Sustainable Energy Security for Nigeria Through Innovative Financing Mechanisms

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1 Introduction

Sustainable electricity supply is inevitable for the economic, social and political development of any country. Since the establishment of the first utility company under the name Nigerian Electricity Supply Company in 1929, Nigeria has been grappling to establish a sustainable electricity supply framework. The major transformation occurred in 1972 with the merging of the Electricity Corporation of Nigeria (ECN) with the Niger Dam Authority (NDA) to form a new entity called National Electric Power Authority (NEPA). NEPA was the only organisation vested with generating, distribution and transmission of electricity in Nigeria until 2005 and electricity supply management was purely based on monopoly. The electricity supply under the management of NEPA was characterised with epileptic power supply, inadequate investment on procurement of new equipment and poor management. Due to the precarious situation of the power sector, decisive action was taken to privatise it in 2005. Hence, the unbundling of the sector into generation, distribution and transmission companies was undertaken. The expectation was that the privatisation would lead to efficient and effective delivery of electricity supply.

Contrarily, more than ten years after privatisation, electricity supply is still poor with end users having to pay more for the service. Confirming the state of electricity supply in Nigeria, Kojima et al. (2016) show that the available generating capacity

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of less than 6000 MW represents about 55% of the total population of Nigerians who have access to electricity. Furthermore, the World Bank Doing Business Report of 2017 identifies factors that have contributed to the state of electricity in the country to include liquidity issues, poor project implementation, difficulty in attracting investments due to the harsh operating/business environment, poor regulatory framework (especially with tariff and stalled investments). This suggests the existence of an investment gap in the sector. Therefore, to overcome these challenges, there is a need for more investments in the sector to fill the supply deficit identified. Investors will be willing to invest if they know that they can recover their costs and earn attractive returns on their investments with the least amount of difficulty. Other factors noted by Antonio et al. (2015) that economies need to put in place as done in advanced countries include maintaining a viable financing system for the sector, creating a conducive operating environment that will attract a wide range of funding sources (most especially, the private sector) and having the political will to carry out the reforms. Accordingly, if these factors are not in place (or only partially in place) there will come a point in time when the budget of the country is unable to sustain measures put in place to maintain and keep the power sector in existence.

The electricity auction and the forfaiting financing models are two market models identified to be capable of attracting investors and reducing cost of borrowing. This leads to effective price discovery process in the electricity sector (Beck 2010; Busse 2014; Daube et al. 2008; Ivashina and Scharfstein 2010; Martínez and Flatow 2015; Rudnick 2009). Consequently, the present study on one hand assesses the electricity auction model using Chile (a developing country) as an example. This is because of the success recorded by Chile in the implementation of the model (Rudnick 2009). On the other hand, forfaiting financing is also examined because it has been shown to be a cheap source of financing capital projects (Busse 2014; Ivashina and Scharfstein 2010). Thereafter, the study attempts to see how a combination of the electricity auction and the forfaiting financing models can be applied to the Nigerian electricity sector.

This study is divided into five sections of which this introduction is a part. It gives the background to the study while setting the issues within the scope of the research. Section 2 gives a brief background of the power sector in Nigeria. Section 3 examines the auction and the forfaiting models. Against the background of challenges facing the Nigerian electricity sector, Sect. 4 discusses the applicability of the two models to the Nigerian setting. Section 5 concludes the study with relevant policy recommendations.

2 Historical Background of Power Sector in Nigeria

Electricity generation in Nigeria dates back to 1896 with the installation of two small electricity generating sets serving the former Lagos colony. The installed capacity of the generators was 60 kW, which was higher than the demand for electricity usage (Folorunso and Olowu 2014). Thereafter, in 1946 and under the jurisdiction of the

Public Works Department, the Nigerian Government Electricity Undertaking was set up to take on the responsibility of supplying electricity in Lagos State. Legislature backing electricity supply transferred issues relating to the sector (such as electricity supply and development) to the Electricity Corporation of Nigeria (ECN) in 1950. Native Authorities and the Nigerian Electricity Supply Company (NESCO) were also issued licenses to generate electricity in other locations in the country. In existence with ECN was another body known as Niger Dams Authority (NDA), which had the responsibility to construct and maintain dams. In addition to the responsibility given to it, NDA also generated electricity through hydropower, improved navigation and promoted fish seawaters and irrigation (Okoro and Chikuni 2007). The electricity generated by NDA was sold to ECN for distribution and sales at utility voltages. The two bodies (NDA and ECN) were merged in 1972 to bring their functions under an organisation known as the National Electric Power Authority (NEPA) charged with the responsibility and monopoly to generate, transmit and distribute electricity supply in the country. An expectation from the merger was that NEPA would be effective and efficient in harnessing electricity supply resources that were available in the country.

