

Understanding government policies on renewable energy deployment and climate change mitigation in Nigeria since the russia-ukraine crisis

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Abstract: The global energy sector remains affected by the Russian-Ukraine crisis. Prior to the crisis, the United Nation Sustainable Development Goals (SDGs) has energy transition plan from fossil fuel to renewable sources, a measure aimed at addressing climate change by the year 2030. However, while the Russian-Ukraine belligerent relationship was not predicted, it has served as a catalyst for energy transition across the world given the increase in the price of fossil fuel. The study addressed the question; Is the effect of Russia-Ukraine crisis on fossil fuel accessibility enhancing renewable energy deployment in electricity generation in Nigeria? The study analyzed how the effect of Russia-Ukraine crisis on fossil fuel accessibility in enhancing renewable energy deployment in electricity generation in Nigeria. The underlying assumption of the study is that the Russia-Ukraine crisis will not catalyze the transition of electricity generation from fossil fuel to renewable sources in Nigeria. The theoretical framework of the study is public choice theory and it is applied from the perspective that government instrument instead of market force allocate certain need. The study adopted descriptive research design and Nigeria transition to renewable energy was case studied. Information were obtained from purposively selected government documents and website pages of concerned agencies. Information gathered were content analyzed. The study noted that electrical energy continued to be sourced from non-renewable sources in the country despite the extant policies of government on transition to renewable energy in the country. The study concluded that politics rather than emergency situation drives energy transition.

Key words: Climate Change, Electrical Energy, Fossil Fuel, Russia-Ukraine Crisis, Nigeria

Introduction

Prior to and since the outbreak of the Russia-Ukraine crisis, access to fossil fuel has remain problematic for importing economies, a class to which Nigeria belong. The crisis is expected to impact world population, economy, energy use, as well as climate despite the United Nations' Sustainable Development Goals, SDG (Martinho, 2022; Pereira, Zhao, Symochko, Inacio, Bogunovic, & Barcelo, 2022; Prins, 2022). The implementation of the SDG is arguably under threat both to the belligerent states and economies around the world as a result of escalation (Pereira et al., 2022). Also, the crisis is expected to affect the forest sector in that both rural and urban dwellers in states in the international system confronted with shortage of electrical energy may result to the use of fuelwood as a source of cooking energy (Prins, 2022; Pelz, Chinchian, Neyrand, & Blechinger, 2023). While Fueki et al (cited in Omotosho, 2019) identified the impact of oil shocks on domestic and global economies due to the absence of substitute, sanctions placed by the European Union, EU, alongside other western states, on the Russian economy, following the invasion of Ukraine, resulted in increase in the price of energy and welfare cost, and engendered energy crisis in the Euro zone, and in states in the international system including Nigeria (Hausmann et al., 2022; Perdana, Vielle, & Schenckery, 2022; Falahi, 2022). Guan

et al. (2023) remarked that the war ignited an energy crisis against households capable of increasing the cost of energy accessed by them to about 62.6-112 per cent globally and pushing the number of poor households to about 78-141 million across the world.

Addressing the associated challenges of energy crisis resulting from the Russia-Ukraine crisis has encouraged increase in the use of coal in the Eurozone for the generation of electricity, which is with implications for the implementation of the EU plan on the reduction in the Greenhouse Gas Emissions (Perdana et al., 2022). Also, the quest to mitigate the environmental implications of engaging non-renewable sources informed the increase in budgetary allocation for the development of renewable energy technology and facing-out dependence on gas and oil from Russia (Saktiawan, Toro, & Saputro, 2022; LaBelle, 2023). Whereas in Ghana prior to the war, renewable energy constituted about 1 per cent of the electrical mix with projected increase to about 10 per cent by 2030, vehicular movement depends on fossil fuel (Osei-Tutu, Boadi, & Kusi-Kvei, 2021). Furthermore, Isha et al (2023) has demonstrated how policy challenges confronting energy firm could impact energy transition in medium and low countries with evidence from Brazil and Nigeria. It was revealed that through innovative policies Brazil has been able to facilitate transition to renewable energy whereas in Nigeria, uncertainty in policy and finance has hindered investment in energy transition (Isha et al., 2023). The outcome of this is the continuous reliance on non-renewable energy sources in Nigeria.

