



The Role of SHP in Nigeria's Energy Policy*

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1. Introduction



- Energy is worldwide acknowledged to be essential for economic and social development of nations.
- Energy is also an instrument of internal cooperation and diplomacy.
- Energy enhances development in the health, education, commerce, manufacturing, transportation, domestic and industrial sectors of the economy.
- It also facilitates security of lives and property.



- Therefore final energy in the forms of fuels, electricity, and process heat are very essential.
- Because of the desire for economic growth, good and secured lifestyle coupled with high population growth, demand for modern energy in Nigeria has been growing without commensurate growth in energy supply capacity as shown in Fig. 1.

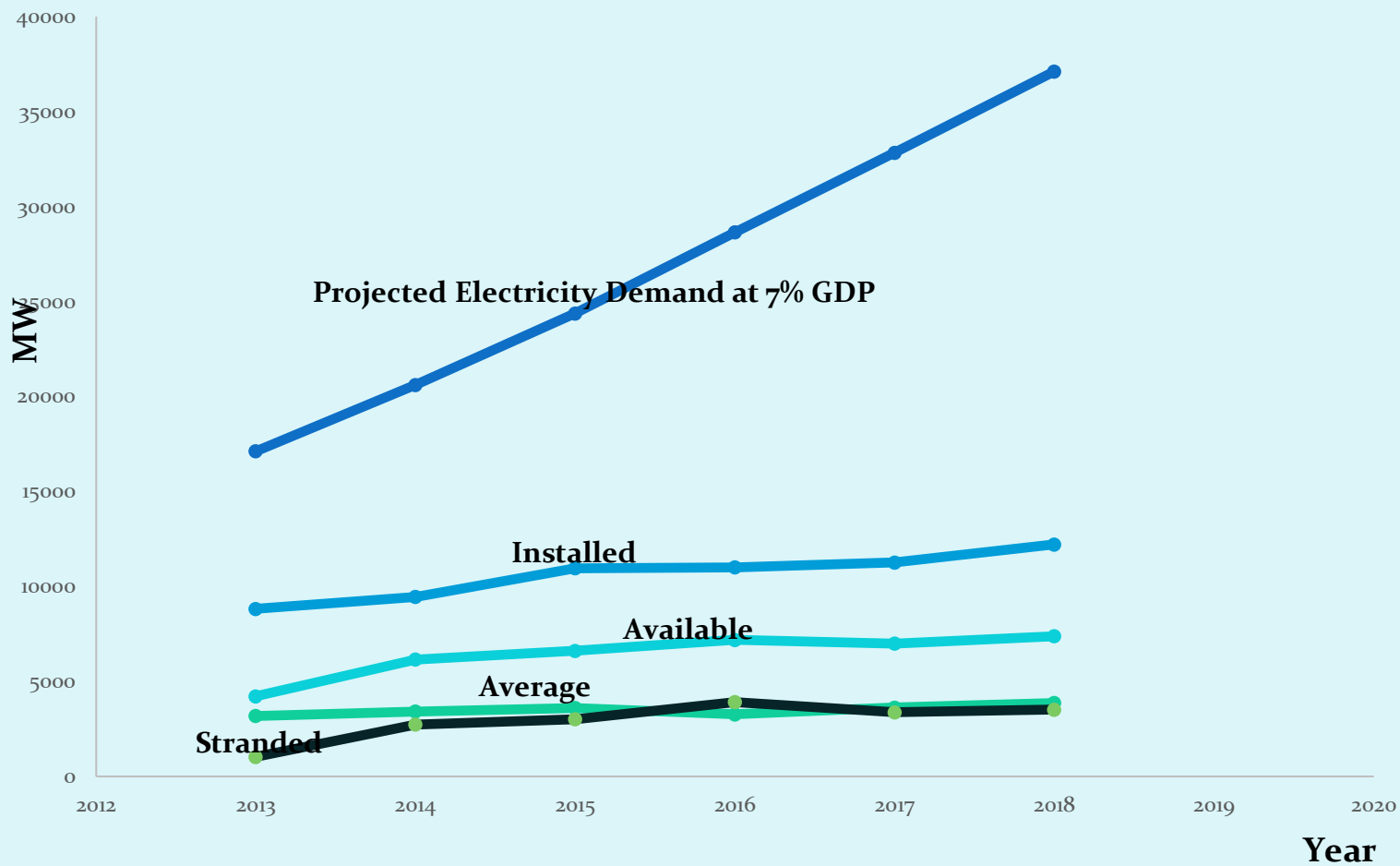


Fig.1 Electricity Demand and Supply Gap in Nigeria

Source: ECN, TCN and Gencos Heartbeat Vol.3 Issue 01



- However, since humanity realized how insecure it is with the discovery of global warming, its causes and concomitant effect; sustainable energy development became imperative.
- Energy resources that emits greenhouse gases on use and energy processes that are not efficient are now being discouraged.
- Renewable energy sources and energy efficiency best practices are now being promoted to drive development.



