Impact Factor: 9.9 ISSN-L: 2544-980X

Energy Crisis in Nigerian Universities: Implication for Effective Planning and Administration for Decision Making to Ensure Sustainable Development of University Education System in Nigeria

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Abstract: This paper discussed the energy crisis in the Nigerian universities for sustainable development of university education in Nigeria. Secondary data were used in the study. The secondary data were collected from online and print publications. The paper concluded that energy crisis is facing the Nigerian universities and is adversely affecting the academic services in the universities. Disruption of academic staff job performance, students' academic work, consumption of larger portion of universities' subvention and students protest are the impacts of energy crisis in the Nigerian universities. Poor funding, corruption, vandalism /insecurity, are the factors responsible for the energy crisis in the universities in Nigeria. Based, on this problems, the paper recommends that every universities in Nigeria should have builther power generation plant. Government and private institutions should provide adequate funding for the building of the plant.

Keywords: Energy, University education sustainable university education.

Introduction

According to the NPE (FRN, 2004), university education is expected to make optimum contribution to national development through the intensification and diversification of its programs for the development of high level human resources base within the context of the needs of the nation; make professional course contents to reflect Nigeria's national requirements; make all students, part of the general program of all-round improvement and to offer general study courses such as history of ideas, philosophy of knowledge and nationalism. Universities are expected to encourage and disseminate their research results to both government and industries. Universities are expected to inculcate community spirit in their students through projects and action research. They are expected to ensure that faculty in their professional fields have relevant industrial and specialized experience. However, the NPE states that a huge percentage of funding for university education shall be devoted to Science and Technology. Reports indicate that several federal universities in Nigeria are on the brink of a major crisis, with 275 institutions facing a potential collapse due to a steep increase in electricity tariffs.

The Nigerian universities are facing the problem of energy crisis. The energy crisis has affected the operation of the universities. The implementation of the curriculum in most universities are poorly implemented due erratic supply of electricity in the universities and in the hotels and in the host communities.Some host communities of universities in Nigeria are lamenting the poor power supply in their various communities, noting that is disrupting economic and social activities of the communities. It appear the energy crisis is posing serious challenges to the universities operation and development. It is based on this that this paper seeks to discuss the energy crisis in the Nigerian universities for sustainable development of university education in Nigeria.

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The purpose of this paper is to discuss the energy crisis in the Nigerian universities for sustainable development of university education in Nigeria. The specific objective is;

1. find out the factors responsible for energy crisis in the universities in Nigeria;
2. to assess the impact the energy crisis in the universities education in Nigeria.

Literature Review

Methodology

Concept of Energy

Energy is considered by Energypedia (2017) as electricity (Power), which is the most versatile form of energy. Without access to reliable electricity, education becomes very difficult and the quality of services delivered becomes poor. Energy is used for lighting room offices, lecture hall, theater and labs. Energy enables powering of A/C, working fans and many more which provides us comfort in the offices and halls within the campuses.

Energy also provides means of entertainment in the schools; radio, television and cinema are possible because of stable power supply. Equipment like information communication technologies and computers also require energy to be used in the respective offices. Constant energy supply is critical for the development of the higher institutions. Energy keep moving the educational sector forward. The importance of adequate and stable energy supply in the tertiary institutions includes;

1. It makes implementation of teaching programme simple, fast and interesting,
2. It makes implementation of research programme possible
3. It makes provision of community services programme economical and reliable
4. It makes school administration fast and effective.

Concept of energy crisis

The energy crisis refers to unstable problems in the generation and distribution of power resulting in poor distribution to the final consumers. The energy crisis is a state where power generation and distribution are not serving its objectives. An energy crisis refers to a situation where the power sector of a country or state fails to generate and distribute power that is adequate to support the production of goods and services in the state (Ogunode, et al 2024).

Factor responsible for energy crisis in Nigerian universities

There are many factors responsible for energy crisis in the Nigerian universities. Some of these factors includes; limited power generation and distribution, Vandalism /insecurity, poor maintenance culture

