Energy Efficiency as a Driver For Economic Transformation and Sustainable Development *

by

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Outline

- Introduction
- Energy Efficiency and Conservation Policy in Nigeria
- Common Energy Wastages Practice in Nigeria
- Practical Energy Efficiency Activities in Nigeria
- Challenges
- Way Forward
- Conclusion

1. Introduction

- I welcome all participants and distinguished guests to this Summit on Energy Efficiency with the theme: Mainstreaming Energy Efficiency with Public Policy, Regulations and Procurement
- The Summit is supported by the United Nations Development Program(UNDP), Global Environment Fund (GEF) and German Agency for International Corporation(GIZ)
- Energy Commission is happy to be associated with this development, which is inline with its mandate of strategic planning and coordination of national policies in the field of energy in all its ramifications.
- Members of the Commission, with Mr. President as Chairman, include Ministers of Science & Tech., Power, Petroleum Resources, Defence, Agriculture & Rural Development, Water Resources, External Affairs and Finance and Mines and Steel Development

1. Introduction Cont'd...

- The Commission also has a Technical Advisory Committee made up of all energy and energy-related MDAs and NGOs.
- I will be discussing on the subject; Energy Efficiency as a Driver for Economic Transformation and Sustainable Development.
- Energy is very critical to economic and human developments.

