Power Supply: Natural Gas, Natural Solution

MAY AGBAMUCHE-MBU

LEGAL EAGLE

may.mbu@thisdaylive.com

The last few months have been particularly trying for Nigerians, no light, no fuel and for a good many no water, stretching our patience like never before. A cursory review of the power sector for example shows that electricity generation in Nigeria dates as far back as the end of the 19th century, when the first power generating facility was installed in Lagos in 1898. Electricity generation at this time was on a regional basis but there were some Federal Government owned facilities operated by the Public Works Department, Native Authorities and the Municipal Authorities.

To integrate the generation of electricity, the government passed the Electricity Corporation of Nigeria (ECN) ordinance No. 15 of 1950. This ordinance placed all the electricity departments and units under the control of one body, the ECN. During its existence the country generated about 165.2 megawatts of power, increasing transmission lines and by 1964, adding new power plants in Kano, Lagos and also close to the Oji and Afam Rivers. Comprehensive western and eastern grids grid were created, as was in 1962, the Niger (River) Dam Authority, which was created and charged with the provision of hydro power. The Kainji Dam project followed shortly afterwards.

Subsequently, the ECN was merged with the Niger Dams Authority to become the National Electric Power Authority (NEPA). NEPA had a variety of power generation plants including hydro, diesel, gas and coal powered plants. It was responsible for operations, power generation, transmission and distribution. Specifically Section 7 (2) of the National Electric Power Authority Act 1972 charged NEPA among other things with:(c) supplying electricity and promoting economic and efficient electricity generation, distribution and supply at reasonable prices. Section 7(2)(b) further empowers NEPA to construct, reconstruct, maintain and operate electric generating stations, transmission and distribution lines on, above or below ground, transformer stations and all other stations, buildings and works necessary for carrying out its duties under this Act.

Notwithstanding the fact that NEPA increased its generating capacity, it was not able to meet the growing demand for electricity for domestic and industrial use especially for the steel, mining and fertilizer industries. NEPA's largest generation plant was located at Egbin with a total installed capacity of 1320 megawatts. Between 1985-1987 due to the malfunctioning of NEPA's older generating sets including four generating units at Kainji and other units at Afam and Ughelli there was a loss of over 1000 megawatts. Although they were repaired there were still cases of disturbances in the grid system especially with gas fired plants.

NEPA was riddled with issues of bad management and poor performance that was evidenced by frequent power outages due to collapses in its transmission lines resulting in instability in its grid system. Regretfully, towards the end of the 1980s NEPA was transmitting only half of its installed capacity and was unable to meet its statutory obligations. In response to these challenges government started an initial restructuring process, amending the Electricity and NEPA Acts in 1998 to remove NEPA's monopoly and encourage private sector participation. However these reforms were not very extensive so more reforms by way of a National Electric Power Policy, 2001, were introduced. This policy set out the following objectives for the power sector:

a. To ensure that the power sector attracts private investment both from Nigeria and from overseas;

b. To develop a transparent and effective regulatory framework for the power sector;

c. To develop and enhance indigenous capacity in electric power sector technology;

d. To ensure that the Government divests its interest in State-owned entities and entrenches the key principles of restructuring and divestiture in the electric power sector;

e. To promote competition to meet growing demand through the full liberalization of the electricity market; and

f. To review and update electricity laws in conformity with the need to introduce private sector operation and competition into the sector.

These principles were encapsulated in the Electric Power Sector Reform Act (ESPRA) which was passed into law in March 2005. The Act removed government's monopoly in the power sector and began the process of opening it up to private investment and participation in electricity generation, transmission and distribution. The Act provided for the creation of the Power Holding Company of Nigeria (PHCN) to assume the assets, liabilities and employees of NEPA in the interim period. It also established the Rural Electrification Agency and a consumer assistance fund to bridge the funding gaps for low income earners.

PHCN like its predecessor NEPA struggled with low capacity generation, high costs, inadequate distribution of electric power, inability to finance new or expanded infrastructure and inadequate machinery for effective billing and collection of bills. Eventually as provided for by EPSRA, it was privatised and broken down into various units - Distribution Companies (DISCOs), Generation Companies (Gencos) and the Transmission Company of Nigeria (TCN).

PHCN was unbundled into 18 different successor companies (6 generation, 11 distribution and 1 transmission firm) and its assets and liabilities were transferred to these companies in a landmark $2.5 billion transaction. The generation companies are: Shiroro Hydro Power Plc, Kainji Hydro Power Plc, Afam Power Plc, Sapele Power Plc, Ughelli Power Plc and Geregu Power Plc. The successor transmission company is the Transmission Company of Nigeria (TCN) and the following are the 11 successor distribution companies: Abuja Electricity Distribution Plc, Benin Electricity Distribution Plc, Eko Electricity Distribution Plc, Enugu Electricity Distribution Plc, Ibadan Electricity Distribution Plc, Ikeja Electricity Distribution Plc, Jos Electricity Distribution Plc, Kaduna Electricity Distribution Plc, Kano Electricity Distribution Plc, Port Harcourt Electricity Distribution Plc and Yola Electricity Distribution Plc. The Nigerian Electricity Liability Management Company is to assume the liabilities of the successor companies whilst the Nigerian Bulk Electricity Trading Plc (NBET) would make power purchases from the Gencos and IPPs (Independent Power Plants).

During the initial privatisation exercise government sold 100% of its equity in the above successor companies (except TCN) and the African Development Bank provided a partial risk guarantee of US$180 million to guarantee the obligations of the NBET under its power purchase agreements with selected independent power plants. The second phase of privatisation involves the sale of 10 government-owned independent power plants, called National Integrated Power Projects (NIPPs). In 2004, the Nigerian government established a special purpose vehicle to build and own these assets, in order to address power shortage. However the NIPPs generated only 600 MW of power compared with the anticipated 2,500MW.