Specifically, while Nigeria is an exporter of crude oil, large quantity of the product is imported such that between 2010 and 2018, fossil fuel represented about 93.1 per cent of the aggregate export of Nigeria while the same amounted to about 24.4 per cent of the country's import (Oguntunde, Oguntunde, Ojo, & Okagbue, 2018; Omotosho, 2019). The importation of crude oil in Nigeria is due to inadequate government investment in the oil sector, and poor state of refineries (Monday, Obi & Udo, 2018). Hence, following the collapse of local refineries in Nigeria, in the late 1980, the countries has become exposed to the fluctuations of oil price because it imports refined crude oil (Obioma cited in Monday et al., 2018; Oguntunde et al., 2018). The above explains the reasons for the subjection of Nigerian energy sector to fluctuation in fossil fuel accessibility in the international market and the recurrence of energy crisis in the country. Notably, as the price of fossil fuels continues to soar in the international market, households also switch to alternative sources of energy such as fuelwood and charcoal for cooking (Eniola, 2021; James, 2022; Oyediji & Adenika, 2022; Pelz et al., 2023). It was estimated that over 30 million households sourced for cooking energy from fuel wood in Nigeria (Pelz et al., 2023). These sources are not renewable and are with implications for the health and environment of dwellers because it allows for environmental degradations, pollution, and global warming.

It is useful to note that there is interdependence and interconnections between electrical energy security and climate because electrical energy is crucial to the economic and social life of every state (Debebe et al., 2023; Kicaj et al., 2023). In fact, foreign policy, national interest, support for democracy, economic development, reduction in poverty, and protection of the environment revolve around energy (Bovan, Vucenovic, & Peric, 2020; LaBelle, 2023). Also, the production of goods and services, information dissemination, and economic development is achievable through energy (Albert, 2021; Chudy-Laskowska, & Pisula, 2022). While electrical energy remains crucial to the life of any state, it is usually generated from non-renewable sources, such as fossil fuel, and this explains the nexus between the generation of electricity

from non-renewable sources and other sectors of the economy (Inegbdion, Inegbedion, Obadiaru, & Asaleye, 2020; Chudy-Laskowska, & Pisula, 2022). The non-renewable energy sources used across countries has included gas-fired, oil powered, through coal powered (Chudy-Laskowska & Pisula, 2022; Debebe et al., 2023). Of these sources of non-renewable energy generation, hydro and gas fired have taken preference overtime in Nigeria (Agbo et al., 2021; Soyemi, Samuel, Adesanya, Akinmeji, & Adenuga, 2021). It was reported that about 79 per cent of the electricity need of Nigeria were generated from fossil fuel (Agbo et al., 2021). Hence, inaccessibility to fossil fuel in the international market significantly affects electrical energy availability for use in the country.

Hence, despite the importance of electrical energy and issues with its accessibility in Nigeria, Pelz et al. (2023) claimed that while states are embarking on energy transition from non-renewable to renewable sources with the aim of achieving the SDGs 7, limited data on energy accessibility remain a challenge in Nigeria's energy transition plan. Hence, while Obafemi et al. (2018) claimed that about 40 per cent of the population connected to the national grid does not have adequate access to electrical energy need, the WorldBank (cited in Pelz et al., 2023) estimated electricity accessibility in Nigeria at 55.4 per cent, and noted that there is a wide gap of accessibility between the Urban and Rural population at 83.9 to 24.6 per cent respectively. Also, the irregular supply vis-à-vis outright absence of electricity supply in Nigerian communities have prompted the adoption of fossil-fueled self-electrical energy generating set both by households and businesses as a means of achieving their routine electrical energy need (Chanchangi et al., 2021) and also with implications for climate change. Thus, while there is increasing awareness for the use of renewable energy, fossil fuel is still been traded. The reason for this has been presented from two major perspectives which are energy politics (Agbo et al., 2021) and the level of technological development (Caineng, Qun, Guosheng, & Bo, 2016).

Whilst Caineng et al (2016) posited that the development of eco-friendly technology will solve the pollution problem identified with fossil fuel through replacement, Agbo et al. (2021) noted that the decision of petroleum producing states to ensure the growth of their Gross Domestic Product, GDP, encourages the selling of their fossil fuel in the international market. While Nigeria being an exporter and importer of fossil fuel continue to experience energy crisis resulting from external pressure such as Russia-Ukraine crisis, households continue to source for alternatives in the form of fuelwood in attaining their routine cooking energy needs and these sources are with implications for the environment and health of dweller. Ren, Liu, Li, and Zang (2022) affirmed the above and noted that the deployment of non-renewable energy such as charcoal and wood negatively impacts residents' life contentment because it affects their health, and the increasing use of such sources will pitch dwellers into 'environmental-health-trap'.