1. Introduction Cont'd...

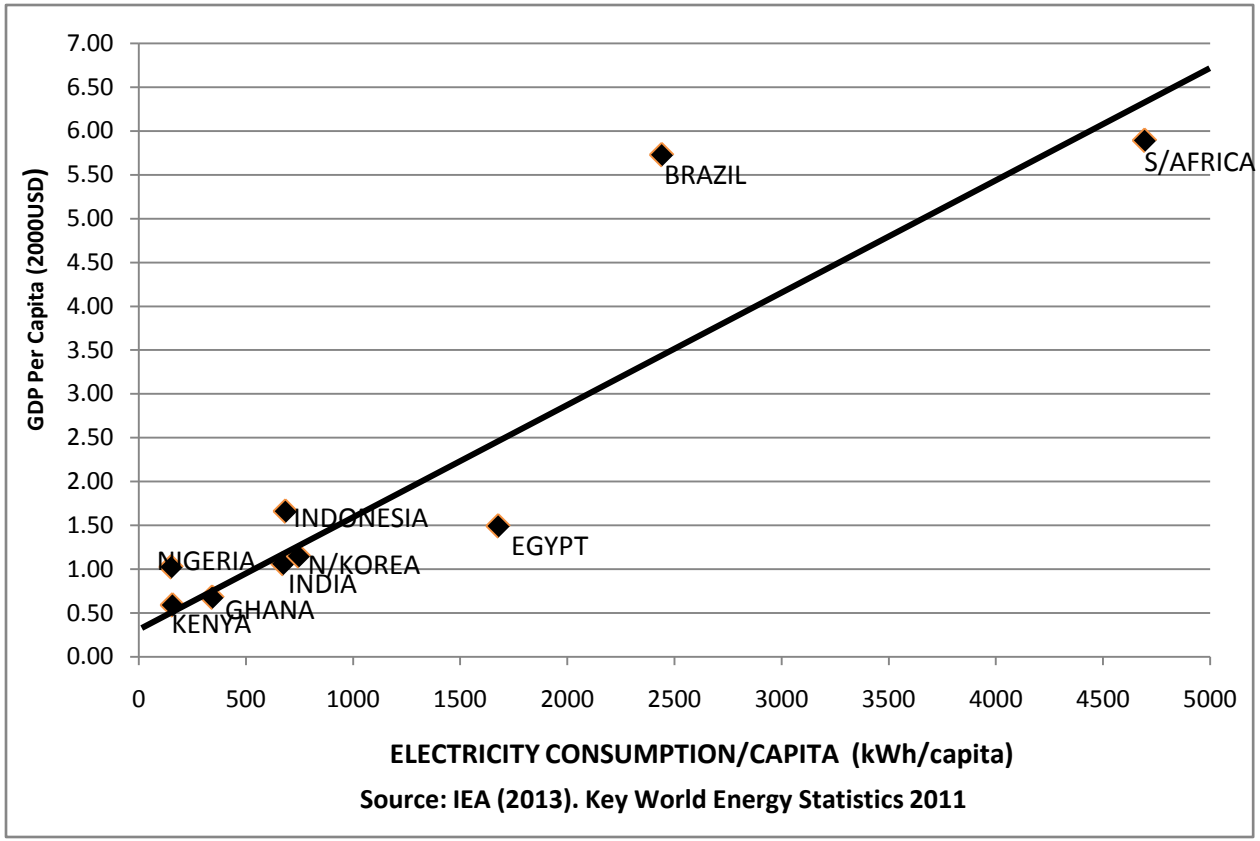
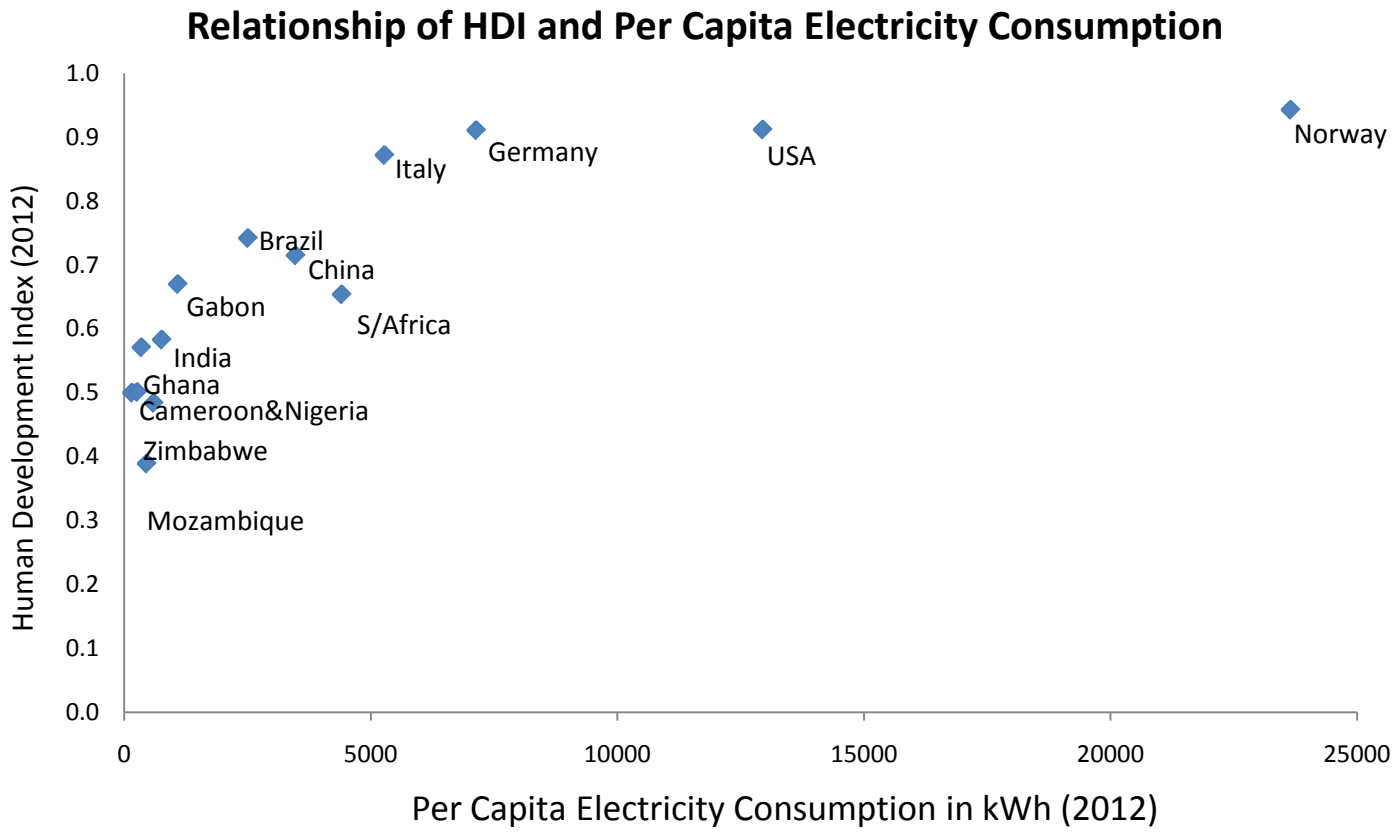


