KEYNOTE ADDRESS: An Overview of the Draft Revised National Energy Master Plan (NEMP)

By

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Presentation Outline

- Introduction
- The Development of the National Energy Master Plan (NEMP)
- Energy Demand and Supply Projections/ Targets
- The Provisions of NEMP
- Next Step
- Conclusion

1. Introduction

- First, let me welcome you all to this Validation Workshop organized to assess and identify gaps and inadequacies in the 2007 Edition of the draft National Energy Master Plan (NEMP).

- Energy plays very important role in the economic, social and political development of our nation;

- Inadequate supply of energy therefore, restricts socio-economic activities, limits economic growth and adversely affects the quality of life,

- Improvements in standard of living imply increased consumption of energy.

- It is our belief that energy is an all-pervading factor in the quest for socio-economic development and improved quality of living and that the National Energy Master Plan is the most efficient and effective way of providing adequate, reliable, cost-effective and affordable energy supply in the country

1. Introduction Cont'd….

Table 1. Nigeria's Energy Supply and The Economy

S/N	ITEMS	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1.	Electricity generation (billion kWh)	22.03	23.9	24.22 (503)* (10,695)**	23.8	23.3	21.27 (562)* (18,603)**	20.8	25.02	27.7 (619)* (20,407)**	29.6
2,	Energy Consumption per Capita (kgoe/Capita)	151.3	125.5	132.6 (680)* (1,780)**	87.1	81.4	80.8 (670)* (1,830)**	83.1	77.8	73.6 (670)* (1880)**	65.7
3.	Electricity Consumption/capita (kWh/Capita)	174.6	176.4	181.4 (563)* (2596)**	167.6	161.2	142.9 (571)* (2782)**	135.2	157.1	165 (592)* (2933)**	175.9
4.	GDP/Capita (US$/Capita)	620.7	658.0	826.3 (2314)* (8,492)**	1030.3	1223.5	1286.3 (2540)* (9550)**	1,106.8	1440.7	1470.6 (1281)* (7520)**	1513.4
5.	Energy Intensity (kgoe/ US$)	0.244	0,191	0.161 (0.294)* (0.210)**	0.085	0.067	0.063 (0.264)* (0.192)**	0.075	0.054	0.050 (0.550)* (0.250)**	0.043
6.	GDP Growth Rate (%)	9.6	6.6	6.5	6.0	6.5	6.0	7.0	8.0	7.4	6.6

Sources: CBN (2005-2012), NCC, Osogbo (2009 -2012),
****Africa Average - IEA (2007, 2010, 2013)***
*****World Average - IEA (2007,2010, 2013)***

