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RESEARCH ARTICLE

Legal Imperatives for the Implementation of Energy Auctions in Nigeria

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Abstract

With the passage of the Climate Change Act, and to help meet its net zero obligations by 2060, Nigeria must transition from its dependence on fossil fuel energy sources to renewable energy. This will involve the procurement of large amounts of renewable energy by the government. In the past, procurement of power from the government-owned bulk trader has been chaotic, with no discernible strategy, and it is doubtful whether the government or Nigeria's citizens have derived value for money from the process. This article suggests a transition from the current, mostly unsolicited, proposal system to energy auctions, as the authors believe that this will help the country achieve low prices for renewable energy. The article also examines polices that have been implemented in other countries to drive energy auctions, with a view to applying relatable practices to the Nigerian exercise.

Keywords: Renewable energy; procurement; competition; energy auctions; Nigeria; NBET

Introduction

Since 1999, Nigeria has invested a total of approximately USD 29.635 billion in its power sector, with limited results.[1] The consensus among Nigerians appears to be that the power sector privatization that began in 2013 did not yield the desired results.[2] Despite the enormous investment, generation and transmission capacity stands at only 7,000 MW, while distribution remains at around 5,000 MW.[3] Access to energy is low, with approximately 80 million people lacking access to

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1 "Nigeria: Power Africa factsheet" (USAID), available at: <https://www.usaid.gov/powerafrica/nigeria> (last accessed 22 July 2024).

2 Despite the efforts at privatization, power generation remains paltry and this continues to slow economic growth in Nigeria by hampering manufacturing: B Udo "Why Nigeria's power privatisation hasn't achieved full objective: BPE boss" (26 July 2018) *Premium Times* (Abuja), available at: <https://www.premiumtimesng.com/business/business-interviews/277773-why-nigerias-power-privatisation-hasnt-achieved-full-objective-bpe-boss.html?tztc=1> (last accessed 11 September 2024).

3 The average distribution is normally less than this, averaging below 3,500 MW: C Remteng et al "Nigeria electricity sector" *Energypedia*, available at: <https://energypedia.info/wiki/Nigeria_Electricity_Sector#:~:text=Most%20generation%20is%20thermal%2Dbased,available%20capacity%20of%201%2C060%20MW)> (last accessed 22 July 2024).

electricity.[4] Nigeria has the largest absolute access deficit in sub-Saharan Africa and the second largest in the world, after India.[5] The national electrification rate is 55 per cent, and the rural electrification rate is only 39 per cent.[6] To achieve universal access to electricity by 2030, Nigeria would need to connect between 500,000 and 800,000 households each year.[7] Both grid extension and off-grid solutions will be needed to provide quality services to unserved and underserved households and businesses in a timely manner.

Given the low levels of access to energy, resource constraints and the huge appetite for power, it is not surprising that the Nigerian Bulk Electricity Trading Company (NBET)[8] has in the past received a high number of unsolicited power generation proposals. However, unsolicited proposals as a source of new energy projects limit competition and result in high energy prices. Without proper planning, these unsolicited proposals (which are contracted mostly on a "take or pay" basis) result in the government paying for generation capacity without consumption.[9] This points to the need to restructure the way in which power is procured such that limited resources are utilized judiciously and a process is developed to derive value for money for the country in the procurement process.

Nigeria's electricity sector is maturing, so policies and laws must be adapted to reflect this changing environment. In respect of procuring electricity for the grid, this means taking into consideration the declining cost of new technologies in the renewable energy sector and the need to incorporate economic, social and environmental concerns in the procurement of power. One of the best ways to achieve these objectives is through energy auctions. Auctions allow energy project developers to bid against one another for the right to supply energy through long-term contracts at the lowest possible prices.

Also, with the passage of the Climate Change Act,[10] Nigeria will have to transition to renewable energy to help it meet its net zero emission targets by 2060.[11] This will involve the procurement of

4 DD Sasu "Share of population with access to electricity in Nigeria from 2010 to 2020" *Statista*, available at: <https://www.statista.com/statistics/1307416/total-population-access-to-electricity-in-nigeria/#:~:text=the%20previous%20year.-,The%20share%20of%20the%20population%20with,electricity%20remained%20at%2055.4%20percent> (last accessed 22 July 2024).

5 B Akinyemi "Why Nigeria may not achieve target on clean energy by 2030" (23 February 2020) *Nigerian Tribune*, available at: <https://tribuneonlineng.com/why-nigeria-may-not-achieve-target-on-clean-energy-by-2030/#:~:text=According%20to%20the%20Bank%2C%20Nigeria,in%20the%20world%2C%20after%20India.&text=The%20Bank%20asserted%20that%20for,to%20800%2C000%20households%20per%20year> (last accessed 22 July 2024).

6 Ibid.

7 C Nweke-Eze "The Nigerian electrification project: An example of a successful rural electrification design?" (2022), available at: <https://www.rifs-potsdam.de/en/blog/2022/01/nigerian-electrification-project-example-successful-rural-electrification-design> (last accessed 22 July 2024).

8 Nigerian Bulk Electricity Trading Plc is a public liability company owned by the federal government of Nigeria. It was established to be a catalyst in the development of an efficient and competitive wholesale electricity market through the bulk purchase of power and ancillary services from independent power producers and successor generation companies for resale to distribution companies and other large consumers who may take electricity directly from the national grid. NBET incurs liability when it purchases power in bulk from the generation companies. Ideally, NBET should obtain an optimal bargain; in public procurement this is usually achieved through competitive bidding. However, unsolicited proposals, which are used to encourage creativity and much-needed investment, are not competitive unless safeguards are used to optimize the process. Such measures are necessary because of the risk exposure that arises from the "take or pay" clauses in power contracts. Take or pay means that the government is liable to pay for power generated whether it has the capacity to take delivery or not.

9 The recent debate around the Azura power plant has brought this to the fore: T Adebulu "Exclusive: How Nigeria paid $137m in two years for unutilised gas in 'take or pay' deals" (31 March 2022) *The Cable*, available at: <https://www.thecable.ng/exclusive-how-nigeria-paid-137m-in-two-years-for-unutilised-gas-in-take-or-pay-deals> (last accessed 22 July 2024).

10 This 2021 act seeks to provide a framework for achieving low greenhouse gas emissions and to mainstream climate change actions into national plans and programmes.

11 V Chime "Buhari pledges Nigeria will reach net zero emissions by 2060" (2 November 2021) *The Cable*, available at: <https://www.thecable.ng/nigeria-targets-2060-for-net-zero-emissions-ten-years-after-un-target> (last accessed 22 July 2024).

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large amounts of energy. The energy procurement that had been done was disorganized and the government has failed to obtain value for money for the energy procured. This article suggests a transition from the current unsolicited proposal system to energy auctions. It examines the laws and policies that are paramount to the success of the auction process by comparing notes from practices in other leading jurisdictions.