Limited Power Generation and Distribution

The limited power generation and poor distribution is one of the major factor responsible for the energy crisis in the Nigerian universities. According to statistics provided by GET.invest, a European programme focused on renewable energy projects, noted that only 3,500 MW to 5,000 MW is typically available for onward transmission to the final consumers in Nigeria. This is essential because of the country's poor transmission network and incessant collapse of the national grid amongst other factors. This is happening despite the privatisation of 11 electricity distribution companies (DISCOs) and six generating companies (GENCOs) with the federal government retaining 100 per cent ownership of the Transmission Company of Nigeria (TCN). Despite the poor supply, electricity tariffs have also continued to be on the rise in the country. Nigeria has struggled with poor power supply for decades, a challenge that is estimated to cost businesses about $29 billion yearly, according to the World Bank. The country has the lowest access to electricity globally, with about 92 million persons out of the country's 200 million population lacking access to power, according to the Energy Progress Report 2022 released by Tracking SDG 7. World Bank report in 2021 also explained that a total of 74 per cent of power users in the country are dissatisfied with the supply of electricity across the country while 93

per cent of metered power users paid their bills regularly, 78 per cent of electricity consumers in the country received less than 12 hours of power supply daily (Izuaka, 2023).Limited generation by various institutions saddled with power generation and distribution in Nigeria is a major factor responsible for limited energy in the various tertiary institutions in Nigeria (Ogunode, Amos, Bitrus, &Kauna 2024)

Vandalism /insecurity

The high rate of vandalism of plant facilities and insecurity in the country is significantly affecting ongoing works in the energy sector, leading to a low supply of power across the country (Ogunode&Olugbenga, 2023). Otombosoba (2021) observed that due to widespread poverty in Nigeria, there is a high incidence of power equipment vandalism. Vandals often have free rein to steal cables and wires. Additionally, insecurity facilitates this process of vandalism, resulting in low capacity utilization and disrupted power distribution.The issue of vandalism and insecurity extends to tertiary education institutions, where abandoned infrastructure projects contribute to the degradation of facilities. Ogunode, Jegede, Olamoyegun, Akinjobi, and Olatunde-Aiyedun (2022) highlighted that abandoned infrastructure projects in public tertiary institutions have left critical educational facilities exposed to vandalism, further compounding the challenges faced by the education sector. Similarly, Adams, Zubair, and Olatunde-Aiyedun (2022) stressed that addressing project abandonment and enhancing security measures are vital for protecting educational infrastructure and ensuring their effective utilization.To mitigate the impacts of vandalism, leveraging open educational resources (OER) and technology-driven solutions may provide a pathway forward. Mohammed, Olatunde-Aiyedun, and Bello (2024) underscored the importance of increasing the readiness of distance learning lecturers to adopt OER, which can enhance educational delivery even in resource-constrained and insecure environments. Furthermore, the assessment of science resources in higher education, as examined by Olatunde-Aiyedun, Olamoyegun, and Ogunode (2022), reveals the need for proper resource management and secure infrastructure to support academic activities in Nigerian tertiary institutions.

Poor maintenance culture

The poor maintenance culture of Nigerian towards energy infrastructure across the country is also affecting the constant supply of power in the country (Ogunode, &Olugbenga, 2023a). Otombosoba, (2021) opined that there is frequent breakdown of obsolete generating plants and equipment due to inadequate maintenance and lack of spare parts. The main problem against safe and efficient electricity supply in Nigeria is inadequate infrastructure, poor history of corporate governance and inadequate pricing structure to support the economics of power generation, transmission and end user distribution (NAPE, 2016).

Corruption

The high rate of corruption in the power sector is responsible for the instability in the supply of power in Nigeria, particularly in tertiary institutions. The Centre for Health, Equity and Justice (CEHEJ) noted that corruption in Nigeria's power sector has gulped N11 trillion since 1999. The report indicated that the figure might increase to N20 trillion in the next decade. According to Yemi Cole, an associate professor of law at the University of Lagos who made the presentation, the report established that corruption in the power sector "manifests significantly in the process and procedure for contracts to certain (privileged corporations). The total estimated financial loss to Nigeria from corruption in the electricity sector from the return to democracy since 1999 to date is over Eleven trillion Naira (N11 Trillion Naira), the report stated. "This represents public funds, private equity and social investment (or divestments) in the power sector. "It is estimated that it may reach over Twenty Trillion Naira (N20 Trillion Naira) in the next decade given the rate of Government investment and funding in the power sector amidst dwindling fortune and recurrent revenue shortfalls (Thecable, 2019). Corruption has penetrated all the sub-sectors in the power sector. Ogunode, Amos, Bitrus, and Kauna (2024) concluded that the high corruption in the energy sector in Nigeria is among the factors responsible for the energy crisis in Nigerian universities. Nigeria's electricity sector is seriously challenged by low

levels of access and inadequate supply, leading to regular power outages, and one of the factors responsible is corruption. Corruption has practically been accepted by individuals as a way of life (Ayeni, Tusayi, Joseph &Obatayo, 2018; Ayantoye 2024).The deployment of Information Communication Technology (ICT) has been proposed as a critical solution for addressing corruption in Nigeria's tertiary institutions, including challenges within the energy sector. Ogunode, Olatunde-Aiyedun, Ukozor, and Ayeni (2024) emphasized that ICT tools can enhance transparency and accountability, thereby reducing corruption. Similarly, Ogunode, Ohunene, and Olatunde-Aiyedun (2022) reviewed factors contributing to financial corruption in Nigerian public universities and highlighted systemic issues that exacerbate these challenges.

