

OF 'DUMSOR' AND GHANA'S ENERGY SECTOR CHALLENGES: PART 1

A. Introduction

The impression being created by the Government is that the major challenge with Ghana's erratic power supply evidenced by the persistent 'dumsor-dumdum' is the lack of generation capacity, and so signing additional power purchase contracts with independent power producers (IPPs) will automatically resolve this challenge. We are instead of the opinion that the current round of power outages has nothing to do with the lack of generation capacity, but more to do with fuel availability – light cycle crude oil and natural gas to power the thermal plants - and other causal factors.

B. Statistics

We will examine and analyze the energy challenge in a three-part series. In this first part, we will state some baseline and other statistics on the energy situation in Ghana.

Installed Supply Capacity

According to the Energy Commission, installed generation capacity available for grid supply as at the end of 2013 was about **2,936 Megawatt (MW)**. Hydroelectric generation at Akosombo, Bui and Kpong constituted 53.8% of this amount whereas thermal generation at the dual fuel natural gas, light cycle oil and diesel plants located in Tema and Takoradi (Aboadzi) provided 45.9% of installed capacity. Renewables constituted only 0.1% whereas LPG generation from Genser power provided the remaining 0.2% of installed capacity.

Historic Demand Condition

Demand has been estimated to increase **10-15% year-on-year** in the past three decades. Thus, new generation capacity must increase by at least the same percentage per year in order to support expanding industrial, institutional, commercial, household and other needs as the country grows and develops.