Meaning of renewable energy auction

An energy auction is a competitive process for procuring generated electricity. In an auction, energy project developers bid against each other to supply energy through long-term contracts at the lowest possible price. Awards are generally made solely based on bids submitted by participating energy providers according to transparent award rules. An auction enables a policymaker to buy renewable energy at competitive prices while advancing specific country development and energy policy goals.

Renewable energy auctions are energy auctions where the bidders are sellers of renewable energy. Renewable energy auctions have four main elements: demand; qualification requirements; winner selection; and seller's liabilities. Renewable energy auctions are also known as "demand auctions" or "procurement auctions", whereby the government issues a call for tenders to procure a certain capacity or generation of renewables-based electricity. Project developers who participate in the auction typically submit a bid with a price per unit of electricity at which they are able to realize their project. The auctioneer evaluates the offers on the basis of the price and other criteria and signs a power purchase agreement (PPA) with the successful bidder. The strengths of auctions lie in their: flexibility; potential for real price discovery; ability to ensure greater certainty in price and quantity; and capability to guarantee commitments and transparency.[12]

Mechanisms and operationalization of energy auctions

Competitive procurement designs have been proven to be better at achieving low energy prices than most other mechanisms. They create a transparent process and provide predictability for procuring additional power capacity through well-scheduled auctions. International experience shows that prices tend to fall when they are used compared to other energy procurement methods.[13] Some of the widely used auction designs are the sealed bid auction, descending clock auction, periodic tenders with increasing premiums and the certificate auction design. In some cases, depending on the peculiar needs of the country, a hybrid model encompassing two or more auction designs may be adopted. Broadly, there is a range of auction procedures for awarding energy contracts. While the sealed bid auction is widely used, there are considerable differences in the price determination mechanism: pay-as-bid is used in France, Italy, California, Brazil (in the second stage of the procedure) and China (within the first rounds of tenders), whereas Brazil uses the descending clock auction in the first phase of a two-stage procedure.

In Denmark, where tendering is used to support offshore wind power, a two-stage procedure is applied. In the first phase, offers are collected in a manner equivalent to a sealed bid auction, and several offers are then preselected primarily based on their price. Finally, a dialogue is launched, enabling bidders to improve their offers. The Dutch model is also notable for several features. Its support for renewable energy is based on a well-defined annual budget. To exhaust this budget, multiple auctions are held with predefined feed-in premiums tied to the level of technology. Auctions take place sequentially; the lowest price category is tendered at the beginning, when offers

12 "Renewable energy auctions: A guide to design" (2015, International Renewable Energy Agency and Clean Energy Ministerial), available at: <https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2015/Jun/IRENA_Renewable_Energy_Auctions_A_Guide_to_Design_2015.pdf> (last accessed 22 July 2024).

13 A Eberhard and AW Kruger "Best practice in renewable energy auctions design and implementation: A global review" (2018, EEG Energy Insight).

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regarding the quantity of energy to be produced are collected (volume tender). The next tender round is held for the next price category and this is repeated until the predefined budget is exhausted.[14] The compensation rates are determined in advance based on the technology level. However, potential plant operators can submit their project within a "free category" and can thus request a lower level of compensation than that scheduled.[15]

Existing laws and entities in respect of energy auctions in Nigeria

Electric Power Sector Reform Act

The Electric Power Sector Reform Act of 2005 (EPSRA), which is the overarching law guiding the power sector, allowed for the extensive reform of the power sector in Nigeria. The National Electricity Power Authority (the public utility that acted as a monopoly) was the major actor in the power sector until 2005. The federal government of Nigeria unbundled the authority, which became the Power Holding Company of Nigeria, in preparation for the reform of the sector.[16] EPSRA deepened the unbundling of the utility, transforming the Power Holding Company into six generation companies, a transmission company and 11 electricity distribution companies.[17] The act also established the Nigerian Electricity Regulatory Commission (NERC) as the regulatory agency.[18]

EPSRA provides for a phased and strategic implementation of the power sector reforms until optimal capacity generation and a full competitive market are achieved. It also provides for the pre-privatization and post-privatization stages of Nigeria's electricity supply industry, while the Market Rules (made pursuant to EPSRA) identify the three stages of market development: pre-transitional stage electricity market; transitional stage electricity market; and the medium-term market stage.

Nigerian Electricity Regulatory Commission

Section 31 of EPSRA established NERC as an independent regulatory body tasked with driving reform of the power sector. NERC aims to promote and ensure efficient market structures, fair and competitive electricity trading, and an investor-friendly sector. It regulates and monitors the power sector and ensures private companies' compliance with market rules and operating guidelines. NERC sets generation, transmission and end-user retail tariffs, using the multi-year tariff order methodology.[19] NERC also licenses and regulates persons engaged in the generation, transmission, system operation, distribution or trading of electricity. It is charged with responsibility to develop competitive electricity markets.[20]

Nigerian Bulk Electricity Trading

EPSRA also created NBET, a fully government-owned entity.[21] NBET was issued with an electricity trading licence and capitalized. Its major role is to negotiate PPAs and purchase electricity on behalf

14 M Jansen et al "Policy choices and outcomes for offshore wind auctions globally" (2022) 167 *Energy Policy* 1 at 1–9.
15 Ibid.
16 EPSRA, sec 1. See also, "About us" (Transmission Company of Nigeria), available at: <https://tcn.org.ng/page_about_us.php> (last accessed 11 September 2024).
17 Id, sec 10.
18 Id, sec 31.
19 The multi-year tariff order is a tariff model for incentive-based regulation that seeks to reward performance above certain benchmarks, reduces technical and non-technical / commercial losses, and leads to cost recovery and improved performance standards from all industry operators in the Nigerian electricity supply industry. It is used to set wholesale and retail prices for electricity in the industry by employing a unified way to determine total industry revenue requirement, which is tied to measurable performance improvement and standards.
20 See "About NERC" <https://nerc.gov.ng/about-nerc/> (last accessed 22 July 2024).
21 EPSRA, secs 25 and 68.

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of the distribution companies. NBET therefore offers a key incentive for the private sector to invest in the sector as it is mandated to execute bankable PPAs with the private sector. Its capitalization by the government also provides comfort to investors that the institution would be able to meet whatever shortfalls arise from electricity trading in the interim and transitional market period.

The true test of NBET's potency to assume market risk in the power sector was tested immediately after the takeover of the old successor companies by the private sector. Subsequently, it immediately became obvious that the revenues collected by the distribution companies were insufficient to settle the debts that had accrued from the power that was generated and sold. As debts to the generation companies mounted, investors in the sector looked to NBET to come forward and settle the debts, but the institution was unable to do so. This non-liquidity in the market persisted until the Central Bank of Nigeria stepped in recently to provide financing that is now being used to settle the accrued debt in the sector.[22]

Policies driving renewable energy auctions

National Energy Policy

The aim of the National Energy Policy (2003) was to facilitate an adequate, sustainable and reliable supply of energy at suitable costs and in an environmentally friendly manner; it also was to facilitate provision of alternative energy sources. The policy framework also captured initiatives aimed at encouraging the use of sustainable and safe energy.

