting MEPS and retrofit achieved the following from Sept. 2007 to Sept. 2009:
 - Peak load reduced by 124MW
 - At US\$120/bbl, energy cost saving was US\$39.6m per year;
 - Emission savings was 105,000 tons of CO₂;
 - Two assembly plants were established to produced CFLs by private investors;
 - CFL penetration rate increased from 3% to 79% whilst that of incandescent decreased from 58% to 3%;



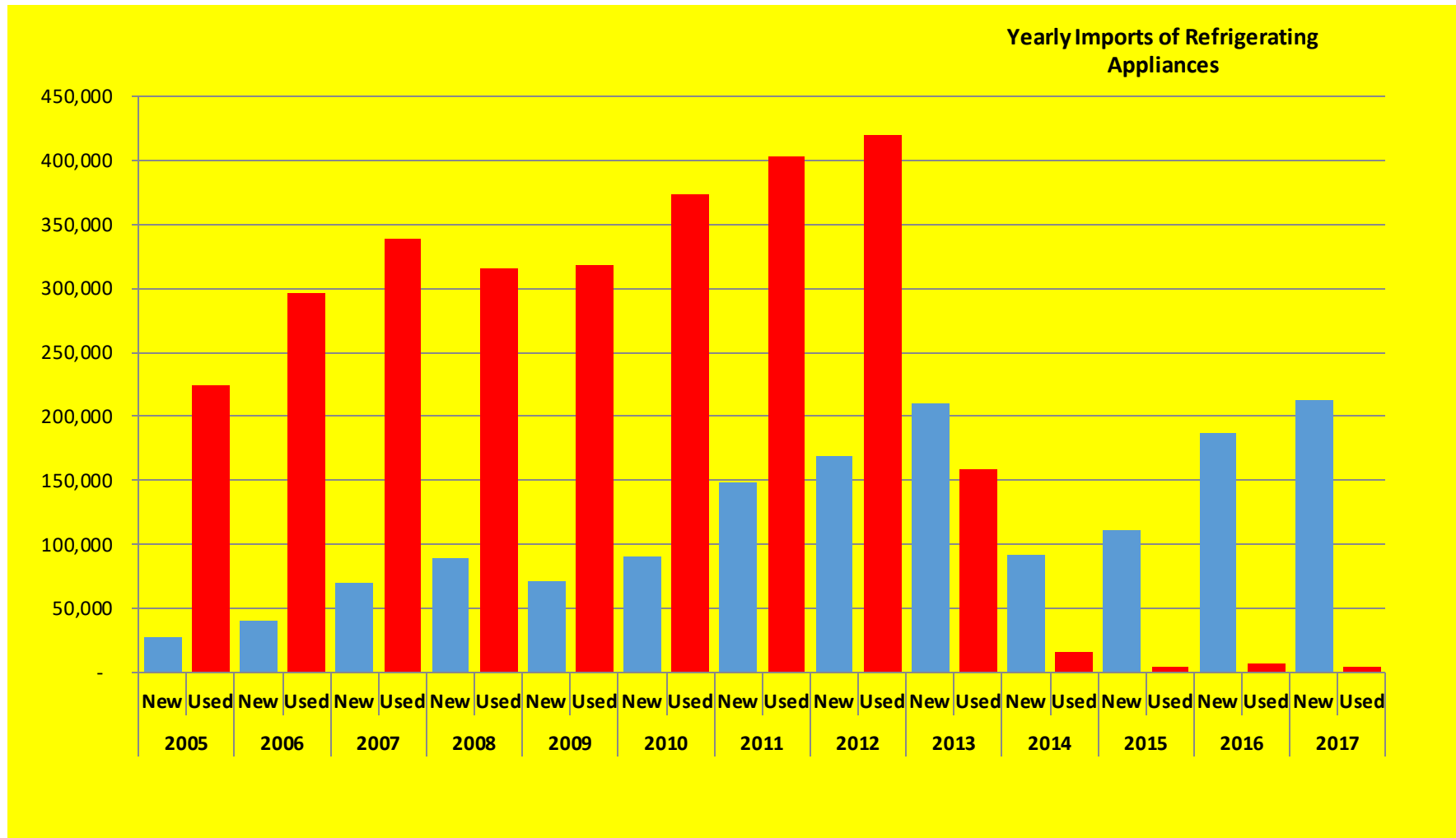
Results 2 - Refrigeration

- 10,000 old and inefficient refrigerators were retrieved from homes and same number of new and efficient ones replaced them;
- The average consumption of refrigerators reduced from 1,200kWh a year to 600kWh universally, but those involved in the rebate scheme reduced to 380kWh.
- 32,000 units of imported used refrigerating appliances were confiscated and dismantled;
- Electricity savings of 400GWh of was recorded, the equivalent of a third of the generation capacity of the Bui hydro plant;
- Total annual carbon savings of 1.1m tons of CO₂ was saved
- 1,500kg of chlorofluorocarbons was recovered from the dismantled refrigerators
- Refrigerating appliance market which used to be dominated by used and inefficient ones is now dominated by new and efficient ones

Reduced consumption



Evidence of Transformed market



Challenges & Lessons

- Affected groups will always agitate but it takes a lot of *tact and skill* to deal with them;
- Institutional collaboration is critical to the success of MEPS implementation. It takes the lead institution to demonstrate and exhibit *system leadership*.
- *Stakeholder consultation* is very important for buy-in, political support is a top priority.
- MVE needs laboratories and trained personnel, however, services of existing institutions like internationally accredited laboratories can be used for enforcement. *No need to reinvent the wheel*.
- Political interference, bribery and corruption should always be met with *strictness, firmness and fairness*.

Potential for replication

- The potential for replication is very high in the West Africa Sub region in particular and Sub Sahara Africa in general.
- Replication in Africa will contribute to global carbon emission and also insulate the continent from dumping of sub standards appliances.





Thank You

