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One Decade of Power Sector Privatization Programme in Nigeria: Issues and Challenges

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Abstract

Since Nigeria's independence in 1960, the inadequacy of electricity institutions had resulted into incessant power outages, which prompted government to start the power sector reform in 2005 and concluded the exercise in 2013 with the privatization of the power institutions. The privatization was aimed at reducing inefficiency, mal-administration and government interference, increase generation and power supplies, and increase capital in to the sector. The scheme was based on the assumption that free market and competition would bring about efficiency and injection of private capital that would result in better performance and increased power supplies to enhance industrialization and development of the country. However, post-privatization electricity supplies showed little or no improvement, because the challenges confronting the sector are far from being resolved since 2013 till date. The methodology adopted for this research is descriptive analysis of content of information, mainly gathered from the secondary sources particularly in newspaper, journals, textbooks and archival documents. The study found that the challenges confronting the power sector after the privatization scheme include the inadequacy of gas for powering turbines, cost recovery and transmission challenges among others. The study concluded that privatization is yet to achieve its targets in the power sector-a decade after the exercise commenced.

Keywords*:* Issues, Challenges, Power Sector, and Privatization Programme

Introduction

In spite the Nigeria's huge human and natural resources, she has not been able to provide stable power for its citizenry. Some African countries like South Africa; with about 60 million population, generates 52.000MW and Ghana has celebrated three years of uninterrupted power in 2019 while Nigeria, with about 216 population generates just 4000 MW only (Adelabu,2023). Nigerian electricity supply has been so epileptic that the Nigerian economy has been described as a generator economy (Ekpo, 2020). To buttress this assertion, several reports of power consumers will suffice here. First, the Good Governance initiative's report revealed that Nigerians spend ₦3.5 trillion annually on power generators (Vanguard, 2013). According to another report by Punch (2022), about ₦630 billion was spent by manufacturers alone from 2014 to 2021 to self-generate alternative energy sources of over 14,000 MW, due to poor supply of power by the distribution companies.

The break down revealed that manufacturer spent ₦25 billion in 2014, ₦59 billion in 2015, ₦129.95 billion in 2016, ₦17.35 billion in 2017; ₦98.11 billion in 2018, ₦61.38 million in 2019, ₦81.91 billion in 2020 and ₦71.22 billion in 2021. Another report by the chairman, manufacturer association of Nigeria, Ibrahim Usman revealed that manufacturers self-generation capacity was 13.223MW in 2013, but increased same to 14.000MW in 2014 and 20000MW in 2020 (Punch,2023). Additionally, a study and polls on performance of powers sector by Obasi

and Ayansina (2014) showed that about 110 million Nigerians (or 69% of the population) experienced greater spending on alternative electricity supply in 2013. Complementary to this report, the data issued by Centre for Management Development, Lagos, on the use of generator by Nigerians also affirmed that about 60 million Nigerians spent N1.61trillion on generator annually due to epileptic power supplies (This Day Live, 2013).

In terms of power generation and electricity consumption, records showed that as at 2013, Nigeria power generation stood at 3,800 megawatts and the per capital electricity usage was 136 kilowatts/ hours, translating to one of the lowest electricity consumption on a per capital basis in the world; when compared to Singapore, 8,307 Kwh; China, 2,944 Kwh; South Africa, 4,803 Kwh; India, 616Kwh; United States, 13,394Kwh; and the war-torn Libya, 4,270Kwh (Oketola, 2013). Also, in terms of per capital power consumption basis, Nigerian ranked 178th with 106.21 KWH per head, far below Kenya -124.68Kwh, Ghana -283.65 Kwh, Cameroon-176.01 KWh, and Gabon-900 Kwh per head (Anyanrouh, 2017).

As a way out to resolve the problems in the power sector and improve the nation's electricity supplies, Nigerian government embarked on power sector reform in 2005 and started the privatization of power sector's infrastructure facilities and institutions in 2013 to reduce excessive state's control and its inherent inefficiency, and bring about competition, apply appropriate pricing and massive injection of private capitals to bringing about efficiency and improve power supplies to the citizenry. Therefore, the study examined the salient issues and challenges confronting power sector since its privatization in 2013 with a view to recommend workable solutions to the endemic problem bedeviling the sector especially the epileptic power supplies in the country.