1.

Introduction

Cont'd



- Hydropower, particularly small hydropower is one of the renewable energy sources actively being promoted to enhance energy supply and access in developing countries.
- Electricity access in Nigeria is less than an average of 60% and even much lower in the rural areas.
- Small hydropower in Nigeria refers to hydropower plants of capacities less than 30MW.
- However, SHP can be referred to as pico; if capacity is less than 5kW; micro: for capacities between 5kW and 500kW; mini: for capacities between 500 kW and 1MW; and small: for capacities between 1MW and 30 MW



2. National Energy Policy and Small Hydropower Development

- A National Energy Policy, an instrument always sought after by investors, development partners, researchers and scholars usually show governments political will and details of how a nation intends to develop its energy sector.
- For example, the National Energy Policy of Nigeria promotes the optimum development of all its energy resources in an environmentally friendly manner and with the active participation of the private sector for socio-economic prosperity.
- Nigeria has a potential hydropower resource of about 15GW of which 3.5GW is estimated to be SHP capacities.



2. National Energy Policy and Small Hydropower Development..... Cont'd



- What is therefore the national policy on hydropower development as contained in the National Energy document approved by the Federal Executive Council (FEC)
- It is therefore hereby reproduced for explicitness and records.

(a) Hydropower Policy Statements:

- i. The nation shall fully harness the hydropower potential available in the country for electricity generation.
- ii. The nation shall pay particular attention to the development of the mini and micro hydropower schemes.
- iii. The exploitation of the hydropower resources shall be done in an environmentally sustainable manner.
- iv. Private sector and indigenous participation in hydropower development shall be actively promoted.



2. National Energy Policy and Small Hydropower Development Cont'd



b) Objectives

- i. To increase the percentage contribution of hydro electricity to the total energy mix.
- ii. To extend electricity to rural and remote areas, through the use of mini and micro hydro power schemes.
- iii. To conserve non-renewable resources used in the generation of electricity.
- iv. To diversify the energy resource base.
- v. To ensure minimum damage to the ecosystem arising from hydropower development.
- vi. To attract private sector investments into the hydropower sub-sector.



2. National Energy Policy and Small Hydropower Development Cont'd



Strategies

- i. Establishing and maintaining multilateral agreements to monitor and regulate the use of water in international rivers flowing through the country.
- ii. Ensuring increased indigenous participation in the planning, design and construction of hydropower stations.
- iii. Providing basic engineering infrastructure for the production of hydropower plants, equipment and accessories.
- iv. Encouraging the private sector, both indigenous and foreign, in the establishment and operation of hydropower plants.



2. National Energy Policy and Small Hydropower Development Cont'd



Strategies Cont'd

- i. Encouraging the private sector, both indigenous and foreign, for the local production of hydropower plants and accessories.
- ii. Ensuring that rural electricity boards incorporate small-scale hydropower plants in their development plans.
- iii. Promoting and supporting R & D activities for the local adaptation of hydropower plant technologies.
- iv. Initiating and updating data on the hydro potential of our rivers and identifying all the possible locations for dams.



3. Small Hydropower Development in Nigeria



- The first hydropower project in Nigeria was a SHP plant in 1929 established by a private concern, Nigeria Electricity Supply Company (NESCO) in Jos to provide electricity to tin mining industry.
- It started with about five (5) SHPs of 3MW.
- The company has now grown to a hybrid of about 30MW capacity.
- In 2002 the Energy Commission liaised with UNIDO and a workshop on SHP promotion was held.

