

Electricity Provision And Management In Nigeria: Challenges And Prospects

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**Being A Lead Paper Presented At The International Colloquium On Thirty Years Of
Social Services Provision And Management In Nigeria, 26 – 28th March 2012**

INTRODUCTION

Social services in general, are designated to provide meaningful opportunities for social and economic growth especially of the disadvantaged sector of the population in order to develop them into **productive and self-reliant citizens and promote social equity**. They are organized efforts to **advance human welfare**. They are provided by **government to improve the life and living conditions of the populace/citizens either directly through the public sector or by financing private provision of the services**. The term is associated with a social consensus that **services should be available to all regardless of income**.

Electric power(**electricity**)is the engine that drives industrialization, which improves communication, helps innovation in science and Technology, provides sound healthcare delivery system and improves citizens' standard of living. Since Electric power is the engine that drives industrialization, a stable Electric power supply(**PROVISION**) and management is the key for Nigeria to become one of the 20 most developed economies in the world and to meet her MDGs targets. But it is very unfortunate that the biggest problem in Nigeria is electricity (**electric power**) provision and management, a crisis without end.

Energy is the core driver of the World's economy. In developed and developing economies, energy is at the heart of efforts to evolve strong economies and ensure sustainable development. Steady population growth combined with economic growth, in spite of the global recession, shall give yardage to energy consumption as the years roll on. Leading international financial institutions, especially the World Bank estimates that investments of \$1 trillion will be needed in this decade alone, and a further \$4 trillion during the next three decades to meet energy requirements of developing countries

"Energy is at the core of virtually every problem facing humanity. We cannot afford to get this wrong. We should be skeptical of optimism that the existing energy industry will be able to work this out on its own." [Testimony of witness Dr. Richard E. Smalley to the Senate Committee on Energy and Natural Resources – Full Committee Hearing on sustainable low-emission electricity generation, 27 April, 2004. Dr. Smalley is Director of the Carbon Nanotechnology Laboratory at Rice University]

Also, **"... the momentous decisions we take in the next few years will determine whether our heirs thank us or curse us for the energy choices we bequeath to them."**

[Alex Kirby, BBC News Online environment correspondent, 19 April 2004]

Electricity production in Nigeria over the last 40 years has varied from gas-fired, oil-fired, hydroelectric power stations to coal-fired stations with hydroelectric power systems and gas-fired systems taking precedence though renewables are making inroads. **Presently, there are a total of sixteen(16) power plants in Nigeria: ten(10) owned by Power Holding Company of Nigeria(PHCN) and another six(6) plants belonging to independent power producers(IPPs).**

Adequate generation, supply, distribution and management of electricity constitute a central development issue which cannot be over-emphasized. Apart from serving as the pillar of wealth creation in Nigeria, it is also the nucleus of operation and subsequently the 'engine of growth' for all sectors of the economy. In recognition of the consolidating linkages between the energy sector and other sectors of the economy, electricity development and utilization therefore have pervasive impacts on a range of socio-economic activities and consequently the living standards of citizens in the country.

Government recognized the inadequacy of this provision and thus noted the cardinal challenge therein. In this regard, the new civilian administration identified for the millennium the need to create a socio-economic environment that does not suffer the inadequacy/neglect of the past. Thus, the overriding task of government at the time was a single minded pursuit of growth and development which would go beyond the annual budgetary revenue and expenditure allocation to the electricity sector. Towards this end, Government released the 1999-2003 Economic Policy document which sets out very clearly its stretching goals in which 14 specific quantifiable target areas featured. Against this background, a framework was proposed for taking government out of direct involvement in most economic activities which are best suited for private sector undertaking such as energy and power generation as well as Provide the enabling legal, fiscal and monetary environment for the private sector to become the effective engine of growth and development in the economy, and up-grade the performance of major infrastructural (electricity) facilities.

According to government, the foregoing is required to open new and sustainable economic opportunities to all Nigerians for the pursuit of honest and fulfilled life. However, in order to attain these stated objectives, some strategies were designed.

A study on the black Areas of the World titled "Your Black Global" on February 8th 2008, stated that Africa's(Nigeria's) Electricity Crisis Sustains Poverty. "Once the Sun goes down in Africa, about 75% of the population live in a world of darkness. Day-to-day living conditions suffer from no electricity. Time management is crucial because people are unable to cook or clean, and are simply forced to sleep. Up to 250million Africans have no access to electricity and are left to use kerosene lamps or burning fire. Africa(Nigeria) needs more energy access, which will alleviate poverty by increasing local commerce, creating more jobs, enhancing incomes and improving safety. Low electricity access has turned away many foreign investors, donors and tourists away from Nigeria. [CHEVALIER DR. JOSEPH UJAMHAN, KSG - NSE 12/03/09]. The quest to rapidly and firmly put Nigeria on the course of economic development is, technically, a function of adequate provision and management of energy, particularly electricity (electric power).

As we consider the prospects and challenges of providing and managing electricity in Nigeria, the following questions requiring answers are obvious: *what has been done in Nigeria to provide and manage electricity? What institutional frameworks/ policies have been put in place? What is the state of affairs in the sector? How has development been structured? What strategies have been put in place? What reforms are in place/ ongoing? What should be /is the roles of CSOs/NGOs/ CBOs? Can public-private partnership contribute to the RXM of Electricity? Are there contemporary issues of interest? What are the challenges encountered and the proffered possible solutions as a way forward?*

What link is there between the provision and management of electricity with the: MDGs, Education, Health, Housing, recreation & tourism, social infrastructure, employment, income generation, personnel welfare, development and urban planning?

This paper attempts to discuss the provision and management of electricity (electrical power) in Nigeria vis a vis the challenges and prospects. It attempts to highlight efforts made and the sufficiency/adequacy/inadequacy/insufficiency of all efforts to date with posers on some issues of

contention. Finally recommendations are made as an attempt to reengineer the ongoing reform and transformation in order to reposition the power(electricity) industry.

2. HISTORY OF ELECTRICITY PROVISIONS AND MANAGEMENT

The Hon Minister of power, Prof. BartheNnaji,detailed efforts to provide and manage electricity in Nigeria from 1950 to date including prospects and challenges. Some of the interesting major events are highlighted as follows:

- 1950- 1st thermal Station - within a decade imbalance in demand and supply became evident.
- 1972- Building of sector was attempted
- 80/90- Military continued to ignore the sector
- 1999- Refocused attention on the power system
- 2005- Grips with scale of problem: unbundling NEPA and setting up Regulatory Commission
- NIPP (11 new Power Stations, Transmission Lines, etc.)
- 2007- Starting of NIPP
- 2011 (more than 50years) after independence haunting Nigerians is no power(electricity)
- [at N75- 80K/day on diesel The Island Hotels, Homes and Industries rely on generators]
- Small Businesses are affected by lack of power(electricity) and high cost of running generators (Small Printing Press, barbing saloons, sawmills etc)

Figure 2.1:shows the history of investments in Nigeria from 1975 – 2004.