Figure 1 Effect of Electrical Energy Consumption on Economic Development of Nations.

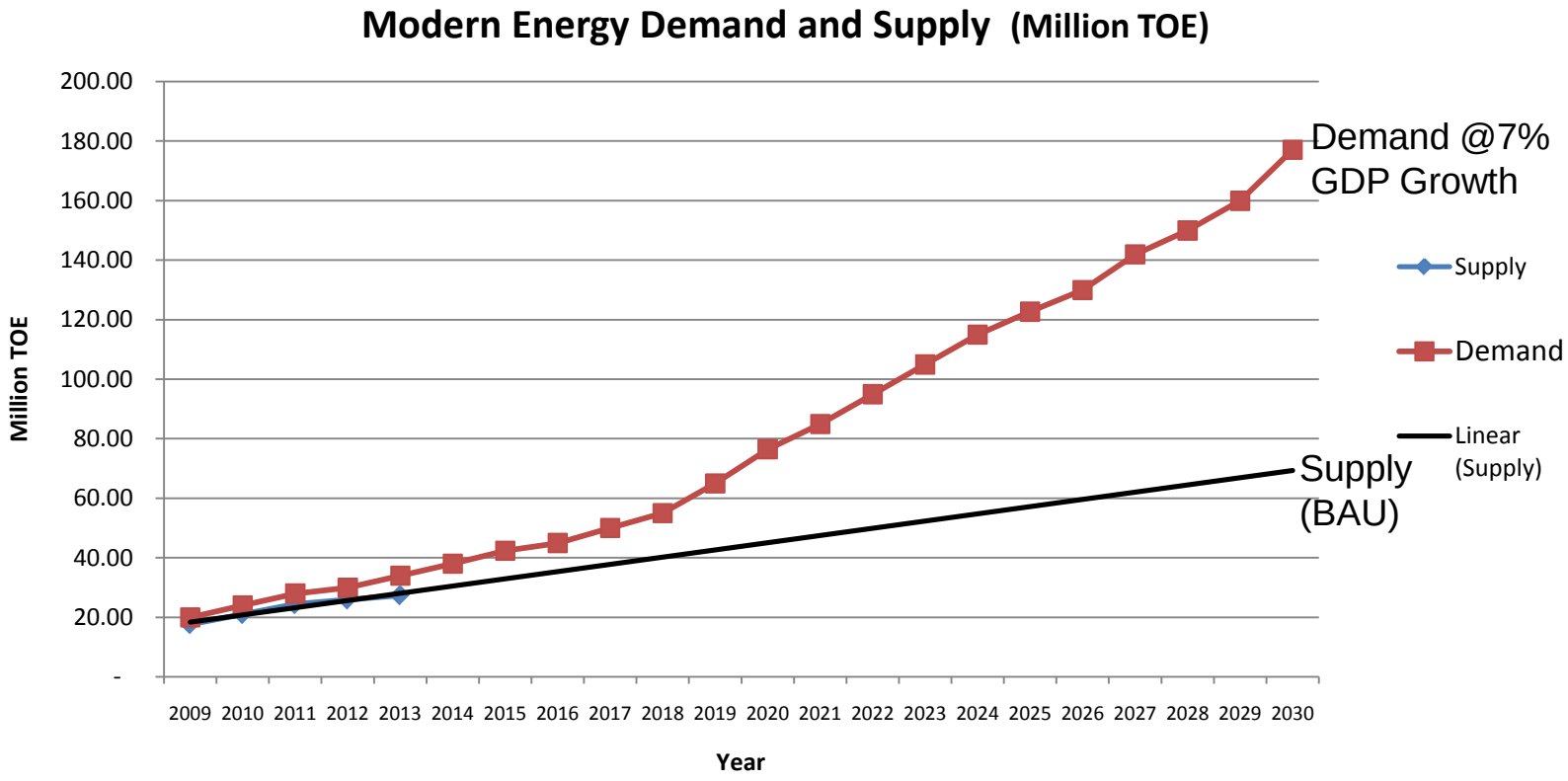
1. Introduction Cont'd...