Thus, while the price of fossil fuel continues to soar in the international market and electrical energy remain inaccessible to majority across the world, Ugwu et al. (2022) identified the low level of renewable energy technological development in the country with poor research, issues of finance, and poor execution of renewable energy policies. In fact, the escalation of the Russia-Ukraine crisis and raising electrical energy inaccessibility occasioned by fossil fuel supply shortage to states in the international system, have prompted states transition to renewable energy sources (Saktiawan et al., 2022; Ugwu et al, 2022; LaBelle, 2023) and with the possibility of climate change mitigation. However, it remains unclear how the Nigerian government will adhere to the SDG provisions on the generation of clean energy from renewable sources

using renewable energy technology when the country earned its foreign exchange from fossil fuel (Oguntunde et al., 2018; Omotosho, 2019; Agbo et al., 2021). The study is conducted against this background, hence this study.

The study addressed the question; Is the effect of Russia-Ukraine crisis on fossil fuel accessibility enhancing renewable energy deployment in electricity generation in Nigeria? The study analyzed how the effect of Russia-Ukraine crisis on fossil fuel accessibility is enhancing renewable energy deployment in electricity generation in Nigeria. The underlying assumption of the study is that the Russia-Ukraine crisis will not catalyze the transition of electricity generation from fossil fuel to renewable sources in Nigeria.

The study in achieving its stated objectives has five sections. The introduction formed the content of section one. In section two, there is the discussion of literature review. Methodology of the study was discussed in section three. Presentation of finding and discussion was done in section four. The study was concluded in section five.

Literature Review

This section presents the reviewed extant studies under three sub-headings including; conceptualization, theoretical framework, and empirical review.

Conceptualization of Climate Change

Climate change implies increase in global temperature (Kaddo, 2016; Olagunju, Adewoye, Adewoye, & Opasola, 2021). Kaddo (2016) quoted the NASA observation that the earth temperature has increased by one degree. McMichael et al (nd) argued that based on the available evidence, the world climate is changing through human activities especially the release of greenhouse gases from fossil fuel. It was noted that precisely from 1976, the global temperature has increased by 0.6 to 0.2°C (McMichael et al., nd). Olagunju et al (2021) explained the term climate change as obvious alteration to the condition of the climate and its properties over the period of a decade or more. Hence, biogeographical and anthropogenic factors have been identified as the two major factors responsible for changes in the climatic conditions (Olagunju et al., 2021). In this study, the concept of climate change is explained according to the definitions of Kaddo (2016) and Olagunju et al (2021). The reason is because the two definitions recognized climate change has upward changes in the global temperature which is observable over a minimum of a decade or more.

Theoretical Framework

Public choice theory is adopted for the study from Ostrom (1975) and Feldman (1986) point of views. Ostrom (1975) noted that the nonmarket decision is the major concern of public choice theory. Thus, the limitation of the market in allocating resources effectively and efficiently as been recognized by economist, as such, there are goods and services which are better made available by the government through its instrumentality (Ostrom, 1975). Renewable energy belongs to such class after all the policy of government better ensures compliance with the use of the technology and its availability to member of the public. The public choice theory has been paraphrased by Feldman (1986) as the availability and use of natural resources informed by the level of development and conditioned by costs and benefits. Also, the form of resources and its availability dictates resources management (Feldman, 1986). Hence, the theory, because

it allows for the examination of the nexus between natural resources and policies of government is adopted for this study.

Empirical Review

This section presents reviews of extant studies under the outlined themes.

A Review of Global Energy Transition to Renewable Sources Since Russia-Ukraine

The Russia-Ukraine crisis, following the effect of the Covid-19 on energy market, is one of the factors catalyzing the transition to renewable energy across the world (Guan et al., 2023). Albert (2022) as noted the effect of Covid-19 on energy source and use to include continuous deployment of renewable energy technology as a substitute to fossil fuel. Of course, Russia is a major supplier of fossil fuel across the world with the contribution of about 12.3 per cent of oil and 23.6 per cent of natural gas globally in the year 2021, and since the outbreak of the war, price of energy continues to soar in the international energy market (Guan et al., 2023) and this is resulting in energy poverty for households in the international system (Ren et al., 2022). Energy poverty has been presented as the inaccessibility of clean source of energy by households (Ren et al., 2022).

Before the outbreak of Covid-19 and the Russia-Ukraine war, renewable energy technology has continued to be deployed. Kuzemko et al (2020) explained the factors driving the deployment with the sharp decline in the price of renewable energy technology. As such, energy is expected to be sourced from solar, wind, biofuel, and biomass, and these sources will not be conditioned by the fluctuations in the fossil fuel market and it will enhance reduction in the emission of greenhouse gases (Chudy-Laskowska & Pisula, 2022), and solve energy poverty issues (Ren et al., 2022). The deployment of renewable energy technology is in fulfilment of the SDGs goal on climate change mitigation, a reality which is identified with the engagement of renewable energy technology as alternative to fossil fuel as source of energy.