Methodology

The investigation is a documentary study, hence the methodology adopted for this research is descriptive analysis of content of information, mainly gathered from the secondary sources particularly in newspaper, journals, textbooks and archival documents of the ministries, departments and agencies (MDAs) of government relating the privatization of the power institutions in Nigeria between 2013 and 2023. The Author adopted the content analysis to allow for a careful review of several publications and reports, especially in newspapers and journals on one decade of power sector privatization programme in Nigeria.

Theoretical Framework

The study adopted Marx's dialectical materialism for the analysis of privatization of power sector in Nigeria. According to Marx (1965), dialectical materialism are the result of a continuous economic struggle between different classes or groups in a society and the struggle also involved the conflict between the mode of production and the relations of production. The mode of production conditions the social, political and intellect life processes in general. The mode of production is the way in which the means of production were owned, involving the social relations between men, which resulted from their connections with the process of production. Explaining further in the work of Aina (1986), dialectical materialism primarily emphasizes the importance of domination, exploitation, struggles and control between the various classes in any mode of production.

Also, in the writings of Dyke (1969) and Otobo (2005), dialectical materialism is of the stand that the hierarchical structure of the society emanates from the established way of organizing production and distribution in material and spiritual life, which the theory submitted ensure the unequal exploitation of nature especially the available resources such as human labour by social classes and bourgeoisie group.

When Marx's dialectical materialism is applied for the analysis of the privatization of power infrastructure and institutions in Nigeria, the study observed that privatization is a product of the shift emphasis of international capitalism and bourgeoisies from the State's ownership of the means of production to the private ownership, which is usually dominated and control by the capitalists or bourgeoisies. Based on this, it is the position of this study that the privatization of the power infrastructure and institutions in Nigeria represents a strategy by local bourgeoisie or capitalist and governing class in Nigeria state, in close collaboration with their foreign neo-colonialists or neo-imperialists foreign masters, to increase and solidify their ownership and control of both the means and mode of production in Nigeria State. In fact, in support of this position is the study of Otobo (2005), which also restated that it is the pursuit of excessive profits by the capitalist class that necessitated the procurement of the power infrastructure facilities and institutions when the privatization scheme was carried out in 2013 in the nation's power sector. Concomitantly, privatization scheme has resulted in to labour downsizing, staff retrenchment, and hike in power tariff and total take-over and control of power assets by the ruling capitalist class as predicted in Marx's dialectical materialism.

Current Status of Power Infrastructure Facilities in Nigeria

Following the power sector reform, participation of private sector organizations increased considerably with fifty-five licenses issued to the private sector entities from the year 2000 till date. However, only twenty private electric power generation plants were operational while nine are still under construction. Also, the assets of the Power Holding Company of Nigeria (PHCN) and National Integrated Power Projects (NIPP) were sold, following the privatization of power generation and distribution wings of the power sector. Eleven distribution companies and six generation companies were equally privatized, while thermal and hydro plants still remains under the control of federal government. The National Integrated Power Project (NIPP) further built an additional ten generation plants, with total design capacity of 5,454 MW, owned by Niger Delta Power Holding Company (NDPHC) and are located in gas-producing southern states (Manjo, 2020). Table 1 contains the power generation connected to transmission networks in Nigeria as at 2020.

Power Generation Connected to Transmission Network in Nigeria

Name	Fuel Type	Year Completed	Installed Capacity MW	Installed Available Capacity	Actual Generation (MW) as at 2020
AES	GAS	2001	270	267	0
AFAM IV-V	GAS	1982	580	98	0
AFAM VI	GAS	2009	980	559	523

ALAOJI NIPP	GAS	2015	335	127	110
DELTA	GAS	1990	740	453	300
EGBIN	GAS	1985	1320	931	502
GEREGU	GAS	2007	414	282	138
GEREGU (NIPP)	GAS	2012	434	424	90
IBOM POWER	GAS	2009	142	115	92
IHOVBOR NIPP	GAS	2012	450	327	225
JEBBA	HYDRO	1986	570	427	255
KAINJI	HYDRO	1968	760	180	181
OKPAI	GAS	2005	480	424	391
OLORUNSOGO	GAS	2007	335	244	232
OLORUNSOGO (NIPP)	GAS	2012	675	356	87
OMOKU	GAS	2005	150	0	0
OMOTOSHO	GAS	2005	335	242	178
RIVERS (NIPP)	GAS	2009	136	166	0
SAPELE	GAS	1978	900	145	81
SAPELE NIPP	GAS	2012	450	205	116
SHIRORO	HYDRO	1989	600	480	350
ODUKPANI	GAS	2013	561	70	0
			12,067	6,840	3,941