Source: Human Development Report 2014 and IEA Key Energy Statistics 2014

1. Introduction Cont'd...

- Hence, present and future prosperity of Nigerian will be challenged by increasing modern energy demand.

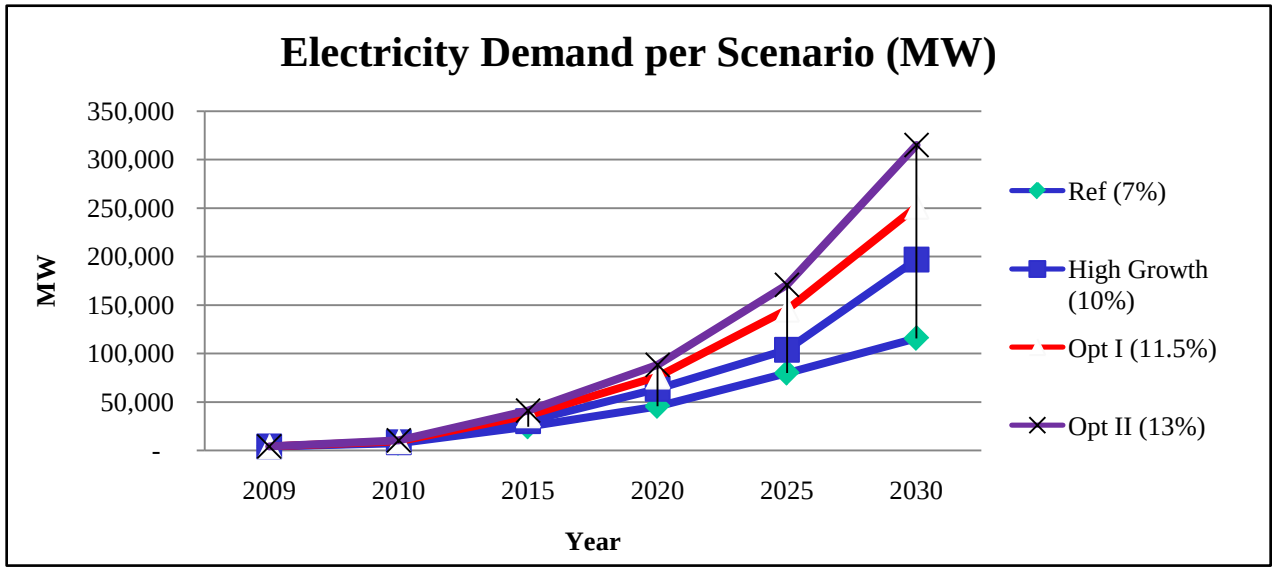


1. Introduction Cont'd...

- Huge Long term Electricity Demand Projections

	2009	2010	2015	2020	2025	2030
Ref (7%)	4,052	7440	24380 (14,000)*	45490 (40,000)**	79798	115674
High Growth (10%)	4,052	8420	30236	63363	103859	196875
Opt I (11.5%)	4,052	9400	36124	76124	145113	251224
Opt II (13%)	4,052	10230	41133	88282	170901	315113