History of Investments in Electric Power in Nigeria (1975-2004)

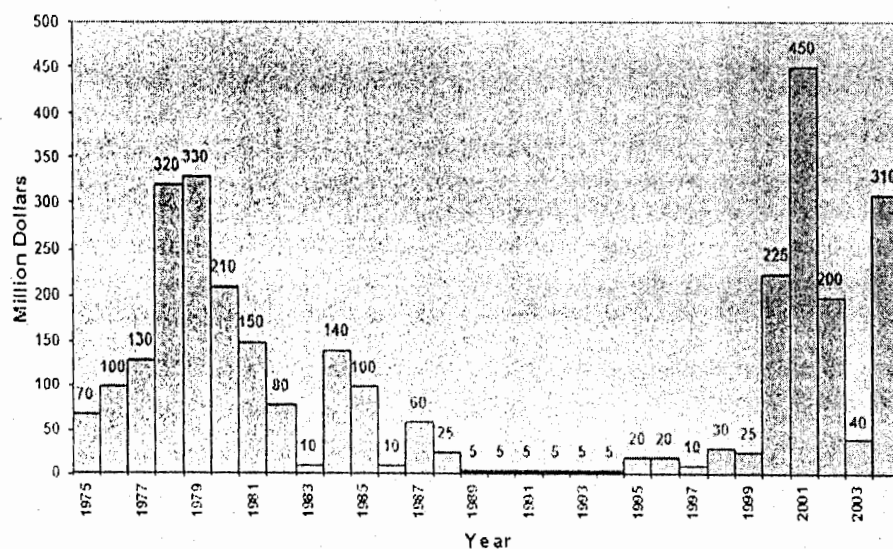


Table 2.1 captures vividly attempts by government to provide and manage electricity in Nigeria from the colonial era to date.

TABLE 2.1: HISTORICAL OUTLAY OF ELECTRICITY PROVISION AND MANAGEMENT IN NIGERIA

DATE	EVENT
1896	Introduction of Electric Power in Nigeria. Installation of of 30 MW, 80Hz, single phase locomotive generator at Ijora, Lagos by the Public works Department(PWD)
1924	Installation of the 3 phase, 50Hz system which supplied power to a few citizens through isolated generating stations like Cameroon Development Corporation, and African Timber Plywood company and Nigeria Electrical Supply Corporation,
1929	4MW hydroelectric plant was established by the Nigerian Electricity Supply Corporation (NESC)at the Kura Falls
1946	Management of electricity supply taken over by the Nigerian Government Electricity undertaking(NGEU)
1952	Establishment of the Electricity Corporation of Nigeria(ECN)which midwifed the establishment of the Ijora Power station , operating 2X10MW coal powered turbo generators to serve the city of Lagos
1953	Hydrological investigation began for possible siting of hydro electric power station in the country by the DEUTCH'S engineering consultant for the ECN, paving the way for Kainji dam construction
1964	Establishment of the Niger Dam Authority to construct the Kainji Dam Power and 330KV transmission lines between Kainji and Oshogbo which was designated as the National Control Centre(NCC)
1968	Commencement of power generation by the Kainji Hydroelectric Power Station with installed capacity of 760 MW
1972	Merging ECN and the NDA to form the National Electric Power Authority(NEPA)to supply power to all parts of Nigeria
2006	NEPA was reformed and renamed Power Holding Company of Nigeria(PHCN) with 18 business units

[Source: O.L Atandare, "Towards Reviving Nigeria's Ailing Power Sector" modified by S. T. Wara]

3. CURRENT STATE AND TRENDS IN THE PROVISION, MANAGEMENT AND DELIVERY OF ELECTRICITY

There are some existing institutional frameworks and policies that have been put in place by the past and current administration of the country. Following is a discussion of the state of affairs as well as current trends in the power sector. Also some comparatives shall be drawn from around the world but especially from Africa.

Table 3.1: Proposed Electricity Infrastructure in Nigeria(Present/Future)

S/N	Name of Station	Capacity(M W)	Type of fuel	Year commissioned	Age of plant(years)
A	Existing Power Stations – pre 1999 stations(EPSS)				
1	Kainji	760	Hydro	1968,1976,1978	23 – 33
2	Jebba	578	Hydro	1986	22
3	Shiroro	600	Hydro	1990	18
	SubTotal	1938			
4	Egbin	1320	Thermal	1986,1986,1987	21 – 22
5	Sapele	1020	Thermal	1978,1981	27 – 30
6	Delta	912	Thermal	1966-1990	18 – 42
7	Afam	711	Thermal	1965-1982	26 – 43
	SubTotal	3963			
8	NESCO	30	Hydro/Thermal	1929	
	Sub Total	5931			
B	National Integrated Power Projects(NIPPs)				
9	Gbarain, Bayelsa	225	Thermal	Yet to be commission	
10	Ihuobor, Edo	451	Thermal	Yet to be commission	
11	Omoku, Rivers	230	Thermal	Yet to be commission	
12	Sapele, Delta	451	Thermal	Yet to be commission	
13	Egbema, Imo	330	Thermal	Yet to be commission	
14	Calabar, Cross River	561	Thermal	Yet to be commission	
15	IkotAbasi, A/Ibom	300	Thermal	Yet to be commission	
16	Ibom Power, Awa Ibom	188	Thermal	Yet to be commission	
	Sub total	2,744			
C	Independent Power Producers(IPP)				
18	AES, Lagos	270	Thermal	2000	
19	Geregu, Kogi	414	Thermal		
20	Omotosho, Ondo	335	Thermal		

21	Papalanto, Ogun	335	Thermal		
22	Alaoji, Abia	346	Thermal		
23	Geometric, Aba	140	Thermal		
24	Agip JV, Okpai/Kwale, Delta	480	Thermal	2006	
25	Chevron JV, Agura, Igbini, Lagos	750	Thermal		
26	Total Fina, Obite, Rivers	500	Thermal		
27	Exxon Mobil, Bonny Rivers	500	Thermal		
	Sun total	4070			
	Grand total	12,745			

[source: J. C. Eke 2008 – Positioning The Power Sector For Electricity Sufficiency In Nigeria To Meet Up With Vision 2020, Covenant University Public Lecture Series]

3.1 Existing Strategies/ Instruments

The Federal Government saw that Electric Power could be delivered independently even by a State Government and in 2004 conceptualized the National Integrated Power Projects. The National Integrated Power Projects (NIPPs) was designed as a FAST TRACK approach to improving the nation's Electric Power Supply through the implementation of integrated Generation, Transmission, Distribution and Gas Supply. Government then projected to meet certain minimum values before 2020:

- 2008 - 15,000 MW
- 2010 - 20,000 MW
- 200,000 MW Transmission Lines and Distribution Lines for the entire country.
- Fifteen (15) Gas line projects were awarded.

