

PUBLIC-PRIVATE PARTNERSHIP AND THE PROVISION OF ELECTRICITY IN EDO STATE: A COMPARATIVE STUDY OF BENIN ELECTRICITY DISTRIBUTION COMPANY AND CCETC-OSSIOMO POWER PLANT

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KEY WORDS

*Benin Electricity
Distribution Company,
CCETC-Ossiomo Power
Plant Company, Public-
Private Partnership
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ABSTRACT

The study presented a comparative study on the role of public-private partnership in the provision of electricity in Edo State, Nigeria. Specifically, the study examined the impact of the partnership agreement between the Edo State government and CCETC-Ossiomo power plant company on the provision of electricity to government parastatals and businesses in the Benin City metropolis, to the service provided by Benin Electricity Distribution Company. The study aimed to examine the extent to which the PPP arrangement between the Edo State government and Ossiomo power plant company has been useful in the provision of electricity in Edo State, identify challenges that may hinder the effective provision of electricity under the PPP arrangement, and proffer solutions to the challenges identified. The study relied on the mixed-scanning approach by combining both qualitative and quantitative research methods. Primary data were generated through responses to questions from BEDC and CCETC-Ossiomo power plant company officials, while secondary data were gathered from reputable sources such as reports, journals, textbooks, and newspapers, amongst others. The study concluded that the Ossiomo power plant company has demonstrated the potential of PPP models in improving electricity access in Edo state. Recommendations were made to the government to provide the enabling environment for the Ossiomo power company to be able to generate and distribute its targeted 55 megawatts of electricity; partner with more private electricity companies to guarantee sufficient distribution of electricity to the consumers; encourage increased investments in renewable energy sources to diversify the energy mix and promote sustainability; amongst others.

INTRODUCTION

All over the world, access to stable and reliable electricity infrastructure remains essential for sustainable economic growth and development. Public-Private Partnerships (PPPs) have emerged

over the last two decades as a popular strategy for infrastructural development by governments worldwide; primarily to meet the ever-growing aspirations of its citizens (Garvin, 2009). Before now, the delivery of services to the public as well as the provision of infrastructure has been handled solely by the government. However,

with population growth and dwindling resources available to the government, as well as the need to ensure that other areas are equally developed, the government seemed not to have been living up to expectation in the provision of the infrastructural needs of its citizens. Globally, governments now partner with the private sector to provide and manage infrastructural facilities in their countries. This contractual arrangement is referred to as a Public-Private Partnership (PPP) (Fadeyi *et al*, 2016).

Rendering of services and the provision of infrastructural facilities are two key functions of government that can bring development to any nation. The involvement of the private sector in the development and financing of public facilities and services has increased over the past years in the developed and developing countries (Akpoghome & Nwano, 2019). The government alone cannot provide all needed infrastructure if the cost of providing infrastructure is put into consideration alongside other responsibilities that the government is expected to undertake. This was why the Nigerian government, like other governments across the globe, decided to adopt the public-private partnership model in the area of infrastructure. Public-private partnership can be conceptualised as the government's involvement of the private sector in service delivery to the citizens. It is a form of contract between the public sector (government) and the private sector (society) in the delivery of services. It can also be seen as government provision of services through the private sector (Eugbog & Omitogun, 2018).

Nigeria is not an exception in PPP collaborations. Over the last two decades, both the federal and state governments in Nigeria have had reasons to collaborate with private companies and institutions in the provision of some capital-intensive infrastructures which are required for service delivery to the citizens. Some of these infrastructures include electricity, roads, buildings, industries, bridges, health, education, hospitals, amongst others (Oyedele, n.d.). Different types of PPP arrangements, varying in terms of the degree of the involvement of the private sector have been used to procure projects depending on the objectives as well as the requirements of the project. The arrangements can also differ in purpose, service scope, legal structure, risk sharing, finance sources and ownership of properties (Kwak *et al*, 2009).