Power Sector Recovery Program 2017–21

In 2017, Nigeria, with support from the World Bank Group, rolled out the Power Sector Recovery Program (PSRP), which aims to "reset" the Nigerian electricity supply industry to a more sustainable sector in the medium term (2017–21). The programme's objectives include: restoring the viability of the power sector; improving power supply reliability; strengthening the sector's institutional framework and increasing transparency; implementing clear policies that promote and encourage investor confidence in the sector; and establishing a contract-based electricity market.[23]

The PSRP's overall goal is to reset the electricity sector and restore stakeholder confidence in Nigeria's electricity supply industry. The PSRP identifies four main areas of intervention: governance; finance; policy; and operational / technical. It focuses on the right allocation of resources, the value of increasing generating capacity and the provision of access to power, especially to the poor despite current challenges with transmission and distribution. Through this, the federal government of Nigeria is to undertake financial interventions to establish a sustainable electricity tariff, technical interventions to rehabilitate and reinforce existing assets to meet baseline power supply, governance interventions to improve the perceived lack of transparency especially by market participants, and policy interventions to increase energy access through frameworks for renewable energy projects and mini-grids.

Some of the operational and technical interventions that relate to the substance of this article are to: ensure a minimum baseline generation of 4,000 MW; guarantee the stability of Nigeria's transmission grid; and improve the performance of the distribution companies by ensuring a reduction in aggregate technical, commercial and collection losses. The policy also champions the use of off-grid energy solutions to improve the sector.

22 K Jeremiah "Stakeholders divided as CBN loans to power sector hit N1.5trn" (8 June 2022) *The Guardian*, available at: <https://guardian.ng/energy/stakeholders-divided-as-cbn-loans-to-power-sector-hit-n1-5-trillion/> (last accessed 22 July 2024).

23 "PSRP objectives" in "Power Sector Recovery Program" at 12, available at: <https://rea.gov.ng/download/power-sector-recovery-implementation-program-2017-2021/> (last accessed 11 September 2024).

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Renewable Feed-in-Tariff Regulation 2016

The government of Nigeria approved the Renewable Feed-In Tariff (REFIT) Regulation in November 2015.[24] The regulation aims to catalyse investment in Nigeria's renewable energy sector. The main target of the regulation was to ensure that Nigeria generated up to 2,000 MW through renewables like biomass, small hydro, wind and solar energy by 2020. The regulation mandates the distribution companies to source at least 50 per cent of their total procurement from renewables. The remaining 50 per cent was to be sourced from NBET. A distinction was made between small and large generation plants. While electricity procured from small plants (between 1 and 30 MW) will automatically be integrated as renewable energy, NERC will initiate a competitive bid process for larger renewable energy projects (over 30 MW).[25] In the context of this article, the regulation sets the procedure for auctions for large projects.

The methodology used to set the REFITs for the qualifying REFIT technologies is the long run marginal cost and levelized cost of energy. The methodology allows the cost of capital and the operating cost of the project to be recovered over the term of the PPA, based on a reasonable level of output / capacity.[26] The REFITs are denominated in USD or the equivalent for other currencies converted at the Naira exchange rate on the date of commercial operation, as published by Central Bank of Nigeria.[27] The REFIT levels are to be technology specific according to the renewable energy sourced electricity technology used. The costs included in calculating the tariff are: investment costs for the plant (including the costs of feasibility studies, site survey etc); development and construction costs, and the costs of connecting to the transmission or distribution system including transmission lines, substations and associated equipment; operations and maintenance costs; fuel costs where applicable; financing costs and a fair return on the invested capital; estimated lifetime of the power plant; and the amount of electricity to be generated.[28]

National Renewable Energy Action Plan 2015–30

The overall objective of the National Renewable Energy Action Plan is to advance the development of renewable energies in Nigeria. Thus, it provides details on the sets of measures and plans that would enable Nigeria to meet its 2020 and 2030 targets. The action plan presents the strategies for achieving the expected development and expansion of renewable energies to achieve the national target under the Economic Community of West African States (ECOWAS) Renewable Energy Policy and Nigeria's contribution to the overall ECOWAS targets of 23 per cent and 31 per cent renewable energy by 2020 and 2030 respectively.

The plan includes baseline data and information on renewable energy sources and technologies, various activities and programmes in renewable energy in Nigeria, barriers to the development and promotion of renewable energy in the country, as well as suggested achieved renewable energy targets, including gender disaggregated indicators based on national potentials and socio-economic assessments.

It provides an overview on concrete policy and regulations, laws, incentives and measures to be implemented by Nigeria to achieve these targets as well as the set-out targets under the Sustainable Energy for All goals. These include plans for developing emerging technologies, targets and

24 This regulation was made by NERC in exercise of the powers conferred on the Commission by the Electric Power Sector Reform Act 2005, secs 32(1) and 96.

25 "Nigeria feed-in tariff for renewable energy sourced electricity" (August 2017, International Energy Agency), available at: <https://www.iea.org/policies/5974-nigeria-feed-in-tariff-for-renewable-energy-sourced-electricity> (last accessed 11 September 2024).

26 REFIT Regulation, sec 9.

27 Id, sec 10.

28 Id, sec 15.

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measures for achieving them, coordinating delivery, developing human capacity and decarbonization of different sectors.[29]

Rural Electrification Strategy and Implementation Plan

The Rural Electrification Strategy and Implementation Plan, approved by the president in July 2016, aims to facilitate the entry of new market participants, especially in the private sector, into the delivery of renewable energy. Furthermore, it provides for diverse approaches, including a "bottom-up" approach through spontaneous initiatives by project proponents as well as a "top-down" approach through organized large-scale procurements. Mini grids also play a significant role in rural electrification.

A Ministry of Power study, based on geo-referenced data of population clusters and load centres, concluded that an estimated 8,000 potential load centres are suitable for mini grids powering 14 per cent of Nigeria's population.[30] Nevertheless, mini grids have yet to achieve the scale needed in Nigeria, due to constraints such as limited pre-investment support, the absence of adequate viability gap financing and a lack of credible market intelligence. This has deterred international investors from entering the sector and is therefore a critical factor that highlights the need to expand the grid, especially for industrialization.

In the past, NERC, which has issued over 55 generation licences to potential, but unsolicited independent power projects, had prepared the legal framework for competitive procurement.