However, the aggressive deployment of renewable energy technology in solving energy issues across the globe has been confronted with challenges including the capability of serving as the absolute replacement to fossil fuel (Breetz, Mildenerger, & Stokes, 2018; Albert, 2022). Energy transition, especially from fossil fuel to renewable sources, is believed to be conditioned by factors inclusive of cost of technology, rate of deployment, and politics (Breetz et al, 2018). The hidden factor conditioning the adoption and deployment of energy technology has been identified as politics, and this is because the political institution and condition that encourage the growth of a new technology differs absolutely from the condition that ensures the replacement of the extant technology (Breetz et al., 2018).

Hence, while there is aggressive campaign for the adoption of renewable energy across the world, the policy of countries remains crucial to its adoption and implementation. Albert (2022) has attested to the claim and stated that it is not possible to transit to fossil fuel absolutely with the 'non-substitutability hypothesis'. It was argued that though majority of the International Political Economy scholars posited that fossil fuel will be absolutely substituted by renewable energy and the level of growth will remain the same (Albert, 2022). On the contrary, the complete transition to renewable energy especially with the target of full decarbonization of the world will be achievable only with 'great transformation' or structural changes (Albert, 2022),

in countries across the world. This is with cost implications and sustainability concerns for countries in the international system.

Household Energy Choice and Climate Change Concerns in Developing Countries?

The quantity of energy used by households across the world accounts for a major percentage of the total energy consumption (Ren et al., 2022). Hence globally, cooking, heating, cooling, and transportation are forms of household energy consumption in any economy (Danlami, Islam, & Applanaidu, 2015; Ren et al., 2022). Households obtained energy from fossil fuels and renewable sources (Lyakurwa & Mkuna, 2019). This is because energy is one of the routinely required elements by human being for its survival (Danlami et al., 2015; Caineng et al., 2016). More so, Danlami et al (2015) outlined energy sources available to households to include electricity, gas, petroleum, solar, and kerosene. After all, energy consumption by household has been describe as energy resources used by a household on appliances (Danlami et al., 2015).

Whilst studies have presented the quest for clean and afford energy by household in developing countries has a problem (Jan, Khan, & Hayat, 2011; Ren et al., 2022), Covert et al., (2016) noted that in developing countries there are few policies on the use of fossil fuel despite the raising cases of air pollution. In fact, Debebe et al (2023) pointed out that ensuring energy security and containing the contribution of energy use to environmental changes remain a source of concern in most African states because of the continuous reliance of about 900 million households on the use of biomass fuel for cooking. Hence, the question continued to be asked on potential factors responsible for the use of non-renewable sources against renewable sources of energy.

Aina and Odebiyi (1998) using the energy consumption classified the Nigerian economy into five sector which are households, agricultural, commercial, transport, and industries. Of these sectors, the household was noted to consume energy more than the other sectors. Thus, in the country, fuelwood has been identified as supplying 80 per cent of the energy need of households (Eniola, 2021; James, 2022; Oyediji & Adenika, 2022; Pelz et al., 2023). This demonstrated energy challenge recorded in the country, and addressing this has informed the demand by Oyedepo (2012) for diversifies sources of energy for commercial, industrial, and domestic with the adoption of new technologies. However, energy accessibility remains an issue in Nigeria (Agbo et al., 2021).

Jan et al (2011) analyzed energy choice determinant of rural household in Pakistan and noted that while there exist diverse energy sources to households, there is preference for biomass fuels. Also, while factors determining energy choice has included availability of alternatives sources of energy, and energy preference, income is noted to be the key determinant. Danlami et al (2015) outlined factors such as number of residents, age, income, nature of employment, residence location (urban/rural) as factors informing energy choice. In a review by Ateba, Prinsloo, and Fourie (2018) on the effects of choice of energy and determinants on the use of energy in selected South African households, it was noted that factors including irregular supply of electricity is responsible for the use of other fuel especially by the low-income households.

Lyakurwa and Mkuna (2019) in their interrogation of dominant choice of energy by households in Tanzania, identified household income as a major factor determining sources of energy. In fact, it was evident in their interrogation that household utilization of renewable energy for cooking, lighting, and heating was low. Similarly, Debebe et al (2023) in their discussion on

the household energy choice determinant for domestic chore in Ethiopia revealed that the utilization of energy is skewed towards fuels from biomass, specifically fuelwood, and charcoal. About 87 per cent of the sampled population uses fuelwood, 32 per cent uses charcoal, and 17 per cent utilizes electricity for domestic activities (Debebe et al., 2023). Hence, flowing from Mukhadi, Machate, and Semanya (2021) empirical review of energy choice and consumption from 32 countries energy sources has been identified to include fuelwood, gas, charcoal, and kerosene. It was noted in the study that choice of energy was conditioned by demographic, economic status, (rural/urban) location, and level of education. It is obvious from the above that the use of energy is vital and the condition to use it is responsible for choice sources among dwellers in particular location. Hence, mitigating the impact of fossil fuel is more informed by government policies.