In line with the desire by the federal government to provide capital-intensive infrastructures for efficient service delivery, Benin Electricity Distribution Company (BEDC) is one of the successor distribution companies (DisCos) that were created following the unbundling and privatization of the state-owned Power Utility, Power Holding Company of Nigeria (PHCN) PLC in 2013 in a bid to restructure the power sector for efficiency in service delivery (Premium Times, 2013). It has the responsibility of distributing electricity to four Nigerian states: Edo, Delta, Ondo, and Ekiti, with a geographical coverage of 57,353 square kilometres (BEDC, 2023).

To change the narrative of poor power supply as one of the ways to create an enabling environment for businesses to thrive, the Edo State Government under the leadership of Governor Godwin Obaseki entered a Power Purchase Agreement (PPA) of 55MW with Ossiomo Power and CCETC Clean Energy (CCETC-Ossiomo Power), to boost electricity market in the state (BusinessDay, 2020).

The CCETC-Ossiomo Power Plant Company was inaugurated in 2018 in Ologbo, Edo State. The Ossiomo Power Plant operates as an Independent Power Producer (IPP) and plays a vital role in meeting the electricity needs of households, businesses, and government offices and parastatals in its area of jurisdiction. Over the years, the provision of electricity to consumers in Edo state by the BEDC has been abysmally poor. Most residential buildings as well as government offices in the state could barely get three hours of electricity supply in a whole day and this was slowing down business and other economic activities in the state. This was why in the year 2020, the Obaseki-led government in Edo state entered into a power purchase agreement with the CCETC-Ossiomo Power Plant Company to make power more available to government offices and business places to boost economic and business activities.

STATEMENT OF THE PROBLEM

Globally, electricity is considered a major determinant of the economic and social growth and development of any nation or society. Power is needed for small, medium or large business enterprises to thrive. Before the 2013 unbundling of the Power Holding Company of Nigeria (PHCN) into Generation Companies of Nigeria (GenCos), Transmission Company of Nigeria (TCN) and Distribution Companies of Nigeria (DISCOs), the responsibility of generating, transmitting and distributing electricity rested on the federal government as prescribed by the Nigerian Constitution (Constitution of the Federal Republic of Nigeria, 1999 as amended). Until recently, the federating states and private companies were not given the power to generate, transmit or distribute electricity even when they could do so. However, the public sector's traditional role in electricity provision has proven inadequate in meeting the increasing demands of the population. The immediate past President of Nigeria, Gen. Muhammadu Buhari signed sixteen constitutional amendments into law in 2022, one of which pertained to the devolution of powers, giving constitutional authorities to states to also generate, transmit and distribute electricity within their boundaries, including territories formerly covered by only the national grid, and the incumbent President of the Federal Republic of Nigeria, Bola Ahmed Tinubu, Grand Commander of the Order of the Federal Republic(GCFR), assented to the bill in 2023 (Daily Post, 2023). In response, the Public-Private Partnership (PPP) has gained attraction as an alternative approach to improve and expand electricity service delivery. Some states of the federation have been leveraging the opportunity to make electricity more available in their states for rapid economic growth and development. In 2020, Edo state government under the leadership of Governor Godwin Noghaghase Obaseki, entered a Power Purchase Agreement (PPA) of 55MW with Ossiomo Power and CCETC Clean Energy (CCETC-Ossiomo Power), to boost the electricity market in the state (BusinessDay, 2020). This public-private partnership agreement was initially meant to make electricity more available to businesses, government offices and parastatals especially within the Benin City metropolis. The agreement was later modified to include residential buildings that meet the requirements to be connected to the power source. Since its operational takeoff, how effective has the CCETC-Ossiomo Power Plant helped to improve the supply of electricity in Edo state?

RESEARCH QUESTIONS

The research questions for this study are:

To what extent has PPP been useful in the provision of electricity in Edo State?

What are the factors that may hinder the effective provision of electricity under the PPP arrangement?

How can PPP be best be utilized for efficiency in the provision of electricity?

What are the possible solutions to the challenges of ineffective provision of electricity under the PPP arrangement?

Objectives of the Study

The primary objective of this study is to examine the efficacy of public-private partnership in the provision of electricity in Edo state while the specific objectives are to:

Examine the extent to which PPP has been useful in the provision of electricity in Edo State.

Identify the factors that may hinder the effective provision of electricity under the PPP arrangement.

Give policy recommendations on how PPP can best be utilized for efficiency in the provision of electricity.

