

Renewable Energy and Challenges of Development in Nigeria

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Abstract: *Renewable energy deficit has over the years ruined socio-economic development in Nigeria, previous administrations have tried to fix this critical sector, which is the major driver of the economy but to no avail. Humongous amount of money and resources were sunk in the sector without positive corresponding results only for the nation to be submerged in unmitigated darkness. While businesses already established were in comatose struggling to recuperate, some are already folding, others have out of frustration decided in relocating to neighboring countries that relish power supply for industrialization, revenue generation and job creation. This intractable situation embraces the usage of Marxian political economy approach as our theoretical propositional analysis. The theory offers understanding of the systemic issues that influences the development of the sector, as a nation at the crossroad in formalistic approach to knowledge; it is incumbent for her to dialectically cogitate relations gap between the economic and non-economic, quantitative and qualitative and between theories of political economy and theories of subjectivity. However, though dialectics itself is not a cut-and-dried methodology but a complex and multidimensional methodology open to a wide variety of interpretations and applications; its efficacy is envisaged in spectrum of analysis of socio-economic interdisciplinary relations for objectivity. Materials for the treatise were sourced from secondary sources. The purpose of the paper is to stimulate wider discussion on mitigating energy gap in Nigeria. The paper recommend that institutionalized weak-willed tools of the government used in fighting corruption be constitutionally strengthened and policies towards this sector holistically implemented in governance so that Nigerians will heave a sigh of relief that the issue of renewable energy deficit, which is a long-term measure approach will be addressed, and in no distant time a mirage.*

Keywords: Privatization, Dialectics, Political Economy, Renewable Energy.

Introduction

Energy deficit is an indelible migraine to Nigeria's underdevelopment since every sector of the economy largely depend on it. After Nigeria gained independence, there have been no mindful attempt to fix the sector that has the capacity to induce industrialization, revenue generation and job creation. Nigeria is Africa's largest economy, and its population is expected to double by 2050, reaching 400 million and making it the third most populous country in the world (UN, 2019). Despite Nigeria's vast power generation potential, its power sector is in a parlous state. Nigeria has 13GW of power generation capacity, but the ageing grid delivers only about 5GW to a population of 200 million (IMF, 2019). A myriad of challenges faces the power sector in Nigeria. The biggest among them being dilapidated infrastructure and poor financial health across the power value chain. More robust and modern grids in developed countries face the challenge of integrating high shares of variable renewable energies – the ageing and fragile grid in Nigeria places severe constraints on what is possible. In an attempt to turn this situation around, the power sector was unbundled in 2013, and generation and distribution was privatized. There are now six generating companies, 11 distribution companies, and one transmission company. But the consensus is that the privatization has failed to bring improvements in the delivery of electricity services, with service coverage expansion, metering, quality of supply, load shedding and customer satisfaction all performing poorly (Idowu, et al., 2019). Nigeria has signed a hugely ambitious agreement with Siemens AG, a German multinational conglomerate, to upgrade the generation, transmission and distribution infrastructure through a phased approach (Siemens, 2019). The first phase will be the rehabilitation of transmission and distribution, a focus on reducing energy losses, and medium-term goals of 7Gw and 11Gw of reliable power supply by 2021 and 2023. Last year, the World Bank also authorized a \$750 million Power Sector Recovery Operation (PSRO) to improve the reliability of electricity supply. An IEA report written in 2018 concluded that to provide electricity to its massive and growing population, Nigeria will need to draw intensively not just on renewable energy but also increasingly on domestic gas reserves (Occhlall and Falchetta, 2018). Through the Ministry of Power, Works and Housing, the Federal Government is planning on growing national generation capacity to 161Gw with fossil fuels (mainly gas) contributing about 57 per cent of this capacity. Hydropower is projected to contribute about 8.4Gw (more than 80 per cent of the estimated national potential) and VRE sources 25.9Gw (or about 16 per cent of total generation capacity) by 2030. Such high VRE penetration of distribution infrastructure, which is struggling to deliver 5Gw of dispatch able electricity, will call for a complete remodeling of the transmission and distribution system, alongside extending access to almost half the population who are yet to be connected to the grid. The nation is riddled in acute poverty that hinders the actualization of these laudable objectives. Nigeria has now overtaken India as the country with the largest number of people living in extreme poverty, and must focus on cost-effective and most likely to succeed in an extremely challenging context.