Legal framework for competitive procurement

Section 82(1) of EPSRA provides that NERC shall have a continuing responsibility to monitor the Nigerian electricity supply industry in regard to its potential for additional competition. This mandate relates primarily to competition in the electricity market. Section 68(3) of EPSRA also provides that all contracts for purchases of electrical power and ancillary services by the holder of a temporary trading licence shall be awarded according to an open, transparent and competitive process, pursuant to a procedure established by NERC, unless the circumstances require otherwise and NERC allows or requires an alternative method. NERC developed the NERC Regulation for the Procurement of Generation Capacity 2014, which came into effect on 11 February 2014. The regulation provides for the processes to be used by a buyer in procuring additional electricity generation capacity. The regulation prohibits, unless otherwise approved by NERC for good cause, unsolicited bids or proposals for the provision of generation capacity outside the application of the regulation and entry into any contract involving the purchase of electrical output of any generation facility to which the regulation apply.[31] The Nigerian electricity supply industry is also governed by the Market Rules.[32] This is a regulatory instrument designed to establish and govern an efficient, competitive, transparent and reliable market for the sale and purchase of wholesale electricity and ancillary services in Nigeria and to ensure that the Grid Code and the Market Rules work together to secure efficient coordination and adequate participation in the Nigerian electricity market. Specifically, these rules: provide a framework for an efficient, competitive, transparent and reliable

29 "National renewable energy action plans (2015–2030)" (2016, Inter-Ministerial Committee on Renewable Energy and Energy Efficiency), available at: <https://www.se4all-africa.org/fileadmin/uploads/se4all/Documents/Country_PANER/Nigeria_National_Renewable_Energy_Action_Plans_.pdf> (last accessed 22 July 2024).

30 J Lane et al "Mini-grid market opportunity assessment: Nigeria" (2018, Sustainable Energy for All Africa Hub and African Development Bank, 2018), available at: <https://greenminigrid.afdb.org/sites/default/files/minigrid_market_opportunity_assessment_nigeria_june_2018.pdf> (last accessed 22 July 2024).

31 I Grace "NERC lifts ban on suspended Bulk Procurement Regulations, 2016" (23 June 2016) *The Daily Times*, available at: <https://dailytimesng.com/nerc-lifts-ban-suspended-bulk-procurement-regulations/> (last accessed 11 September 2024).

32 Market Rules for Transitional and Medium Term Stages of the Nigerian Electricity Supply Industry (December 2014), available at: <https://nbet.com.ng/pdf/marketrules.pdf> (last accessed 11 September 2024).

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wholesale electricity market; set out the responsibilities of participants, the transmission service provider, the system operator and the market operator in relation to trading, coordination, dispatch and contract nomination, pricing of imbalances and ancillary services, metering, settlement and payments; set out the operation and pricing system of the balancing market; ensure an efficient, transparent and predictable settlement system, as well as payment obligations; establish a governance mechanism and a market monitoring system; provide a framework for the resolution of disputes among participants or between participants and the system operator or the market operator, on matters relating to the Market Rules and the Grid Code; and provide an efficient and transparent process for amending the Market Rules and the Grid Code. Nigeria also has broad legislation that governs procurement in different sectors, ministries, departments and agencies. This also applies to the electricity supply industry and is discussed below.

Public Procurement Act of 2007

Section 24(1) of the Public Procurement Act provides that all procurement of goods and works is to be made by open competitive bidding. It further defines this as the process by which a procuring entity, based on previously defined criteria, effects public procurements by offering to each interested bidder equally, simultaneous information and the opportunity to offer the goods and works needed; also, invitations to bid may be by way of national or international competitive bidding.

Section 39(2) of the Public Procurement Act provides an exception to this general rule. It provides for special and restricted means of procurement and empowers the procuring entity to engage in negotiations with suppliers and contractors, in situations:

> "(a) [W]here it is not feasible for the procuring entity to formulate detailed specifications for the goods or works or, in the case of services, to identify their characteristics and where it seeks tenders, proposals or offers on various means of meeting its needs, to obtain the most satisfactory solution to its procurement needs;
> (b) where the character of the goods or works are [sic] subject to rapid technological advances; where the procuring entity seeks to enter into a contract for research, experiment, study or development …; where … procurement [is] concerned with national security …; or
> (c) where the tender proceedings have been utilized but were not successful or the tenders were rejected by the procuring entity under an open competitive bid procedure and the procuring entity considers that engaging in new tendering proceedings will not result in a procurement contract."

Section 40(1), also provides for restricted tendering if: "(a) the goods, works or services are available only from a limited number of suppliers or contractors; (b) the time and cost required to examine and evaluate a large number of tenders is disproportionate to the value of goods, works or services to be procured …"

Section 41 of the act provides for requests for quotations, and further gives the procurement entity the liberty to carry out procurements by requesting quotations from suppliers or contractors. There must be at least three unrelated suppliers or contractors, where the value of the goods or works to be procured does not exceed a sum to be set in the procurement regulation.

Section 42(1) provides for direct procurement and accordingly empowers the procuring entity to procure goods, works or services by directly inviting a proposal or price quotation from a single supplier or contractor, where:

> "(a) goods, works or services are only available from a particular supplier or contractor, or if a particular supplier or contractor has exclusive rights … and no reasonable alternative or substitute exists; or

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(b) there is an urgent need for the goods, works, or services and engaging in tender proceedings or any other method of procurement is impractical …
(c) owing to a catastrophic event, there is an urgent need for the goods, works or services, making it impracticable to use other methods of procurement …
(d) a procuring entity which has procured goods, equipment, technology or services from a supplier or contractor, determines that: (i) additional supplies need to be procured from that supplier or contractor because of standardization, (ii) there is a need for compatibility with existing goods … taking into account the effectiveness of the original procurement in meeting the needs of the procurement entity."

It is therefore evident that the Public Procurement Act enthrones a regime for the application of a competitive procurement process for energy auctions and NBET will have to comply with the provisions of the act in conducting auctions.

Fiscal Responsibility Act 2007

This act provides for the prudent management of the nation's resources. It ensures long-term macro-economic stability of the national economy, secures greater accountability and transparency in fiscal operations within the medium-term Fiscal Policy Framework, and establishes the Fiscal Responsibility Commission to ensure the promotion and enforcement of the nation's economic objectives, and related matters. The act makes reference to public competitive procurement and provides in section 38 that, "[a]ll contracts with regards to the execution of [sic] annual budget shall comply with the rules and guidelines on: (a) Procurement and [award] of contracts; and (b) Due process and certification of contract."

Infrastructure Concession Regulatory Commission Act

This act supports the sound principle of competitive public bidding by providing that:

> "[U]pon an approval for any project or contract for financing, construction, operation or maintenance of any infrastructure or development project under this act, the Federal Government Ministry, Agency, Corporation or body concerned shall, by publication in at least three national newspapers having wide circulation in Nigeria, and such other means of circulation, invite open competitive public bid for such project or contract approved".[33]

Under section 5, the act further made exceptions to the competitive public bidding of projects, by providing for circumstances under which competitive bidding of contracts will not be necessary: if "(1) only one contractor or project proponent applied or submitted a bid or proposal, or (2) only one contractor or project proponent meet [sic] the prequalification requirements, the Ministry, Agency, Corporation, body may undertake direct negotiation without competitive bidding".

Experience of energy auctions from other jurisdictions

Country experiences

This section of the article considers different countries' experiences to distil certain best practices that can be deployed in Nigeria for energy auctions.