The monopolistic power of NEPA in generating, transmitting and distributing electricity continued right up to 2005 when the Electric Power Sector Reform Act of 2005 was signed into law. Prior to this period, there was dearth in infrastructural development and low investment in the electricity industry (Idris et al. 2013). This position put the industry in a deplorable state and given the importance of power in the development of an economy, the issue of reforms became a necessity. For instance, while the installed capacity for electricity generation was an average of 5600 MW, it dwindled to an average of 1750 MW in 2001 with a load demand of 6000 MW (Folorunso and Olowu 2014). This situation shows that the demand for electricity in Nigeria outweighs the supply and explains the incessant power failures due to power rationing. In addition, out of 79 installed generating units, only 19 units were put to use. Thus, the reform sought to address these problems and other issues in order to improve and stabilise electricity supply, minimise operational cost and increase cost recovery. Furthermore, the reform sought to increase the level of capital investment and infrastructural development in the power industry (Idris et al. 2013).

One of the major outcomes of implementing the reform was the deregulation and privatisation of the electricity industry. Consequently, NEPA was renamed Power Holding Company of Nigeria (PHCN). This process enabled the organised private sector to participate in electricity generation, transmission and distribution in addition to reducing the strain on government lean resources to develop the sector. For instance, Independent Power Producers (IPPs) came into existence to complement the activities and functions of PHCN. With the set-up of the PHCN, NEPA was unbundled into several units consisting of 11 distribution companies (DISCOS), six generating companies (GENCOS) and one transmission company (TRANSCO). However, while DISCOs and GENCOs are private sector operated, TRANSCO is under the control of the Federal Government. Following the establishment of the PHCN and in what appeared to be an improvement to power supply; generation peaked to 3.774 MW out of an available generation of 4000 in 2005 (Folorunso

and Olowu 2014). In an affirmation of the improvement in electricity generation, Fig. 1 shows that total electricity output in GWh improved from 23,539 GWh in 2005 to 28,706 GWh in 2012. Furthermore and in spite of the vandalism of gas pipelines supplying gas to generating stations, Nigeria recorded her highest peak of power generation (5074.7 MW) in February 2016 against an installed capacity of 12,000 MW (Fashola 2016).

Evidence of below capacity generation of electricity in Nigeria is similarly observed in Fig. 1 where actual output is about half of capacity to generate. Nonetheless, the problems associated with electricity generation under the former NEPA persists with the new body; PHCN. For example, while power generation remained less than 6000 MW few years after implementing the reforms, problems related to dilapidated and outdated equipment and structures, vandalism of power sector infrastructures in spite of the poor condition of existing ones and lack of adequate financing continues in the sector (Aliyu et al. 2015; Idris et al. 2013).

The continual problems of the power sector over the years clearly negates the goal of the United Nations Sustainable Development goal of ensuring access to affordable, reliable, sustainable and modern energy for all. Nigeria falls short of this goal because data obtained from World Bank Sustainable Energy for All shows that percentage of total population with access to electricity in 2012 was 55.6% even though it was an improvement over previous years (48% in 2010). Thus, the role of energy in enhancing socio-economic development and reducing poverty in the country remains unachieved. The lack of adequate financing for the power sector in Nigeria has been identified to be a major obstacle in accomplishing access to affordable, reliable, sustainable and modern energy for all. It is against this background that this paper assesses, examines and recommends financing models that best fits a developing country like Nigeria particularly as it relates to the inherent challenges in its power sector.

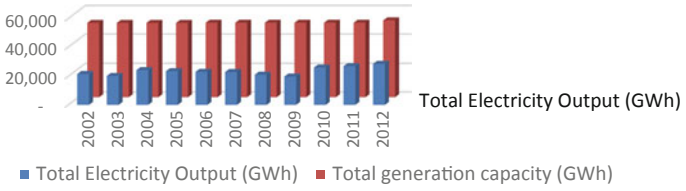

Fig. 1 Total electricity output and electricity generation capacity in Nigeria (2002–2012). *Source* World Bank Sustainable Energy for All (2017) (The data used in the figure is available only up to 2012)

3 Case Studies of Electricity Financing Models

This section discusses two electricity financing models namely the auction model as practiced in Chile and the forfaiting model.