1. Introduction Cont'd….

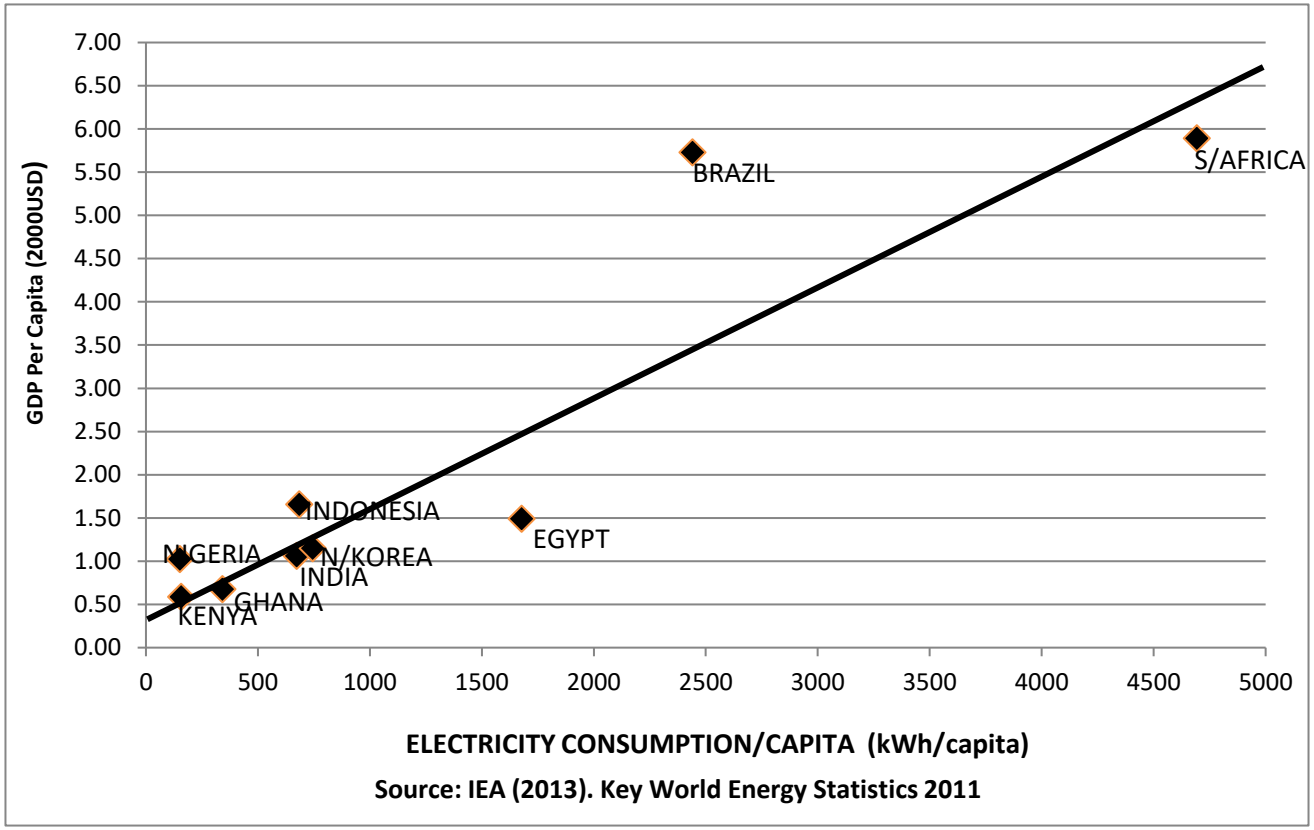
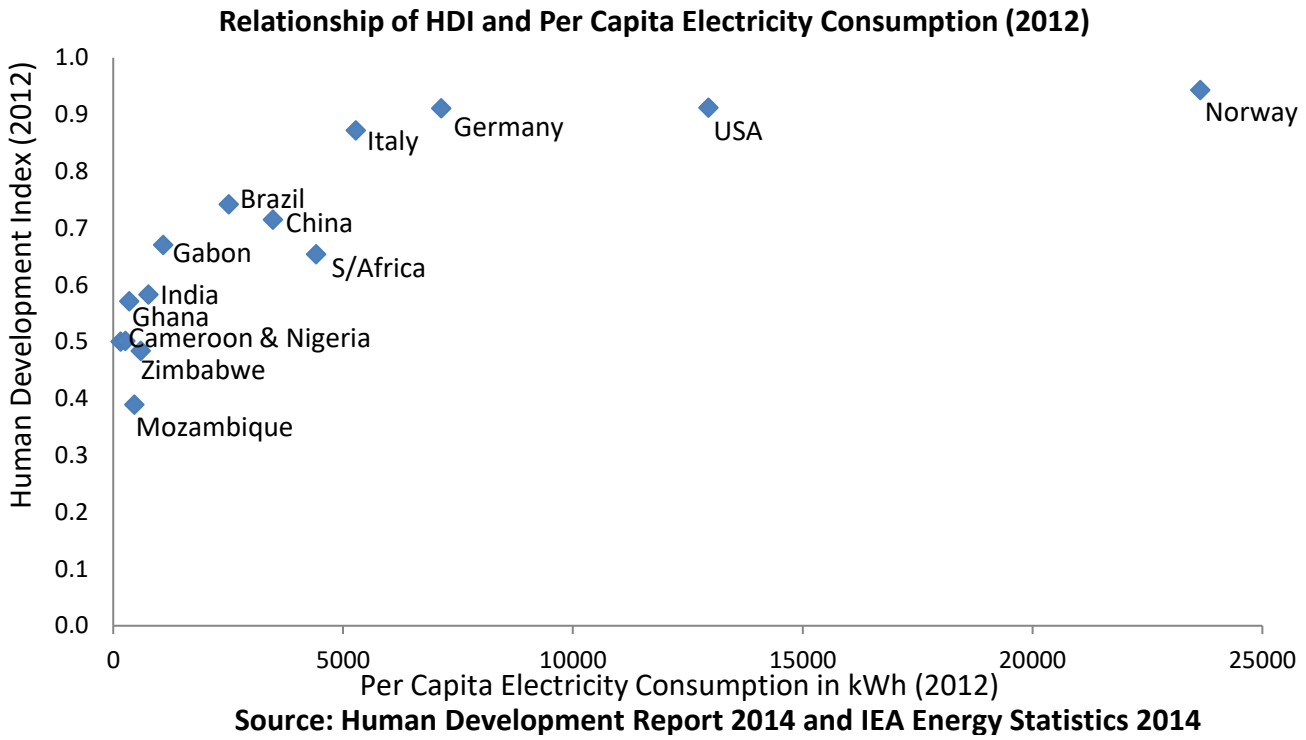


Figure 1 Effect of Electrical Energy Consumption on Economic Development of Nations.