India

In India, the primary legislation governing electricity (including renewable energy) is the Electricity Act 2003. The power to legislate on matters concerning electricity is shared between central

33 Infrastructure Concession Regulatory Commission (Establishment, Etc) Act 2005, sec 4.

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government and the state governments. However, in the event of inconsistency, central legislation prevails over state legislation. On 7 June 2022, the Central Electricity Regulatory Commission, issued the Central Electricity Regulatory Commission (Connectivity and General Network Access to the Inter-State Transmission System) Regulations 2022, which will come into force on the date of notification by the commission. These regulations seek to replace the current regulations related to connectivity to the interstate transmission system. They allow developers and consumers to connect with the grid for the injection or withdrawal of power without having to specify the transmission route. Further, developers will not have to specify their target beneficiaries when seeking connectivity.[34]

To promote fairness and standardization in the competitive bidding process, the Indian government has notified guidelines for tariff-based competitive bidding processes for grid-connected solar, wind, hybrid and round-the-clock projects (the Competitive Bidding Guidelines). These guidelines apply to long-term procurement of electricity by the distribution licensees from projects that are above the respectively prescribed capacities, through competitive bidding. Any deviation from the relevant Competitive Bidding Guidelines must be approved by the relevant regulatory commission.[35]

India utilizes a variety of renewable energy auction schemes, with more than 30 GW of renewables (mainly solar photovoltaic (PV)) acquired. The federal government has paid for approximately half of this capacity, with the other half distributed amongst the provinces. Auctions are often held as sealed-bid, pay-as-you-go affairs, with non-indexed rates priced in Indian Rupees for a period of 25 years and ceiling prices announced in advance.[36]

Under the auction process, developers are invited to apply for a capital subsidy grant (maximum 20 per cent of capital cost) on top of their tariff, in India's viability gap funding (VGF) method.[37] The VGF funding is split: 50 per cent is payable at the time of commissioning, with the remaining 50 per cent due over the first five years of operation. The objective of the VGF is to reduce the exposure of distribution businesses to price changes.[38]

India has also adopted round-the-clock tenders to reduce renewable energy utilization costs, minimize intermittency in renewable energy, and improve the match between power supply and demand. The first of these competitive auctions was completed on 8 May 2020. The winning bid was billed to use a mix of wind, solar and energy storage. The tariff obtained from the auction was lower than the off-takers' average cost of purchasing electricity.[39]

The tender process is not without its limits and has come under some criticism. Developers revealed that tender conditions did not actually require the supply of power throughout the day. Therefore, the nomenclature "round-the-clock" was merely theoretical. Also, the tender does not state, on a day-to-day basis, how much power is needed. It only considers a monthly quota. Again, the tender does not state how much storage capacity is required to be set up.[40]

Another auction method that has been used in India is the e-reverse auction. The e-reverse auction platform was introduced to promote competition and create a manageable price regime.

34 A Narula, A Gupta and U Gupta "The Renewable Energy Law Review: India", cited in E Kirichenko et al "List of issues that require legal regulation as part of the renewable energy regulation in component states of federation" (2024) 17/3 *Energies* 747 at 762.

35 Ibid.

36 W Kruger, A Eberhard and K Swartz "Renewable energy auctions: A global overview" (2018, University of Cape Town Energy and Economic Growth Research Programme) at 53.

37 Id at 55.

38 Ibid.

39 "Round-the-clock renewable energy auctions: India" *Bloomberg*, available at: <https://www.bloomberg.com/netzeropathfinders/best-practices/round-the-clock-renewable-energy-auctions-in-india/> (last accessed 22 July 2024).

40 K Chandarsekaran "Round-the-clock renewable energy tenders worry developers" (26 May 2020) *The Economic Times*, available at: <https://economictimes.indiatimes.com/industry/energy/power/round-the-clock-renewable-energy-tenders-worry-developers/articleshow/76012308.cms?from=mdr> (last accessed 22 July 2024).

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The Indian government achieved its objectives under this system by granting bidders access to the bids in real time. It offered them the option to revise bids, unlike the closed system where only one bid is submitted. However, it was subsequently discontinued as it led to intense competition and a steep fall in tariffs, thereby making projects lack viability.[41]

The magnitude of procurement in India's auction programme is commendable. For instance, the government has acquired more than 16 GW of solar PV and 7 GW of onshore wind capacity in only two years, on both a national and sub-national basis.[42] In both federal and state-level auctions, this has been accompanied by remarkable pricing results (USDc 3.6–3.8/kWh) for both technologies.[43] The amount of VGF made available has significantly decreased, with many projects bidding with no VGF support. Despite these accomplishments, the sector faces several significant challenges, namely: refusal of subnational off-takers to sign PPAs for projects they deem too costly; concerns over the effect of inflation and grid curtailment on projects, particularly with regards to very aggressive bidding assumptions in recent rounds of bidding; and the requirement of local content for projects being granted at prices that are 10–15 per cent higher than those not requiring local content.[44]

Where off-takers refuse to sign PPAs, it means that they are not legally bound to take delivery or pay for power generated. This erodes the confidence of the project developers that they will be able to recover their costs and make a profit. As a matter of fact, in such situations the transaction will not reach financial closing. The PPA is a critical part of the procurement phase of the project. Even though a PPA may take considerable time to negotiate, it will govern the project for the following 25–30 years and establishes the foundation for the financing, development, construction, operation and maintenance of the project.[45]

Germany

The development of renewable energy in Germany is based on the German Renewable Energy Act (EEG). Although the German scheme for renewable energy originally relied on fixed feed-in tariffs under the EEG, the current version of the EEG (EEG 2017) has shifted the basis for renewable energy supply to an auction system as regards the more significant onshore forms of renewable energy production (wind energy and large-scale PV solar energy). Tenders for offshore wind energy are subject to a separate law, the Code on the Development and Support of Wind Energy at Sea.[46] The Energy Collective has also amended EEG 2017. The tendering system was adjusted based on types, volumes and modalities. Installations that are not exempt from tendering under section 22, paragraph 2 of the EEG 2017, only receive financial support if the Federal Network Agency has awarded the concerned plant a contract under the tendering procedure. Only onshore wind turbines and solar installations with an installed capacity of up to 750 kW are exempt from submitting

41 R Prasad "India will stop awarding renewable energy projects vis e reverse auctions: MNRE secretary" (15 July 2022), available at: <https://www.moneycontrol.com/europe/?url=https://www.moneycontrol.com/news/business/economy/india-will-stop-awarding-renewable-energy-projects-via-e-reverse-auctions-mnre-secretary-8827771.html> (last accessed 11 September 2024).

42 A Waradpande "India's solar status 2017 w/charts: Bridge to India" (31 January 2018) *PW Magazine*, available at: <https://www.pv-magazine-india.com/2018/01/31/indias-solar-status-2017-w-charts-bridge-to-india/> (last accessed 22 July 2024).

43 Eberhard and Kruger "Best practice in renewable energy auctions", above at note 13 at 55.

44 "Renewable energy auctions: Analysing 2016" (2017, International Renewable Energy Agency), available at: <https://www.irena.org/Publications/2017/Jun/Renewable-Energy-Auctions-Analysing-2016> (last accessed 22 July 2024); A Khana and LAN Barroso "Promoting renewable energy through auctions: The case of India" (2014 World Bank Group), available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/441291468034518626/promoting-renewable-energy-through-auctions-the-case-of-india> (last accessed 22 July 2024).