3.1 The Auction Model in Chile

Chile is considered as one of the strongest economies in South America. Like many other developing countries, Chile experienced systemic energy demand especially in the 1990s due to factors such as rapid economic growth, rapid population growth and limited financial resources. Procurement of new generation sources to sustain the demand posed a challenge for the government thus, the need for a creative means of procuring new energy sources became imperative.

Prior to reforming, Chilean's electricity sector was vertically integrated whereby; generating, distribution and transmission were managed by government entities. The tariff system was purely regulated with subsidies in place. Action towards full liberalization began with the unbundling of the power sector into generation, transmission and distribution utilities in 1986. The restructuring exercise resulted in a total number of 23 and 40 generating and distributing units respectively with regulatory and policy issues entrusted to the National Energy Commission (NEC), a government agency (Rudnick 2009).

Following privatisation, electricity procurement evolved from a single or bilateral model to the auction model. The generation segment is structured as a complete competitive market where market forces determine key investment decisions and price setting. In contrast, the distribution and transmission segments are monopolistic in nature, characterised with regulated tariffs and set measures for investment requirements (Rudnick 2009). The reform mainly brought about the deregulation of wholesale electricity generation while small consumers enjoy protection with regulated tariff (Rudnick 2009). About 90% of the electricity is generated from hydro source (Mocarquer and Rudnick 2008). Privatisation in Chile is mainly financed through three mechanisms namely: (1) auction model, (2) stock exchange model and (3) sale of share to the public. In this paper, we focus on the auction model due to its uniqueness and the important role it plays in electricity generation reform.

3.2 Assessment of the Chilean Auction Model: Opportunities

Auction generally can be defined as a selection process for the procurement of goods and services competitively where award is made to pre-qualified bidders and is based on financial offers (Maurer and Barroso 2011). In electricity auction mechanism, potential investors compete for long-term supply of energy contract offered by the

distributors' companies. The power generator bids to sell power contract to the distribution companies. The aim of auction is to ensure security of electricity generation and attract investors in a competitive environment. The steps in the auction model are:

1. Electricity distributor offer certain quantities of electricity energy supply through an auction
2. Bidders comprises of generating companies bids for the contracts
3. Winner is selected based on some criteria set by the auctioneer
4. Electricity is generated and sold to the distributors in accordance with the term of the contract
5. Payment for the electricity.

Chile and Brazil, both developing countries, pioneered the electricity auction model as early as the 2000s (Maurer and Barroso 2011). After its first introduction in 2005, the success recorded in the model made it a toast of many other developing countries faced with similar electricity challenges. Examples of countries where auction model has been applied include South Africa, Morocco, Egypt, India, UAE and Brazil. For example, the UAE has been able to achieve significant renewable energy generation at a reduced price from auction model. The country set record for the lowest solar price worldwide with a winning price of 29.9/MHh International Renewable Energy Agency (IRENA 2017). This no doubt consolidates electricity security for such a striving country. Similarly, the epileptic power supply due to imbalance between electricity supply and demand led to the adoption of auction model in Brazil in 2004. Auction model was introduced as a procurement mechanism to purchase energy for captive consumers. Winner who bid to supply specified quantity of energy for the lowest price is selected. The competition in the sector due to auction model in Brazil has also led to the increase in other sources of energy such as wind and solar power. By means of auctioning their energy need, the distribution utilities are able to secure energy supply that meet the need of their customers (Fieldfisher 2016).

Studies that have evaluated the outcome of the auction model in Chile unanimously agree that the model is a success (e.g. Maura and Barroso 2011). The evaluation of the model was done through reviews that identified factors, which contributed to its successful implementation. The experience so far suggests that the model helped to achieve electricity security; an objective of the reforms carried out in the sector and as noted by Rudnick (2009), power interruption reduced significantly compared to the pre reforms era. One of the benefits of a well-designed electricity generation auction model is its ability to match demand with supply as distributor companies project their future electricity need, which are offered through auction. Three auction processes carried out between October 2006 and 2010 have been able to achieve an average allocation demand of 28 TWh/annum to be served between 2010 and 2025 (Moreno et al. 2010). This indicates that the process succeeded in attracting more investment in electricity generation.