Poor involvement of universities in energy generation

Ogunode (2024) maintained that the lack of energy generation by various tertiary institutions in Nigeria contributes significantly to the energy crisis faced by these institutions. Many tertiary institutions in Nigeria lack independent power supply facilities, including solar power systems, forcing them to rely wholly on the national grid and other limited alternatives. Monday (2019) also identified the poor involvement and participation of tertiary institutions in power generation as a key factor responsible for the persistent power challenges in higher education.Integrating innovative approaches, such as renewable energy technologies, could help address these issues. Ariza and Olatunde-Aiyedun (2023) demonstrated the effectiveness of incorporating project-based learning into renewable and sustainable energy education. Their case study on the development of the Electric Vehicle EOLO highlights the potential of involving university stakeholders in practical, energy-focused projects to enhance knowledge and develop energy solutions. By adopting similar approaches, Nigerian tertiary institutions could not only alleviate their dependency on the national grid but also position themselves as hubs for renewable energy research and production, contributing to sustainable development in the country.

Poor funding of universities

The poor funding of Nigerian universities is a significant factor contributing to the energy crisis in these institutions. Ololube et al. (2016a) highlighted that inadequate funding of higher education leads to weak infrastructure, poor maintenance of facilities such as school buildings, offices, classrooms, student hostels, and staff quarters. The major issue in educational development is the shortage of funds, which threatens the survival of the education system due to dwindling public funding amidst rising demands and escalating costs of higher education. This shortage of funds affects job performance and the growth of institutions, as higher education cannot thrive without adequate financial support.Olamoyegun, Olatunde-Aiyedun, and Ogunode (2022) emphasized that insufficient funding of science programs in public schools also reflects a broader pattern of neglect within the education sector. This lack of investment limits the availability of resources and infrastructure needed to support critical educational services, including power generation. Additionally, Olatunde-Aiyedun and Ogunode (2021) noted that the shortage of professional science and environmental education teachers further compounds the systemic challenges in Nigeria's education system, which require significant financial commitments to address.The inability of the Nigerian government to implement the 15%-20% funding formula for education recommended by UNESCO exacerbates these challenges, negatively impacting the performance and sustainability of higher education institutions. Nigeria's neglect of this funding formula undermines the education system's quality and sustainability. This neglect has led to a collapse of essential infrastructure, including power generation facilities, thereby disrupting effective teaching, research, and service delivery. Addressing the funding gaps requires initiatives from both the government and stakeholders to revitalize the educational system and ensure the growth and development of higher education in Nigeria.

Results and discussion

Impact of energy crisis in Universities in Nigeria

There are many negative impacts of energy crisis in the Nigerian university system. These impacts includes; disrupt implementation of teaching, research and community services and reducing the volume of funds in the systems.

Disruption of academic job performance

The energy crisis in the Nigerian universities is disrupting academic job performance of lecturers in the various universities. Ogunode, andEimuhi, (2023) viewed academic staff job performance as the total performance of teaching, researching and community services responsibilities an academic staff as carried out and still carrying in the institutions that are employed at a particular time. Academic staff job performance is the general record of tasks carried out by an academic staff to be compared to the assigned responsibilities and functions given to them. Academic staff performance is a performance result that can be achieved by a person or group in an organization quantitatively (Robbins and Judge 2017; Ogunode and Ayeni 2023). The entire job performance of most lecturers depends on energy. The cardinal job function of the lecturers are hinged on teaching, researching and provision of community services. The implementation of the teaching programme that directly relate with curriculum execution depend on partially on online teaching. Lecturers needs constant energy to effectively carry out e-teaching because majorities of the ICT facilities depend on energy to functions. The energy crisis has affected the implementation of teaching programme in Nigeria. Teaching programme is the first cardinal programme of the universities. Teaching programme requires constant supply of energy for effective teaching programme implementation. It has been observed that the unstable power supply in some universities in Nigeria is affecting the implementation of the teaching programme. The lecture halls, theatre, libraries, laboratories and ICT centres need stable electricity to be able to operate optimally. World University (2012) reported that the poor electricity supply in Nigeria is proving a major impediment to the operation and growth of information and communication technologies in the nation's universities. Only a trickle of daily electricity production dribbles erratically into the country's 275 private, state and federal universities, rendering ICT systems dysfunctional. Universities resort to diesel-propelled generators, but they are expensive and environmentally unfriendly.