1. Introduction Cont'd….



Source: Human Development Report 2014 and IEA Energy Statistics 2014

2. The Development of the National Energy Master Plan (NEMP)

- **The Energy Commission of Nigeria, in 1990, constituted a committee comprising some members of the Commission's Technical Advisory Committee (TAC) to draft a National Energy Policy (NEP), which was approved by the Federal Executive Council in April 2003, after several reviews by inter-ministerial committees; and was launched and presented to the general public on 5th July 2005.**

- **In order to provide a framework for the implementation of the National Energy Policy, in 2007, the National Energy Master Plan (NEMP) was drafted. The translation of the provisions of the NEP into a long-term National Energy Masterplan, for its implementation is in line with Article 5(d) of Decree No. 62 of 1979 of the ECN's mandate, which empowers the Energy Commission of Nigeria (ECN) to:**

  "prepare, after consultation with such agencies of government whose functions relate to the field of energy development or supply as the Commission considers appropriate, periodic Masterplans for the balanced and coordinated development of energy in Nigeria."

- **You may recall that the National Energy Policy was reviewed in 2013. This has made the review of the National Energy Master Plan imperative;**

- **The overall objective of NEMP is to provide a framework for the implementation of the National Energy Policy.**

2. The Development of the National Energy Master Plan (NEMP) Cont'd…

- **Apart from the introductory chapter, the National Energy Master Plan consists of twelve other chapters, covering all energy resources and cross-cutting issues.**

- **Each chapter presents the national policies and the objectives of each energy sub-sector and issues that need to be addressed for the balanced development of the overall energy sector.**

- **The set of activities required for accomplishing the objectives and each strategy, including the implementing and funding agencies as well as the timelines for each sub-sector are tabulated in every chapter.**

- **The timelines are categorized into short – term (2013– 2015), medium term (2016– 2020) and long –term (2021– 2030).**

2. The Development of the National Energy Master Plan (NEMP) Cont'd….

- **The overall energy policy objectives are to:**
  - **ensure the development of the nation's energy resources, with diversified energy resources option, for the achievement of national energy security and an efficient energy delivery system with an optimal energy resource mix,**
  - **guarantee increased contribution of energy to productive activities to national income,**
  - **guarantee adequate, reliable and sustainable supply of energy at appropriate costs and in an environmentally friendly manner, to the various sectors of the economy, for national development,**
  - **guarantee an efficient and cost effective consumption pattern of energy resources,**
  - **accelerate the process of acquisition and diffusion of technology and managerial expertise in the energy sector and indigenous participation in energy sector industries, for stability and self-reliance,**
  - **promote increased investments and development of the energy sector industries with substantial private sector participation.**

3. Energy Demand and Supply Projections/ Targets

- The Nation's vision is to be amongst the 20 large economies in the world by 2020. Nigeria was number 39 in 2012. However with the rebasing in 2013, we jumped to number 26. This upwards movement requires adequate, reliable and cost effective supply of electricity, fuels and process heat in the economy.
- Hence, the need to have a "roadmap" for exploiting energy resources to meet the energy demands for the development goals.
- A study conducted by Energy Commission of Nigeria on Nigeria's long term energy demand and supply using IAEA energy planning tools of MAED and MESSAGE predicted huge amount of energy requirements under the following scenarios and assumptions:

3. Energy Demand and Supply Projections/ Targets Cont'd…

The assumptions for the study are as follows:

Reference Growth Scenario:

- GDP grows by an average of 7% per annum.
- The main driver of growth is the manufacturing sector
- Manufacturing to account for 15% of GDP by 2020 from 4% in 2010
- Poverty to be reduced by half by 2015 in line with MDG objectives.