Adapted from: Administration of Public Infrastructure in Nigeria (Manjo, 2020)

From the table 1 above, it need to be stressed that the discrepancy in the installed available capacity mainly due to shortage of gas supplies to these power generation plants during the period under investigation. Additionally, five (5) thermal power plants were constructed. These are Calabar generation company (634 MW), Egbema generation company (381 MW), Gbarain generation company (254 MW), Azura Edo IPP gas power plant (459 MW) and Qua-Iboe IPP Project (533MW). Equally, under the renewable energy infrastructure, there are new 10 MW pilot wind plant in Katsina, Zungeru 700 MW plant and Gurara 30 MW and 3,050 MW Mambilla hydro power plant projects in the area of transmission, Nigerian's transmission infrastructure network is splited into two i.e a 330KV network and a 132KV network. In each of the transmission networks, there are two elements of basic transmission substations. As at 2020, Nigeria possesses 5,650KM of 330KV transmission lines and 6,802KM of 132KV transmission lines.

There are 32nos 330/132KV substations, spread across the country with total installed transmission capacity of 7,688MVA (equivalent of 6,355MW). The available capacity of the 330/132KV transmission networks is about 96% of installed capacity. Also, completed government's NIPP's projects increased the length of transmission lines by 6,577km of 330KV lines and 1,514km of 132kv lines, translating to an increase in the capacity of 330/132KV and 132/33KV transformers by 6,940MVA and 4,663MVA respectively. Equally, completed ten new 330/132kv substations and seven new 132/33KV substations and the reinforcement of 32 existing 330KV and 13 existing 132KV substations had boosted the transmission capacity of on-grid power in the short term (Manjo, 2020).

With respect to power distribution to the public, Nigerian energy distribution infrastructure is made up of distribution lines and substations of different capacities. As at 2020, Nigeria has the total lengths of 37, 173km, 29,055km and 70,799km of 33KV, 11KV and 0.416KV distribution lines respectively. There was a total of one hundred and two (102) 132/33/11 KV substations with a combined capacity of 9,130 MVA (or 7,761 MW), with available capacity of these distribution networks averaged 94.1 percent of installed capacity of 8.448MVA (NIMP, 2020). Table 2 contains the electricity transmission route length as at 2022.

S/N	NAME	UNIT	DEFINITION	2013	2022
1.	Generation Capacity	GW	Total installed generation capacity	12.067	12.522
2.	Transmission Route Lines 330KV	KM	Total length of 330KV transmission lines	5,552	
3.	Transmission Route Lines 132KV	KM	Total length of 132KV transmission lines	7,040	7,300MVA
4.	Transmission Capacity	MW	Total transmission transformer capacity	5000	5.592
5.	Distribution Capacity	MW	Total distribution transformer capacity	6000	6,879mw
6.	Access to Electricity	Percent	Proportion of population that have access to electricity, where access mean customer premises within 1kmof 11/KV network	40%	45%

Source: Author's Computation, 2023

Following the continuous epileptic power supplies situation in the country after the privatization exercise, the Buhari government in June, 2020 considered the idea of reviewing the privatization of the power sector. However, no concrete decision was reached on the matter by the Buhari Administration. In November, 2023, Tinubu administration expressed readiness to review the privatization of the power sector. In fact, in March, 2024, the Minister of Power, Adebayo Adelabu threatened to revoke the licenses of some power distribution companies over their failure to distribute about 1.769.91 megawatts of electricity between February 1st and 14th, 2024 (Punch,2024). In the same manner, the national assembly interrogated the power privatization

programme with the pronounced objective of cleaning the power sector and allow for more government control and operation. In fact, the national assembly enacted the new electricity bill and assented by President Bola Tinubu on 9th June, 2023. The new electricity Act empowered States, Companies and Individuals to generate, transmit and distribute electricity.