Energy is the mainstay of Nigeria's economic growth and development. It plays a significant role in the nation's international diplomacy and it serves as a tradable commodity for earning the national income, which is used to support governmental policies and development programs. It also serves as an input into the production of goods and services in the nation's industry, transport,

agriculture, health and education sectors, as well as an instrument for politics, security and diplomacy. Olowe (2011) elicited that energy, oil and gas, has contribute over 70% of Nigeria's Federal revenue. National developmental programs, and security, depend largely on these revenue earnings. Energy, especially crude oil, has over the past five years contributed an average of about 25% to Nigeria's Gross Domestic Product (GDP), representing the highest contributor after crop production. The contribution of energy to GDP is expected to be higher when we take into account renewable energy utilization, which constitutes about 90% of the energy used by the rural population, which has not been harnessed properly (Wendy, 2013).

According to Akinbami, J.F (2001) Nigeria is endowed with abundant energy resources, both conventional and renewable, which provide her with immense capacity to develop an effective national energy plan. However, introduction of renewable energy resources into the nation's energy mix have implications on its energy budget. Results of the model reveal that under only a least cost constraint, only large hydropower technology is the prominent commercial renewable energy technology in the electricity supply mix of the country. In Isa Ferral et al (2021) energy's importance to economic growth makes it a "commanding height" of society, while daily interactions dependent on energy make it a highly personal issue. Energy is an ideal lens through which to view how changing political, social, and economic conditions result in different policies, programs, and electrification realities. Awuzie (2000); Amakom (2004); Udoighe (1999), and Imobighe (2006) the energy sub-sector, especially petroleum, continues to maintain its prominence as the single most important source of government revenue and foreign exchange earner. Petroleum contributed an average 25.24% to the GDP between 2002 and 2006. However, despite the fortunes of the oil sector, other sectors of the economy are declining. Only about 40% of households in Nigeria are connected to the national grid. There is high-energy loss due to the physical deterioration of the transmission and distribution facilities, an inadequate metering system and an increase in the incidence of power theft through illegal connections. Other problems of the power sector include manpower constraints and inadequate support facilities, the high cost of electricity production, inadequate basic industries to service the power sector, poor billing systems, poor settlements of bills by consumers and low available capacity, about 40% out of the installed capacity of about 6,000MW. Inadequate funding prevented targeted growth in the sector. Production activities in the solid minerals sub-sector were generally on decline. With the ongoing restructuring of the power sector and the imminent privatization of the electricity industry, it is obvious that for logistic and economic reasons especially under the privatized power sector, rural areas that are remote from the grid and/or have low consumption or low power purchase potential will not be attractive to private power investors. Such areas may remain unserved for the distant future. Encouragingly, Nigeria has huge renewable resources, which remained untapped including solar, hydroelectric, wind in coastal areas and geothermal in the northern region.

Clarification of Concept

Renewable Energy

Renewable energy is considered a viable solution to the energy challenges of Nigeria and globally especially in the rural areas of the country and to the restrictions posed by the rising cost of conventional or traditional energy. In addition, consideration has been given to the factors affecting developments in the renewable energy sector, and efforts made to ensure capacity building for renewable energy, stimulation of the private sector, developing the markets for renewable energy, obtaining the necessary finance for renewable energy projects and the assistance of multilateral institutions in advancing renewable energy technologies in the country. Modern energy services, including renewable energy, have been a prerequisite to sustained development in every advanced economy. According to United Nations Environment Program (UNEP, 2015), renewable energy is defined as any energy generated from natural processes including hydropower, geothermal, solar, tides, wind, biomass, and biofuels, made up 53.6% of the total gigawatt capacity of all energy technologies installed in 2015. This excludes large hydroelectric projects. According to IEA (2015), renewable energy technologies were becoming much more prevalent in both developed and developing economies as they became cheaper, more reliable, and readily available. During 2015, and for the first time ever, developing economies invested more money into renewable than developed economies (UNEP, 2015). Renewable energy technologies had more benefits to developing countries than merely being environmentally friendly. They also could provide protection against future price increases in conventional fuels by diversifying the energy portfolio, aid in the balancing of both budget and trade deficits and created new local economic opportunities which supported poverty reduction and promoted economic growth (World Watch, 2005; REN21, 2015). Renewable energy (RE) is defined as in the SRREN (IPCC, 2011) to include bioenergy, direct solar energy, geothermal energy, hydropower, ocean energy, and wind energy. The technical potential for RE is defined in Verbruggen et al (2011) as "the amount of renewable energy output obtainable by full implementation of demonstrated technologies or practices." Renewable energy sources are capable of supplying electricity, but some sources are also able to supply thermal and mechanical energy, as well as produce fuels that can satisfy multiple energy service needs (Moomaw et al., 2011). Benney (2015) argued that renewable energy is broadly defined as energy derived from natural processes that are replenished constantly and over a short timeframe. In its various forms, renewables are derived directly from the sun or from heat generated deep within the earth. The main types of renewable energy include electricity, fuel and heat generated from solar, wind, ocean tides, hydropower, biomass, geothermal resources, biofuels and hydrogen derived from renewable resources. Renewable energy replaces conventional energy sources in four main areas: electricity generation, fuel, rural or off-grid energy generation, water, and space heating in the home (REN21 2010). The striking feature of the above postulations and demarcations was that renewable energy has the capacity and flexibility to be replenished. Due to the rural and underdeveloped status of many emerging economies, renewable energy can be particularly suitable for these states. For example, in rural and remote areas, transmission and distribution of energy generated from fossil fuels can be difficult and expensive. Producing