High Growth Scenario

- GDP grows by an average of 10% p.a.
- Manufacturing to contribute 22% to GDP by 2030 from 4% in 2010
- Nigeria transits from an agrarian to an industrializing economy

3. Energy Demand and Supply Projections/ Targets Cont'd…

- **Optimistic Growth Scenario I**
  - GDP grows by an average of 11.5% p.a.
  - Manufacturing to contribute 22% to GDP by 2030 from 4% in 2010
  - Nigeria transits from an agrarian to an industrializing economy

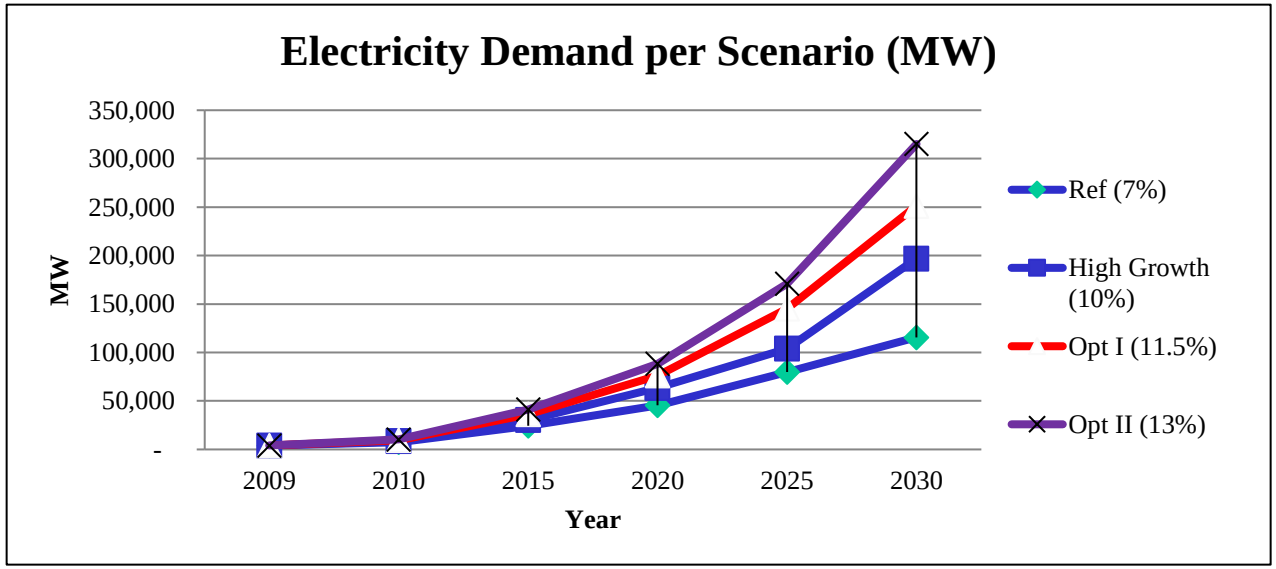
- **Optimistic Growth Scenario II**
  - GDP grows by an average of 13% p.a.
  - Manufacturing to contribute 22% to GDP by 2030 from 4% in 2010
  - Nigeria transits from an agrarian to an industrialized economy

3. Energy Demand and Supply Projections/ Targets Cont'd….

Table . Electricity Demand Projections for Nigeria under various Economic Scenarios

	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



Source: ECN, 2012

3. Energy Demand and Supply Projections/ Targets Cont'd…

Table . Electricity Supply Projections by Fuel Type : Optimistic II Scenario 7%

Fuel Type	2009	2010	2015	2020	2025	2030
Coal	0	609	1805	6527	7545	10984
Electricity import	0	0	0	0	0	31948
Gas	3803	4572	18679	33711	61891	80560
Hydro	1930	1930	3043	6533	6533	6533
Nuclear	0	0	1000	1500	2500	3500
Small hydro	20	60	172	409	894	1886
Solar	0	260	1369	3455	7000	25917
Wind	0	10	19	22	25	29
Biomass	0	0	3	16	35	54
Total	5753	7440	26092	52174	86422	161411

Source: ECN (2010)

3. Energy Demand and Supply Projections/ Targets Cont'd…

Table 19. Electricity Supply Projections by Fuel Type : Optimistic II Scenario 10%

Fuel Type	2009	2010	2015	2020	2025	2030
Coal	0	870	2579	9324	10778	15691
*Electricity import	0	0	0	0	0	45640
Gas	3803	6957	21328	44763	82702	115086
Hydro	1930	2174	4348	9332	9332	9332
Nuclear	0	0	1500	2500	3500	3500
Small hydro	20	81	246	585	1277	2694
Solar	0	377	1956	4936	10000	37025
Wind	0	18	28	32	36	42
Biomass	0	0	4	23	50	77
Total	5753	10476	31989	71495	117675	229086

Source: ECN (2010)