***Power Roadmap Target (PRMT) by 2014 ** PRMT by 2020**



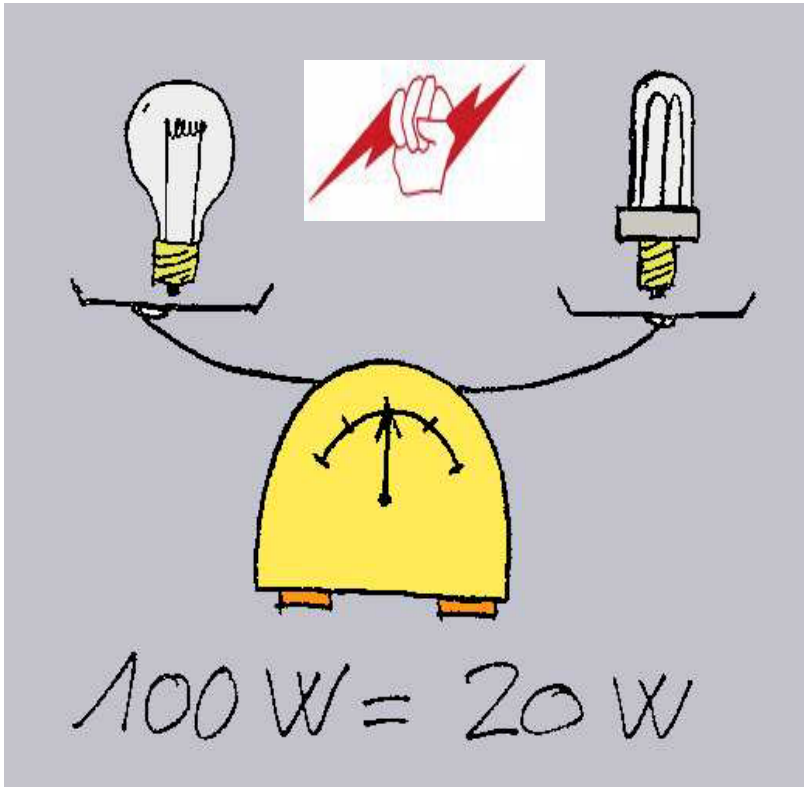
1. Introduction Cont'd...

- The major final energies relevant in the economy are:-
  - Fuels
  - Electricity
  - Process heat
- However, these final energies are presently sourced mainly from petroleum (crude oil and natural gas), hydropower and fuelwood. In energy terms, for example, fuelwood supplied about 65.5% of total energy consumed in Nigeria in 2011; while petroleum product accounted for 11.37% and hydropower 0.75% of total energy consumed in Nigeria in the same year.
- However, consumption of petroleum and fuelwood have adverse environmental and climate change effects. Their consumption in business-as-usual scenario is therefore not sustainable.

1. Introduction Cont'd...

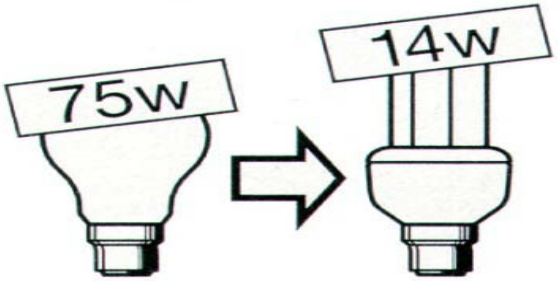
- One way of narrowing the supply gap in the economy is through energy efficiency.
- Energy efficiency is as old as energy use itself. Fires were open and later improved to enclosed spaces and then later replaced by ovens etc. Energy efficiency means "***using less energy to provide a level of energy service***". It lowers energy use or it minimizes amount of energy use/cost/waste and it is achieved by means of more efficient technologies or processes rather than by behavioural changes. It often requires cash outlay.
- Energy conservation on the other hand refers to "***using less or no energy to achieve a lesser energy service through behavioural change"***. Energy conservation saves energy and can be implemented with little or no cost.