renewable energy locally can offer a viable, sustainable and affordable alternative especially as countries transition through the industrialization process. The most significant barriers to the widespread implementation of large-scale renewable energy and low carbon energy strategies worldwide are primarily political and economic, not technological as is commonly believed. For example, according to the World Energy Outlook Report (2013), the volatility caused by fossil-fuel based energy systems often leads to wide spread regional differences in energy prices, which in turn can be blamed for unleashing or frustrating economic growth. For countries in transition, the loss of momentum at crucial moments can seriously undermine development efforts. Likewise, when emerging states are unaccustomed to swelling revenues over short periods, the resource curse becomes common due to a general lack of governance capacity, civil conflict and corruption that may result and diminish the overall benefit from the boom (Ross 2013).

Theoretical Framework

The subtle hollow of some political economy intellectual approaches tends to misdirect scholars into alluding that economic misfortune and quagmire of a given entity has no remedial approach. The placidity and vibrancy of Marx dialectics and political economy makes his critiques choleric due to studious and intellectual solution to innate class struggles that its ominous complex gestation and gravidity affects the ecological dimensions of a given system. Ecological dimensions entails tracing the complicated interrelationships and interdependence that exist in a given system. Marx was of the view that in contemporary heterogeneous and variegated society, interdisciplinary alignment approach is obvious as an analytical tool to remedy a prevailing ectopic socio-economic system. As Marx would contend, "it is not consciousness that determines life (man's existence), but material life that determines consciousness" (Marx and Engels, 1976).. Marx believed that it was the entire social World, and the economy in particular that need to be analyzed because this focuses on dialectical relations within the material world. For Hundeyin and Momo (1999), economics today was generally known as political economy during the 19th century, when it was more of a mixture of the descriptive and the prescriptive approach to the study of society. Classical political economy basically was concerned with the growth and development of economic systems and societies. This forced them to place their searchlights of operation mainly on the socio-economic and political factors that may impede or facilitate the growth of the economy. This was the case with processes of growth and development of different social groups and classes within the socio-economic system. Apparently, though classical economists like David Ricardo, Rev Malthus and Adam Smith were much concerned in finding lasting solutions to inherent issues as it relates to production, distribution, exchange and consumption of goods and services; as well as the role of governments and the markets in growth and development. Marx intellectually was consummately concerned with holistic study of issues, phenomena and policies in any society as it relates to production between people, which is dually anchored on two propositions: The dynamical character of social reality, and the relatedness of the different and complete elements of the society. (Ake, 1981).

The centrality and dynamism of Marxian Political Economy is the adoption of material conditions of life in determining the behavior and material conditions of social groups. The well-being and welfare of the workers must be paramount so that production processes are not constricted. Hence, economic issues are central component and aggregate of the fundamental converge of perustration. Distinctive application and consideration is given to the modes of societal production, which is the systematic coordination or organic unity between productive forces and social relations of production. Extraneous societal class structures and extrinsic superficial substructure ultimately resolve the political, legal and ideological aspects of social life in the society. Marx opined that the welfare of human element (labor) in factors of production is of paramount importance, (Anumve, 2000). Political economy was Marxist frameworks to study the effects of global capitalism (Globalization) on local cultures and the responses these cultures in the world capitalist market system. Thus, Political economy is a research approach. It is often associated with Immanuel Wallenstein's the world-systems theory in which countries or zones replaces the socio-economic classes of classical Marxist.