The energy crisis in the universities also affects the implementation of the research programme which is the secondary cardinal functions of the academic staff. Ogunode and Abubakar (2020) submitted that research is the second cardinal programme of higher institutions. Research is very important to the development of the society. Research is conducted mostly in the higher institutions environment with the objectives to solve problems affecting the society. The academic staff is saddled with the responsibilities of carrying out researches in the universities. Conducting research is one criterion for measuring their performance. Energypedia (2017) observed that poor access to electricity also results to poor time management. Many researchers and students working in the laboratory for their project and research work. A work they supposed to finish normally in 3 days took them over a week to finish because there was no power and the supposed machine they were to use can’t function without light. Energypedia (2017) and Ohajianya, Abumere, Owate and Osarolube, (2014) submitted that some time lectures was canceled in many universities because of lack of power, seminars delayed and students fighting over charging ports among others. Adahal (2020) and Omotere, (2024) asserted that energy poverty remains a major problem, not just in Nigeria’s tertiary institutions, but across the entire facet of the Nigerian society, leaving in its trail unnecessary difficulties in execution of simple tasks and grounding economic activities. However, it poses even more challenges in the universities where it has become a barrier to effective research, student learning and general smooth running of the tertiary institutions. Energypedia (2017) and Echono, (2023) maintained the lack of electricity also affects their research output. For example, taking readings of an experiment from a machine in the laboratory and suddenly the power goes off and you realize you have wasted your effort without achieving your aim. This, in turn, demoralizes the faculty and consequently prevents them from building their academic career.

The responsibilities of the academic staff in the areas of community service provision is also disrupted by the energy crisis facing the universities. Community service programme of tertiary institutions are

social and economic projects that are designed to serve community purposely in the fields such as health, social service, environmental protection, education, urban and rural redevelopment, welfare, recreation, public facilities, public safety, and child care. Community service programmes are organized projects, supervised activities that are a direct benefit to the community and are designed to improve the welfares of the whole communities (Lawinside, 2024). Community service programme refer to structured programm undertakes to improve the social, economic of host communities. Communities service programme are geared towards solving community problems. Community service programme are designed to promote positive development in the communities and improve social changes. Example of community services of tertiary institutions include; sensitization and awerenessprogramme; employment opportunities programme, agricultural research programme, health service programme, small scale business programme, community youth empowerment programme, social programme, information sharing programme, community engagement programme, adult education programme, women education programme (Ogunode, Hassan &Olatunde-Aiyedun, 2023), sanitation and climate changes programme (Olatunde-Aiyedun, Olatunde&Ogunode, 2022), research findings sharing programme, sport development programme. The implementation of community services by lecturers needs the availability of constant energy supply in the universities and in the host communities. The current electricity crisis in the universities in Nigeria is disrupting the daily operations of Nigeria's universities institutions.

Disruption of students' academic works

The poor electricity supply in the various universities in Nigeria have negative impact on the academic performance of the students. Ogunode and Josiah, (2023) defined academic performance of students as the total learning outcome of the students in the educational institutions which includes the knowledge, social and communication skills and ideas acquired and retained through their course of study. Academic performance refers to all organized educational programmes and knowledge a learner or student achieves or acquires in the school environment as a result of academic activities. Academic performance is the total knowledge, skills and behaviour a student or learner acquires or gains from an organized test or examinations in educational institutions. The execution of students' academic work requires constant availability of energy in the universities. The students' needs the power to support e-learning, powering of the ICT facilities to support their academic works such as typing of assignment, submission of projects, photo coping of documents and reading in the light. Femi (2014) also observed that lack of access to electricity also affects students'. Given the fact that students try to optimize any chance they have access to electricity, they sometimes wake up at mid-nights when the power comes to charge their phones, laptops and other electronic gadgets. This shortens the time they have to sleep which consequently affects their health. Lack of access to electricity impoverishes the students financially. Ogunode, et al (2023a) concluded that lack of access to electricity affects the student's academic performance. Students who tend to study at night have no choice but walking into the school to study. Some walk over 3Km to get to the school so they can have access to power. The problem sometimes is that there is no power even in the school campus. Students sometimes result to studying under the street lights which are powered by solar or they study with their personal lanterns. This affects the academic performance of students in the universities.