Materials and Methodology

The methodology of the study was presented in this section. This section presented the research design, sampling method, and data collection and analysis.

Research Design (RD)

The RD for the study was descriptive and Nigeria was case studied on renewable energy technology deployment. Relevant information was sourced from secondary materials including government documents and agencies of government website. The essence of adopting descriptive RD is due to its capability to provide explanation to issues, events, policies, and programme (Dulock, 1993; Kumar, 2011; Hassan, 2022¹). This is suitable to the research because the central objective of the study was to provide understanding to the policies of government on RE deployment and climate change mitigation since the Russia-Ukraine crisis. After all, since the year 2015, climate change mitigation through energy transition from fossil fuel to renewable sources has formed the cornerstone of global goals with the aim of protecting the earth². Hence, the study purposively selected the rules and regulations, and policies enacted on such effect in Nigeria. Hence, the National Climate Change Policy for Nigeria for 2021-2030, and the Climate Change Act of 2021 were selected for review, and these constituted the secondary data. Evaluating the level of implementation, especially since the Russia-Ukraine crisis, also informed the selection and review of the Nigeria Energy Transition Plan, NETP³ and the National Electricity Regulation Commission, NERC⁴ using purposive sampling technique. Information gathered were analyzed using content analysis.

Findings

This section presents the information gathered on the outline objectives and based on the methodology discussed.

¹ This was retrieved from www.researchmethod.net/descriptive-research-design/#How_to_Conduct_Descriptive_Research_Design

² This was retrieved from <https://www.undp.org/sustainable-development-goals> on the 12th of August, 2023

³ www.energytransition.gov.ng

⁴ <https://nerc.gov.ng/index.php/home/nesi/403-generation#>

Renewable Energy Deployment in Electricity Generation in Nigeria Since the Russia-Ukraine Crisis

The signing of the Paris Agreement of 2015 by Nigeria in 2017 signifies the readiness of the country to promote the transition of energy generation to the adoption of low carbon technology⁵ or renewable energy technology. Specifically, section 19(1) of the Climate Change Act of Nigeria⁶ obliged the Ministry of Environment to act in line with the international guideline on energy generation, that is the SDG with concerns for climate change action plan, and

set the carbon budget for the country, preserve the increase in global temperature within 2°C, and adopt measures to restrict the increase in temperature to 1.5°C above the pre-industrial level

The policy action itemized in the National Climate Change Policy on energy for Nigeria 2021-2030 for the accomplishment of the set target, in accordance with international standard, has included⁷

the deployment of renewable energy such as solar and wind, enhance efficient energy use and management through the adoption of new and innovative techniques of generation of power and introduction of innovative technology; production and use both in on-grid and off-grid; enhance full transition to clean cooking fuel, contain transmission and distribution losses; encourage cities to ambitiously use climate change mitigation actions; avail financial and sustainable support for the use of renewable energy sources

As such, available information on the website of Nigeria Energy Transition Plan⁸ revealed that the Energy Transition Plan, ETP, has been endorsed by the Federal Executive Council⁹ and a working committee on implementation has been commissioned (and the main member includes the foreign affair ministry, finance, environment, power, work, and housing)¹⁰. Also, support has been received by the working group from the Sustainable Energy for All, and the Global Energy Alliance for People and Planet¹¹. To accomplish its essence, the working group targeted a minimum of 10 billion United States dollar to begin the execution of the NETP by COP27, start the local production and assembling of electric vehicle, and solar energy system decentralization in the country by 2025, and ensure knowledge transfer in partnership with research institution¹². To encourage the generation of electricity using renewable energy technology, the federal government has introduced¹³

⁵ This is contained in the Forward pages of National Climate Change Policy for Nigeria 2021-2030.

⁶ The Act is known as the Climate Change Act 2021. It is the national plan on climate change.

⁷ The policy mechanism is outlined on the Page 19 of the National Climate Change Policy for Nigeria 2021-2030 as published by the Federal Ministry of Environment, Department of Climate Change.

⁸ www.energytransition.gov.ng accessed on 11th July, 2023.

⁹ This is the highest decision-making body in the Nigeria federation.

¹⁰ <https://energytransition.gov.ng/implementation/> accessed on the 11th of July, 2023.