The intended Projects were made up as follows:

- 21 Gas Turbine PG 9171E DLN - 2,444 MW
- Extension to CCPP (3 new stations) - 200 MW
- Transmission Line (330kV, 132kV) - 3,000 KM
- Additional Capacity Delivery(330kV, 132kV) - 8,903 MVA
- Substation Autotransformers - 60-300 MVA
- Distribution Capacity - 3,540 MVA

To execute this meant the involvement of the following:

- Over 300 contracts were to be executed
- Over 600 project sites
- Over 20,000 shipments will be required
- 10,000 tons of Materials for Power Station Equipment
- 25,500km of Transmission and Distribution cables required
- 67,500 tons of Transmission Towers Materials to be imported
- 200km of Gas pipeline Materials required

- New Distribution Transformers - 22,600 MVA
- Budget (excess crude oil funds) - \$3,000million

Locations:

- Calabar, Cross River State (561 MW)
- Egbem, Imo State (338 MW)
- Ihovbor, Eyaen, Edo State (451 MW)
- Gbarain/Ubie, Bayelsa Sate (225 MW)
- IkotAbasi, Akwalbom State (300 MW)
- Sapele, Delta State (451 MW)
- Omoku, Rivers State (230 MW)
- Papalanto Phase 2 (late addition)(754 MW)Ogun State

Funding

Generation Sector was put at \$1.287 billionat \$526.63/KW. [\$480 < \$526.63 < \$1,000 required to generate a kw of power]

Design and Supervision

This is to be executed by the Local and International Consultants for Design and Supervision and awarded according to World Bank tested and competitive formats.

In particular, Consultants were to:-

- Prepare Technical Specifications, Tender Documents
- Negotiate and finalize Contracts
- Co-ordinate and Manage all the Generation, Transmission, Distribution and Gas Supply
- Monitor Contracts and Claim management – involving Quality Cost and Time Control
- Attending Factory Acceptance Tests
- Monitor and evaluate all Contracts, with timely reporting.

3.2 Problems/Challenges

Implementation and output so far have been short of the projected values indicated above due to diverse drawbacks and challenges. These include: generation, transmission, distribution, utilization, marketing, financial, human resource, societal, political and legal (technical, non-technical and environmental) challenges respectively as summarized hereunder:

- Inadequate funding
- Inadequate arrangement for capital projects and Market Operator's settlement
- Low morale of staff due to poor remuneration
- Vandalism
- Energy theft
- Shortage of skilled staff.

[Source: Engr. E. O. IKWU Review of Activities and Achievements, Benin Electricity Distribution Company Plc, 10/01/2008 & S.T. Wara]

3.3. REFORMS – Government Policy Development over Time

The non-performance of NEPA led to the need for **restructuring** of the power(electricity) industry to relieve it from the burden of inefficiency and thus create an environment where reliable, stable and long term electricity provision and management can be guaranteed amongst other perceived benefits.

It was reckoned that it is near impossible for government alone to fund the necessary growth in the sector of any country and in spite of the unprecedented allocation of funds to NEPA in 1999, the modest improvement that were noticed in the quality of power(electricity) provision and management left the authority with an excruciating debt of N21.653 billion(\$144.35 million) to her bankers and a huge commitment of more than N138.4 billion(\$922.67million) to her contractors. As a way of rapidly mobilizing private capital and efficiency to the power sector, the government chose to embark on a privatization programme aimed at having at least 85% of the power sector privatized by the year 2010(J. C. EKE, 2008). This realization and decision has led to policy reforms under successive governments.

3.1.1 OBASANJO REFORM

The road to privatization has been long and NEPA lost its **monopoly** over the Nigerian Power System in 1998 when the National Council on Privatization(NCP) empowered a 23 member Electric Sector implementation Committee (EPIC) to develop recommendations to promote the **policy goals of total liberalization, competition and private sector led growth of electricity**. The EPIC set out the Electric Power Policy Industry (EPI) that can meet the needs of its citizens in the 21st century and predicted that fundamental reforms at all levels are eminent(J. C. EKE 2008). The Electric Power sector Reform(EPSR) was perfected in a bill signed into law on **March 11th 2005** by the President and Commander in Chief of the Federal Republic of Nigeria. **Act 2005** gives legal authority and support to the reform activities: restructuring and eventual privatization of NEPA.

The key provisions of the EPSR Act 2005 include the following:

- Creation of initial holding company, called Power Holding Company of Nigeria, PHCN to take over the functions, assets, liabilities, and staff of the National Electric Power Authority, NEPA
- Unbundling of PHCN into successor companies and ensuring greater operational autonomy, market development, privatization of successor companies
- Development of competitive electricity market
- Establishment of the Nigerian Electricity Regulatory Commission(NERC),
- Provision for licensing and regulation of generation, transmission, distribution and supply of electricity
- Enforcement of matters such as performance standards, consumer rights, and obligations
- Provision for the determination of tariffs and also matters incidentals and connected with the foregoing.

The main ingredients of the reform are **deregulation, commercialization, privatization, free market evolution** etc. It is aimed at improving the **overall efficiency** through restructuring, **private sector participation**, and **competition** which is a major driver of the industry's efficiency, through improved **customer satisfaction** and **reduced tariff**. The implementation of the power reform bill kicked off with the incorporation of the initial holding company, called Power Holding Company of Nigeria(PHCN) on the 31st May 2005. The Nigerian Electricity Regulatory Commission(NERC) was officially inaugurated on October 31, 2005. The establishment of NERC is one of the main pillar of ensuring the delivery of an efficient power sector in Nigeria. **The duties of NERC include:**

- To **regulate tariffs and quality of service**(to the extent proposed in the market design) and powers to oversee the industry effectively.
- **Monitor** anti – competitive behavior, including mergers and acquisitions involving licensed electricity companies.
- Institutional and enforcement requirements of the regulatory regime.

- Requirements for licensing by the NERC of the Generation Companies, System Operators, Transmission services, Distribution Companies, and Trading Companies that will be created from the restructuring and unbundling of NEPA.
- Legislative Authority to include special conditions in licenses,
- Provisions relating to public policy interests in relation to fuel supply, environmental laws, energy conservation, management of scarce natural resources, promotion of efficient energy, promotion of renewables and publication of reports and statistics, etc.
- Provision contemplating the establishment of a **Power Consumer Assistance Fund(PCAF)** from which designated consumers shall enjoy some elements of subsidies.
- The establishment of the **Rural Electrification Fund(REF)**, to promote rural electrification through both public and private sector activities,
- Providing a legal basis with necessary enabling provisions for establishing, changing, enforcing and regulating technical rules, market rules and standards

As a result of the reforms, the public sector monopoly enjoyed by the defunct NEPA has been broken and the emerging PHCN split into 18 companies in what the industry experts call '6 – 1- 11 Model'. The companies have been licensed to operate and are registered with the Corporate Affairs Commission(CAC). The companies include: 6 generating companies(GEN Os), one transmission company(TCN) and 11 distribution companies(DISCOs). **Presently, there are IPPs generating electricity and selling to the power pool from which the 11 DISCOs purchase as retailers through the power purchase agreement(PPA).** Table 3.1 is a summary of ongoing NIPP and IPP projects.