1. Introduction Cont'd...



Lumens; Amount of Visible Light Produced by a Light Source e.g.

100W Incandescent Lamp = 1,600 Lumens
60W Incandescent = 800 Lumens
40W Incandescent = 450 Lumens



1. Introduction Cont'd...

- Both energy efficiency and conservation are very important in stabilizing and reducing carbon dioxide emissions into the atmosphere, with resultant mitigation of adverse climate change
- The major economic sectors where energy efficiency and conservation can be effectively employed to reduce energy demand and cost of energy supply are:-
  - Industry
  - Transport
  - Utilities
  - Lighting
  - Appliances
  - Buildings

1. Introduction Cont'd...

- The Transformation Agenda of Government is literally to move the under performing sectors of the economy from business-as-usual to better scenarios that will guarantee higher national wealth(GDP) and enhanced human development indexed(HDI) – employment, education, health, higher incomes, etc.
- This we earlier acknowledged requires adequate energy supplies
- However, adequate government policy and plans, backed by requisite laws, are imperative in realising the full benefits of energy efficiency and conservation in making available adequate supply of sustainable energy for driving the Transformation Agenda of Government.

2. Energy Efficiency and Conservation Policy in Nigeria

- Policy on energy efficiency and conservation was first made by the Federal Government in 2003 under the National Energy Policy
- The policy stated that "*the nation shall promote the development and adoption of energy efficient in energy utilization*", and that *"energy conservation shall also be promoted at all levels of exploitation of the nation's energy resources".*
- The objectives of the omnibus policy statements as well as strategies for achieving the policy objectives were also stated
- In 2013, the National Energy Policy was reviewed by stakeholders to reflect changes that occurred over ten(10) years since it was approved. Energy efficiency and conservation was given greater prominence in the review and a chapter of 13 pages was dedicated to the subject matter.

2. Energy Efficiency and Conservation Policy in Nigeria Cont'd...

- The following are the omnibus policy statements in the reviewed policy:-
  - The nation shall adopt and promote energy efficiency and conservation best practices in the exploitation and utilization of the nation's energy resources.
  - The nation shall mainstream energy efficiency and conservation best practices into all sectors of the economy
  - The nation shall adopt appropriate energy pricing, metering, and billing mechanisms
  - The nation shall integrate energy efficiency and conservation studies into the curricula of educational institutions

2. Energy Efficiency and Conservation Policy in Nigeria Cont'd...

- The objectives of the policy are:
  - To guarantee energy access for all at appropriate costs and in a sustainable and environmentally friendly manner
  - To monitor the energy use patterns of the various sectors of the economy
  - To encourage end-users to adopt energy efficiency best practices, minimize energy wastages and enhance energy security
  - To ensure the prudent exploitation of the nation's renewable and non-renewable energy resources
  - To enhance self-reliance in the prudent exploitation of the nation's renewable and non-renewable energy resources
  - To reduce adverse effects of energy related activities on the environment
  - To increase the proportion of hydrocarbon resources available for special applications such as industrial feedstock and for export
  - To eliminate avoidable investments in energy supply infrastructure.

2. Energy Efficiency and Conservation Policy in Nigeria Cont'd...

- Short, medium and long-term general strategies of achieving the policy objectives were also provided
- For example, the general long-term strategies included:-
  - Replacing all incandescent light bulb in every home, industry, institutions and establishments in Nigeria with LEDs and other high energy saving lamps by 2025
  - Establishment of a broad range of equipment energy efficiency standards and labelling by 2025
- In addition, specific policies on energy efficiency in Residential, Industrial, Commercial, Transport, Agriculture and Building Designs have also being provided in the review.

2. Energy Efficiency and Conservation Policy in Nigeria Cont'd...

- The National Energy Master Plan, also reviewed in 2014, indicated activities in the short, medium and long-term that would enable the strategies to be realised.