According to Marx, legal relations and the forms of the state are passages in the material conditions of life. His conception of the state is therefore related to the productive base of the society through various stages of history. In his opinion, the base or economic structure of society becomes the real foundation on which people build up essential relations. The legal and political structure is but a reflection of that base. Political economy explains the relations between the base and the super-structures. Karl Marx developed his theories of classic economy by reformulating the theories of classical political economy and he did this while developing his own organic conception of capitalist society. He questioned the naturalistic bases of classical political economy. According to him, the classical writers made errors by naturalizing the historically specific social reforms of capitalist society. In his opinion products of labor only become and commodities in historically specific and thereby transitory forms of society. On this historical and materialist basis, Marx builds his theory of capitalist society, which is rooted in the concepts of value, surplus value and class. Capitalist society is based on a particular social form of production, within which the production of useful goods is subordinated to the expansion of surplus value. Marx reformulation of the classical concepts of political economy gave birth to a revolution in social and political theory, but the results of the revolution are not yet fully assimilated into the mainstream of political science.

Global Political Economy of Renewable Energy

The deployment of RE is a good indicator of countries' commitment in the promotion of environmental friendly energy policies and, as we shall see, one that has received little attention in the scientific literature. The second, closely connected one, is to compare the explanatory power of those political determinants with that of other economic, energy and environmental drivers that have received greater attention in the literature so far, at least in the particular case of RE. Both at the theoretical and at the empirical level, political economy analyses of energy and environmental policy decisions have mainly focused on two types of determinants: the quality of

government, which also includes the institutional framework where energy and environmental policy decisions are implemented and the ideology of the incumbent government. Corruption, a standard measure of governance quality, reduces the responsiveness of policies to citizens' preferences and should then raise the income level at which environmental protecting policies start to be adopted. Fredriksson and Svensson (2003) study both theoretically and empirically the contrasting effects of corruption and political instability on the implementation of environmental policies. They predict that corruption reduces the "stringency" (i.e., the efficiency of implementation) of environmental regulations; yet political instability should offset this effect, as it lowers the rate of return on corrupt practices. They find support for this claim in a cross section analysis on 63 countries. Some studies in this literature strand associate corruption with lobbying activities. Fredriksson *et al.* (2004) for instance considers the combined effects of corruption and of industry size – a proxy for lobbying efficiency - on the outcomes of energy policy in the OECD countries.

Another striking problem on renewable energy is transfer of technology from developed nations to developing nations. As Crikemans (2011) indicate, "From an external political economy perspective, those countries that today invest in renewable energy sources and technology may become the dominant geopolitical players tomorrow." As oil and gas lose their dominance in the energy mix, the rents associated with their production will diminish. As a result, oil and gas-producing countries will lose access to the high rents associated with the resource curse. Alternatively, without rents, which helped provide a critical supplemental income stream to certain countries, those countries may be more vulnerable to domestic unrest or conflict. This obviously is what Merkins (2001:56) adduced as resource curse. Though many analysts like Windlow (1987); Vachus (2000); Milder (2005) and Winney (2010) argued that oil in many nations may pose as resource curse to producer countries, they moved a step further to argue that if diversification of economy is not adopted, the same fate will catch up with other new discoveries. The countervailing arguments and debates over renewable energy suffering the same fate with oil when Filmer (2018) quipped thus:

Renewable energy resources are not point source and mainly require surface area, which in spite of possible conflicts over land ownership²³ is less scarce and concentrated than oil or gas. Some areas have much higher renewable energy potential than others e.g. Chile's Atacama Desert yet potential developers may nevertheless choose to build renewable capacity domestically when faced with the national security premium of being in thrall to another state for electricity supply, or if the cost of transmission is too high. The success in deploying renewable energy requires a country to have a high governance capacity. The involvement of multiple sectors, including rare earths and metals, technology, skilled labor, manufacturing and construction, reduces the chances of "Dutch disease" (the idea that disproportionate income from one sector causes the appreciation of a country's currency, leading to the weakening of other sectors and increased long-term vulnerability). Instead, countries "specializing" in renewable energy may actually end up with more diversified and progressive economies than they would otherwise.