3.3.2 YAR'ADUA'S SEVEN POINT AGENDER & TWO SPECIAL INTEREST ISSUES FOR NIGERIA

On assumption of office on 29th May, 2007, President Umaru Musa Yar'Adua, GCFR, rolled out his election covenant with the people of Nigeria, the Seven Point Agenda. Since then, the Agenda has been properly conceptualized and comprehensively articulated and the implementation strategies adequately laid out, to ensure the realization of Vision 20:2020. The President enunciated a seven-point agenda plus Two Special Interest Areas to tackle the numerous problems facing The Nigerian economy.

Power and energy are two subsectors prioritized under the Seven-Point-Agenda. Federal Government infrastructure reforms in this sector will lead to the development of sufficient and adequate power supply to ensure Nigeria's ability to develop as a modern economy and an industrial nation by the year 2020. He declared a national emergency on energy and power supply. The plan is to increase power supply to 10,000 megawatts (mw) in 2011 and 50,000 mw by 2015.

In addition, the section on electricity traces the causes of the poor performance of the industry. Quintessentially, the issues and challenges facing the sector include the following:

- a) **Technology-related problems** – Inadequate electricity production and supply infrastructure, inadequate gas supply, dearth of investment and funding, inappropriate pricing, management and ownership, and conflicting goals and objectives; and
- b) **Reform – related challenges** – Inappropriate implementation and co-ordination of initiatives and Government programme, inappropriate industry structure, ineffective regulation although nascent, and consequences of reform.
- c) Failure to provide adequate and reliable electricity justifies the evolution of initiatives to **transform the industry**. Central to this transformation strategy are:
 - Articulating initiatives to aggressively attract private investors;

- Clearly defining roles for private and public sector involvement in power generation, transmission and distribution;
- Improving transmission and distribution networks to support generation capacity; and
- Increasing power generation capacity through the diversification and installation of gas distribution grids and replacement of the existing plants, amongst others.

Consistent with President Yar'Adua's critical **infrastructure policy**, a joint venture fund of 628,875 billion Naira (**\$4.193billion**) for the power sector has been agreed by Federal Government with all States Government. The Federal Government had earlier set aside 288,223 billion Naira (**\$1.922 billion**) in the 2008 Supplementary Budget to provide its share of power expenditure. Additional intervention, proposed in the 2009 budget toward addressing the challenges of critical power infrastructure include the conclusion of **Mambilla hydro-electric power generation project and other generation, transmission and distribution projects**. To succeed with plans for addressing problems in the power sector and to, specifically guarantee the achievement of the **goal of 6000MW for power generation in 2009**, the Government has set aside over 200 billion Naira (**\$1.333 billion**) in the 2009 Budget for implementing gas projects, aimed at acquiring capacity to deliver 1.2bn scf of gas to domestic market. The projects associated with the above allocation include:

National Domestic Gas Projects, Trans-Sahara Gas Pipeline Project, Calabar-Umuahia-Ajaokuta Gas Pipeline; Ajaokuta-Abuja-Kano Gas Pipeline; Gas Supply Pipeline to PHCN Delta IV; Gas pipeline to power plants including: Omotosho, Papalanto and Alaoji.

Again, allocations in the budget to other priority infrastructure areas are clearly indicative of Government resort to the medium term development framework as platform for achieving long term development objectives, which Nigeria's Vision 2020 represents.

The National Gas Infrastructure Project

The gas industry has also been prioritized in the energy sector because of its current relative importance in the projected transformation of the Nigeria economy by 2020. As gas reserves decline and grow in importance in the industrialised nations, the resultant rising gas prices in the international market continues to create a preferential pull for export of Liquefied Natural Gas (LNG). Consequently, there is a disproportionate focus by gas producers in the country for LNG projects. This creates a significant shortfall in the availability of gas for rising domestic utilisation, which threatens the economic aspirations of **the 10 nations** in this sector. Gas demand is forecast to grow from the current level of 5 bcf/d to about 20 bcf / d by 2012. Projected growth in the domestic sector is the most visible, growing from less than 1 bcf/d in 2007 to about 8 bcf/d by 2012. The energy requirement to sustain an aggressive GDP growth drive is enormous. Currently, demand, (export and domestic), for natural gas far outstrips supply, driven by growth in the power sector and other gas based industries such as fertilizer, cement, methanol, LNG etc.

3.3.3 JONATHAN's Power Sector Reform Roadmap

In a bid to address the problem of inadequate electric power supply in Nigeria, which has long plagued and affected private and industrial concerns, the President of the Federal Republic of Nigeria, Dr Goodluck Jonathan on Thursday, 26th August 2010 presented a Roadmap on the Power Sector Reform to stakeholders and investors in the Power Sector. Whilst the Roadmap broadly follows the existing power legislation - the Electric Power Sector Reform Act of 2005 (EPSR Act 2005) - which was passed under the leadership of former President Olusegun Obasanjo, it modifies some provisions and presents indicative timelines for planned actions. We note that the implementation of the legislative framework, EPSR Act 2005, had been somewhat uncoordinated after the exit of the Obasanjo administration, thus stalling the much anticipated impact of increased private sector investments and

resultant improvement in power supply to residential, commercial and industrial consumers alike. We present subsequently some of the key highlights of the Roadmap, as presented by the President.

Divestiture of Successor Companies. As part of the Roadmap, the Presidency has in clear terms highlighted the Federal Government's plans to divest of its interests in all but one of the eighteen successor companies to the Power Holding Company of Nigeria (PHCN). The downstream end of the chain as represented by **eleven distribution companies** located around the country would be divested through the sale of a minimum of **51%** in each of the separate companies to a **core investor**. For the **six generation companies**, it intends to utilize a **mixed strategy** to be adopted by the Bureau of Public Enterprises, in privatizing the successor companies. Whilst it would grant **concessions** for the operation of the hydro-power generating plants (Kainji – 760MW; Jebba – 570MW; Shiroro – 600MW), thermal generating power plants (Afam – 900MW; Egbin – 1320MW; Ughelli – 972MW) would be divested through a similar process as the distribution companies i.e. the sale of a minimum of 51% equity to a qualified core investor.

Holding on to the Transmission Infrastructure. Similar to the initial provisions of the EPSR Act 2005, the Federal Government would not divest of its interest in the midstream segment of the Power value chain – Transmission. However, the Roadmap indicates that the infrastructure, though owned by the government, would be managed by a credible private sector company, under a five year management contract.

Major review on the existing tariff structure: A major disincentive to the requisite investments in the Sector, “low tariffs”, would also undergo a major review. The current tariff structure – the Multi Year Tariff Order (MYTO) which became effective in July 2008, has been criticized as not effectively reflecting the true market costs, thus making the rates unattractive to prospective participants in the power value chain. The MYTO structure had provided for minor reviews on an annual basis, while a comprehensive review was scheduled to be initiated after a five year period. However, there are also provisions for a major review to be initiated under the MYTO structure, before the stipulated five year period, if there are substantial changes to key input parameters. We note that two of the basic inputs in the MYTO model (**gas prices and the exchange rate**) have changed substantially from the assumptions used. Whilst the exchange rate has devalued 19% from the initial MYTO assumption of N125 from 2009 to 2011, gas prices for the power sector were recently hiked five-fold to \$1/mmbtu, effective by the end of 2010 with graduated increases for subsequent years by the Ministry of Petroleum. Apart from the changes to the inputs in the MYTO model, we note that power tariffs in Nigeria have historically been less than 50% of tariffs in comparable countries. We expect that the tariff review, when effective would result in at least a 100% increase in the effective tariff paid by consumers in 2009, thus giving a more reflective position of power pricing.