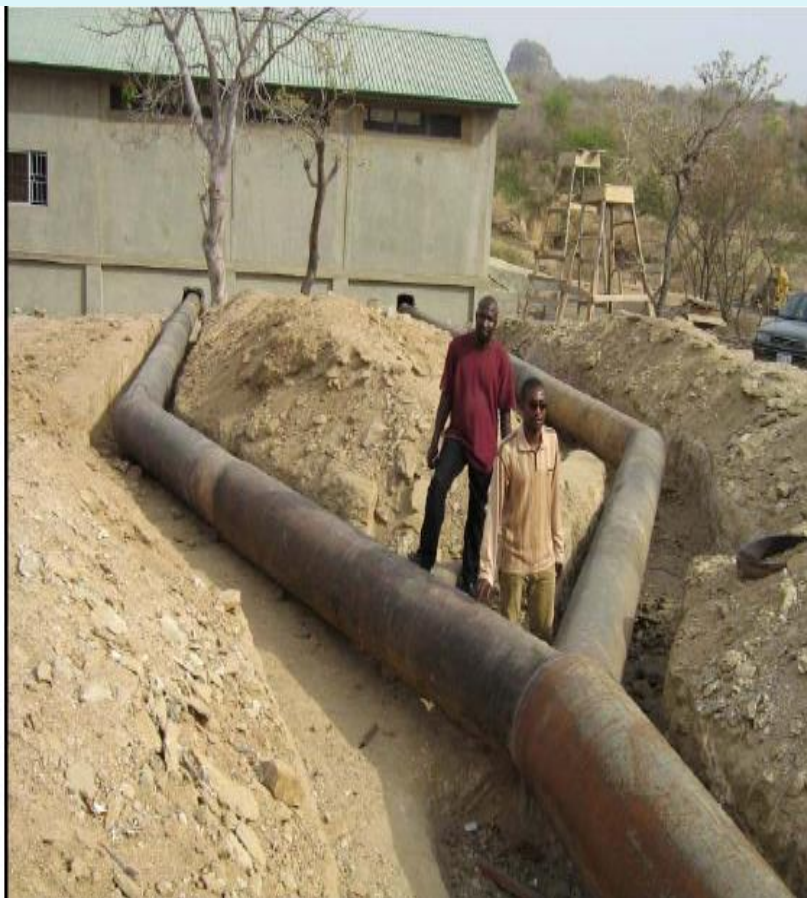


- Thereafter capacity building of Nigerians was held at the International Centre for Small Hydropower (ICSHP) in China as well as the establishment of 30 MW SHP plant and 150kW SHP were established in Ezioha Mgbowo in Enugu and Waya Dam in Bauchi, respectively in collaboration with respective River Basin Authorities.
- A UNIDO-RC-SHP was later established in Abuja to support SHP development within the sub-region.
- The Regional Centre conducted many feasibility studies of potential SHP sites in Nigeria as well as got the 400kW SHP plant in Kakara, Taraba State established and operationalized.



3.

Small Hydropower Development in Nigeria ... Cont'd



Penstock bifurcation into the 2x75 kW Francis Turbines house at Waya Dam, Bauchi State installed by UNIDO



- The Federal government has established the 30MW SHP in Gurara I and 34 MW medium hydropower plant in Dadin Kowa Dam, Gombe State.
- With the ESPR Act of 2005, electricity as a marketable product in the industry has been liberalized and largely privatized.
- Private sector can now generate and distribute electricity in line with the licence issued by the industry regulator, which is NERC.
- We now have less than 2GW of install capacity of hydropower of which less that 0.1GW (100 MW) is SHP.
- The large hydropower operated about 65% availability in 2018



4.

Challenges to SHP Development



- **Human Capacity Barriers**
- **Technology Barriers**
- **Financing Barriers**
- **Institutional, Policy and Regulatory barriers**
- **Information Barriers**



5.

Way Forward



- Continuous human capacity building
- Resuscitation of Ajaokuta Steel plant and establishment of SHP fabrication hubs
- Incentivize investors with development funds e.g. Rural Electrification Funds (REF), CBN power support Fund
- Strengthen synergy amongst relevant institutions
- Strengthen advocacy for SHP



6.

Conclusion



- The National Energy Policy of Nigeria articulates the optimum development of Nigeria energy resources in an environmentally friendly manner and with the active participation of the private sector.
- Hydropower, and indeed SHP which contributes about 23% of the hydro potential in the country has a significant role in the policy in meeting the energy needs of the country for driving sustainable economic and social prosperity.



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**Thank you
and
God Bless**