LITERATURE REVIEW

Conceptualisation of Public-Private Partnership

Public-Private Partnership has several definitions. The variations in the definitions can be attributed to the consequences (political and economic) of PPPs which make their meaning and desirability open to different interpretations. Some definitions of PPP are as follows: Public-Private Partnership is defined as "a cooperative venture between the public and private sectors built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards" (The Canadian Council for Public-Private Partnerships in Jatto, 2011). Public-Private Partnership is a long-term agreement between the government and a private partner whereby the private partner delivers and funds public services using a capital asset and sharing the associated risks (OECD, 2019). Ughulu and Erah (2020), defined PPP as "a long-term relationship between the public sector and private sector under which the responsibility for designing, financing, construction, management and/or operation of public infrastructure and services that were traditionally undertaken by the public sector are contractually shared and jointly undertaken by both the public and private sectors, usually in proportion to the type and quantity of risks each party can best carry". From the discussions above, PPPs can be seen as long-term contractual relationships between public and private sectors in which both parties collaborate to provide and/or manage public infrastructures or services that were hitherto undertaken by the public sector only.

Public-Private Partnerships involves the public and private working in co-operation and partnership with each other (Harris, 2003 in Babatunde, Opawole & Akinsiku, 2012), it is essentially a partnership between public sector organizations and private sector investors and businesses to design, plan, finance, construct, providing and/or operating infrastructure, facilities or related services. Successful public-private partnerships build on the experience of each partner to meet clearly defined needs and provide a net benefit (or value for money) to the general public through the appropriate allocation of resources, risks and rewards (Leiringer, 2003). It involves unbundling the costs and the risks inherent in delivering the project and allocating them to the partner best able to absorb and mitigate them (Pryke and Ouwerkerk, 2013). The allocation of every risk is determined by how well partners in both sectors can reduce risk efficiently and effectively. Public-private partnerships (PPPs) represent an alternative form of outsourcing that involves collaborating with the private sector to deliver services, especially those necessitating the creation of new physical assets. PPPs involve forging enduring partnership between the two sectors to provide services which is a new method of boosting private sector involvement in providing public infrastructure and services. With PPP, the public sector will focus on acquiring services on the most cost-effective basis, rather than directly owning and operating assets (Oladapo, 2007). Under PPP, the private sector can look forward to providing a wider range of services over a longer contract period, usually between 15 to 30 years (Harris, 2003 in Babatunde, Opawole & Akinsiku, 2012). Public services can be rendered more efficiently and effectively to meet public needs through cordial partnership with the private sector. There are varying reasons for establishing public-private partnerships but the partnerships generally involve the financing, design, construction, operation and maintenance of public infrastructure, facilities as well as services. This means that public-private partnerships are not only concerned about the private sector financing capital projects in return for an income stream, it is also the use of private sector skills and management expertise to deliver and operate public projects in a cost-effective way over their lifetime. The underlying logic for establishing partnerships is that both the public and the private sector have unique characteristics that provide them with advantages in specific aspects of service or project delivery (Leiringer, 2003). The most successful public-private partnership arrangements lie in the strength of both sectors establishing mutual relationships. Whereas the roles and responsibilities of the public and private partners may differ on individual servicing initiatives, the public sector's overall role and responsibilities would not change. Although PPP is one way of providing public infrastructure and services, it is however not a substitute for strong and effective governance and decision-making by the government.

Types of Public-Private Partnership Arrangements

There are various forms of Public-Private-Partnership (PPP) which are mostly represented by different acronyms. A number of these PPP arrangements are only slightly different from one another. Some of the popular examples are represented in the table below:

Types of Public-Private Partnership	Meaning
BOT – Build-Operate-Transfer	A private investor builds a facility, sells the output to the public, and transfers it at the end of the contract.
BRT - Build-Rent-Transfer	The private investor builds the facility, rents it out, and transfers at the end of the contract.
BTO – Build-Transfer-Operate	Private vendor builds facilities and transfers them to the government, and the government either operates directly or contract out. The private vendor either gets full payment at the end of the contract or shares in the earnings from the operation thereafter.
CONCESSION	A private vendor (concessionaire) may or may not build the facility, but is allowed to manage the facility and charge users a fee for use of the facility.
DBB – Design-Bid-Build	The government agency provides the design, puts out tenders, and the winner builds the facility.
Engineering, Procurement and Construction (EPC) Contract	The contract whereby the contractor provides a complete installation (e.g., a power plant) to specification, at a fixed price and to a fixed schedule.