In addition, the transition to a pure market model further opened the Chilean electricity market to investors. Although this had significant impact on the compet-

Table 1 Electricity auction process in Chile (2006–2008)

	2006	2007	2008
Total energy auctioned (GWh)	14,170	14,732	1800
Allocated energy (GWh)	12,766	5700	1800
Price cap (US$/MWh)	61.7	62.7	71.06
Mean allocation price (US$/MWh)	52.8	61.2	65.5

Source Mocarquer and Rudnick (2008)

itiveness of the sector, the impact was below expectation (Bustos-Slavagnoy 2012). Since the market determines the price of electricity, Long Term Auction (LTA) model has the potential to attract investors due to high possibility of adequate return for the investors. Based on the experience of Enel Green Power (EGP) in Chile as one of the active bidder and investor in electricity generation, auction is an effective mechanism for electricity security if properly designed. Indeed, the surge in various energy generations is partly due to open market and a robust regulatory framework (Díaz 2015). The emergence of a wide variety of generation technologies, comprising new hydro projects, gas, coal and oil-fired plants, sugarcane biomass and international inter-connections are largely due to the reforms and process put in place for the electricity sector.

Table 1 shows that approximately 66% of the total energy auctioned between 2006 and 2008 were allocated. It can thus be inferred that the auction model helps in mitigating uncertain future energy demand, growth, energy spot price volatility, and the need for project finance from new generation investments.

3.3 Assessment of the Chilean Auction Model: Challenges

Long-term auction contract is still considered a novelty in the electricity industry, which gives room for improvement to overcome some of the challenges experienced in its implementation. Existing studies of the auction application in Chile identified some challenges faced which border especially on price and competitiveness. The final consumers ended up paying a high price for electricity due to complete deregulation of the generation companies. High price recorded in the auction is attributed to technological differences in the generation and capacity constraint given at short notice (Bustos-Salvagnoy 2012). For instance, the cost pass through to the final consumers for generation rose from 39% in 1992 to 57% in 2008 while that of distribution reduced to 18% in 2008 from 39% in 1992 (Rudnick 2009).

In addition, the electricity auction did not generate sufficient competition as expected due to the way it was designed and organised. The Auction in Chile was not as competitive as expected due to factors such as lack of incentives for distribution companies to make a competitive auction and the existence of vertical integration

between some distributors and generators that affected the competitiveness of the auction and new entrants (Bustos-Salvagnoy 2012). For example, some generation companies still maintained stakes in the distribution companies, thus affecting the entrance of new investors and consequently competition in the industry. Another factor that hampered competition in the auction process of Chile was low capacity of the grid. This had significant effect on competition in energy generation and the development of transmission and distribution network (Martínez and Fernando 2015).

3.4 Forfaiting Financing Model

One of the greatest challenges facing project execution especially in developing economies is capital availability. The increasing budget deficit, slow growth of global economy and poor management has made the private sector to assume some of the responsibilities hitherto managed by government. Some of these responsibilities include provision of roads, electricity supply, housing and other projects that require substantial amount of finance. The private sector normally raises funds from the capital market and financial institutions to execute these projects although some of the projects are executed as part of their corporate social responsibility activities. Nonetheless, the fragile global economic condition has shaped the behaviour of investors and posed a challenge for funding projects using the traditional finance model.

Due to difficulties such as reduction in loan availability and preference for safer investment havens, the traditional project finance experienced financing difficulty thus leading to the creation/development of forfaiting finance (Busse 2014). The use of forfaiting to finance infrastructure projects rather than the traditional export financing has proven to be a viable source for project finance. This has led to an increase in the use of the model as an alternative means of infrastructure finance. The start of the use of this means of finance (forfaiting) can be traced to Germany. Forfaiting can be defined as the financing model in which private sector claim for payment to the banks. The private sector sells claim for payment that result from electricity selling contract with the distribution companies. Since future revenue is guaranteed as per the arrangement of the contract, the expected future cash flow from the projects act like a collateral. Forfaiting financing has gradually evolved from its traditional export financing to financing infrastructure projects using the associated receivables as collateral.

Forfaiting, mainly used in trade finance, is an agreement under which "an exporter surrenders ownership of export receivables by selling them at a discount to a forfaiter (financial institution/bank etc.) in exchange for cash" (Busse 2014). As reflected in this definition, forfaiting is traditionally associated with export financing. Using forfaiting, a hypothetical exporter sells the receivable from the goods sold to the banks in exchange for immediate cash. In the context of electricity generation financing, forfaiting can be described as the financial model whereby the generation companies

sell part of the claim from the future sale of electricity to the banks at a discount. This provides private investors with the required cash needed to procure generation assets. Upon completion, they (the investors) pay the debt from revenue derived from selling of the electricity to the distributors.