45 "Understanding power purchase agreements" *Power Africa Understanding Series Vol 1*, available at: <https://cldp.doc.gov/sites/default/files/Understanding_Power_Purchase_Agreements.pdf> (last accessed 22 July 2024).

46 M Böhme and C Bartholl "Germany" in KB Wong (ed) *The Renewable Energy Law Review* (3rd ed, 2020, Law Business Research Ltd) 52, available at: <https://www.taylorwessing.com/-/media/taylor-wessing/files/germany/2020/09/the-renewable-energy-law-review-germany-2020.pdf> (last accessed 22 July 2024).

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tenders. Administratively fixed remuneration rates continue to be applicable to them. The Federal Network Agency, an agency of the Federal Ministry of Economic Affairs and Energy, is the main regulator of renewable energy in Germany. Despite the hierarchical superiority of the Federal Ministry of Economic Affairs and Energy, it cannot overrule decisions made by the Ruling Chambers of the Federal Network Agency.[47]

In 2014 Germany opted for auctions instead of its successful fixed support level subsidy scheme for utility-scale renewable energy. The following year, a trial auction for ground-mounted solar PV systems was launched and, subsequently, in early 2017, auction schemes for other technologies (onshore wind, offshore wind and biomass) were established. Hydropower, geothermal and gas technologies are excluded from auctions under the guidelines of the German Ministry of Economic Affairs and Energy, since there is insufficient competition in these sectors to make auctions relevant.[48] Germany continues to build renewable energy capacity through auctions as it moves away from nuclear power following the Fukushima disaster in 2011, and stated an objective of eliminating nuclear power by April 2023; this became a central aspect of Germany's energy market recovery.[49]

The design of German auctions has generally been quite simple. Although, a combination solar PV / onshore wind auction was held for the first time in April 2018, auctions are technology-specific. The ceiling prices are published before the auctions. Bidders must deposit bid bonds of between EUR 25 and 50 per kW (EUR 100 per kW for offshore wind) and demonstrate that their projects have received the relevant municipal approvals (ie developer-selected sites). Solar auction bidders can adjust their projects for a lower support level; however, wind and biomass support entitlements are not transferable.[50]

The project tender process is packaged on a sealed-bid, pay-as-you-go basis, with a completion time of 18 to 30 months according to the technology and size. However, for offshore wind projects the realization period is six to seven years.[51] A key feature of the auction is the "sliding feed-in premium". Thus, if the electricity spot market price is lower than the auction price, the difference is covered. On the other hand, if the market price is higher than the auction price, the difference is applied to the project. Consequently, the auction price serves as a project's minimum price.[52] Reduced qualification requirements and penalties (for example, no need for a Federal Emission Control Act permit and lower bid bonds of EUR 15/kW), longer realization periods (54 months) and a preferential price rule (projects are paid a clearing / uniform price) are all used in German auctions to encourage energy cooperatives to pursue "citizen projects". Onshore wind projects for citizens are restricted to 18 MW.[53]

While it is the function of Germany's Ministry of Economic Affairs and Energy to set the rules and processes governing auctions, the Federal Network Agency (Bundesnetzagentur) manages the tender process for gas, telecommunications, post and railways. The Bundesnetzagentur publishes submission deadlines and needed information on its website, and the ministry selects the lowest bidders in the auction based on the award mechanism stipulated in the renewable energy law for each technology.[54]

47 Ibid.

48 K Appunn "EEG reforms 2016: Switching to auctions for renewables" (8 July 2016) *Clean Energy Wire*, available at: <https://www.cleanenergywire.org/factsheets/eeg-reform-2016-switching-auctions-renewables> (last accessed 22 July 2024).

49 This strategy has recently taken a hit due to the pressure of the Russian-Ukraine war, leading to the roll back on this policy.

50 C Klessman "Explaining recent renewable energy auction results in Europe" (12 December 2017), available at: <https://www.slideshare.net/sustenergy/explaining-recent-renewable-energy-auction-outcomes-in-europe> (last accessed 22 July 2024).

51 Ibid.

52 Eberhard and Kruger "Best practice in renewable energy auctions", above at note 13 at 55.

53 Ibid.

54 "German Renewable Energy Act 2017 (EEG 2017): What you should know" (April 2017, Norton Rose Fulbright), available at: <https://www.nortonrosefulbright.com/en/knowledge/publications/85ea2d80/german-renewable-energy-act-2017-eeg-2017---what-you-should-know> (last accessed 22 July 2024).

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Solar PV and wind technologies have advanced rapidly in Germany, both in terms of volume and price. In 2017, 1,500 MW of offshore wind was purchased for EUR 4.4 c/kWh (USDc 5.4), a great result for such a nascent technology. In April 2018, an additional 1,500 MW of offshore wind was auctioned at EUR 4.7 c/kWh. In respect of onshore wind, "citizen projects", as they are described, have dominated tenders, garnering between 71 per cent and 84 per cent of auctioned capacity during the 2017 round of auctions. This practice has generated considerable public criticism as it seems that these so called "citizen projects" are in reality driven by larger project development corporations that are disguising themselves under a legal loophole to enjoy better project conditions.[55]

Although Germany's first solar PV auction saw a nearly 100 per cent realization rate, the unique conditions granted to winning bidders in citizen projects for onshore wind have generated worries about the projects' potential low realization rates, given the extended deadlines and cheap fines. As a result, special provisions for citizen initiatives were put on hold for 2018 and it appears that they may be phased out entirely.[56]

Brazil

In 2014, Brazil had a total installed generating capacity of 134 GW, with hydro accounting for around 66 per cent (89.2 GW). The government projects an increase of the total non-hydro renewables generation to 20 per cent of total electricity by 2030.[57] Before 1995, Brazil's power sector was predominantly government-controlled, with vertically integrated companies. Sector reforms were subsequently introduced to increase security of supply and help the government resolve its debts.[58] The background to Brazil's energy auctions is not complete without referencing the implementation process of 2004, which happened due to the need for power distribution corporations to service their customers. This was one of the key recommendations to improve Brazil's previous approach to energy.

The extant Brazilian electricity sector institutional model, beginning from 2004, is backed by Law No 10,848 and Decree No 5163, which addresses the commercialization of electricity in national territory. Law No 10,848 requires energy distribution companies under the National Interconnected System to ensure supply for the national domestic market through auctions. As an adjunct, Decree No 6048, issued in 2007, amends Decree No 5163, by allowing exclusive auctions from alternate sources. The purpose of using an auction mechanism in the first place was to expose pricing. This entails determining the true cost of renewable technology and improving contracting efficiency.