Issues Connected with the Privatization of Power Sector

The study examined four salient issues that were connected to the privatization of power sector in Nigeria. These issues are the roadmap of the power sector reform; the targets of the privatization scheme; unbundling PHCN; and sales of erstwhile PHCN under the privatization scheme

Roadmap of the Power Sector Reform

In response to the challenges in power sector between 1999 and 2000, Nigerian government undertook series of rehabilitation of power infrastructure facilities. Firstly, Obasanjo's administration initiated the National Integrated Power Project (NIPP) in 2004 to boost electricity generation capacity through the construction and opening of gas power stations across the country (Okolobah, 2013). Furthermore, from 2005 onward, the nation's power sector institution – NEPA (renamed PHCN) was decentralized and unbundled, and licenses were granted to independent power producers (IPPs) for the establishment of independent power projects (IPPs).The IPPs generates and sells electricity privately to the general public. Legally, the Electric Power Sector Act (EPSRA) of 2005 unbundled the power sector into generation, transmission and distribution companies; transfer assets, liabilities and staff of erstwhile NEPA to PHCN; set up independent regulator i.e. National Electricity Regulatory Commission (NERC) for power sector; migrate the former PHCN staff to the successor generation, transmission and distribution companies; and create a competitive market for electricity services in Nigeria. The asset of the ESPRA Act resulted to the establishment of new eleven distribution companies named Discos; six generation companies named Gencos; and one transmission company, following the unbundling of NEPA and the incorporation of Power Holding Company of Nigeria Plc (PHCN).

In August 2010, Jonathan administration restarted the power sector reform and launched the Power Sector Road Map (2010) to commence privatization scheme in the power sector in December, 2010. The privatization scheme commenced with the submission of bids in July 2012; opening of bids in October, 2012; completion of negotiations in January, 2013; completion of agreements in February, 2013; payment of 25% share sale in March, 2013; and payment of 75% share sale in August, 2013. Invariably, privatization exercise which started in 2010, was completed fully in 2013 by the Jonathan administration.

Issue of Unbundling of PHCN and Privatization Programme

Records shows that in 2013, eighteen(18) new companies emerged from the unbundling of the erstwhile PHCN with six (6) companies in electricity generation, eleven companies in electricity distribution and one (1) company as a power transmission company. With respect to generation infrastructure, the electricity power sector reform (EPSR) also ensured the privatization of government's thermal power plants and the concession of the nation's hydropower stations. Table 3 contains the list of the six (6) electricity generation companies called GENCOs that emerged from the privatization process and their status.

Table 3: Six New Electricity Generation Companies and Privatization Status as at 2013

SERIAL NO.	GENCOS	TYPE	INSTALLED CAPACITY	PRIVATIZATION STATUS AS AT 2013
1	Afam VI Power Plc	Thermal	776MW	100% sold
2	Sapele Power Plc	Thermal	414 MW	51% sold
3	Egbin Power PlcPlc	Thermal	1,020 MW	100% sold
4	Ugheli	Thermal	900 MW	100% sold
5	Kainji /Jebba Power Plc	Hydro	1338 MW	Long term concession
6	Shiroro hydro electric Plc	Hydro	600 MW	Long term concession

Author's Computation, 2023

It must be stressed that the importance of electricity generation in the power sector cannot be over-emphasized since it is the first of the three stages in the national power grid system. The power or electricity generated by the six electricity generation companies is complemented by those generated by Independent Power Producers (IPPs). The Independent Power Producers (IPPs) are private firms with power plants in existence prior to the commencement of the power sector reform of 2005 and privatization process in 2013. Most of the Nigerian's Independent Power Producers are located in the Niger Delta as shown in table 3 above, for the power sector to take advantage of the natural gas generated from oil exploration and exploitation activities in the Niger delta region.

Following the completion of privatization scheme in 2013 the new practice is that the energy generated by GENCO's is sold to the Nigerian Bulk Electricity Trading (NBET) Plc at any agreed price, which is usually facilitated through power purchase agreements. The Nigeria Bulk Electricity Trading Plc was established by the EPRS Act as the bulk purchaser of energy in the Nigerian Electricity Supply Industry. Presently, the NBET is the manager of the electricity pool in the Nigerian electricity supply market. Meanwhile, in the Nigerian electricity generation market, four (4) generation options namely; transmission based on-grid generation; embedded generation, off-grid generation and captive generation, form the mixture of energy generated in the country.

