NIGERIA ELECTRIC POWER SECTOR

Presented at

Workshop on the Use of SIMPACTS Model for Estimating Environmental and Human Health Damage from Power Generation

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COUNTRY PROFILE

- **Location:**
  - between 30 and 14o E of GM
  - 40 and 14o N of Equator
- **Capital City:** Abuja
- **Population:**
  - 88.9 million by 1991 census
  - ~ 120 million present estimate
  - 20 million Households
  - ~ 60% rural
- **Area:** 923,768 sq. km
- **Season:** Rainy and Dry
- **Temp:** between 6° C and 37° C

COUNTRY PROFILE (cntd)

- **GDP(Current Factor Cost) N5488billion (USD49 billion)**
- **Comm. Energy Cons. 45.5 million tce**
- **Electr. Consumption 13.7 bkWh**
- **Electr./capita 115 kWh/cap**
- **Total Installed capacity**
  - **Hydro**
  - **Thermal**
- National access to electric power supply ~ 40% of population

Nigeria's Electric Power Sector

- **Public sector dominated with National Electric Power Authority(NEPA) owning 98% of generating capacity and the entire transmission and distribution grid.**
- **Of the total installed capacity of -------- NEPA has --- consisting of**
  - 4 gas turbine thermal plants (Afam, Sapele, Ijora & Delta)
  - 2 steam turbine Thermal plants (Egbin and Sapele)
  - 3 hydropower plants (Kainji, Shiroro and Jebba)
- **The remaining ----- is own by private sectors consisting of :**
  - 1hydropower (shesco, Jos)
  - 3 diesel power plants (AES, Agreco,Geometric)

Electric Power Supply Infrastructure

- **Thermal :**
  - Number Power plants: 6
  - Total Number of generating units: 69
  - Present capacity utilization
- **Hydro power**
  - Number Power plants: 3
  - Total Number of generating units: 18
  - Present capacity utilization
- **Transmission & Distribution**
  - ~ 11000km of 330kV and 132 kV grid lines
  - 23 no. of 330/132 substations,
  - 91 no. of 1323311kv substations
  - Radial network controlled from national control center Oshogbo

Environmental and Health problems posed by Power generation in Nigeria

- **Kainji Downstream flood problems**
  - The water storage capacity of the nation's hydropower stations are Kainji 141.7 m l, Jebba 103.15m and Shiroro 360 m
  - At the peak of the rains when the dams are filled to capacity, the excess water is discharged to protect the equipment.

Power station	Type	Year of commissioning	Installed capacity	Available capacity
Afam	Thermal	1959	700.9	
Delta	Thermal	1966	876	
Kainji	Hydro	1968	760	
Sapele	Thermal	1978	1020	
Ijora	Thermal	1978	60	
Jebba	Hydro	1985	540	
Egbin	Thermal	1985	1320	
Shiroro	Hydro	1990	600	
IPPs & EPPs	Diesel	2001	318	

An Assessment of the Environmental and Human Health Damages from Kainji Hydro Power Plant in Nigeria

Objectives

- To conduct a general assessment of the damage caused by hydro power plants on the environment and human health
- To estimate the cost of the damages
- To recommend some mitigation actions in view of the above

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Justification

- Environmental awareness and recognition of the need for safer environment is growing in the country.
- The Farming population downstream of the Kainji hydropower plant in Kwara, Niger states suffer losses in farmland from flood resulting from the dam
- The HYPADEC bill (Hydro electric power producing Area development Commission) is presently being debated in the National assembly.
- Need for an objective study of the impact of the plant for policy advice.
- The recently approve national energy policy for the country also calls for standards for IPP's in the on going privatization process