In Brazil, auctions are used to contract all power provided by distributors in the regulated tariff market. The following are the common types of power generation auctions in Brazil: (i) New energy. Its goal is to accommodate future demand for electricity from projects that have not yet entered into commercial operation. This kind of auction is divided into two categories: A-5, which will begin operations five years after the sale, and A-3, which will begin supply three years after the auction. (ii) Existing energy (A-1). This aims to substitute contracts that are about to expire with power from existing facilities, which have already had their investments amortized and hence have a cheaper cost. The energy will be delivered at the start of the following year. (iii) Reserves. The contracting of reserve energy was established to improve the National Interconnected System's electrical supply security, with electricity generated and purchased specifically for this purpose, either from existing or new sources. (iv) Adjustment. Distribution businesses can contract up to 1 per cent of their market. Adjustment auctions are used to close the difference between distribution firms' forecasts and

55 Eberhard and Kruger "Best practice in renewable energy auctions", above at note 13 at 55.

56 Ibid.

57 Ibid.

58 M Hochberg and R Poudineh "Renewable auction design in theory and practice: Lessons from the experiences of Brazil and Mexico" (2018, The Oxford Institute for Energy Studies), available at: <https://www.oxfordenergy.org/publications/renewable-auction-design-theory-practice-lessons-experiences-brazil-mexico/> (last accessed 22 July 2024).

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actual usage. Typically, these are short-term contracts (three months to two years). (v) From alternative sources. The goal here is to promote energy matrix diversity by introducing new projects based on renewable energy sources such as wind, solar and biomass. (vi) Projects of a structural nature. For the purchase of energy from generation projects approved by the president of the Republic by a decision of the National Energy Policy Council. These are public interest strategic projects, generally major hydropower facilities, that provide cheap rates, boost system dependability and ensure long-term demand is met.[59]

Historically, renewable energy projects are granted in auctions for new energy, primarily large hydropower, biomass and wind projects in subtype A-5 auctions and wind, biomass and small hydropower projects in subtype A-3 auctions. These are in addition to specialized alternative source auctions.[60] The auctions are hybrid in nature. A dynamic downward auction is used in the initial phase, with participants bidding for an annual quantity of energy starting at the ceiling price. This price is fixed and not modifiable during the auction. Bids are withdrawn when the price is reduced in subsequent rounds. Only bidders that maintained their bids until the end of the first phase are eligible to enter the second phase, which is a sealed bid auction. Starting with the lowest bid price, the winning bids are those that are required to contract the desired amount of energy.[61]

Brazil's auctions were successful in procuring large scale renewable energy capacity. For instance, wind energy (which has emerged as Brazil's fastest growing technology) has witnessed significant cost reductions.[62] However, concerns by the Brazilian Association of Wind Power (Abeeolica) over reduced return margins may leave projects exposed to issues related to underbidding that may arise during construction. Nevertheless, Brazil remains an exemplary market when referencing the successful growth of large-scale renewable energy that is not reliant on a single support instrument, but a combination of instruments with autochthonous designs. The combination of several support programmes, including long-term PPAs and subsidized financing, has permitted the large-scale deployment of renewables and the institutionalization of a local industry.

South Africa

Since 2003, South Africa has initiated several strategic framework policies aimed at the promotion of renewable energy in the country's electricity sector. The *White Paper on Renewable Energy* was the first of these policies that solely targeted renewable energy, acknowledging it as an important energy source and aiming to harness it more ambitiously in the future. It defined non-mandatory medium-term targets for renewable energy in the final energy demand by 2013. The Integrated Energy Plan included a broader policy approach and outlined an overall strategy for the country's energy supply and demand. South Africa also enacted an Energy Efficiency Act in 2005 and an Electricity Regulation Act in 2006. The Integrated Resource Plan 2010–30 is the most recent and important piece of legislation in terms of renewable energy support and is a subset of the Integrated Energy Plan of 2003. It builds on the assumption that, within the next two decades, South Africa will need 57 GW of new power capacity, along with a diversification of power supply. The plan aims for a significant reduction in the relative dependence on coal and the promotion of alternative forms of electricity generation. To achieve this, it defines long-term generation and capacity-based goals for 2030 (see above), analyses various policy options, sets out future areas for policy action and includes a cost analysis.[63]

59 See, Eberhard and Kruger "Best practice in renewable energy auctions", above at note 13.

60 SM Sirin and I Sevindik "An analysis of Turkey's solar PV auction scheme: What can Turkey learn from Brazil and South Africa" (2021) 148 *Energy Policy* 1 at 1.

61 Ibid.

62 Ibid.

63 "Legal frameworks for renewable energy: Policy analysis for 15 developing and emerging countries" (Deutsche Gesellschaft für Internationale Zusammenarbeit), available at: <https://www.icafrica.org/fileadmin/documents/Knowledge/GIZ/Legal%20Frameworks%20for%20Renewable%20Energy.pdf> (last accessed 11 September 2024).

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The African continent's largest power grid in situated in South Africa, with a generation capacity of over 265 terawatt hours (TWh) per year, from 45 GW of installed capacity.[64] Coal is used to generate most of this power. ESKOM, a state-owned and vertically integrated electrical provider, is the country's largest public utility corporation. It oversees the majority of generating and transmission assets, as well as a sizeable portion of the distribution network infrastructure. The remaining distribution infrastructure is controlled and operated by 179 municipalities, with ESKOM supplying their bulk power consumption. The Department of Energy is the chief ministry of the national power sector, whereas ESKOM is overseen by the Department of Public Enterprises under a shareholder agreement. The National Energy Regulator of South Africa oversees tariff approvals as well as the licensing of generators, transmitters, distributors and dealers in the energy industry.

Onshore wind concentrated solar power, solar PV, biomass, biogas, landfill gas, small hydro (under 40 MW) and small renewable projects (1–5 MW) all comprise South Africa's Renewable Energy Independent Power Producer Procurement (REIPPP) programme, which began in 2011. ESKOM is the off-taker for the long-term renewable contracts and follows an integrated resource strategy. This strategy is used to assign these technology classes, which allocates most of the auction demand to wind and solar due to their lower prices compared to the other technologies. From 2011 to 2015, onshore wind received 48 per cent of auction demand, solar PV received 36 per cent and others received 16 per cent. Multiple technologies were chosen to avoid the purchasing of a single technology and encourage competition among them. The technology bands are also divided by project size, which is beneficial for supporting smaller distributed renewables that may be more expensive than utility-scale equivalents but may provide additional grid advantages, such as reducing the need for transmission and distribution upgrades.[65]

According to Eberhard and Kruger, South Africa's REIPPP programme, which has run four competitive tenders / auctions since 2011, has attracted USD19 billion in private investment, with wind power electricity prices falling by 46 per cent and solar PV electricity prices falling by 71 per cent in nominal terms.[66] After an unsuccessful attempt to apply feed-in tariffs, competitive bids were implemented. The bids included typical, non-negotiable contract agreements, such as 20-year PPAs, and an implementation agreement under which the South African government backs up independent power producer procurement programme payments made by ESKOM.[67]

REIPPPP bidding requirements include contributions to socio-economic development, securing land and rights of way for installations including transmission lines, obtaining all necessary permits, collecting at least 12 months of wind monitoring data, as well as 12 months of bird and bat monitoring data, and ensuring that projects were financially closed by the time of bidding.[68]

One notable critical requirement of the REIPPPP is the provision of letters of support by finance providers. This requirement, in reality, "outsources" project due diligence to banks or other financing providers, ensuring that bids are bankable and strong at the time of submission. Finance providers must agree to accept the risk allocation in the PPA, implementation agreement and direct agreement, as well as provide financing term sheets. Bidders are also required to produce two financial models (sponsor and banking) to demonstrate the soundness of the financial models utilized, including sensitivity assessments on foreign currency movements, tax and accounting treatment disclosures, and any other model assumptions. Finally, bidders are required to provide a statement regarding success payments, defined as reimbursements of expenditure made in the development of the bid project and only payable if financial closure is achieved.