Source: Afolabi (2011) and Centre for Sustainability in Mining and Industry (CSMI) (2010) cited in Fadeyi *et al* (2018).

AN OVERVIEW OF THE BENIN ELECTRICITY DISTRIBUTION COMPANY

Benin Electricity Distribution Company is one of the distribution companies (DisCos) created after the unbundling as well as privatization of Power Holding Company of Nigeria (PHCN) Plc which was the state-owned electricity company. Other distribution companies that were created include Eko Electricity Distribution Company, Ibadan Electricity Distribution Company, Enugu Electricity Distribution Company, and Kaduna Electricity Distribution Company, amongst others (BuyPower.ng., 2020). BEDC is in charge of retail distribution of electricity in Edo, Delta, Ondo and Ekiti States. BEDC is the 5th largest DisCo in distribution capacity and the 3rd largest in the number of households among the Distribution Companies (DisCos) that were privatized (BEDC, 2023). BEDC is strategically located and uniquely positioned to maximize the opportunities that may arise as Nigeria's power trading market becomes more competitive and liberalized, as there are several major power generations and transmission hubs located within the area (BEDC, 2023). The company was established in

2013 as part of the privatization efforts to improve the efficiency and effectiveness of electricity distribution (Premium Times, 2013).

It was assigned the responsibility of distributing electricity to four Nigerian states: Edo, Delta, Ondo, and Ekiti, with a geographical coverage of 57,353 square kilometres. The company operates from twenty-seven (27) business districts with approximately 350 offices located across four (4) states with about 18 million people, about 4 million households, and an effective customer population of 1,291,181 as of September 2023 (BEDC, 2023). Since its inception, BEDC has faced several challenges, including inadequate infrastructure, ageing distribution networks, inadequate training of personnel, power theft, revenue collection issues, and customer service complaints. These challenges have impacted the reliability and quality of electricity supply in its operational area (Uhumwangho & Okedu, 2014; Esan, Nwulu, David & Adepoju, 2024). To address these issues, BEDC has been working on various initiatives. It has invested in upgrading infrastructure and expanding the distribution network to improve service delivery. BEDC has also implemented measures to prevent theft, reduce technical losses, and enhance revenue collection through training and retraining of personnel. Additionally, the company has focused on customer engagement and satisfaction, aiming to provide reliable and efficient electricity services (Esan *et al.*, 2024).

Over the years, BEDC has collaborated with stakeholders, including government agencies, regulatory bodies, and communities, to address the complex issues plaguing the power sector. It has participated in public-private partnerships and engaged in dialogue with consumers to understand their needs and concerns better (BEDC, 2023). Despite these efforts however, there seems not to be much progress made by BEDC in improving power supply in its operational areas as consumers continue to grapple with epileptic power supply, thereby implying that there is still much work to be done to achieve reliable and consistent electricity access for all consumers.

AN OVERVIEW OF OSSIMO POWER PLANT

The Ossiomo Power Plant, located in Ologbo, Edo State, is a major power generation facility that plays a significant role in addressing the country's electricity needs. Access to reliable and affordable electricity is crucial for economic growth and development. The Ossiomo Power Plant, inaugurated in 2018, represents a significant milestone in Nigeria's pursuit of energy self-sufficiency. Situated in Ologbo, Edo State, the plant is a key power generation asset that has positively impacted the region and the country as a whole. The Ossiomo Power Plant currently has an installed capacity of 55 megawatts (MW). It utilizes modern gas-fired combined cycle technology, which involves the integration of gas turbines and steam turbines to maximize efficiency. The transmission and distribution infrastructure of the Ossiomo Power plant includes a 33KM 33KV line; 8KM 11KV mini-grid around Ologbo; 2 X 15MVA Injection Substation located at the Edo State Government Secretariat on Sapele Road and a 10KM 11KV mini-grid around GRA/Ring Road, Benin City (Vanguard, 2020). The Ossiomo Power Plant stands as a significant power generation facility in Nigeria, contributing to the country's energy security and economic development. Through its efficient operations, commitment to environmental sustainability,

and socio-economic impact, the plant exemplifies the potential of the power sector to drive progress. Continued investments in the plant's infrastructure and technology will be crucial to meet evolving energy demands and ensure a sustainable energy future for Nigeria (Punch, 2022).