Being a novel financing model for infrastructure projects, limited studies on forfaiting financing exist (for example, Beck 2010; Busse 2014; Daube et al. 2008). Majority of the studies related to forfaiting financing mainly focus on German case studies. The focus on Germany might be due to two reasons namely: (1) forfaiting finance for infrastructure started in Germany in 2002, (2) majority of the Public Private Partnership projects in Germany are financed using forfaiting financing approach. The experience of Germany in the application of forfaiting financing presents useful lessons in term of its benefits and shortcomings.

The increasing attractiveness of forfaiting financing model over the traditional project finance has been attributed to a number of factors. Some of the benefits of forfaiting financing model include lower financing costs, fast procurement and due diligence process (Daube et al. 2008). The reduction in financing costs can be associated with the guarantee of the payment of the receivable by the purchaser (i.e. the distributor or auctioneer). This is otherwise referred to as waiver of objective, which means that the purchaser will not back out of the contract under any circumstance(s). Under the traditional project finance structure, banks bear the credit risks throughout the life cycle of the project because it is characterised with off-balance sheet financing with limited recourse to the shareholders (Busse 2014). This contributes to the problem of financing including high financing costs under project finance. Accordingly, due diligence related to the technical, financial, legal and market are set up by banks to mitigate the risk. The largest risk under forfaiting financing is during the construction period of the facilities in the form of insolvency risk of the generating companies. Once the facilities are completed, payment is guaranteed by the distributing companies.

Unlike the traditional project finance that was badly hit during the financing crisis, forfaiting financing remained attractive during the same period. Indeed, during the peak of the crisis in 2008, new loans to large borrowers fell by about 47% globally (Ivashina and Scharstein 2010). During crisis, banks and other investors try as much as possible to avoid risk making financing models such as forfaiting more attractive, compared to project finance. Generally, forfaiting has been acknowledged as a viable alternative to project finance models and not only during crisis periods. This is due to guaranteed payment that effectively reduces credit risks. This feature perhaps makes the model more attractive to the Nigerian electricity sector as an alternative means of project financing considering the challenging financial and economic environment.

Recently, out of 164 projects surveyed to have been embarked upon in Germany, 133 were financed by forfaiting with only 31 financed using the traditional project finance structure (Beck 2010; Busse 2014). In terms of private public partnership (PPP) projects, about 65% of the PPP project in Germany are financed using the forfaiting model including part or full selling of the receivables to the financing banks (Beck 2010; Busse 2014). In addition, payment guarantee provided by the public partner who is liable to pay to the bank in case of bad performance of the

partner is given to the banks. Nonetheless, the risk allocation of this model that protects the private investor has been criticized.

The processes involved in the forfaiting model are:

1. The contract between distribution and generation companies is finalised
2. Special purpose vehicle (SPV) is established to handle the sales transaction including management of the cash flow
3. The distribution or public partner provide guarantee of the future claims
4. Selling of the receivables to the banks or investors
5. The generating companies receive cash equivalent to the present value of the receivables.

4 Application of Auction Contract and Forfaiting Financing Model to the Electricity Sector in Nigeria

Despite the reforms carried out in the Nigerian electricity sector, it is still plagued with problems left unresolved over the years. With an estimated population of more than 170 million and available generation capacity of about 12,000 MW, the World Bank report indicated that only 55% of Nigerians have access to electricity. Considering the current trend in the Nigerian electricity sector, the probability of attaining the ambitious 20,000 MW by year 2020 seems slim if proper steps are not taken to eliminate the challenges facing the sector.

Challenges hampering the efficient delivery of electricity in Nigeria are widely documented. For instance, as at 2012, about 40% of installed capability was not available (Antonio et al. 2015). Aliyu et al. (2015) and KPMG (2016) similarly show that illiquidity, high tariff, high financing cost, gas supply interruption and dearth of adequately skilled labour have had major impact on electricity generation in Nigeria. Attracting investors in an environment where the prospect of making attractive return on investment is difficult. The precarious economic situation of the country also aggravates the liquidity problem. In addition, electricity-generating units incurred huge losses due to electricity theft and pipeline vandalizations. These challenges further beams light on the need for a viable and sustainable financing model for the sector because Government has shown that it cannot finance the level of subsidy needed to put in place, the necessary infrastructures to maintain the existing model. Nevertheless, Government came up with various strategies to attract investors, although largely, the strategies seemed unrealistic. For example, to help reduce financing plight of private investors, the Federal Government offered them 213 billion Naira as soft loans (The Economist 2016). The government also made a move to increase electricity tariff under the Multi-Year Tariff Order. Trade unions and some politicians vehemently opposed this move.