3. Energy Demand and Supply Projections/ Targets Cont'd…

Table 21. Electricity Supply Projections by Fuel Type: Optimistic II Scenario 13%

Fuel Type	2009	2010	2015	2020	2025	2030
Coal	0	3353	3353	12122	14011	20399
Electricity import	0	0	0	0	0	59333
Gas	3803	13110	26426	49996	120512	164307
Hydro	1930	4157	11207	12132	12132	12132
Nuclear	0	0	3600	7200	7200	7200
Small hydro	20	105	320	760	1660	3502
Solar	0	490	2543	6417	15970	48132
Wind	0	23	36	41	47	54
Biomass	0	0	5	30	65	100
Total (supply)	5753	21238	47490	88698	171598	315158

Source: ECN (2010)

3. Energy Demand and Supply Projections/ Targets Cont'd…

Table 14. Projected Total Energy Demand for Fuel Petroleum Products for Nigeria

Year	PMS (Million litres)		DPK (Million litres)		AGO (Million litres)		Fuel Oil (Million litres)		LPG (Thousand tonnes)	
	7%	13%	7%	13%	7%	13%	7%	13%	7%	13%
2009	5096.9	5096.9	356.1	356.1	565.6	565.6	120.0	120.0	74.2	74.2
2010	6180.0	8890.0	464.0	902.0	791.7	1177.9	160.0	270.0	93.2	132.9
2012*									120	
2014*									250	
2015	14460.0	19510.0	3788.0	7039.0	2301.9	3651.0	1800.0	3380.0	1107.0	1871.2
2016*									500	
2020	28170.4	35587.1	9038.7	22704.5	4176.8	6270.8	4632.1	9277.9	2862.5	5733.5
2025	39769.4	55459.4	15084.9	44285.4	6231.8	11408.4	7806.1	20797.4	4824.0	12852.3
2030	56457.2	88369.2	22064.9	77255.7	8902.4	21349.7	11374.6	45443.4	7029.2	22903.7

Source: Energy Commission of Nigeria (2010)

* Punch 29th June 2014, pg 25

3. Energy Demand and Supply Projections/ Targets Cont'd…

Table 15. Renewable Electricity Supply Projection in MW (13% GDP Growth Rate)

S/N	Resource	Now	Short	Medium	Long
1	Hydro (LHP)	1938	4,000	9,000	11,250
2	Hydro (SHP)	60.18	100	760	3,500
3	Solar PV	15.0	300	4,000	30,005
4	Solar Thermal	-	300	2,136	18,127
5	Biomass	-	5	30	100
6	Wind	10.0	23	40	50
	All Renewables	2025.18	4,628	15,966	63,032
	All Energy Resources	8,700 (installed Gen Capacity)	47,490	88,698	315,158
	% of Renewables	23%	10%	18%	20%
	% RE Less LHP	0.4%	1.3%	8%	16%

Short – 2015
Medium – 2020
Long – 2030

4. Key Action Areas : Petroleum Resources

For petroleum resources, the NEMP has provisions to:

- **Intensive exploration in all potential deposit basins, to increase reserves to highest possible value,**
- **Increase in local value added through participation of domestic industries in upstream activities and the expansion of the processing sub-sector,**
- **Enhanced incentives to encourage the establishment of gas-based industries to end flaring.**
- **Intensify human capacity building and establishment of an R, D &T institution to progressively improve local content in the sub-sector and eventually domesticate oil technology.**

4. Key Action Areas : Tar sands/Bitumen and Coal

- **For Tar sands/Bitumen and Coal, the NEMP has provisions to:**
  - **attract private sector financing of coal exploitation through appropriate incentives,**
  - **rebuild coal transportation infrastructure for domestic and export trade,**
  - **develop domestic markets for carbonised coal as alternative to fuelwood and establish coal briquetting plants,**
  - **adopt incentives to promote private investment flow into tar sands exploration, exploitation and development.**

4. Key Action Areas : Shale Hydrocarbon

- **For Shale hydrocarbon, the NEMP has provisions to:**
  - Identification of research & development priorities;
  - Delimiting, sharing and leasing prospective blocks for exploration activities
  - Development of appropriate legal, fiscal, environmental and other regulations to guide the operation of the shale gas/oil industry.