¹¹ *ibid*

¹² *ibid*

¹³ *ibid*

Feed-in tariffs to regulate the price of electricity generated from renewable sources as a means of ensuring adequate return on investment; tax holiday of 5 years for pioneering company in independent power generation...

However, available information on the website¹⁴ of the NERC reveals that electricity is generated in Nigeria from gas and hydro. Also, the power generation company are classified into gas and hydro respectively, and are owned by private and government. The information is presented in Table 1. below.

Table 1. List of Power Generation Company and Energy Sources in Nigeria

| S/N | Name of Power Generation company | Source of power generation | Privatization tus | Sta- Power Generation Capacity |
|-----|----------------------------------|----------------------------|-------------------|--------------------------------|
| 1 | Afam Power Pls | Gas | Privatized | 776MW |
| 2 | Sapele Power Plc | Gas | 51 per cent sold | 414MW |
| 3 | Egbin Power Plc | Gas | Privatized | 1,020MW |
| 4 | Ughelli Power Plc | Gas | Privatized | 900MW |
| 5 | Kainji Power Plant | Hydro | Concession | 760MW |
| 6 | Jebba Power Plant | Hydro | Concession | 578MW |
| 7 | Shiroro Power Plc | Hydro | Concession | 600MW |
| 8 | Alaoji NIPP | Gas | Privatized | 1,074MW |
| 9 | Benin | Gas | Privatized | 451MW |
| 10 | Calabar | Gas | Privatized | 563MW |
| 11 | Egbema | Gas | Privatized | 338MW |
| 12 | Gbarain | Gas | Privatized | 225MW |
| 13 | Geregu | Gas | Privatized | 434MW |
| 14 | Olorunsogo | Gas | Privatized | NA |
| 15 | Omosho | Gas | Privatized | 451MW |
| 16 | Omoku | Gas | Privatized | 225MW |
| 17 | Sapele | Gas | Privatized | NA |

NA=Not Available

Source: Author Compilation (2023).

Discussion

It is evident from above that while there are existing plans by the government of Nigeria to support the use of renewable energy through the deployment of renewable energy technology as manifesting in the extant policies of government, that is National Climate Change Policy on energy for Nigeria 2021-2030, existing power generating plants in the country have neither adopted nor deployed renewable energy technology despite the Russia-Ukraine crisis effect on fossil fuel availability. This reality provides more insight into the Albert (2022) ‘non-substitutability hypothesis’ that the outright replacement of fossil fuel with renewable energy will require a systemic transformation. Also, Isah et al (2023) explanation that uncertainty in finance and government policies may have prevent the transformation to renewable energy provides understanding into the reason why the country maintains non-renewable energy sources. The

¹⁴ <https://nerc.gov.ng/index.php/home/nesi/403-generation>

submission of Breetz et al (2018) that politics is the hidden determinant of transition to renewable sources of energy justifies the position of extant studies on the adoption of renewable energy technology.

Thus, it is evident that the electricity energy generation from fossil fuel and hydro is sustained and the implication of this is that while the price of fossil fuel continued to soar in the international energy market as evidence in the Russia-Ukraine crisis, energy continue to be sourced from non-renewable sources by household. Hence, fuelwood, fossil-fueled energy generating set, and charcoal are sourced by household to meet up routine energy need (Agbo et al., 2021; Ren et al., 2022). Hence, it remains evidence that the continuous reliance on fossil fuel to generate electricity has not allow for climate change mitigation in the country. This is because, the irregular power supply has only sustained further encouraged deforestation through the use of fuelwood (Inegbdion et al., 2020; Chudy-Laskowska, & Pisula, 2022). This, of course is with effect on climate change mitigation.

Conclusion

The study has analyzed how the effect of Russia-Ukraine crisis on fossil fuel accessibility is enhancing renewable energy deployment in electricity generation in Nigeria and noted that the extant fossil fuel and hydro power generating sources are still maintained in the country (Agbo et al., 2021). The reason for this is attributable to politics and the structural changes requirement (Breetz et al., 2018; Albert, 2022). As such, the Russia-Ukraine crisis and the soaring fossil fuel price has little or no effect on the transition to renewable energy policy in the country. Thus, politics rather than emergency situation drive energy transition.

