CONFERENCE PAPER

ON

Power Generation in Nigeria; Problem and solution

BY

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ABSTRACT
Electric power 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 is the key for Nigeria to becomes one of the most 20 developed economy in the world. But it’s very unfortunate that the biggest problem in Nigeria is electricity crisis, a crisis without end. In this paper a review of the current Power generation in Nigeria was carried out. The review revealed that the total grid capacity of 8,876 MW with only 3,653 MW available as at December 2009. Thus available power is less than 41% of the total installed capacity. Hence the paper investigated into the problems of electricity generation in Nigeria and proffers solutions to the energy crisis. However some of the problems identified include among others corruption, poor maintenance management, inadequate funding and lack of energy remix. It is worth to note that the appalling levels of the nation’s infrastructure, namely power supply, water, telecommunication and even, petroleum product supply are all indication of an economy that is unhealthy as a result of PHCN inability to meet electricity demand. Hence one of the solution proffers in this paper to the power generation crisis in Nigeria is the complete deregulation of the power generation system. The solution proffers in this paper is food for thought for PHCN and Federal Government of Nigeria and it will go along way in solving power generation problem in Nigeria.
INTRODUCTION

• A power system is known worldwide except Nigeria as a versatile relatively cheap and cost effective means of providing energy in any Nation or community. It consists of three main hierarchical stages or subsystems known respectively as generation, transmission and distribution. It is effective and indispensable machinery for the rapid industrial and economic growth of any nation.

• However, the electricity supply in Nigeria is characterized by frequent power failures and load shedding.

• Hence this paper looks at Power generation in Nigeria,. And also investigated into the problems of electricity generation and finally proffers solutions to the energy crisis.
POWER GENERATION IN NIGERIA

• 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.

• Presently there are a total of 16 power plants in Nigeria 10 owned by power Holding company of Nigeria and another six plants belonging to independent power producers. This is expected to generate 6,426 MW of electricity in order to achieve the presidential target of 6,000 MW of electricity by December 2009.

• The summary of the installed and available electrical capacity in the Nigerian generating stations are shown in Table 1. It shows that despite a total grid capacity of 8,876 only 3,653 were available as at December 5, 2009. Thus 41% of the installed capacities are unavailable.
<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Installed capacity (MW)</th>
<th>Available capacity (MW)</th>
<th>Number of units</th>
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<tr>
<td>Geometric</td>
<td>Thermal</td>
<td>140</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>8,876.</strong></td>
<td><strong>3,653</strong></td>
<td></td>
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</table>
Fig. 1 power generating stations versus installed capacity.
PROBLEMS OF POWER GENERATION

Some of the problems confronting power generation in Nigeria are itemized below:

- Poor maintenance planning;
- Inadequate funding;
- Poor electricity pricing;
- Monopoly;
- Lack of energy mix;
- Inadequate gas supply;
- Vandalization Generation facilities;
- Poor inventory management and
- Drought
These Problems were identified through the administration of questionnaires and from literatures on the possible limiting factors in power generation system. The result shows that maintenance planning and spare parts inventory management as the most influencing factors affecting the effectiveness of the power generation system. See fig. 2 for the weight representation of the factors affecting power generation system in Nigeria.
Fig. 1: Ranking of factors affecting power generation

Source: Author’s fieldwork 2010
SOLUTION TO POWER GENERATION PROBLEMS IN NIGERIA

However the solutions to the numerous problems confronting power generation includes among others:
• Full Deregulation;
• Energy mix;
• Structured maintenance;
• Adequate funding; and
• Power sharing with neighboring countries.
Other measures that should be taken in resolving the power crisis in Nigeria includes among others:

- Provision of community and military security to prevent vandalism of oil, gas and electrical equipment and lines;
- 25% of annual budget should be set aside to take care of power generation expansion program for the next twenty five years;
- Nigerian engineers should be adequately represented in the planning and implementation of all aspects of the power sector reform program;
- Government should ensure level playing fields for the independent power producers and other genuine investors in the power business; and

There is need for efficient pricing of electricity so that the price of electricity will not be lower than the average production cost. This will encourage private partnership participation.
Conclusion

This paper has reviewed the current Power generation in Nigeria. The result revealed that out of a total grid capacity of 8,876 MW only 3,653 MW was available as at December 2009. Thus available power is less than 41% of the total installed capacity. We also investigated into the problems of electricity generation in Nigeria and proffers solutions to the energy crisis. However some of the problems identified ranges from corruption, poor maintenance management, inadequate funding to lack of energy mix. Hence solutions were proffers and one of the solution proffers in this paper to the power generation crisis in Nigeria is the complete deregulation of the power generation system. The solution proffers in this paper is food for thought for PHCN and Federal Government of Nigeria and it will go along way in solving power generation problem in Nigeria.