Current Supply And Demand Condition

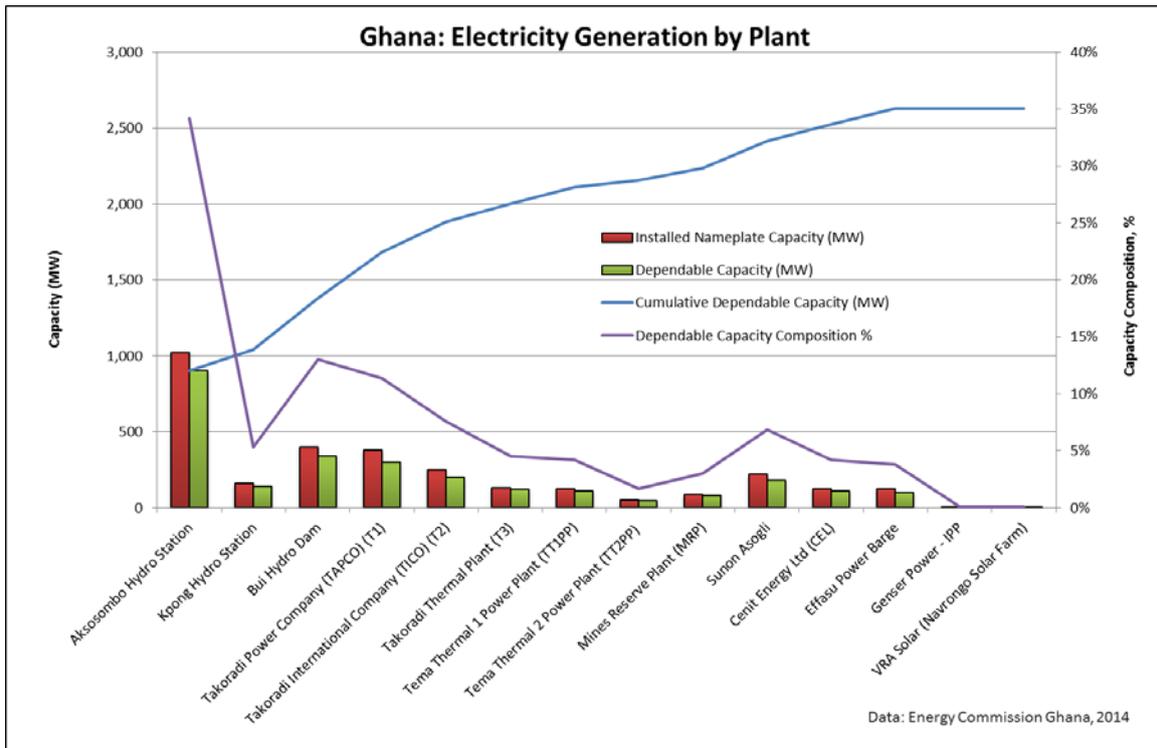
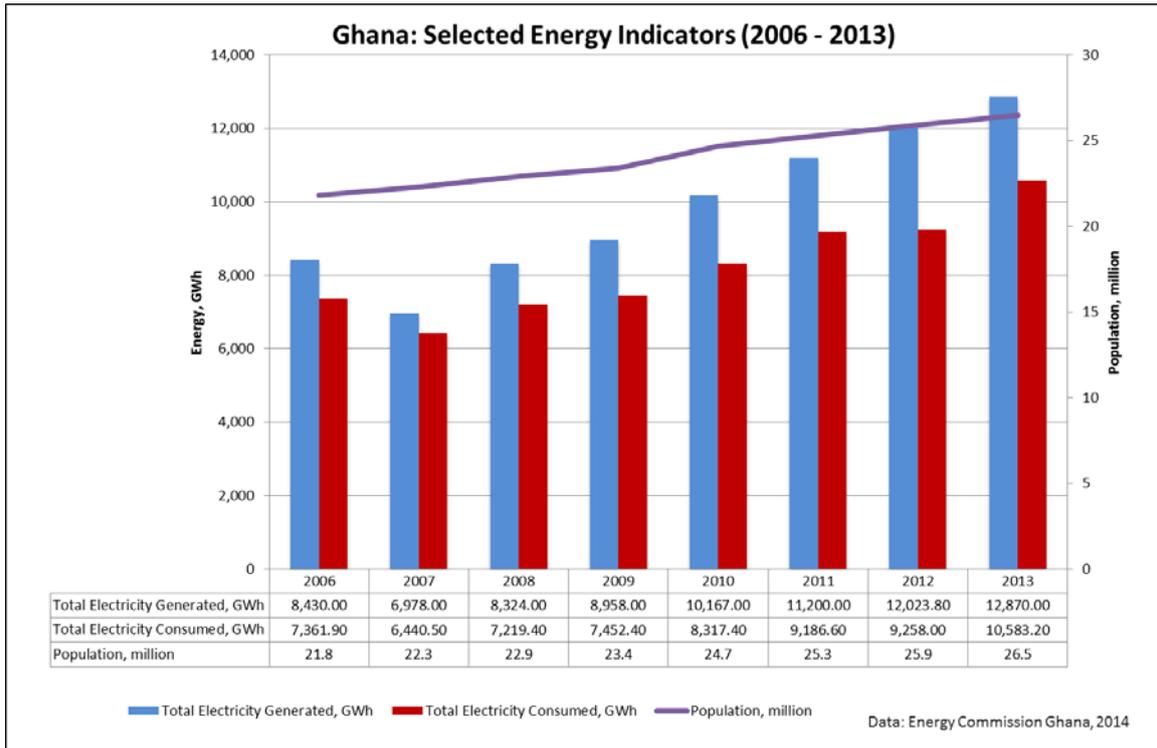
1. However, only about **1,500 MW or 51% of the 2,936 MW** installed capacity has been available in recent times due to a myriad of factors, the primary one being the unavailability of gas to power the thermal plants and government's inability due to fiscal constraints to purchase light cycle crude oil as an alternative. This is compounded by the declining rainfall patterns which affect the hydro plants. The Bui hydro plant, for example, has predominantly seldom run at more than 40% of its installed 400MW capacity since it was commissioned with great fanfare in December 2013 due to the water level being low. Thus, the dry season we are in currently has to end before rainfall can increase the water level to allow for a higher level of generation.