Introducing a Bulk Purchaser: A new transitory entity ‘the Nigerian Bulk Electricity Trading Company (NBETC) PLC has also been incorporated, to play a mediatorial role between the generation companies and the distribution companies. The Company's role would involve the bulk purchase of power from the successor generation companies, Independent Power Producers as well as new entrants into the upstream power space and then reselling these to the distribution companies. The Company would play this function up until, the individual distribution companies can enter into direct Power Purchase Agreements having been adjudged credit worthy by the counter party or generating company, a status which they currently lack. However, there would be **no restrictions on a direct purchase** by the distribution company from the power generators, during the life span of the bulk trader.

Financial Guarantee by the Federal Government: To encourage private sector investments and guarantee payments to power infrastructure investors, particularly the generation companies, various options of a credit enhancement programme guaranteed by the Federal Government of Nigeria is currently being reviewed by the Ministry of Finance. Thus, the guarantee would ensure that the bulk

trader 'the Nigerian Bulk Electricity Trading Company Plc' gets some support from the Government to enable it effectively execute Power Purchase Agreements (PPA's) entered into with the generating companies. Current options for the credit enhancement being mulled include:

- An FGN backed letter of credit to provide liquidity to the bulk trader
- A Rolling Guarantee of the obligations of the bulk purchaser, issued by a multilateral institution or domestic and/or international banks, with a counter guarantee issued by the FGN;
- A World Bank Partial Risk Guarantee backed by a FGN indemnity
- An FGN treasury bond issue
- A combination of two or more of these options

Natural Gas Initiatives for Power

Holding the seventh largest gas reserves in the world estimated at about 187 trillion cubic feet, the nation's power infrastructure has in recent years been skewed towards the use of thermal or gas fired generation plants. From about 73% in July 2010, thermal plants are scheduled to account for c.88% of the country's total generation capacity by December 2013, thus emphasizing the role of natural gas in the grand scheme of delivering power. Consequently, to boost domestic production and encourage sale to gencos by the International Oil Companies (IOC's), the Ministry of Petroleum recently announced a five-fold increase in the cost of 'gas to power', aimed at making it a profitable venture for the IOC's. Effective December 2010, natural gas to power plants would be sold at \$1/mmbtu, up from \$0.20 currently.

*Prices for December 2014 and December 2015 are based on our assumption of a 10%YoY inflation. In addition, increases of \$0.50/mmbtu would be introduced by the end of 2011 and 2013 respectively, while subsequent price increases would be guided by the country's inflation. However, these prices would be capped by its export parity, which indicates that the cheaper of the two would be paid by power generation companies for gas supply to their respective plants.

A New Set of Targets

Following a failed attempt of the Yar'Adua administration to actualize a December 2009 power generation target of 6,000 MW, the Roadmap presents yet another set of generation, transmission and distribution targets by the Federal Government. To partly ensure the achievement of these targets, the Government would maintain direct responsibility for the completion of the National Integrated Power Projects, the completion of budgeted PHCN projects and the completion of budgeted Nigerian Gas Company investments in the gas supply and transportation infrastructure. **On generation**, it plans to increase capacity by 52% from 4,612MW currently to 7,033MW by April 2011, partly fuelled by the completion of 1,266MW from the NIPP projects by the stated date. We note that none of the NIPP projects currently contribute to the country's present capacity. With graduated increases in generation capacity, it intends to attain 14,218MW by December 2013. However, **expansion in its transmission capacity** is expected to be less aggressive, with just a 16% improvement from 5,155MW to 5,995MW by April 2011 on its 330kv network (relative to 52% for generation). Also, due to the comparably lower improvements in the transmission grid from the budgeted PHCN and NIPP projects, the infrastructure would only have a capacity to transmit 8,653MW by December 2013, less than the anticipated 14,218MW for generation.

Similarly, **targets for the distribution** arm underperform the generation arm, as its target is to hit the current peak load of 9,057MW by December 2013. However, we note that the strategy for the downstream end would be a gradual closure in identified gaps and a reduction in distribution losses over the target period. Ultimately, the Federal Government in line with **Vision 20:2020**, aims at a target of 40,000MW by 2020. This would imply significant investments from the private sector, as the Roadmap estimates suggest an annual investment of \$10 billion (N1.5 trillion), which effectively amounts to 81%

of Nigeria's 2010 capital expenditure budget. This does not include the proposed construction of a 700kv super grid Based on estimates of CAPEX of N1.853 trillion, as initially passed

Planned Construction of a Super Grid

To augment the existing 330kv and 132kv transmission lines, the Federal Government recently announced its approval for the construction of a new 700kv super grid. Construction of the new grid is estimated at a cost of \$3.5 billion and is likely to be completed within four years. Since the transmission network would be owned by the Federal Government, the construction would still be financed with Government funds, though with additional support from private investors, as well as international finance and development agencies. However, as stated previously the transmission infrastructure would be handed over to a specialized private firm to manage, under a five year contract. Whilst, the source of initial funding from the Government end remains unclear (as no budgetary allocations in this regard have been disclosed), we note that the new grid would significantly improve the transmission infrastructure, thus reducing the recurrent losses that plague the current lines.

Investor's commence bidding for the Discos

Following calls for bids from the Bureau of Public Enterprises (BPE) from investors, the first phase of the privatization exercise of the successor companies seems to have kicked off. In addition to financial bids, the investors must showcase a strategic plan for the distribution company (Disco), which would involve an improvement in its processes, consequently resulting in a reduction in technical and commercial losses. We anticipate interests from individual corporates (local and international), sub-national governments as well as consortiums formed solely for the purpose of securing the assets of the discos. We add also that some sub-nationals which had earlier indicated interest in securing the discos in their localities might form partnerships or SPV's with technical companies for the purpose of the acquisition. Given the population, density and relatively higher percapita consumption of the Lagos region and Abuja, we judge that the Eko Electricity Dist. Co. Plc., Ikeja Electricity Dist. Co. Plc and the Abuja Electricity Dist. Co. Plc would be favourites for prospective investors.

Policy consistency

Key to implementation success. Whilst the Roadmap broadly outlines a program schedule, which if properly implemented and timelines adhered to, will be expected to bolster power generation, transmission and consumption in Nigeria significantly, we believe that its success would be closely linked to consistency in policy implementation and political continuity. We re-iterate that the 'Power Program' initiated by the Obasanjo administration, which was broadly based on the Electric Power Sector Reform Act 2005 (same basis for the New Power Roadmap') was stalled by the Yar'Adua administration, as it suspended funding for a key nerve of the reform - **the National Integrated Power Project (NIPP)**, for **more than two years** amidst allegations of corruption. Consequently, a key risk to its success would be changes in the present proponents of the Power Roadmap, especially as we approach an election year. If this risk element crystallizes and a change is effected, we are likely to see the process being altered or suspended completely again, as the new leaders at the helm of affairs would come in with their own strategies.