3. Common Energy Wastage Practices in Nigeria

- Leaving Appliance on when not in Use;
- Use of Incandescent Light Bulbs;
- Security/Street Lights Left On during the Day;
- Windows Open When AC is in Use;
- Opening and Closing of Fridges & Freezers Unnecessarily;
- Heating Water beyond the required temperature;
- Purchase of Secondhand Appliances;
- ETC…

3. Common Energy Wastages Practice in Nigeria Cont'd...

Industrial Sector:

- Fuel and Steam Leakages;
- Compressed air leakages;
- Water leaks;
- Damaged or missing insulation;
- Excessive heating or cooling;
- Burners out of adjustment;
- Dirty heating surfaces such as coolers, exchangers, and so forth;
- Etc.

4. Practical Energy Efficiency Activities in Nigeria

- Establishment of National Center for Energy Efficiency and Conservation (NCEE&C) in University of Lagos(Unilag) in 2008

Permanent Site under construction

DG, ECN inspecting the top of the new building at the Permanent Site

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

- UNDP-GEF Programme on Energy Efficiency(EE)
  - Established EE Standards on Lighting Lamps
  - Established EE Standards on Refrigerator
  - Established EE Standards on Air conditioners
  - Replacement of Inefficient Lamps in ECN
  - Capacity Building of Nigerians in EE

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

Quality Assurance

- Lamps Testing Analysis Machine were installed in the laboratories of the Standard Organization of Nigeria (SON) and the Energy Commission's National Centre for Energy Efficiency and Conservation (NCEEC), Lagos.
- The testing facilities will enhance the ability of SON and ECN to promote good quality of lightning fixtures as well as enhanced R & D.

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

Replacing IL with CFLs (One Million CFL Demo Project)

❑Replacement of Incandescent Lamps with 1 Million High Quality Compact Fluorescent Lamps (CFL) across the Nation.
A ECN/CUBA/ECOWAS Pilot Project – 2008-2010

Beneficiaries of the project were:

- ❖ 22 nos. Estates in Abuja
- ❖ 10 nos. States
- ❖ 14 nos. Tertiary Institutions
- ❖ 6 nos. ECN Research Centers
- ❖ 7 nos. Hotels in Abuja
- ❖ Jaji Military Cantonment, Kaduna
- ❖ Civil Defence Headquarters/Staff Quarters

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

Walk-through Energy Audit

- Walk-through energy audit in Industry in different Regions of the Country- 2000 – 2005(In Collaboration with UNIDO)

  i. West I (Lagos/Ogun Areas)
  ii. Oyo, Osun, Ekiti Areas
  iii. Edo, Delta Areas
  iv. Plateau, Gombe & Bauchi Areas
  v. Rivers, Abia, Akwa-Ibom, Cross Rivers Areas
  vii. Anambra, Enugu & Imo Areas
  viii. Kano Area

- Walk-through energy audit of Hotels in Abuja – 2010-Date

  i. AMSO Hotels Ltd.
  ii. NCKOVAD Hotels Ltd.
  iii. ORIENT Hotels Ltd.
  iv. BABCOCK University Guest House
  v. GOUBA Suites & Hotels Ltd
  vi. VALENCIA Hotels
  vii. NANET Suites & Hotels Ltd.

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

Public Awareness and Sensitization Campaign on Energy Efficiency

- National Training Sensitization and Walk-through Energy Workshops in Industries for Lagos, Kaduna, Kano, Enugu & Rivers Industrial Zones – 2001, 2003, 2004, 2005
- National Training Workshop on Energy Efficient Motor System in Industries Lagos – 2001
- National Training Workshop on Energy Reduction in Pumps and Pump Systems Lagos – 2002
- National Workshop on Fuel Interchange in Heating Units - 2003

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

- Establishment of Clean Cookstove Testing Facilities by ICEED//Clean Cookstove Alliance
  - Afikpo, Ebonyi State
  - NCERD, Nsukka, Enugu State