4. Key Action Areas : Nuclear Energy

For Nuclear Energy, the NEMP has provisions to:

- **pursue the introduction of nuclear power into the national electricity generation scheme,**
- **apply nuclear science and technology in industry, agriculture, medicine and water resources management,**
- **ensure safe exploration of nuclear mineral resources in the country through intensive manpower development in the utilization of nuclear energy for peaceful purposes .**

4. Key Action Areas : Hydropower and other Renewables

For Hydropower and other Renewables, the NEMP has provisions to:

- **further harness the large scale hydro potentials and use the small scale potentials for rural, remote or isolated community electrification,**
- **establish and maintain multilateral agreements on monitoring and regulation of international rivers flowing through the country.**
- **active promotion of renewable energy by making it a part of the curriculum for secondary and tertiary institutions,**
- **adoption of strategies for market development through awareness creation, pilot and demonstration projects, establishment of local manufacturing capacity and removal of other barriers to market penetration,**
- **Adoption of on-grid renewable electricity projects**
- **establishment of a Renewable Energy Fund for supporting rural energy supply from renewables.**
- **Upgrade R & D institutes for enhanced RE R & D activities**

4. Key Action Areas : Electricity

- **For the electricity sector, the NEMP has provisions to:**
  - Perfect legal and regulatory environment to attract private investments (indigenous and foreign) to the sub-sector,
  - Support rural electrification and rapid expansion of overall access, with diversified power generation to achieve a target access of 100% by 2020.
  - Rehabilitate existing power plants and strict adherence to both preventive and turn around maintenance schedules;
  - Complete all on-going energy-related projects and fast-tracking the commencement of all proposed electricity projects;
  - Design and implement a long-term coordinated programme for rural electrification based on distributed decentralized generation;
  - Design a long-term R & D portfolio for the Electricity Supply Industry (ESI).

4. Key Action Areas : Energy Utilization

- For the energy utilization sector, the NEMP has provisions to:
  - **Develop energy supply, demand and consumption databases;**
  - **Promoting energy efficiency and conservation measures;**
  - **Encouraging industry, agriculture and transport sectors to switch over to more appropriate and environmentally friendly energy types;**
  - **Establishing National 90-day Strategic Fuel Depots in each of the six geopolitical zones of the country.**

4. Key Action Areas : Energy Efficiency & Conservation

- **For Energy Efficiency and Conservation sector, the NEMP has provisions to:**
  - **Intensify EE &EC sensitization and awareness campaigns**
  - **Adopt energy efficiency best practices**
  - **Put in place MEPS for appliances and equipment**
  - **Support R & D in relevant institutions**
  - **Carry out large-scale adoption of energy-efficient appliances and equipment**

4. Key Action Areas: Environment and Climate Change

- For Environment and Climate Change, NEMP has provisions to:
  - **Reviewing, updating and harmonizing the existing energy-related "Guidelines and Standards for Environmental Pollution Control in Nigeria";**
  - **Ensuring adherence to laid down environmental standards;**
  - **Establishing definite targets and timelines for the attainment of end of gas flaring target in Nigeria;**
  - **Carrying out massive sensitization and awareness campaign on the effects of climate change, their mitigation and adaptation;**

4. Key Action Areas: Energy Financing

- **For Energy Financing, the NEMP has provisions to:**
  - Establishing renewable energy fund;
  - Providing fiscal and financial incentives;
  - Introducing tariffs that guarantee good rate of return on investment;
  - Periodic review of concessionary feed-in tariff for renewable based energy supply;
  - Attracting long-term financing from local and international institutions;
  - Establishing and implementing favourable monetary policies.

5. Next Step

- The way forward is to implement the NEMP:
  - securing the support of all the stakeholders - the government at various levels, the private sector and the general public;
  - securing appropriate legislative empowerment for its implementation at various level of energy users;
  - ensuring that the NEMP guides all activities in the energy sector and is the overall roadmap for a sustainable energy supply system in Nigeria.

6. Conclusion

- By working together under the framework of this National Energy Master Plan, stakeholders have re-affirm their commitment to the goals of the National Energy Policy, National Energy Master Plan and the balanced development of the energy sector.

- It is therefore, my belief that energy is a key to socio-economic development and improved quality of living and that the National Energy Master Plan will be developed to capture all factors germane to the balanced development of the energy sector, including energy demand and supply, production, processing, research and development, training and manpower development, energy databank, fossil fuels, nuclear energy, renewable energy, environment, energy efficiency and conservation and international cooperation.

- Finally, I will like to join my Principals, to encourage all participants at this Workshop to give in their best and come up with useful ideas, comments and recommendations that will add more value to the National Energy Master Plan and provide lasting and sustainable solutions to the nation's energy issues.

THANK YOU AND GOD BLESS!