VOL. 08 NO. 4,
MAY, 2025
E-ISSN 3026-9210
P-ISSN 3026-815X

African Scholar Publications & Research International
www.africanscholarpub.com

Journal of Built Env. & Geological Research (JBEGR)

Acceptance and Adoption of Solar-Powered Electricity by Homeowners in Lagos State, Nigeria

Odu T. Y. (PhD)[1]; Ajayi O. O. (PhD)[2]; & Owolabi T. O. S.[3]

[1]Department of Architecture, Nile University of Nigeria, Abuja, FCT, Nigeria.
[2,3]Department of Architecture, Caleb University, Lagos, Nigeria
Corresponding Author: toyin.ajayi@calebuniversity.edu.ng

DOI: https://doi.org/10.70382/ajbegr.v8i4.035

Abstract

The increasing demand for sustainable energy solutions in rapidly urbanizing regions, such as Lagos State, Nigeria, has positioned solar power as a viable alternative to the unreliable national grid. This study investigates the acceptance of solar-powered electricity among homeowners in Lagos State, focusing on awareness, adoption willingness, and barriers to wider usage. A quantitative research design, using a structured questionnaire administered to 121 respondents, reveals that 45% of homeowners currently use solar power, with higher adoption rates in affluent urban areas. Despite this interest, key obstacles, such as high initial costs and limited knowledge, remain prevalent. The study concludes that addressing these barriers through education, financial incentives, and community solar initiatives will be essential to promoting broader solar energy adoption in Lagos. Recommendations are made for policy interventions in terms of finance and legal aids to facilitate a sustainable energy transition.

Keywords: Acceptance, Adoption, Barriers, Energy access, Homeowners, Lagos state, Renewable energy, Solar-powered electricity

Introduction

The increasing need for sustainable and reliable energy sources has become more urgent in areas experiencing rapid urban growth, such as Lagos State, Nigeria (Edoma & Nwaubani, 2014). As Nigeria's economic hub and Africa's most populous

city, Lagos faces significant energy issues due to the ongoing unreliability of the national power grid (Fagbohun & Adejugbagbe, 2023). Frequent blackouts, combined with a heavy reliance on expensive and environmentally damaging options like diesel generators, have led many homeowners to explore more sustainable energy solutions (Timiyan, 2022). In this context, solar power has emerged as a feasible option, offering benefits such as reduced energy costs, environmental benefits, and greater energy independence (Kabeyi & Olanrewaju, 2022). Globally, the adoption of solar energy has been encouraged by technological advances that have lowered installation costs and increased system efficiency (Obaideen, Olabi, Al Swailmeen, Shehata, Abdelkareem, Alami & Sayed, 2023). Still, despite these improvements, the use of solar energy among Lagos residents remains limited (Kyere, Dongying, Bampoe, Kumah & Asante, 2024). Understanding the factors affecting this limited acceptance is essential for developing strategies to promote wider adoption and help solve Lagos's ongoing energy problems.

Lagos State, Nigeria, faces a severe and ongoing energy crisis marked by an unreliable national grid, frequent power outages, and a widespread reliance on expensive and polluting diesel generators. This situation pushes homeowners to seek sustainable alternatives like solar power (Edoma & Nwaubani, 2014; Fagbohun & Adejugbagbe, 2023; Timiyan, 2022). Although solar energy offers significant benefits such as lower costs, environmental advantages, and energy independence, benefits that have driven global adoption due to technological advancements that reduce costs and increase efficiency (Kabeyi & Olanrewaju, 2022; Obaideen et al., 2023), its adoption among Lagos homeowners remains limited (Kyere et al., 2024). The main issue is the lack of understanding of the specific factors that influence the low acceptance and adoption of solar-powered electricity by homeowners in Lagos. This gap hampers the development of effective strategies to remove barriers and harness this sustainable solution to address the state's critical energy problems.