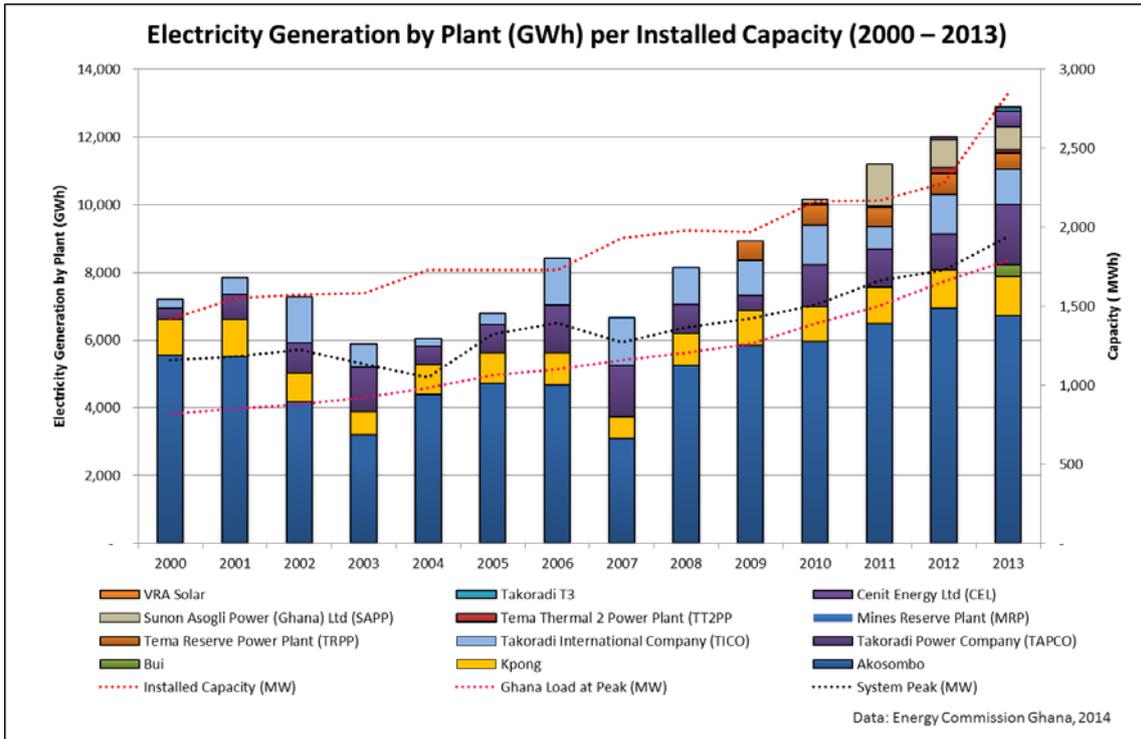
2. Peak power demand in Ghana currently stands at about 2,000 MW. For 2014, Ghana's peak load ranged between 1,900-2,200 MW (ex the 10-20% reserve margin needed for system redundancy).
3. Gross electricity supplied in 2013 was about 12,871 GWh (**an average of 1,469 MW per day**) against a forecast of 16,113 GWh (**1,839 MW per day**) for the year. Of the actual quantity supplied, hydro comprised only **936 MW (32% of the total installed capacity or 59% of hydro capacity)** whereas thermal sources constituted **527 MW (18% of the total installed capacity or 39% of total thermal capacity)**. This condition created a **20% supply deficit** in relation to forecasted demand, thus necessitating the load-shedding (a.k.a 'dumsor') that has been carried since 2013.
4. The 2010 Wholesale Power Reliability Assessment report estimated that Ghana **loses between 2-6% of GDP annually** due to insufficient wholesale power supply, which excludes a number of indirect costs of lost economic output.

Current Supply Deficit

What are the causes of this supply deficit?

1. The main factors responsible for the current supply condition stated above are: (a) the very poor credit risk of ECG (currently the sole offtaker on the market); (b) gas supply challenges from the West African gas pipeline as Nigeria, our major supplier, prioritizes her domestic industrialization agenda over regional integration needs; (c) poor infrastructure planning, maintenance and lack of system redundancy resulting in many thermal plants going offline on or about similar times; and (d) distorted tariff regime pushing IPPs to ask for sovereign guarantees in power purchase agreements (PPAs) before commencing operations.
2. The low level of supply from Bui currently, which is a leading reason why the 'dumsor' has worsened since December 2014.





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