In view of the above, there is potential for a new resource curse, which would be less associated with a country's potential for renewables themselves than with its position within the energy value chain and its possession of rare earths and metals. As noted above, the rise in renewable energy will increase dependence on advanced raw materials to build the machines to produce solar PV panels, wind turbines, etc.—many of which require highly specialized manufacturing processes and rare earth elements concentrated in particular countries. The production and sale of these elements, in a renewable-energy carry significant rents which in turn shape the development of domestic institutions in some places as oil and gas did in the past. Access to modern forms of energy is one of the key preconditions for achieving sustainable development. Yet, some 1.06 billion people worldwide still have no access to electricity and some 3.04 billion people still do not have access to clean cooking. The situation is particularly critical in sub-Saharan Africa and developing Asia, the two regions characterized by the highest levels of energy poverty. Africa, for example, represents 16% of the global population but less than 6% of the global energy demand. Widespread energy poverty stands in stark contrast to large energy reserves in Africa, including oil, natural gas, coal and various sources of renewable energy.

Verrastro *et al.* (2010) and Johansson (2013) argued that, contrary to the assumptions of actors who are concerned about intermittency, renewable energy may strengthen energy security while at the same time it will inevitably lead to the emergence of new interdependencies between the countries. According to Kostyuk *et al.* (2012), renewable energy expansion is likely to lessen the role of geopolitics in international relations. In their view, renewable energy will increase the availability of energy and thus make it less prone to political tension. They conclude that the world is presently at an important crossroads in terms of the future energy path. Hoggert (2014) notes that small-scale photovoltaics (and nuclear power) technologies are likely to promote a secure low carbon transition with reduced geopolitical risks. Krewitt *et al.* (2009: 23) indicate that the creation of international solar energy partnerships would have geopolitical advantages because they could "reduce economic imbalances between the North and the South and create global markets for future-oriented energy technologies without having to fear conflicts over scarce resources." Casertano (2012: 6) notes that renewable energy "democratizes" the energy supply and creates new network structures that can be called "Internet of Energy". Rifkin (2011: 37) argues that deployment of renewable energy can lead to a "Third Industrial Revolution" and democratize the international energy system.

Privatization

Privatization is the process of transferring property from public ownership to private ownership and/or transferring the management of a service or activity from the government to the private sector. Privatization can be partial or complete. It may also carry conditions

as to the change in ownership. This entails the sale, wholly or practically, of SOEs to private interest. By privatization, Davis (1988) perceives it as a policy of widespread or partial sale of public-owned asset to interested investors whether local or foreign. Privatization is more encompassing. He explained further that privatization: Goes beyond increased price and mass Unemployment it touches the very foundation Of building a just and equitable society Which all the Nigeria government, from Independence, have gullibly claimed to Aim at. Furthermore, privatization of public Enterprises will necessarily involve the transfer of public wealth, held on trust by the Government on behalf of the people, to private interests. Ubeku (1986) privatization” as the : Systematic and programmed withdrawal of government from those activities which private Person and /or undertaking can perform more efficiently than government agencies or enterprises. Privatization is a global economic stratagem to allow multinational companies and elite bourgeois to dominate the economic space of their various nations.

Ugorji (1995) argued that privatization has become an important instrument for streamlining the public sector and promoting economic development in countries all over world. It is a strategy for reducing the size of government expenditure and transferring assets and service functions from public to private ownership and control. Privatization is based on four core beliefs in that the Government is into more things than it should be. It is intruding into private enterprise and lives; government is unable to provide services effectively or efficiently; Public officials and public agencies are not adequately responsive to the public; and Government consumes too many resources and thereby threatens economic growth. A situation where the government is shying away from its responsibility and social contract to the people connoted a grave error in the wheels of governance and a deliberate decision. Ezeani (2006) defined privatization thus:

A deliberate government policy of stimulating economic growth and efficiency by reducing state interference and broadening the scope of private sector activity through one or all of the following strategies; transfer of state-owned asset to private ownership, through sale of share, control or management of state-owned asset, encouraging private sector involvement in public activity and shifting decision-making to agents operating in accordance with the market condition.