Bibliography

1. Agbo E.P., Edet C.O., Magu T.O., Njok A.O., Ekpo C.M., Louis, H., *Solar energy: A panacea for the electricity generation crisis in Nigeria*, "Heliyon" 2021, 7, s. 1-21.
2. Aina O.I., Odebiyi A.I., *Domestic Energy Crisis in Nigeria: Impact on Women and Family Welfare*," African Studies Program, University of Wisconsin-Madison" 1998, 26, s. 1-14.
3. Albert M.J., *The Climate Crisis, Renewable Energy, and the changing Landscape of Global energy Politics*, "Alternative: Global, Local, Political" 2021, 46(3), s. 89-98, DOI: 10.1177/03043754211040698
4. Albert M.J., *The global politics of the renewable energy transition and the non-substitutability hypothesis: towards a 'great transformation'?*, "Review of International Political Economy" 2022, 29(5), s. 1766-1781.
5. Ateba B.B., Prinsloo J.J., Fourie E., *The Impact of energy fuel choice determinants on sustainable energy consumption of selected south African Households*, "Journal of Energy in Southern Africa" 2018, 29(3), s. 51-65.
6. Bovan A., Vucenovic T., Peric N., *Negotiating Energy Diplomacy and its Relationship with foreign policy and National Security*, "International Journal of Energy Economics and Policy" 2020, 10(2), s. 1-6.
7. Breetz H., Mildemberger M., Stokes L., *The Political Logics of Clean Energy Transitions*, "Business and Politics" 2018, 20(4), s. 492-522.

8. Caineng Z., Qun Z., Guosheng Z., Bo X., *Energy Revolution: From Fossil Energy Era to a new Energy Era*, "Natural Gas Industry" 2016, 3, s. 1-11, <http://dx.doi.org/10.1016/j.ngib.2016.02.001>
9. Chanchangi Y.N., Adu F., Ghosh A., Sundaram S., Mallick T.K., *Nigeria's energy review: Focusing on solar energy potential and penetration*, "Environment, Development and Sustainability" 2022, <https://doi.org/10.1007/s10668-022-02308-4>
10. Chudy-Laskowska K., Pisula T., *An Analysis of the Use of Energy from Conventional Fossil Fuels and Green Renewable Energy in the Context of the European Union's Planned Energy Transformation*, "Energies" 2022, s. 15, <https://doi.org/10.3390/en15197369>
11. Covert T., Greenstone M., Knittel C.R., *Will We Ever Stop Using Fossil Fuels?*, "Journal of Economic Perspectives" 2016, 30(1), s. 117-138.
12. Danlami A.H., Islam R., Applanaidu S.D., *An Analysis of the Determinants of Households' Energy Choice: A Search for Conceptual Framework*, "International Journal of Energy Economics and Policy" 2015, 5(1), s. 197-205.
13. Debebe B., Senbeta F., Diriba D., Teferi E., Teketay D., *Determinants of household energy choice for domestic chores: Evidence from the Semien Mountains National Park and Adjacent Districts, Northwest Ethiopia*, "Cleaner Energy Systems" 2023, s. 4, <https://doi.org/10.1016/j.cles.2023.100063>
14. Eniola P.O., *Menace and Mitigation of Health and Environmental Hazards of Charcoal Production in Nigeria*, in W. L. Filho et al. (eds.), *African Handbook of climate Change Adaptation*, 2021, https://doi.org/10.1007/978-3-030-45106-6_238
15. Falahi Z., *The Ukraine Crisis: An Offer of Crisis Resolution and its impact on the global economy*, "Info Singkat" 2022, 5(1), s. 7-12.
16. Federal Ministry of Environment, (nd), *National Climate Change Policy for Nigeria 2021-2030*.
17. Feldman D.L., *Public Choice Theory Applied to National Energy Policy: The Case of France*, "Journal of Public Policy" 1986, 6(2), s. 137-158.
18. Guan Y., Yan J., Shan Y., Zhou Y., Hang Y., Li R., Liu Y., Liu B., Nie Q., Bruckner B., Feng K., Hubacek K., *Burden of the global energy price crisis on households*, "Nature energy" 2023, 8, s. 304-316, <https://doi.org/10.1038/s41560-023-01209-8>
19. Hausmann R., Loskot-Strachota A.L., Ockenfels A., Schetter U., Tagliapietra S., Wolff G., Zachmann G., *Cutting Putin's Energy Rent: 'Smart Sanctioning' Russian Oil and Gas*, Center for International Development at Harvard University, 2022, (working paper), retrieved from <https://growthlab.hks.harvard.edu/files/growthlab/files/2022-04-cid-wp-412-cutting-putins-energy-rent.pdf>
20. Inegbedion H.E., Inegbedion E., Obadiaru E., Asaley A., *Petroleum Subsidy Withdrawal, Fuel Price Hikes and the Nigerian Economy*, "International Journal of Energy Economics and Policy" 2020, 10(4), s. 258-265.
21. Isha A., Dioha M.O., Debnath R., Abraham-Dukuma M.C., Butu H.M., *Financing renewable energy: policy insights from Brazil and Nigeria*, "Energy, Sustainability, and Society" 2023, 13(2), s. 1-16, <https://doi.org/10.1186/s13705-022-00379-9>
22. James I.G., *Deforestation in Nigeria and the Millennium Development Goals: Challenges and Prospects*, "Central Asia Journal of Theoretical and Applied Science" 2022, 3(12), s. 70-77.
23. Jan I., Khan H., Hayat S., *Determinants of Rural Household Energy Choices: An Example from Pakistan*, "Pol. J. Environ. Stud.", 2011, 21(3), s. 635-641.