Regarding the power transmission sub-sector, the power privatization scheme also created an energy transmission company from the unbundling of erstwhile NEPA in 2005. Therefore, the Transmission Company of Nigeria (TCN) was licensed on the 1st of July, 2006 to oversee the national power grid system, reduce power system failures and ensure that power sector players comply with the national power grid code. Presently, the TCN is wholly owned by the federal government. However, it is being managed by the private sector and has three departments

namely; Transmission Service Provider (TSP), System Operation (SO) and Marketing Operations (MO).

In the area of electricity distribution, the power sector deregulation process also created eleven (11) distribution companies called DISCOs; and the privatization scheme effectively de-monopolized electricity distribution as each DISCO was assigned coverage area to reduce conflicts, streamline their operations and ensure steady power supply. In practice, the energy generated by GENCOs are transferred to TCN, and through the TCN, each DISCO receives energy that it sells to households, industrial and commercial users. Table 4 contains the list of eleven distribution companies (DISCOS) and their areas of operation as at 2023.

Table 4 Eleven Distribution Companies (DISCO's) and Areas of Operation & Coverage

No.	Name of DISCO	Area of Coverage/Operation
1.	Abuja Electricity Distribution Company Plc	FCT, Kogi, Nasarawa and most parts of Niger State
2.	Benin Electricity Distribution Company Plc	Edo, Ondo, Delta and parts of Ekiti State
3.	Eko Electricity Distribution Company Plc	Southern Lagos; Ojo, Festac, Ijora, Mushin-Orile, Apapa, Lekki, Lagos Island and Agbara in Ogun State
4.	Jos Electricity Distribution Company Plc	Bauchi, Benue, Gombe and Plateau State
5.	Kaduna Electricity Distribution Company Plc	Kaduna, Kebbi, Sokoto and Zamfara State
6.	Kano Electricity Distribution Company Plc	Kano, Katsina and Jigawa States
7.	Ibadan Electricity Distribution Company Plc	Oyo, Ogun, Osun, Kwara and parts of Niger State, Ekiti and Kogi State
8.	Ikeja Electricity Distribution Company Plc	Parts of Lagos State: Ebute-Egba, Akowonjo, Ikeja, Ikorodu, Oshodi, Shomolu
9.	Enugu Electricity Distribution Company Plc	Abia, Anambra, Enugu, Ebonyi and Imo State
10	Port-Harcourt Electricity Distribution Company Plc	Akwa-Ibom, Bayelsa, Cross River and River State
11.	Yola Electricity Distribution Company Plc	Adamawa, Borno, Taraba and Yobe State

Author's Computation, 2023

Challenges Confronting Power Sector Privatization Scheme

The problems and challenges bedeviling the power sector during the ten years of privatization exercise between 2013 and 2023 are multifarious. However, based on available records, the notable ones among these challenges are:

(i) The challenge of initial take-off

Despite the privatization of the erstwhile PHCN in 2013, Nigeria's electricity generation capacity has declined from the peak generation level of about 4,517.6 mega-watts (MW) recorded in December, 2012 to about 3,670MW in January, 2014. The electricity generation forecast at the time of privatization in 2013 was N12, 800MW of electricity; and energy generation capacity was 3,670MW per hour (MWH/H), while the actual electricity supplied into the national grid was 3,585.32 MWH/H (nigeriapowerreform.org).

In the same manner, the Transmission Company of Nigeria (TCN) also faced an initial challenge of inadequate fund. The company required about $4.4 billion for upgrading of power transfer capacity to make the power network more stable and reliable, and to improve efficiency of electric power transfer, by reducing transmission technical losses and to enable the TCN increase transmission capacity to 16843MW by end of 2018 (Vanguard, March 1st 2014). Unfortunately, up till 2023, these challenges are still confronting the Gencos and TCN, hence, the power supplies had not improved in the country.