With all the effort put into reforming the power sector its challenges still linger on. Gas accounts for 81% of electricity generation but unfortunately Gencos continue to suffer frequent gas shortages even though Nigeria has one of the largest gas reserves in Africa. Transmission is also a major challenge as this is still handled by the Transmission Company of Nigeria which remains a government owned entity lacking modern facilities, among a host of other challenges.

While the process of producing electricity does inevitably involve these three distinct phases - generation, transmission and distribution, the break in the service provider chain causes an absence of liability for failure to provide electricity to the end consumer. DISCOs cannot be held liable for failing to provide electricity to end consumers because the electricity is supplied by the TCN. The TCN in turn cannot be held liable for transmitting below the required quota since they receive the electricity from the Gencos. Gencos in turn cannot be held liable for not producing the required quotas of electricity because of the Nigerian Gas Company is responsible for supplying the gas needed for their gas turbines to produce electricity. Therefore at any and all points of the electricity production chain it is possible for a breach to cause a shortage or absence of agreed electricity supply for end consumers which they are powerless to demand accountability for. I recently read that the Nigerian Electricity Regulatory Commission (NERC) has established 16 customer complaint forum offices. These offices are being established as an 'appellate court' within the operation area of every Disco to resolve customer complaints not resolved at the Disco level. I fully expect these 'appellate courts' to be inundated with extremely angry consumers who just cannot be appeased as the problem of power supply regulation appears to be way beyond NERC, as presently constituted.

The System and Market Operation Departments of the transmission company explained that Nigeria's electricity generation is low because of gas shortages to the generation plants in southern Nigeria which led to a nationwide system collapse. The distribution companies were on station supply meaning that they did not have power for their customers but only enough to power gas stations. Vandalism of pipelines has been declared as the main cause of the epileptic electricity supply in recent times causing serious shortage of gas. These attacks on the gas transportation lines have been a bone of contention for years for the government. Where an attack on the Escravos-Warri- Lagos pipeline occurs its impact is felt in the power stations in Kogi, Lagos, Ogun and Ondo states and beyond. The country it appears is being held to ransome by these vandals. Improved community relations should be encouraged and nurtured, so also must stiffer penalties be introduced, coupled with new and more effective means of policing and protecting these invaluable assets.

With all the effort being exerted to bring our electricity supply to par one cannot but mention the wastage caused by gas flaring, the absence of a gas pipeline network to take the gas from where it is processed in the Niger Delta to where it is used to produce electricity across Nigeria and the prohibitive domestic policy on producing natural gas. These cumulative inefficiencies conspire to leave us incapable of making meaningful progress in the production of power for the electricity sector.

The low cost of natural gas in itself means that it is cheaper to flare gas than to process, store and transport it. Secondly, in order to produce electricity with 80% feedstock of natural gas Nigeria needs 10 times more gas pipeline networks than exist currently.

However, without investments in creating this gas-to-power pipeline network the dream of constant electricity, based on the current plans, will not come to fruition because of the gaps in the supply of gas to the Gencos. It would therefore follow that the Government should be investing in creating this gas-to-power network, however at an exorbitant cost which some have estimated as high as $12 billion.

The Federal Ministry of Environment commissioned and had the National Oil Spill Detection and Response Agency manage a satellite data measurement system monitoring the visible rate of gas flaring in Nigeria. The system is powered by the VIIRS (Visible Infrared Imaging Radiometer Suite) instrument on board one of the US' National Aeronautics and Space Administration (NASA) Partnership Satelite and shows real time data on the amount of gas flared in Nigeria, the economic cost of the wasted gas, fines to be assessed for same and the amount of CO2 (greenhouse gas produced which itself increases global warming) released as a by-product.

As at 24 March 2016:

- 222 cases of gas flares were occurring in the Federal Republic of Nigeria
- The quantity of gas flared amounted to 384,976,100 MSCF (Million Standard Cubic Feet) and counting,
- The accruable fines from these flares amounted to $1.347 billion (USD) increasing per second
- Value of the flared gas came to $967 million (USD), and increasing per second
- The flares emitted over 20 million tonnes of CO2 and increasing per second

These measurements show the unprecedented amount of wastage that is occurring right now in Nigeria and it is increasing by the second. The website that records this data alleges that by comparison, where as Nigeria produces 5000-6000 Megawatts of electricity the gas wasted by flaring can produce 25,000,000 Megawatts of electricity. To put that in perspective gas flared till date can provide electricity to run Nigeria 5,000 over and is 5 times what China, the world's largest electricity producer produced in 2013 and indeed more than 100% of all electricity produced in 2013 worldwide.

A strong case for developing the gas pipeline networks should be made as it is one of the vital keys to Nigeria's economic future. Apart from domestic use of our gas, an integrated West African/ECOWAS gas pipeline would give Nigeria access to an African market with a largely limited supply of alternative products to our high quality SWEET GAS (0% Sulphur).

The government I understand is in discussion with Algeria and Niger Republic on the possible signing of an MOU to create a 4,400km Tran-Saharan Gas Pipeline which would allow Nigerian Gas reach the wider African region. The planned network has been incorporated into Nigeria's long-term goals for natural gas - the Gas Masterplan.

On a final note I cannot but quote from the Tuesday 12th April 2016 THISDAY LAWYER cover interview I had with Alhaji Sadiq Adamu Executive Director and General Counsel, ExxonMobil Companies in Nigeria titled 'The Development of the Gas Sector should be made a National Priority' where he eloquently stated that 'natural gas development is a low hanging fruit for Nigeria. With the kind of international oil companies' presence in Nigeria all that is needed is very attractive gas development terms and the country will open up. All the big players are already here.'