64 Ibid.

65 Ibid.

66 Kruger, Eberhard and Swartz "Renewable energy auctions", above at note 36 at 23.

67 Id at 17.

68 See A Eberhard and R Naude "The South African renewable energy independent power producer procurement programme: A review and lessons learnt" (2016) 27/4 *Journal of Energy in Southern Africa* 1 at 5–8.

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It was required that bidders first create special purpose vehicles before submitting their offer but this criterion has been lifted since the fourth round. Bidders also affirmed acceptance of the PPA, implementation agreement and connection agreements, and presented all important sub-contracts that were part of the bid. Many proposals were not ready for the first round because of the difficult standards, particularly for overseas developers, and the short bid timeframes (three months).

REIPPPP used a sealed bid process with a single offer, in which winning bidders paid their bid prices. While project capacity restrictions assured competition, there were no limits on the number of projects that may be given to a single bidder. All technologies had ceiling pricing mechanisms in place, which were modified downwards in each round depending on local and global impacting variables, although solar PV and wind were eliminated from the fourth round due to considerable cost reductions for these sources.

REIPPPP is a multi-criteria auction in which winning bids are determined by both price and economic development criteria. Price (70 per cent) and economic development criteria (30 per cent) are used to score eligible or compliant bid proposals. The lowest priced bid receives the highest score (70), with other bids rated in relation to this bid. An exceptional feature of the South African REIPPPP is the heavy weighting assigned to economic development criteria. Although this has been criticized, particularly in terms of its influence on price levels, the resulting prices in subsequent rounds appear to contradict this critique.[69]

Conclusion: Auction design for Nigeria's competitive bidding

In designing the competitive procurement process for Nigeria, it must be contextualized within the current policy and legislative framework in an evolving electricity market. NBET should pursue flexibility, choosing elements from different jurisdictions that will meet the country's development objectives. As a minimum, Nigeria's energy auction design should take into consideration the country's economic situation, the structure of the energy sector and the maturity of the energy market.

Generally, competitive tenders can deliver a pipeline of bankable projects within a reasonable time, especially when they incorporate standard PPAs and appropriate credit enhancement and security measures.[70] First, the auction rules and procedures should be determined by NBET and publicly spelt out for all participants to understand. NBET will be responsible for running the process and will publish submission dates and required information on its website and will choose the lowest bids in the auction according to the award procedure set out by NBET for each stipulated technology.

Traps to avoid in this design process include: over-reliance on the requirement for local content and ownership requirements; small project sizes; short bidding and implementation timelines; implementation choices; political and regulatory uncertainty; poor quality auction documentation and data; and poor inter-government coordination. Another important consideration is that whichever model is chosen should lead to effective price discovery in a structured, transparent and competitive manner. This would help alleviate the problem of information asymmetry between NBET and project developers.

Sensible planning is of utmost importance. For example, Nigeria has been known to build gas fired plants in locations where there is limited gas infrastructure, leading to an inability to evacuate. In designing auctions, therefore, NBET should take into consideration the relative needs of different parts of the country and the practicability of the process. For example, Germany limited the amount of renewable capacity that can be auctioned in specific geographic areas where the transmission grid is congested. In the onshore wind auctions, a reference wind yield condition is provided, according to which projects bid. In the case that the project's wind yield is in fact lower than the reference

69 Ibid.
70 Ibid.

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yield, its tariff is adjusted upwards (vice versa if the yield is better than the reference value). The aim of this design feature is to ensure a more even distribution of wind projects within the country, instead of a clustering of projects in high yield zones only. Similar to the German arrangement, the auction rules and procedures should be determined by NBET and agreed by the Ministry of Power, with submission dates and required information published on its website. The objective would be to choose the lowest bids in the auction according to the award procedure.

NBET will have to decide how much power to procure competitively, the number of rounds and the sources of power (solar, wind, etc). In designing the request for proposals, NBET must ensure that the tender documentation that is key to the success of the auction is outlined and clear. The tender documentation should clarify information regarding the bid requirements, qualification and evaluation criteria, general documentation, project sizing, PPAs and the caps for each source of energy. For Nigeria, it is recommended that solar is apportioned the highest allocation and may in fact be the only source in the first round of auctions, given the abundance of the resource. Nigeria's experience with respect to the 14 solar projects that were unsolicited bids in 2016 is a lesson in high supply that did not yield any competitive pricing. In the future, NBET can set price caps, especially since it has conducted research in the past on pricing solar projects that could form the basis for setting a cap. The timeline for submitting bids can be set to be within three months of the issue of the request for proposals, with financial closing to occur within six months of the announcement of preferred bidders. The request for proposal documents will include a standard PPA, which should be a non-negotiable contract developed with proper consultation to ensure general acceptance by bidders / investors. Bids should contain information on the project structure, legal qualifications, land, environmental, financial, technical and economic development qualifications.

The idea behind most auction designs is to maximize the likelihood that the winning bidders are able to execute the projects. In South Africa, bidders had to submit bank letters indicating that the financing was locked in and this meant that the banks providing the financing had to conduct additional due diligence since they assumed a higher share of project development risk. This prevents projects from bidding low, thus leading to deals not closing. Another important consideration is the need to reduce transaction costs. High transaction costs might erode whatever cost savings were achieved through the auction process and also constitute potential barriers to the participation of small players in the bid process, thereby undermining competition.

With respect to bid evaluation, bidders may have to satisfy certain minimum threshold requirements in selected areas: environment, land, commercial and legal, financial and technical. The environmental review examines approvals, while the land review looks at tenure, land permits, certificates of occupancy and agreements with communities. Commercial considerations include the project structure and bidders' acceptance of the PPA. The financial review includes standard templates used for data collection that should be linked to a financial model used by the evaluators. Technical specifications should be set for each of the technologies, in this case, solar. Bids that satisfy the threshold requirements should then proceed to the second step of evaluation, where bid prices would count for 70 per cent of the total score, with the remaining 30 per cent given to a composite score covering job creation, ownership, management control, preferential procurement, enterprise development and socioeconomic development. The whole point of the auction process is to ensure that the investment outcomes are valid and sustainable, and that the country benefits from the increased level of energy.

Competing interests. None

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