The role of electricity in the economic development of any country is very important. Constant electricity can reduce companies overhead cost, encourage entrepreneurship and reduce unemployment rate. That many companies are dis-

investing from the Nigerian economy due to high operating costs is not new. Proactive steps are needed to build internal capacity in electricity supply. The case of electricity privatisation for Chile, which is considered as the first country in the world to fully liberalize their electricity sector, is an example in this regard. Similar to Nigeria, Chile was faced with uncertainties in the supply of gas from Argentina, mismatch between the demand and supply of energy and limited capital availability. The need to make the sector more attractive to investor topped the Chilean authority strategies. Although the financing structures currently existing in Nigeria are partial privatisation of the generation and distribution units and independent power producers who sell electricity generated to the market, the structures have not been able to maintain a viable and sustainable sector.

Consequently, we consider electricity auction and forfaiting models as feasible and viable strategies to open the door for investors to participate in electricity generation. Through auction, investors bid to supply certain amount of electricity needed by the distribution companies. The main objective for considering the electricity auction strategy in Chile is to attract generation investment and therefore achieve reliable electricity supply. The forfaiting model is considered due to its potential of reducing project finance risks, most especially in the presence of challenging financial and economic environment in Nigeria. Based on the review of the two models, a well-structured auction model together with the forfaiting model has the potential to provide the following benefits to the Nigerian electricity sector:

Price discovery: Based on the early electricity market model as pioneered by Chile and UK, competition in the spot energy price has the capability of providing adequate incentives to attract the required investment and put in place, an efficient operating system. The attempt to hedge spot price variability might be difficult due to the consistencies of the model, which requires that future price, are a reflection of spot price. Effective competition is important to achieve efficient pricing of energy because limited response and price cap to diffuse scarcity prevent fair competition and do not contribute to incentivize (Moreno et al. 2010).

Attract more investors: When prices are determined using the market model, there is a possibility for the investor to recover costs and realize attractive return on investment. As indicated in the experience of Chile, the market model enhances competition in electricity generation and facilitates the entrance of variety of generation technologies, comprising new hydro projects, gas, coal and oil-fired plants, sugarcane biomass and international interconnections.

Energy Supply Security: the market model is employed in Chile to ensure that electricity adequately meet the energy demand. Based on the experience of Chile market model, energy deficit problem previously facing the country has disappeared. Energy supply deficit has hampered the economy growth of many developing countries including Nigeria.

Provision of off-takers for electricity generated: The models will ensure that there are off-takers who will buy the electricity generated. This will also reduce credit risks associated with infrastructure finance because payments are guaranteed specifically as it relates to the forfaiting model.

Nonetheless, for these models to be successfully applied in Nigeria and in line with the argument of Antonio et al. (2015), there is a need to put in place required financial infrastructures and a conducive business environment.[1] A well-developed,

[1] Specifically for the forfaiting model which emanated from Germany, a developed country.

transparent and efficient economic and financial system will be able achieve the desired results as obtained in developed economies.

5 Conclusion

The existence of a viable and efficient power sector is crucial to the development of the social and economic development of any country. Against this background, the present study examines challenges facing the Nigerian power sector that has made it unable to contribute its quota to the development and growth of the country. Literature and data reviewed indicate that Nigeria currently generates less than 50% of available generation capacity, which is largely attributable to the existence of a financing gap that has led to a non-viable and non-sustainable sector. The inability to secure project finance for the sector undoubtedly hinders the attainment of Goal 7 of the United Nations Sustainable Development Goal of access to affordable, reliable, sustainable and modern energy for all. In view of the successes recorded with the use of the auction and forfaiting models especially as it relates to developing countries, the study proposes applying these models to the electricity sector in Nigeria in order to garner the benefits derivable from their use. These advantages include but are not limited to; effective price discovery, attraction of investors, energy supply security and elimination of risks associated with infrastructural financing.

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