Ayodele (2004) historically traced privatization crusade since early 1980s where it has become a popular strategy of transiting from a public sector commanding heights of an economy to a private sector-led one, the world over. In most developing countries, privatization was introduced at the behest of Bretton Woods’s institutions particularly through the adoption of Structural Adjustment Programs (SAP). The program was pursued with vigor in many African countries. For instance, as at December 2002, Mozambique had privatized 579 enterprises, Zambia (268), Ghana (224), Kenya (188), Cote D’Ivoire (105) and Nigeria (81). According to World Bank Report (1996) more than 100 countries across every continent, most of them developing, have privatized some of their state-owned enterprises. Equally striking is the volume of transactions. Between 1988 and 1993, over 26,000 privatization transactions with sales values exceeding US\$50,000 each were recorded worldwide, generating a gross receipt of US\$271 billion. Of these transactions, about 900 were conducted in 1993 alone, against only about 60 in 1988. Developing and transition economies accounted for much of this tremendous growth. Between 1988 and 1994, developing countries around the world sold about 3,300 State Owned Enterprises (SOEs), with sales revenue rising from only US\$2.6 billion at the beginning of the period to a peak of US\$29 billion in 1992.

The flipside of the debate according to Omoankhanlen et al (2010) is that privatization reform has been the only language and singsong every Nigeria’s government seems to understand without resource to the enabling mix of the factors that stimulate private sector driven economy. Good governance, security, functional infrastructures, political stability are some of the enabling mix that can be of attraction to private driven sector. Nigeria business environment has become very hostile to businesses. In a diesel-driven economy, how does the government imagine the privatized public enterprises would do better than when it was not privatized. However, many scholars have given reasons for privatization ranging from cost of reduction, risk transfer, source of revenue, quality of service, expertise, timeliness and flexibility but the case of Nigeria becomes problematic as it is riddled with endemic corruption and nepotism. The whole essence of the exercise was to empower and enrich the bourgeoisie at the expense of the proletariat.

TABLE 1.1- ENTERPRISES LISTED BY BPE FOR PRIVATIZATION AND COMMERCIALIZATION

S/No	Sector	No. of Enterprises for Privatization	No. of Enterprises for Commercialization
1.	Communications	3	
2.	Electricity	2	
3.	Oil and Gas	24	1
4.	Fertilizer	3	
5.	Steel and Aluminum	5	
6.	Mining And Basic metals	5	
7.	Media	2	4
8.	Insurance	2	
9.	Aviation	3	

10.	Transport	5	
11.	Paper	4	
12.	Sugar	6	
13.	Cement	7	
14.	Finance	12	
15.	Agric. & Water Resources	6	11
16.	Automobile Assembly	6	
17.	Hospitality	13	6
18.	Miscellaneous	3	2
	Total	105	24

Source: *Democracy, Good Governance and Development- Jega, A.M (2007)*

The resultant effect of these establishments privatized was it has led to loss of jobs and pushed back people into the labor market. According to Manuchie (2011), about 20,000 jobs were lost from 2004 -2014. The cumulative effect of the privatization was that the original occupiers and owners of the establishment were using to inflict untold hardship to the masses and the commodity not within the reach of the less privileged

Coal

Nigeria is endowed with solid minerals like bauxite, coal, diamond and uranium. Coal is used by advanced countries to generate power. To a large extent Enugu one of the states in Nigeria has large deposit of coal. According to Usman (1986:45), a thermal plant built in 1956, which was situated at Oji-River uses coal as raw material for generating electricity. The establishment has the capacity of generating 400 Mw of electricity and can be upgraded since its raw material is locally sourced and from the state. It initially provide electricity to eastern region and other nearby regions. Following the construction of many dams by subsequent governments and the thirty-month civil war from the eastern part of the country where the establishment is, some other leaders saw that upgrading the establishment will boost economic activities in the region and may force them to secede as the wounds of the war has not been healed. However, the utmost abandonment of the project is merely for political reason. Pahle (2010) noted that coal used to be the backbone of the German electricity system. In the late 2000s still, Germany saw a “dash for coal” with soaring investments in new plant capacities. For Lukas and Digmar (2022) Germany has a long history of hard coal and lignite utilization. At its peak in 1955, the hard coal industry employed almost 600,000 people in mining; the last remaining mine was closed at the end of 2018. The issue of coal was phased out as the German electricity market was opened up for market liberalization with the German Energy Industry Act in 1998. All these were because of political interference.