(ii) Problem of Inadequate Funding

The power sector is a highly capital intensive industry. It must be stated that many of the investors that acquired the unbundled PHCN borrowed money from banks and continuous financing of the procured companies and their power projects became a herculean task for them after privatization in 2013. For emphasis, Nigerian banks provided 70 per cent of the funds in loans and equity of the N404bn paid for the power assets. The acquired loans and Federal government intervention funds disbursed through Money Deposit Banks is not also sufficient to fast track the rapid turn-around expected in the power sector.

Another problem in the power sector is that the estimated $4.28b required capital expenditure and rehabilitation expenditure expected to be provided by indigenous banks, which was not forthcoming as required as at 2013 (Punch, 2013). Following the acquisition of the erstwhile PHCN subsidiaries, the Bureau of Public Enterprise's Director General declared that the eleven distribution companies (Discos) required additional spending a total of $357m in 2013 alone. Out of the required additional funding, the Abuja Disco is required to invest N36.6m; Benin, $24.3; Enugu, $27.2m; Ibadan, $43.86m; Jos; $29,96m; Kano; $50.38m,Eko Disco, $45.2m; Ikeja; $58.74m; Port Harcourt, $25.5m; and Yola, $13m.

The required additional spending by Discos; is to cover the metering, health, safety and environmental practices, reduction in the number of customer interruptions due to network faults, new customer connections and network expansion, improving the customer services and complaints handling procedures. Unfortunately, as at 2014, some of the successful buyers refused to pay the required fund, and many of them also owed the federal government huge sum of fund. According to the Nigerian Electricity Regulatory Commission's report(2014), of the eleven electricity distribution companies in the country, only three distribution companies remitted to the Federal Government the money due to it as at 2014 (Punch, 2014). The

implication is that majority of the Discos purchased power infrastructure assets and facilities on credit at the expense of public treasury.

(iii) Inadequate gas supplies to power generation companies

The power sector reform is based on the utilization of gas fuels to power plants in order to meet the electricity needs of the country. The availability of gas to ensure consistency in power supply has been a great challenge since 2013. The challenge of gas supplies was as a result of the inadequate infrastructure facilities needed for gas gathering, processing and transportation. More importantly, there is also the problem of vandalisation and sabotage of gas pipelines routes, which has resulted into gas supply shortage to power generation companies. The resultant effect is the shortage of gas in the power sector.

The study wish to state that gas supply to the power plants was not taken into consideration or was not considered as a serious factor that will affect the operations of the power sector after the privatization as it is currently being experienced by the power plants. For instance, the approval for the construction of some power plants like the Alaoji, 1074 mega-watts (MW) Egbin, 338MW;Geregu, 848MW; and Omotosho- Papalanto, 786MW gas turbines by the Obansanjo's administration did not factored in the issue of gas supply to these power plants and the resultant effect is that these power plants has remained unutilized long after they were commissioned due to inadequacy of gas. Therefore, the inadequacy of gas supplies to thermal power plants constituted a serious hindrance to efficacy of power sector privatization scheme between 2013and 2023.

(iii) Consumer's fraudulent practices

There are fraudulent practices by many electricity consumers that were ignored by the erstwhile PHCN either due to lack of information or because of the active connivance of dubious staff of the organization. The effect was that these fraudulent activities reduce the income generation of the erstwhile PHCN. Under the privatization scheme, the fraudulent activities continue unabated especially in the various Discos and it has to a greater extent, hinders revenue to the new owners of the privatized Discos, thereby making them incapable of meeting their obligations. These illegal deals were usually committed whenever Consumers and Disco's staff resorts to unlawful actions such as direct hooking from power line; bypassing the energy meter; injecting foreign elements into the energy meter; or drilling line holes in electro-mechanical meter; or assigning ridiculous low amount of energy units to consumers. In practice, all these fraudulent practices are still occurring in various Discos till date, and have continue to prevent the country from full realization of the benefits of the privatization scheme in the power sector since 2013 till date.