Expected Tariff Increase

Given the proposed review of the current tariff structure highlighted previously, we anticipate that the outcome would result in a significant increase in the retail tariff structure, by as much as a 100%. We hold the opinion that this hike in rates would not spur a round of inflation as the cost of alternatives which are currently being utilized; such as refined petroleum products, far exceed the possible rates to be derived from the review. Nevertheless, we anticipate some rounds of protests by labour unions and manufacturers

in a bid to keep their costs at the barest minimum, but we believe the key point to note is the relative pricing/cost as highlighted above. These rounds impelled by the tariff increase may pose a challenge to the reform process, with possibilities of a downward renegotiation with the regulatory authorities.

[SOURCE: Vetiva Flash Note I Pg. 6, 31 AUGUST 2010]

3.3.4. NIGERIAN POWER SYSTEM UPDATE 2011 BY PROF. BARTHE NNANJL, HON. MINISTER OF POWER

The Hon Minister after giving an historical background of efforts to provide and manage electricity in Nigeria from 1950 to date, he brought to light the prospects and challenges.

What does it take to produce electricity?

The minister believes that achieving a stable power supply will require stabilizing and improving existing structures: Transmission Grid, Distribution Network, and Generating stations which have suffered partial of total neglect since commissioning. The Kainji powergeneration station for example was installed in 1968 and has had no turn around maintenance to date resulting in completely eroded system stability.

A Presidential Task Force to implement the 2005 Power Reform Act was set up in 2010 with Prof Barth Nnaji as head to superintend the reforms. **The action plan is to consolidate existing capacity and then build on more capacity.** This would entail:

- Gas powered station at Egbin is over 25yrs, 80% plant capacity. First thermal plant to be refurbished.
- Servicing 600MW Hydro plant in Shiroro.
- Dec 2010 generation/available power is put at about 3000MW.
- April 2011- power capacity rose to 4000MW.
- Resumption of work on NIPP stations.
- Olurunshogbo contributes 10%.
- Gas turbines + Steam turbines (Combine Cycle) 20%.
- Alaoji in Aba, Abia State.
- Ph1 Gas turbine- 504MW (4@ 126.1 each).
- Ph2 Steam turbine- 578MW (2@ 279MW).
- Construction of Nationwide Gas Infrastructure.
- 4000MW to be added at the end of 2011.
- Plants 80-90% complete.
- Rehabilitating existing stations and fast tracking NIPP projects.
- Introduce SMART Power (How Nigerians use energy = Energy Efficiency project to impact: energy conservation using energy efficient devices Educate Nigerians i.e. Energy Management CFLs, LEDs use saves 75%).

Apart from these capital intensive measures, some short/medium term interventions to Nigeria's Crippling Power Crunch, **according to the minister**, include:

- Service improvement in Generation, Transmission and Distribution is eminent/paramount.
- Holistic approach should be adopted for the provision and management of electricity.

No doubts, transformation of the Power Sector requires real structural changes in the system.

- Regulators have to be in place to enforce standard practices in the power industry.
- Purchase agreements should be follow a clearly laid out format and process.
- Liabilities and labour related issues should be addressed frontally and solved once and for all,

The following steps have been taken to ensure the actualization of the structural changes.

- Presidential Action Committee on Power, headed by the President and VP (PAPC)
- A task THAT MUST BE DONE: providing adequate power to the Nigerian economy/Nigerians
- There is need to Create a trusted system which provides confidence to investors, (essential tool for modern life).
- Privatization/Government's Role: Regulate and facilitate whilst investors bring in the money.
- BPE agent charged to privatize PHCN (moving from state ownership to private ownership).
- Thermal: privatized.
- Hydro: concessioned (Why concession? no rights to sell water to private owners).
- DISCOs for privatization (Not 100% i.e. Reduce Stake considerably) - **Private: FG : SG : workers.**
- Technical/commercial losses management.

Transmission System New Look

- State owned.
- Technical consultant to be managed by private sector for quality assurance.
- 331 Expressions of interests from Asia, Middle East, Europe.
- Bidders held to strict standards of Investment and Implementation plans for power station and Distribution.
- People with financial muscles to move on immediately after sale/privatization.
- **40,000MW by 2020 as target needs \$50-60 billion investment.**
- 2010- Appointment of New International Regulator.
- NERC- Nigerian Electricity Regulatory Commission obligations + Investment Recovery Ability, **N8.5/kwh @ 50cents/kwh paying more with generators**
- Competitive companies to choose from with proper service delivery
- Prepayment to be encouraged (Online payment)
- Appointment of Bulk Trader by Government to buy from generators and sell to discos to be financed by the World Bank (partial risk guarantee to allow investors key in early enough with the project). Letter of credit available for default in paying
- CBN will provide funds for low interest rates to banks at 1% to be loaned at 7% for up to 15 years to interested investors
- States and Private Investors can generate: whilst Government is to put policies in place to encourage this. **Lagos State has flagged off such an NIPP through PPP**
- 650MW CC at Afam by Shell in Rivers State- Exploiting Nigeria's abundant gas reserve

On the use of Alternatives Energy

- 10 MW pilot wind station in Katsina with 37 wind turbines
- 275 KW of electricity by Otis Engineering Ltd.
- Kogi State (Coal) 1200W Coal-driven Power station by ETA Zuma Group
- Taraba State (Mambuta plateau Project)
- Giant Hydro Plant(to produce over 4000MW power) by the Federal government with Brazilian government.
- Providing opportunity for locals with foreign partners.
- Setting up new Companies (Power and energy entrepreneurs)

Privatization and existing power sector workers (short-term interest and fears vs tangible long-term benefits)/labour related issues

- Better coordination of service
- Eliminate laxity
- Focused Professionals
- Reward for work
- Managing labour issues in the face of reforms: N57 bn paid out as arrears to PHCN works
- Chief Negotiator trusted by Government. and PHCN workers to mediate (Interest of Nigeria and Nigerians is important), that is, engaging existing workers in the reform process

New targets have been set to save the country from the prevalent economic ravages among other effects of poor electric power supply.

- 2011- 7,643 MW @ 8000
- 2012- 9,879 MW @ 10,000
- 2013- 13,845 MW @ 14,000

[SOURCE: Documentary on NTA 04/07/11 on Nigeria's power sector Reforms].

3.4 Critical assessment of policies, service delivery, management and productivity/efficiency

Where is Nigeria on the Current Power Projects? June 2007 was very critical in government's new spirited effort to provide and manage electricity after decades of neglect as there was virtual stoppage of works by the national assembly. As at the time of stoppage:

- Eight (8) Gas fired Power stations were on-going; three (3) of them were scheduled to be completed in twelve months. others in twenty four (24) months. Indeed, 80% of them would have been completed by 2009.
- One hundred (100) Transmission Lines / Substations were due for completion in 15 months and would all have been completed in 2009.
- 1 No. telecommunication / teleprotection project that covers the whole country was on-going. By 2009 this would have been near completion.
- Fifteen Gas Supply / metering station projects were on-going.
- Two hundred and ninety (290) distribution Projects were on-going.

