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ENERGY POLICY [B] - TRAINING AND DIALOGUE  
PROGRAMME

SIERRA LEONE COUNTRY PAPER

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# Introduction

- Some basic facts:
  - Land area = 72,000 km<sup>2</sup>
  - Population = 5.5 million
  - GDP/capita = USD 580
  - Rainfall = 3,000-4,000 mm



## INTRODUCTION (cont.)

- Low levels of social development: life expectancy is 43 years; infant mortality is 15%; about 70% of those over 15 years are illiterate; very low human development index (0.273)
- About 87% of the total energy used in Sierra Leone is traditional fuel ; access to electricity is only 7%;
- The lack of energy causes the following: social and economic poverty; under development, employment and low living standards; under utilisation of rural human resources; a stagnant rural economy and value adding industries cannot be built.

# Brief Overview

- The MEWR is the governmental authority responsible for the electricity and water sectors. Its mandate includes sector policy formulation, planning and coordination.
- Various other sub-sectors of the wider energy sector fall within the scope of responsibilities of various ministries.
  - The MEWR handles matters related to electric power supply, including that from hydroelectric schemes and, nominally, renewable energy matters related to solar and wind energy.
  - The Ministry of Agriculture and Food Security (MAFS) handles biomass issues (plant- and animal-derived matter), especially fuel wood.
  - Petroleum marketing and sales are handled by the Ministry of Trade and Industry (MTI); the Ministry of Finance (MF) also plays a significant role in the import and storage of petroleum products. Petroleum exploration and extraction is within the scope of responsibilities of a Presidential Petroleum Commission.
  - The Ministry of Mineral Resources (MMR) deals with extraction of minerals, including energy related minerals.

# ENERGY RESOURCES

- FOSSIL FUELS
  - Coal
  - Crude oil
- RENEWABLE ENERGY RESOURCES
  - Solar (1,460 – 1,800 kWh/m<sup>2</sup>/yr)
  - Biomass (656,400 tons of crop waste)
  - Wind (3 – 5 m/s)
  - Hydropower (1,200 MW in 27 site)

# Energy Demand

- Domestic

Energy Source	% of Poor	% of Non-Poor
Fuel wood	99	78
Charcoal	1	15
Kerosene	89	69
LPG	0	0.1
Electricity	2	29

# Energy Demand (cont.)

- Industry and Service Sectors
  - These sectors are badly affected by shortage of power, thus not only disrupting productive activities but also threaten future industrial and commercial investments.
  - Their demand for energy is mainly met by auto-generation.
  - The industrial sector is small in Sierra Leone and there has been very little investment in new industries. Efficiency of energy usage is low in most factories. This is due to a combination of factors including operating below rated capacity and the use of old inefficient technologies.
  - Although NPA carries out cursory energy audits for large industries and commercial enterprises, this is not done in a concerted fashion and there are no awareness raising programmes.
- Mining Sector: This can be divided into the small scale and artisanal sector and the large scale sector. Small scale and artisanal sectors depend on small petrol or diesel generators for power. All of the major mining companies generate their own power using diesel generators



# Energy Demand (Cont.)

- Transport Sector
  - Riverine transportation is a common feature for coastal communities using ferries and small boats (Panpans). The road transportation system is dominated by small cars, taxis and minivans. There is no mass transit system.
  - Inefficiencies in the transportation systems, high fuel costs, poor regulation and road congestion in urban areas are contributing to high transportation costs for the public
  - The transport sector consumes over half of the total quantity of petroleum products but the sector needs to address issues of energy efficiency more seriously.
- Agriculture Sector
  - Irrigation, motive power, processing and preservation of produce and transportation that are integral features of the agricultural system would involve increased use of fuel.

# Energy Supply

- Electricity
  - The electricity industry is state-owned, vertically integrated and small in size
  - The system consists of the Western Area Grid centred in Freetown and originally twelve isolated provincial systems in the rest of the country.
  - The existing and operating hydro power plant is a run-of-river type with a small reservoir. It is located in the Eastern province. A 50 MW hydro power plant is presently under construction.
  - The electricity supply and service in the Western Area is poor. The installed capacity is totally inadequate and breakdowns are frequent leading to frequent load shedding. Network efficiency is also low. The electricity tariff is one of the highest in the sub region, even though it does not include provision for capital cost recovery. High technical and commercial losses combined with poor revenue collection are the major contributors to the liquidity problems of the utility.