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

CLEAN COOKING STOVES

SERC Improved Woodstoves

- Promotion of various Improved Wood/Sawdust Stoves

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

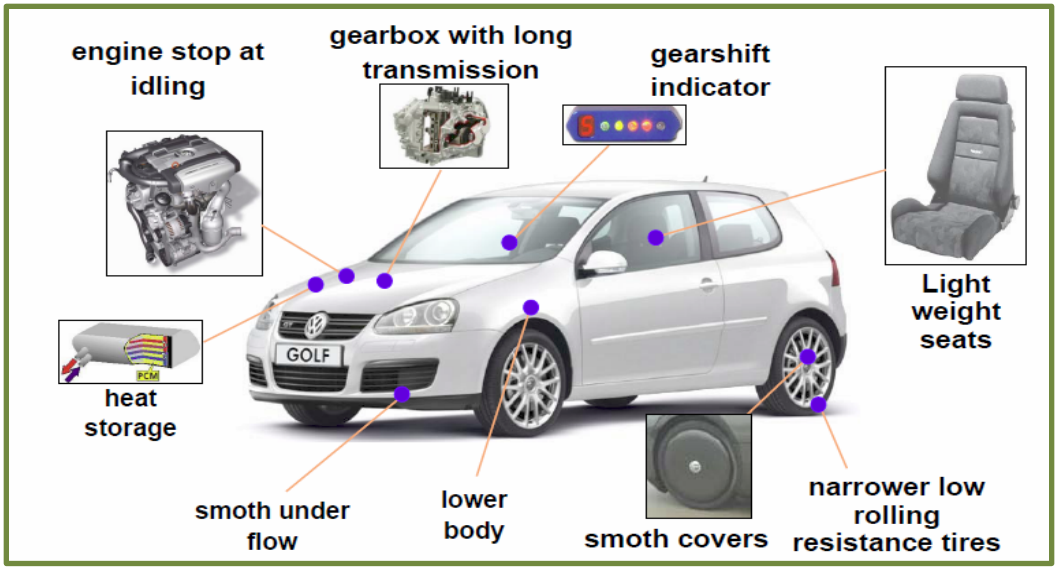
Transport Sector

- Sustainable shift in transportation mode like:
  - motorized modes to cycling and walking;
  - private vehicles usage to public mass transport.
- Ensuring better integration between different public transport modes eg public transport, walking and cycling.

4. Practical Energy Efficiency Activities in Nigeria Cont'd...

Transport Sector Cont'd…

- Improving tyre energy efficiency(tyre pressure monitoring system, rolling resistance, tyre labelling schemes, etc.
- Fuel economy standards for LDVs and HDVs
- Eco-driving



5. Challenges

- High cost of energy efficient systems
- Lack of development funds to support energy efficient technologies
- Inadequate public awareness on the benefits of energy efficiencies and conservation
- Inadequate human capacity in the area of energy efficiency
- Inappropriate energy pricing and billing system
- Weak regulatory framework on energy efficiency
- Lack of legal instrument on the reviewed National Energy Policy and Master Plan, which certain Energy Efficiency and Conservation Policy and Plans.

6. Way Forward

- Appropriate fiscal incentives to be established for energy efficient system
- Incorporation of energy efficiency in the renewable energy fund
- Intensify public awareness and sensitization campaigns and more pilot projects
- Strengthen human capacity development in R & D and related institutions
- Full deregulation of the energy sector and the use of pre-paid meters
- Strengthen Standard Organization of Nigeria (SON)
- Passage of the reviewed National Energy Policy and Master Plan into law

7. Conclusion

- Nigeria's economic transformation and development depends largely on adequate supply of sustainable energy in the economy.
- For Nigeria to be transformed into one of the 20 large economies in the world by 2020, adequate and sustainable energy supply is therefore imperative.
- Energy efficiency and conservation best practices are essential in meeting this aspiration as well as mitigation of adverse climate change effects
- The revised National Energy Policy and Master Plan contains policy on energy efficiency and conservation, and should therefore be passed into law

Thank You

AND GOD BLESS!