THEORETICAL FRAMEWORK

State-in-Society Theory

This work adopts the state-in-society theory which emerged as a result of the understanding that the developmental state was no longer the solution to virtually all societal problems as the state (government or public sector) alone cannot bring about sustainable development unless it partners with the society (private sector) (Imuetinyan & Mustapha, 2018). The basic characteristics of weak states theory as propounded by Migdal (1988) are a diminishing provision of social goods and services by state institutions, high capabilities in terms of penetration and extraction (collection of taxes) but weak capabilities in terms of appropriation as seen in recurrent expenditure always outweighing capital expenditure, possession of numerous social and economic organizations headed by "strongmen" and "social authorities" with authority and accountability imbued into the people's strategy for survival.

For there to be any meaningful development in any state, especially weak states, the state-in-society theory looks beyond the developmental state (Lambach, 2004 in Mustapha & Omoredede, 2017). Whereas the state lays claim to having the authority to superintend over, and regulate all social activities that fall within its borders, a claim which is justified by the Constitution (CFRN, 1999 as amended), in reality, the state (the public sector) and social organizations (the private sector) are always in constant competition for social control. The state and the society influence each other. The state can transform society through the work of its agencies and state policies (Migdal, 1988). However, when the state is weak and unable to effectively transform the society positively, the society steps in to fill the gap created by the failure of the state to insert itself into the strategies for the survival of its citizens. The Society fills the gap through a partnership with the state or by taking over certain developmental activities while the state performs regulatory functions (Odusola, 2006 in Mustapha & Omoredede, 2017). What this indicates is that collaborative efforts of the state (public sector) and the society (private sector) are needed to bring about development (Mustapha and Omoredede, 2017).

This theory fits into this research study as its theoretical framework because the theory helps to underscore the importance of public-private partnership in the development of any state or nation, which is what the study aims to examine.

METHODOLOGY

This study relied on the mixed-scanning approach by combining both qualitative and quantitative research methods. Primary data will be generated through responses to questions from BEDC and CCETC-Ossiomo power plant company while secondary data will be gathered from reputable sources such as reports, journals, textbooks, newspapers, official publications and the internet. Data obtained from the BEDC and CCETC-Ossiomo power plant

company will be compared and findings will thereafter be made known.

FINDINGS

The findings arising from the responses received from BEDC and Ossiomo power plant company revealed the following:

Whereas BEDC distributes electricity to about one million, two hundred and ninety-one thousand, one hundred and eighty-one (1, 291, 181) customers (inclusive of private and commercial customers), Ossiomo power plant company distributes electricity to about three thousand (3, 000) customers of the same categories. This implies that BEDC distributes electricity to 1, 288, 181 (99.7%) customers more than Ossiomo power plant company. It therefore means that BEDC has a customer base that far outweighs the customer base of Ossiomo power plant company by 99.77%.

BEDC distributes 350 megawatts of electricity to its customers in its catchment areas while Ossiomo power plant company distributes 10 megawatts of electricity to its customers. This means that BEDC exceeds Ossiomo power plant company in electricity distribution by 97.14%.

BEDC charges N55 for a kilowatt unit of electricity to its private electricity consumers while Ossiomo power plant company charges the same N97 for a kilowatt unit of electricity to its private electricity consumers. This means Ossiomo Power Plant Company charges 43.30% more than BEDC for a unit of electricity consumed by its private customers.

BEDC charges N71 for a kilowatt unit of electricity to its commercial electricity consumers while Ossiomo Power Plant Company charges same N97 for a kilowatt unit of electricity to its commercial electricity consumers. This means Ossiomo power plant company charges 26.80% more than BEDC for a unit of electricity consumed by its commercial electricity consumers.