## Energy Supply (cont.)

- Petroleum sector
  - The country imports all the petroleum products to satisfy its needs. On ave. about 200,000 metric tons are imported annually.
  - The petroleum products are imported mainly from Abidjan.
  - Prices are fixed according to an agreed formula which takes into consideration the Platt price for petroleum products, and the exchange rate. Allowances are made for various levies and a distribution cost to arrive at the pump price.
  - The industry is faced with a number of problems; limited storage capacity, thus oil companies cannot import huge quantities of product at any one given time, unavailability of foreign exchange to pay for products, etc.

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# Energy Supply (cont.)

- Biomass

- Fuel wood supplies in Sierra Leone are obtained mainly from closed high forests, Savannah wood lands and mangroves. Firewood is normally harvested as an integral part of land clearing for farming, taking care of the energy needs of farming families in the rural areas. Fuel wood can also be a by product of forest management and wood wastes from logging and sawmilling. The major areas of production for the urban market include farming areas adjacent to motorable roads or those areas accessible by waterway.
- The main charcoal producing forests are in the Freetown Peninsular Reserves, the mountain village forests and sections of the mangrove forests. As much as 30% of the wood produced is converted to charcoal.

# Current State of the Electricity Sector

- Despite the endowments in energy resources, financial, technical and environmental challenges have restricted the pace at which these resources have been developed. Presently access to electricity is about 8%.
- B/w 9/2006 and 9/2007 the electricity sub-sector was in crisis; Available power = 5 MW, poor billing and collection, and a very high cost private generation for those that could afford it. During this period, the NPA was unable to generate and deliver sufficient power to its customers due to plant failures, fuel shortages, and a crumbling transmission and distribution system. As a result NPA was unable to earn revenues from power sales and by the end of 2007 had accumulated debts of over US\$7 million from unpaid bills to suppliers, high-interest short term commercial loans to pay salaries, loans from government to purchase fuel, and tariff rates below cost-recovery levels.
- With the change in government and the President's initiative to tackle the electricity crisis as a top priority, emergency support was sought from donors.

# Strategic Action Plan [2008-2025]

## Immediate [2008 – Q2, 2009]

- Strengthening of NPA Management
- Upgrading Freetown distribution network
- Preparing institutional arrangements for the operation of the Bumbuna Hydroelectric Plant
- Commence the construction of 10MW power plant funded by JICA, construction of a substation at regent and 33kV Transmission lines between (Wilberforce to Regent) and 11kV (Kingtom to Wilberforce via Congo Cross) and the rehabilitation of the 11kV overhead line between Falconbridge and Blackhall Road.
- Complete negotiations for the installation of 2x8.75 MW generating capacity funded by BADEA).

# Strategic Action Plan (cont.)

## Short term [Q3,2009 – 2010]

- Forging strategic partnerships with the private sector in which the focus is to unbundle the entire electricity sector
- Establishment of PURC for the sector.
- Finalisation & Approval of NPA Master Plan (JICA)
- Finalize and approve a Rural Electrification Policy (including both on and off-grid solutions to provide access to rural communities).

## Mediun term [2011 – 2016]

- Implementation of Rural Electrification Policy
- Commencement of Bumbuna Phases II-III
- Introduction of further IPPs
- Development of energy conservation guidelines aimed at safeguarding the environment.
- Regulator fully operational
- Developments under the WAPP initiative will continue..

# Strategic Action Plan (cont.)

## Long term [2016 – 2025]

- Increased the access of electricity to at least 50%
- Privatisation of the unbundled entities.
- Complete exploitation of Bumbuna Phases IV and V and other hydro potentials sites
- Integration of the nationwide T&D networks
- Connecting to the West Africa Power Pool



# Energy Policy Formulation Bottlenecks

The following, among others, are some of the bottlenecks in energy policy formulation:

- Lack of coordination of the various energy sub sectors and consolidation of some functions.
- Lack of institutional capacity
- Inadequate information on energy supply and demand as well as the country's resource potential.
- Inefficient supply and use of energy resources mainly due to the neglect of the sector during the country's years of economic and political turmoil;
- Budgetary and financing constraints;
- Inadequate coordination and information sharing among the various projects, government institutions and the private sector; and

THANK YOU