(iv) Inappropriate determination of the end user tariffs

Normally, the efficient pricing of electricity is central to effective functioning of the power sector. Prior to the power privatization exercise, appropriate power pricing was promised and indeed, guided the investment decision in the power sector since pricing is critical for cost recovery in the sector. Appropriate pricing mean the power Users will bear the cost of marginal consumption and ideally, will encourage the optimal utilization of installed capacity. In practice, achieving appropriate and efficient power pricing is easier said than done in Nigeria. In fact, between 2013 and 2023, appropriate pricing have become a mirage. Presently, despite the

privatization, the power sector is still characterizes by substantive up-front fixed costs, and with the deal, it may takes many years for capacity to be fully utilized. Beyond that, costs varies across times of the day for instance, cost varies at peak/off-peak; seasons (dry/rainy); users (residential /commercial); and geographic areas (urban/ rural).

Nevertheless, up till today, cost variations had not been effectively taken into consideration by National Electricity Regulatory Agency and by other power price fixing agencies when fixing prices of energy to promote efficient use of power in the country (Briceno-Garmendia, C &Shkaratan, M., 2015). For truth to be told, it must be stated that energy prices in Nigeria are currently below production costs (Amadi, 2023). Therefore, the power industry has not been able to generate enough revenue to cover its operating costs, let alone meet its considerable capital expenditure needs since 2013 when the privatization exercise started. Therefore, this had constituted huge challenge that owners of Gencos, Discos and TCN had been battling with, and they had not been able to secure enough operating fund or can no longer source for operating fund from government the way the erstwhile PHCN did (Amadi, 2023). On this note, the study wish to state that whatever approach that the owners of the Discos and Gencos adopted to recover their operating costs, such approach must take into consideration the ability of the end users to pay, in view of the increasing multidimensional poverty ravaging majority of the citizen of Nigeria.

Technically, due to the prevailing general poverty in the country, setting efficient tariffs is a complex issue between the power providers and power regulators, as there had been an intense conflict between promoting economic efficiency and societal well-being. As Borenstein (2008) observed that, if income-challenged groups and citizens in multidimensional poverty totally 133 million (as per NBS, 2022), are to enjoy the benefits of power provision, policy makers must set affordable tariffs below production costs or introduce an explicit energy subsidy regime. Regrettably, the current Tinubu administration is no longer receptive to any form of subsidy to citizen of the country

In an attempt to address this tariff issue, Nigerian Electricity Regulatory Commission (NERC) was established with the dual function of ensuring that the prices charged by licensees (new owners) are fair to the consumers and sufficient to allow the licensees (new owners) to finance their operating activities and to allow for reasonable earning and profits for their efficient operations. Equally, part of the effort to ensure cost recovery, the NERC developed a new tariff approach called the Multi-Year Tariff Order (MYTO). At the Centre of this, tariff system, MYTO is an order that calculates electricity prices based on revenue requirements of the whole power industry. However, the study observed that this tariff system approach has remain unworkable since 2013 till date, as each tariff increases is always challenged and met with stiff oppositions by labour unions, civil society organizations and the parliament. In practical terms, the fact remains that the privatized power sector in Nigeria cannot realize its set target and objectives without efficient pricing and adequate cost recovery mechanisms.

(v) Reconciliation of assets and liabilities of erstwhile PHCN

Records have shown that the unbundled PHCN was poorly managed and this constituted one of the reasons why it could not sustain itself by generating enough revenue to remain in operation. The reality is that the privatized power institutions also have the challenge improper records or lack of having comprehensive information detailing the assets and liabilities of the erstwhile

PHCN in 2013. In a bid to solve this problem, the Federal Government set the Nigerian Electricity Management Company (NELMCO). The company serves as a government Special Purpose Vehicle, based on the understanding that it would manage power infrastructure assets, liabilities and other obligations that could not be easily transferred from erstwhile PHCN to the successor companies (Gencos, Discos and TCN). As event unfolded after privatization in 2013, conflicting interests arose between the new investors (owners) and the government over the quality of assets that were privatized. The issue was that some of the assets required additional huge investment for their upgrading to standard for smooth running of the inherited equipment. However, after the privatization in 2013, the federal government as equity shareholder was unwilling to commit substantial amount to investments in power infrastructure after their hand-over to their new owners. In this regard, majority of the power infrastructure assets inherited from erstwhile PHCN were left un-upgraded, un-serviced or un-rehabilitated by the new owners due to lack of funds, and the fear of federal government's revocation of sale offered (Amadi, 2023).