BEDC distributes electricity to its customers for an average of 6 hours daily (which is equivalent to 25%) while Ossiomo power plant company distributes electricity to its customers for an average of 23 hours daily (which is equivalent to 95.83%). This means that Ossiomo power plant company distributes 73.91% of electricity to its customers more than BEDC daily. The reason for this significant difference can be attributed to the volume of customers of Ossiomo power plant company which is low (3000 customers) as compared to the volume of customers of BEDC which is much higher (1, 291, 181 customers). The implication of this therefore is that Ossiomo power plant company will be able to effectively and conveniently distribute the 10megawatts of electricity available to it to its 3, 000 customers on a 24-hour basis whereas BEDC is left with no other choice than to ration its 350 megawatts of electricity among its 1, 291, 181 customers.

The summary of the findings is presented in the table below.

Parameters for Comparison/Electricity Company	BEDC	OSSIOMO Power Company	Percentage Difference
Number of Customers Captured	1, 291, 181	3, 000	99.77% (BEDC)
Unit of Electricity Distributed (MW)	350	10	97.14% (BEDC)
Unit Cost of a KWH Electricity to Private Consumers (N)	55	97	43.30% (Ossiomo)
Unit Cost of a KWH Electricity to Commercial Consumers (N)	71	97	23.80% (Ossiomo)
Average Period Electricity is Available to Consumers (Hours)	6	23	73.91% (Ossiomo)

Sources: BEDC Headquarters, Benin City and Ossiomo Power Plant Company, Ossiomo, Edo State (2023).

CONCLUSION

The study underscores the importance of public-private partnership in addressing the electricity deficit in Edo State, with a focus on the power purchase agreement between the government of Edo State and CCETC-Ossiomo Power Plant Company located in Ologbo, Edo State. Although the Benin Electricity Distribution Company (BEDC) operates as the major electricity distribution company in Edo State, despite its efforts to improve service delivery, it faces challenges related to inadequate infrastructure, poor customer service, and high levels of electricity theft. These factors have contributed to frequent power outages and low customer satisfaction.

CCETC-Ossiomo Power Plant Company, a 55 MW gas-fired power plant, is a clear example of a Public-Private Partnership in electricity provision in Edo State. This public-private partnership in the form of the power purchase agreement between the state government and a private entity has led to increased electricity distribution and improved service quality in the Benin City metropolis, especially for government ministries, agencies and departments as well as some private firms and household who now enjoy an average of 23 hours electricity supply daily. However, the report that was obtained from the company revealed that the pricing of gas which is done in dollars instead of naira hurts the electricity tariff. Another challenge is power theft through the bypassing of meters and illegal connections. Again, the inability of the neighbouring communities to be connected to the CCETC-Ossiomo power supply due to their inability to afford the cost of getting connected could have security implications for the company if not urgently addressed.

While the BEDC faces persistent challenges of having more customers than the electricity that is available for distribution,

inadequate infrastructure, ageing distribution networks, power theft, revenue collection issues, and customer service complaints, the Ossiomo Power Plant demonstrates the potential of PPP models in improving electricity access (Esan *et al.*, 2024). By addressing the identified opportunities and challenges, policymakers, regulators, and stakeholders can foster a conducive environment for successful and sustainable PPP initiatives in electricity provision across the state.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed:

- (i) The government should strengthen regulatory frameworks to ensure effective governance and accountability in PPP agreements.
- (ii) the government should provide the enabling environment for Ossiomo Power Company to be able to generate and distribute its targeted 55 megawatts of electricity as this will further guarantee access to stable electricity for more electricity consumers.
- (iii) the government should partner with more private electricity companies to guarantee sufficient distribution of electricity to the consumers and reduction in the unit price of electricity consumed as a result of competition.
- (iv) The government should encourage increased investments in renewable energy sources to diversify the energy mix and promote sustainability.
- (v) Collaborations among government agencies, private sector entities, and local communities should be enhanced to address community-specific electricity needs in a participatory manner. Mechanisms for regular consultation and feedback from electricity consumers to electricity providers should be enhanced to improve service quality and enhance customer satisfaction.

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