It is obvious therefore why it was and has been difficult to meet up with set targets in the reform agenda and process.

3.5 Notes on African and International Dimensions and State of delivery/Management of Electricity - COMPARATIVE PERSPECTIVE

Find in Table below some comparative facts on population, electricity generation and electric power available for use per person in various countries in Africa

S/N	COUNTRY	POPULATION(MILLION)	ELECTRICITY GENERATED(GW)	ELECTRICITY AVAILABLE FOR USE/PERSON(W)
1	IRAN	70	42	600
2	SOUTH AFRICA	40	40	900

3	EGYPT	79	23	291
4	NIGERIA	150	3	20
		160	5	31.25
			40	250

In his book, "Hot, Flat and Crowded", Thomas Friedman said: An African uses:1/11 of what North American citizen uses, 1/6 of what European citizen uses and ½ of what Latin American citizen uses. This perfectly captures how terrible the state of power generation and management is in this part of the world and especially Nigeria.

Regional Project - West African Power Pool (WAPP)

In an effort to improve power reliability and encourage private sector investment, ECOWAS has been working to establish the West African Power Pool (WAPP). In October 2000, 14 ECOWAS members signed an agreement to launch a project to boost power supply in the region. The WAPP agreement reaffirmed the decision to develop energy production facilities and interconnect their respective electricity grids. In December 2003, ECOWAS Heads of State signed the **ECOWAS Energy Protocol, which provides open and non-discriminatory access to power generation sources and transmission facilities.**

All nations of the world are restructuring their strategy for the provision and management of electricity. The methods applied and the policies are in tandem with what Nigeria is doing. However whilst most countries are making steady observable progress, Nigeria appear to be enjoying no reasonable progress.

3.6 The Contending and Contemporary Issues

- Making use of energy mix
- Dealing with funding/finance
- Energy conservation/management/efficiency/security
- Global warming/Emission reduction
- Companies in cities not using public utility/over dependence on Diesel generators (GSM, ETERNIT, GUINNESS NIGERIA, BRITISH TOBACCO, Banks etc/ implication(cost, electricity infrastructure development/ emissions, health)
- Budgeting for Diesel/generators in federal offices/cost implication (see Table 3.4)
- PREPAID-meters/billing? Where is NERC?/tariff
- Why the agitation by former NEPA workers if they were actually factored into the reform process.
- Rural Electrification/off grid applications/implications

The table shows Federal Budget For Fuel And Maintaining Generators In 2009

S/No.	Federal Establishment	Amount for generator fuel (N) Million	Amount for generator Maintainance (N) Million	Total (N) Million
1	State House Abuja	27	14.3	41.3
2	Police Formation	Na	Na	110.0

3	Ministry Of Police Affairs	Na	Na	9.2
4	Police Pension Office	Na	Na	3.7
5	Office Of Secretary To Federal Government	24.6	3.6	28.2
6	Independent Corrupt Practices And Other Offences Commission	30.0	5.0	35.0
7	Ministry of Defence	39.5	50.0	89.5
8	Nigerian Navy	Na	Na	63.0
9	Nigerian Air Force	19.43	98.0	117.43
10	Nigerian Defence Academy	Na	Na	16.9
11	Nigerian Defence College	5.8	12.6	18.4
12	Defence Intelligence Agency	118	4.9	16.7
13	Ministry Of Foreign Affairs	58.5	25.0	83.5
14	Ministry Of Finance	105.5	49.2	154.6
15	National Assembly	na	na	233.0

[Source: TaiwoAdisa and UchechukwuOlisah, "FG. B N 2bn to run Generators' Nigerian Tribune, January 6, 2006, pp1 and 4]

Where do we go from here with our attempts to provide and manage power. Some universities spend N 14MILLION PER MONTH to power diesel generators, some GSM operators spend N500million a month to fuel generators, N 5 BILLION FOR SPARE REPLACEMENT, N 12 billion for generator purchase. Why can't we harness these funds to reengineer our reform process?

Table 2.2: Statistics of Countries Importing Diesel Generating Sets(1 – 2000Kva)[18]

S/N	Country	US \$Million		
		2002	2003	2004
1	Nigeria	86.60 (29.39%)	94.47 (32.58%)	122.36 (35.49%)
2	Egypt	49.93	22.98	4.51
3	Algeria	34.62	23.47	34.57
4	Guinea	3.59	4.93	22.63
5	Angola	15.91	21.66	17.51
6	Djibouti	1.94	7.63	12.77
7	Sudan	12.22	33.10	12.16
8	Congo	7.52	7.77	10.73
9	Libya	6.76	8.49	9.95
10	South Africa	8.96	5.90	8.38
11	Ghana	5.53	4.08	7.50
12	Morocco	6.27	8.89	7.31
13	Kenya	5.39	4.28	6.03
14	Senegal	20.71	5.24	4.90
15	Madagascar	0.92	2.93	4.84
16	Cameroon	6.90	23.78	4.22
17	Ethiopia	4.22	3.60	4.24
18	Tunisia	3.41	3.96	3.52
19	Tanzania	2.98	5.93	3.95
20	Cote d'Ivoire	1.99	2.64	3.41
21	Gabon	2.70	2.28	3.27
	Total	294.63	290.00	344.76

[Source: Export statistics from EU, USA, and Japan]

4. THE FUTURE TRENDS IN THE PROVISION AND MANAGEMENT OF ELECTRICITY

An easier way of getting immediate improvement in our national grid electricity supply is by working on the load end (DEMAND SIDE MANAGEMENT[DSM] VERSUS SUPPLY/GRID SIDE MANAGEMENT[S/GSM]) first before attempting the more expensive projects for increased grid supply. [source:RevUkaegbuOgwo, Stakeholders@abuja.forum.org.ng]. Analyses have shown that this will yield a significant result when implemented and appears the best short run solution to the menacing power problem in Nigeria. Nigeria has just launched its energy efficiency component of the reform process.

4.1 Millennium Development goals The MDGs and Targets

How does the provision and management of power encourage and/or discourage/palliate the attainment of the targets of the MDGs goals? Our present state in the provision and management of power simply has palliative effects on the attainment of these targets/goals. The issues under consideration, namely: eradication of extreme hunger, and extreme poverty, universal basic education, gender equality and women empowerment, child mortality reduction, maternal health improvement,

combating HIV/AIDS/Malaria/other diseases, ensuring environmental sustainability, and fostering global partnerships rest on the provision and management of power/electricity.

From the table below, it is clearly illustrated that there is a direct relationship between the level of development of a nation and the power generation and consumption. If this country must get anywhere close to achieving the developmental goals in the MDG list, it is imperative that electricity generation is stepped up significantly.