TABLE 1.2 - INDEPENDENT POWER PROJECTS IN NIGERIA (IPP)

No	Power Station	MW	Zone	Status
1.	Zungeru Project -Niger State	700	North Central	Financing Secured
2.	Mambilla Project - Taraba State	3,050	North East	Underdevelopment
3.	Gurara II Project - Niger State	360	North Central	Underdevelopment
4.	Gurara I Project - Niger State	30	North Central	Underdevelopment
5.	Itisi Project - Kaduna State	40	North West	Underdevelopment
6.	Kashimbilla Project - Taraba State	40	North East	Underdevelopment

Source: *Federal Ministry of Power 2012*

Of the six major independent power projects in Nigeria, only one was financially secured though it has not been executed. The rest is wallowing in underdevelopment even when huge amount of money was plunged in it.

Table 1.3 - THERMAL STATION FOR DIVESTITURE

S/N	Generating Station	State	Status	Installed Capacity (MW)
1.	Egbin	Lagos	Existing	1320
2.	Ughelli	Delta	Existing	912
3.	Sapele	Delta	Existing	1020
4.	Geregu	Kogi	Existing	434
5.	Omotosho	Ondo	Existing	335
6.	Olorunshogo	Ogun	Existing	335
7.	Afam	Rivers	Existing	726
Total				5082

Source: *Eberhard and Gratwick (2012).*

TABLE 1.4- EXISTING INDEPENDENT POWER PROJECT

Project Name (Technology)	Location	Designed capacity (MW)
Calabar	Calabar, Cross River State	563
Egbema	Egbema, Imo State	338

Ihovbor	Ihovbor, Edo State	451
Gbarain	Gbarain, Bayelsa State	225
Sapele	Sapele, Delta State	451
Omoku	Omoku, River State	225
Alaoji	Alaoji, Abia State	961
Olorunsogo - Phase 2	Olorunsogo, Ogun State	676
Omotosho - Phase 2	Omotosho, Ondo State	451
Geregu	Geregu, Kogi State	434
Total		4,775

Source: Eberhard and Gratwick, 2012.

Tables 1.3 & 1.4 is all about the status of thermal stations in Nigeria and independent power project (IPP). Though they have the capacity of generating some reasonable quantum of electricity but with the over-bloated population of Nigeria and collapse of their equipment achieving this feat becomes a mirage. Government has sunk huge amount of money without it yielding any result. The journey of Nigeria making an in road in electricity and renewable energy generation is a tortuous one since corruption has crippled all efforts to revive the sector that has hampered all other sectors of the economy. Against this backdrop, the only panacea from these anomalies is the political will from our leaders to address the lingering problem. Unless the touted power sector is practically reformed, the country will continue to be a laughing stock among the comity of nations.

Table 1.5; African Countries with Large Population Lack Access to Electricity (2012)

Country	Population that Lack Electricity (millions)	Population that Lack Electricity (%)
Congo DR	60	9%
Ethiopia	70	23%
Kenya	35	20%
Nigeria	93	45%
Tanzania	36	24%
Uganda	31	15%

Source: Adapted from IEA, "Electricity access in Africa – 2012."

Another mindboggling figures from International Energy Association is that of selected countries with largest population in Africa and percentage of people lacking electricity in their country. Democratic Republic of Congo with population of over 60 million people on 9 percent lack electricity while Ethiopia with over 70 million population is with 23 percent of people without electricity. All these are wakeup call for Nigeria to wake up from slumber and strategically assume her leadership role in Africa, which is already waning.

Conclusion and Suggestions

The BMI (2015) reported that Nigeria has the ninth largest gas reserves in the world, while the NNPC estimated the total natural gas reserves at 165 tcf, including 75.4 tcf of non-associated gas. Geological findings by the Federal Ministry of Petroleum Resources and the NNPC in May 2008 indicated huge potentials in Nigeria's gas reserves as this could be developed to 600 tcf. According to the Organization of Petroleum Exporting Countries (OPEC), Nigeria's crude oil reserves is estimated at 37.1 billion barrels, but produces a daily average of about 2.0 mbpd of crude oil, making it the largest producer in Africa. With the exception of the statutory 445,000 bpd dedicated for domestic refining, the rest are exported. Nigeria reports an installed capacity of 13GW, but its ageing grid delivers only about 5GW to a population of 200 million. What the country needed to wriggle from energy deficits is improved advocacy, technological expertise, regional and economic integration and political will to fight corruption. Past leaders in Egypt are languishing in jail for mismanaging public finance. Where these are defalcated, actualizing the much-expected renewable energy revolution in Nigeria becomes a delusion.

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