(vi) Uncooperative attitude of staff

The former employees of the erstwhile PHCN, like every employee of privatized companies elsewhere, opposed to the privatization of the power sector since the beginning of power sector reform in 2005 till 2013 after the completion of privatization scheme and thereafter. The basis of their opposition was the fear of the future, and issue relating to their employment status, created the resistance to the PHCN unbundling process and the entire privatization scheme. Though, some of their initial concerns that bother on arrears of salaries, pensions, severance and other terminal benefits owed to them was taken care of and settled by the Federal Government.

However, the few old staff left within new successor companies in the privatized power institutions are still fearful, jittery and continuing displaying lack of commitment to the objectives of the power privatization scheme. What posed further challenges are issues such as the criteria adopted in choosing those staff that were retained and those staff that were laid off. It became a thorny issue after some of the staff ware retained to keep the business going. Even when their severance allowances of those laid off had been paid, these outgone staff still mounts pressure for re-absorption into the successor companies. Eventually, the fear generated by this thorny issue created room for sabotage from disappointed staff and commitment from retained staff remains at zero level since 2013 till date, because there were high labour turn-over in all the successor companies between 2013 and 2023 (Bilikisu, 2023).

(vii) Corruption in the power infrastructure institutions

In the power sector, corruption has not only raised the cost of energy supply to the citizenry but has also reduced the quality of power supplies and economic returns from power infrastructural investment. The citizenry are completely mindful that the staff of the power distribution companies are highly exceptional corrupt. Their corrupt practices ranges from bribe collection to restore electricity, to the collection of bribes to repair faults, bribe collection to reconnect disconnected lines, theft of transformer parts by staff of the distribution companies, refusal to allocate pre-paid meters to customers, and receiving payment for pre-paid meters regardless of several pronouncements by the Electricity Regulator commission and the Minister of power (RajiFashola) that the pre-paid meter is free (Manjo, 2020).

Conclusion

Several policies in power sector by successive governments from 1999, culminated in to the power sector reform and power sector roadmap, which became an integral component of Jonathan's transformation agenda between 2010 and 2015 which aimed towards the rapid development of the economy. In 2013, the power sector was complete privatized. However, the challenges in the sector after the privatization adversely affected the performance of the sector from the inception of the privatization in 2013 till date, as electricity supplies is still epileptic across the country. It is therefore becomes imperative for the federal government of Nigeria to boldly tackle these challenges through proactive policies and reform in the power sector since the power sector is indeed, a very important sector critical to the rapid transformation of any economy. Based on this, the reform is a must do in the power sector because the challenges examined in this study are germane and required urgent solution. If the Federal Government can intervene and resolve them, it will create a peaceful environment for the investors in sector to operate effectively and efficiently for provision of steady power supplies in Nigeria.

Recommendations

In the light of the foregoing challenges and conclusions, the federal government of Nigeria need to as a matter of necessity, commercialize the power sector as an option from the current privatization that has failed to yield desirable results. This recommendation is based on the fact that as most countries throughout the world do not privatized completely their electricity supply value chain from generation, transmission to distribution. Secondly, the new amended Electricity Act (2023), must be implemented and enforced vigorously to pave way for commercialization of the power sector, as a viable option to the full privatization of the sector. Thirdly, the resultant effects of the several problems in power sector are the underperforming of the nation's economy. The power sector therefore required a surgical operation and reform. In this regard, the Nigeria's Minister of Power; Adebayo Adelabu, needs to give the power sector the required policy direction beyond statements, to allow for a comprehensive reform in the power sector. On this, the study is in accord with the position of Wumi-Iledare, the Professor Emeritus and Executive Director, Emmanuel Egbogha Foundation, that the 2023's amended Electricity Act will presents a new horizon for the country's power sector if all the new innovations in the Act were vigorously enforced and implemented.

Finally, at the current level of development in Nigeria, vertical integration in the power sector value chain remains a valid market option for value optimization in the power industry. In this regard, the National Electricity Regulatory Commission (NERC) must step up their regulatory activities in the power sector. Also, the Federal Ministry of Power must accept the fact that it is not a regulatory or commercial institution, but a policy institution, hence, its intervention in the power industry must be limited to policy issues for the power sector to progress.

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