24. Kaddo J.R., *Climate Change: Causes, Effects, and Solutions*, 2016, retrieved from <https://core.ac.uk/download/pdf/71818866.pdf> on the 9th of April, 2023.
25. Kicaj J., Polukarov Y., Prakhovnik N., Polukarov O., Kachynska N., *How war in Ukraine is affecting the climate*, "International Journal of Environmental Studies" 2023, <https://doi.org/10.1080/00207233.2023.2174743>
26. Kumar R., *Research Methodology; A Step-by-Step for beginners (3rd Edition)*, London: SAGE Publications Ltd, 2011.
27. Kuzemko C., Bradshaw M., Bridge G., Goldthau A., Jewell J., Overland I., Scholten D., Graaf T.V., Westphal K., *Covid-19 and the politics of sustainable energy transition. Energy Research and Social Science*, 2020, s. 68.
28. LaBelle M.C., *Energy as a weapon of war: Lessons from 50 years of energy interdependence*, "Global Policy" 2023, 14, s. 531-547.
29. Lyakurwa F.S., Mkuna E., *Dominant factors for energy choice decisions by households in Tanzania: A case study of selected villages in Mvomero District*, "African Journal of Science, Technology, Innovation and Development", 2022, <https://doi.org/10.1080/20421338.2018.1550929>
30. Martinho V.J.P.D., *Impacts of the Covid-19 Pandemic and the Russia-Ukraine Conflict on Land Use across the World*, "Land" 2022, 11, s. 1-14.
31. McMichael A.J., Campbel D., Kovats S., Edwards S., Wilkinson P., Wilson T., Nicholls R., Hales S., Tanser F., Sueur D., Schlesinger M., Andronova N., (nd), *Global Climate Change. Retrieved from www.who.int/docs/default-source/climate-change/publication---global-climate-change-comparative-analysis.pdf* (on the 9th of April, 2023).
32. Monday A.U., Obi B., Udo J.N., *The Effect of Importation of Refined Petroleum Product on Exchange Rate in Nigeria: 1990-2015*, "Bingham Journal of Economics and Applied Studies" 2018, 1(1), s. 1-12.
33. Obafemi O., Stephen A., Ajayi O., Abiodun A., Felix I., Mashinmi P., Nkosinathi M., *Electric Power Crisis in Nigeria: A Strategic Call for Change of Focus to Renewable Sources*, "IOP Conf. Series: Materials Science and Engineering" 2018, doi:10.1088/1757-899X/413/1/012053
34. Oguntunde P.E., Oguntunde O.A., Ojo O.O., Okagbue H.I., *Crude Oil Importation and Exportation in Nigeria: An Exploratory and Comparative Study*, "Engineering, Technology & Applied Science Research" 2018, 8(5), s. 3329-3331.
35. Olagunju T.E., Adewoye S.O., Adewoye A.O., Ogasola O.A., *Climate Change Impacts on Environment: Human Displacement and Social Crisis in Nigeria*, "IOP Conf. Series: Earth and Environmental Science" 2021, doi:10.1088/1755-1315/655/1/012072
36. Omotosho B. S., *Oil Price Shocks, Fuel Subsidies and Macroeconomic (In)stability in Nigeria*, "CBN Journal of Applied Statistics" 2019, 10(2), s. 1-38.
37. Osei-Tutu P., Boadi S., Kusi-Kyei V., *Electrical energy transition in the context of Ghana*, "Energy, Sustainability and Society" 2021, 11(47), s. 1-8, <https://doi.org/10.1186/s13705-021-00322-4>
38. Ostrom V., *Public Choice Theory: A New Approach to Institutional Economics*, "American Journal of Agr. Econ." 1975, s. 844-850.
39. Oyedepo S.O., *Energy and sustainable development in Nigeria: the way forward*, "Energy, Sustainability and Society" 2012, 2(15), s. 2-17.
40. Oyediji O.T., Adenika, O.A., *Forest Degradation and Deforestation in Nigeria; Poverty Link*, "International Journal of Multidisciplinary Research and Analysis" 2022, 5(10), s. 2837-2844.