Reduction in volume of subvention of the universities

The monthly and yearly energy bills payment by the universities in Nigeria is taking a lot of funds from the universities subvention. This large sum of payment has affected the volume of funds available to carry out the operation of the universities. The increment of the tariffs has put pressure on tertiary institutions' finances thereby consuming a lot of tertiary institutions' budgets. According to Auwalu Umar of the Public Affairs Directorate of one of the public universities in Nigeria observed that before the recent increase in the electricity tariff in the country, the university used to pay an average of N120 million every month. ''The money is not there to pay these huge monthly electricity bills. After all, the overhead the university receives every year from the Federal Government can't pay its electricity bills for one month. Ogwu, et al (2024) noted thatthe Vice Chancellor of the University of Ilorin, Professor WahabOlasupoEgbewole (SAN), observed that the recent hike in electricity tariffs imposed by the

Ibadan Electricity Distribution Company (IBEDC). The VC said the development has seriously affected the university's budget. The poor electric supply to the universities and host communities has affected the implementation of community services to the host communities (Oloja, 2024). The financial strain caused by the tariff hike is crippling university operations across the country. Most of the institutions have been struggling to meet their overhead costs, and the additional burden of increased electricity bills only threatens to halt their activities entirely.

Students protest

The energy crisis facing the universities in Nigeria has led to continuous protests from the students. Many students in the Nigerian universities have protested poor electricity supply to the campuses and the hotels. The non-availability of stable energy is affecting the students' academic works. Ogwo (2024) reported that earlier this month, the management of the university of Benin (UNIBEN) shut down the university immediately after students refused to shift grounds on their demands for adequate electricity. The students had blocked the Benin-Ore highway to protest weeks of power outage on their campuses even as they have only two weeks to their first semester examinations. The consequences are glaring: the potential collapse of universities would not only disrupt the academic calendar but also jeopardise the education of millions of Nigerian youths. This would be an unfortunate development as Nigeria is already far behind in many educational indices and this could take the country. Students of different tertiary institutions in Nigeria have lamented the poor power supply in their various host communities, saying it disrupts their studies (Ogwo, 2024). Abubakar, (2017) maintained that power supply to universities has led students protest and discruption in the universities programme/

Implication for Effective Planning and Administration

Nigerian universities are facing energy crisis which has adversely affected the academic services in the universities. Disruption of academic staff job performance, students' academic work, consumption of larger portion of universities' subvention and students protest are the impacts of energy crisis in the Nigerian universities. Poor funding, corruption, vandalism /insecurity, are the factors responsible for the energy crisis in the universities in Nigeria. Universities administrators via the national universities communication should design a blue print on energy generation and distribution in the Nigeria universities. Universities manager should collaborate with private institutions and government agencies to ensure adequate funding are provided generated for the building of the various plant in the universities across the country.

Conclusion and Recommendations

This paper examined the energy crisis in the Nigerian universities for sustainable development of university education in Nigeria. The paper concluded that energy crisis is facing the Nigerian universities and is adversely affecting the academic services in the universities. Disruption of academic staff job performance, students' academic work, consumption of larger portion of universities' subvention and students protest are the impacts of energy crisis in the Nigerian universities. Poor funding, corruption, vandalism /insecurity, are the factors responsible for the energy crisis in the universities in Nigeria.

In order to address the energy crisis in the universities in Nigeria, Eromosele (2024) suggested that the government should increase funding for the development of alternative energy sources in universities. Investing in solar power plants and other renewable energy solutions will provide long-term benefits, reducing reliance on Discos and lowering electricity costs. The government must engage in meaningful dialogue with university administrators to understand their unique challenges and develop tailored solutions. This includes revisiting the funding model for federal universities to ensure they have the necessary resources to cover their operational costs without compromising the quality of education. To avert the looming crisis due to the recent hike in electricity tariffs, immediate and decisive action is required. Principally, the Federal Government must step in and provide relief through tariff adjustments, increased funding for alternative energy solutions, and ongoing support for university operations.

Also, the government should invest in renewable energy to complement the fossil fuels energy.Nigeria's energy problems, largely caused by an overreliance on costly fossil fuels, can be eased by embracing renewable energy solutions. Integrating renewable energy into the grid could reduce dependence on fossil fuels and improve access to electricity nationwide, at the least cost possible. Government should increase the funding of the universities to enable universities administrators invest in energy. Every universities should build her plant.

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