Electricity Generation, Consumption and GDP

S/N	Country	Population (in million)	Power Generating capacity (MW)	Per Capita Power capacity (Watts per person)	Per Capita Consumption per person, per year	Country GDP (x10 ⁹)
1	USA	293.6	848,300 (Year 2002)	2889.30	12465.94	11750
2	Germany	82.6	115000 (Year 2002)	1392.25	6209.40	2362
3	United Kingdom (England & Wales)	59.7	76.300 (Year 2001)	1,265.90	5742.50	1782
4	South Africa	42.7	446.50 (Year 2001)	1045.67	4243.60	491.4
5	Brasil	179.1	86020	480.30		1492
6	China	1300.1	338.300 (Year 2002)	260.00	1120.30	7262
7	India	1086	115.520	106.31	582.00	3319
8	Ghana	20.7	1762	85.12	334.26	48.27
9	Nigeria	140.0	4000 (Year 2001)	28.571		125.7

5.2 Public private partnership

Contributory role of IPPs as detailed in Table 5.1 including JVCs and State governments except the people of Nigeria whose simple and ordinary attitudinal change vide appropriate education vide campaigns, jingles, adverts can produce power without building a single power station.

4.2 New frontiers/Vistas/Policies/Goals

- Entrenching Energy Efficiency/conservation practice
- Rethinking Alternate funding for power projects(PENCOM, BANKS, INDUSTRIES, DOMESTIC SECTOR/INDIVIDUALS,REGIONALPARTNERSHIPS)

- Promoting prepaid tariffs vigorously
- SMART/INDIGINEOUS TECHNOLOGIES/Retention gadgets
- HYBRID SYSTEMS/ENERGY MIX in favour of gas fired stations, renewables, biomass, tidal, wind
- Waste/environmental management inputs(dump sites, wood wastes)
- Research Based Energy Excellence centres with capacity for graduate studies on energy matters

CONCLUSION

As stated by Thomas Friedman, "in an increasing flat, hot and crowded world, if you don't have Electricity, you cannot get online and you cannot compete, connect and collaborate globally, and increasingly even locally..." We cannot talk of sound education, good health system, adequate housing, functional recreation /tourism system, functional social structures/infrastructure, employment generation, income generation, personal welfare and urban planning or make progress without the provision and management of electricity.

- All interventions to date are yet to have the desired effect on the Nigerian power sector. There are still power outages though electricity power supply can be said to have palliatively been improved.
- Presently, energy utilization in our national economy is far from efficient. Apart from direct losses, using energy inefficiently has three major implications to the national economy, namely, investments in energy supply infrastructure in excess of what is required with more efficient equipment and practices; increased environmental problems; and increased cost of goods.
- The potential for energy savings in the Nigerian economy is huge, especially in the three main energy demand sectors, namely household, industry and transportation. In the household sector, there is considerable energy loss due to inefficient traditional three-stone stoves, used for cooking mainly in the rural areas. Similarly, there is considerable scope for energy conservation in the Nigerian industries. Energy audit studies have shown that as much as twenty five percent of industrial energy can be saved through simple housekeeping measures. It is therefore imperative to promote energy conservation and efficient energy utilization in all sectors of the economy.
- Many factors are still militating against the smooth running of the power sector, and if proper attention is not paid to these issues, the possibility of the sector generating sufficient power(MW) and giving stable uninterrupted light to all Nigerians will not be achieved in the end.
- Some of the most profound and urgent issues that Nigeria faces include but not limited to:
 - Energy consumption
 - Rising gasoline costs
 - Rising utility bills
 - Greenhouse gas emissions
 - Dependence on foreign expertise/inputs
 - Global warming
 - Energy theft
 - Scarcity of funds
 - Weak transmission and distribution networks
 - Illegal connections
 - Low voltage etc

Meeting the Millennium Development Goals is only with the provision and management of power which also is the 'major' difference between the developed world and the developing world.

The Electricity challenge, that is, lack of access to electricity remains the clearest indicator of underdevelopment and of poverty in general. Success and failure of social infrastructure is directly related to the improvement in the provision and management of Electricity. The world needs more Electricity so as to power development. Anybody who stands in the way of doing this, even for one day, either for personal or political reasons, is a saboteur and should be treated as such. Never again should Politicians use Political Power to settle scores in the Power Sector. It is a sacred cow for the country and that should be protected jealously. Energy being the main driver upon which all the aims and objectives of Vision 20-2020, the MDGs, and other social infrastructure rests, Nigeria's chances are bleak and needs to declare a 'real' state of emergency in the Energy sector very urgently.

THE WAY FORWARD – RECOMMENDATIONS

- Ban the use of generators/making budgetary provisions for purchase/fuelling of generator
- Apply vigorously conservation/efficiency techniques in reality through multi-language mass campaigns, jingles, posters, TV, Radio, newspaper adverts, talk shops, demonstrations, policy applications)etc.
- Rethink financing strategies and adopt suggestions in the case studies attached
- Rethink partnerships and expand the scope to include domestic, industrial, commercial participants: states, local firms, banks, churches that are desirous of going into electricity business should be actively encouraged by the government.
- The execution of the reform program with regard to electricity development is too slow for any effective impact. Government should therefore, pronounce the deregulation and liberalization of electricity production and subsequently approve the applications of would be producers in Nigeria.
- There is also the need to increase the transmission capacity of the nation make adequate use of generated capacity to ensure availability and sustainability of power.
- There is also the need to explore other alternative sources of energy, such as, solar, tide, biomass, wind, etc.
- Institute a 'Lighting Nigeria project' – to provide more access to Electricity by declaring days/periods of National compliance
- Sell low cost, high quality lighting products (Compact Fluorescent lighting bulbs (CFLs) and light emitting diodes (LED))which are guaranteed to provide durable portable and clean/smart technology.
- Institute penalties for all users of electricity as appropriate.
- Encourage attitude change on the use of electricity.
- Employ the use of traditional leaders in mass mobilization.
- Implement the light up Nigeria project simultaneously in all public and private locations at local, state and federal levels.
- Jointly source for funds from within using an integrated approach to achieve set objectives
- Set targets be met to build confidence
- Ban the use of energy inefficient light bulbs, appliances (fridges, acs), equipment (motors) with set timelines
- Massively procure and distribute at subsidized rates energy inefficient light bulbs, appliances (fridges, acs), equipment (motors) with set timelines
- Provide incentives to energy efficient compliant users from competitive tariffs, pay offs etc
- Decentralize the electricity generation programme, use renewable energy sources (Biomass, biogas, wind, solar, mini-hydro and geo-thermal,)/off grid applications and other conventional sources in designated areas.
- Declare Energy Emergency

- Conserve energy /Optimize use of existing capacity(energy management)/Go green
- Carry out a proper Energy audit
- Promote competition and pay as you go tariffs by the provision and installation of smart meters
- Nigeria should champion an integrated pool of African nations and international funding agencies to finance a continental power project so that the projected electricity demand for Africa could be met.
- African countries including Nigeria should put in place the appropriate facilities, regulatory policies and legal frameworks that will facilitate the importation electricity from the integrated network. Encourage the establishment of an integrated power project and subsequent importation of electricity

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