This study aims to explore the factors influencing the acceptance of solar-powered electricity among Lagos homeowners. Specifically, it plans to evaluate their awareness and understanding of solar power, examine their willingness to adopt solar systems, and identify the obstacles preventing broader acceptance. Investigating these areas will help contribute to the growing knowledge on renewable energy adoption and offer valuable insights for policymakers, stakeholders, and energy providers to support the transition to a more sustainable energy future for Lagos.

LITERATURE REVIEW

The global shift toward renewable energy has accelerated, driven by the urgent need to mitigate the environmental impacts of fossil fuels and ensure a sustainable energy supply.

Acceptance of Solar Energy

Solar energy has seen significant global expansion, with the International Energy Agency (IEA) reporting that solar photovoltaic (PV) capacity surged from 5.5 gigawatts (GW) in 2005 to over 700 GW by 2020 (Rozon, McGregor & Owen, 2023). This rapid growth can be attributed to advancements in solar technology, declining installation costs, and supportive government policies. Research shows that consumer acceptance of solar power is largely shaped by awareness, perceived benefits, and access to financing options (Irfan, Zhao, Rehman, Ozturk & Li, 2021; Irfan, Hao, Ikram, Wu, Akram & Rauf, 2021). Filgueira, Lima & Castelo (2022) found that increased knowledge about solar technology positively influences homeowners' willingness to invest in solar systems. While Africa has vast solar resources, the continent has been slower to adopt solar energy compared to other regions. Despite high solar irradiance in many African countries, obstacles such as high upfront costs, inadequate infrastructure, and limited access to financing have hindered widespread adoption (Mathew & Nagaraja Pandian, 2024). However, innovative models, like Kenya's off-grid solar systems, demonstrate that pay-as-you-go (PAYG) financing can enhance solar accessibility for low-income households (Adwek, Boxiong, Ndolo, Siagi, Chepsaigutt, Kemunto & Yabo, 2020). This highlights the importance of tailoring solutions to the socio-economic realities of the region, especially in overcoming financial barriers to solar energy adoption. In Nigeria, the energy sector is heavily dependent oil and gas for electricity production. Despite being one of Africa’s leading oil producers, Nigeria struggles with providing consistent electricity, as the national grid is plagued by inefficiencies and insufficient capacity (Emetere, Agubo & Chikwendu, 2021). Many Nigerians rely on diesel generators, which are expensive and harmful to the environment. As a result, there has been growing interest in renewable energy alternatives like solar power. Several studies have highlighted the key factors that influence the adoption of solar energy in Nigeria, which can be categorized into economic, social, technical, and policy-related factors. Economically, the high upfront cost of solar PV systems remains a significant barrier, especially for lower-income households (Abdullahi, Renukappa, Suresh & Oloke, 2022). Nevertheless, decreasing solar technology costs and flexible financing options have started to make solar power more affordable (Isah, Dioha, Debnath, Abraham-Dukuma & Butu, 2023). On the social front, awareness and perceptions play a crucial role. Many Nigerians still view solar energy as expensive and unreliable, despite its potential long-term benefits (Ajah, 2021).

Factors Influencing Solar Power Acceptance in Nigeria

Technical obstacles, such as the availability of skilled workers to install and maintain solar systems, also present challenges for widespread adoption (Nuru, Rhoades & Gruber, 2021). Furthermore, government support is essential for the promotion of renewable energy. Although several policies have been introduced to support solar energy, their effectiveness has been undermined by bureaucratic inefficiencies (Onuh, Ejiga, Abah,

Onuh, Idogho & Omale, 2024). In Lagos State, the government has acknowledged the potential of renewable energy and initiated programs to encourage solar power adoption. However, these efforts have yet to be fully integrated into a comprehensive energy policy for the state. Research suggests that successful policies should incorporate incentives like tax breaks and improved access to financing, which could drive wider adoption of solar energy (Ogunleye, Coenen & Hoppe, 2022).

METHODOLOGY

This study employs a quantitative research design to assess the acceptance of solar-powered electricity among homeowners in Lagos State. A structured questionnaire was developed to collect data from respondents regarding their demographics, electricity consumption patterns, perceptions of solar power, and intentions regarding the adoption of solar energy systems. The target population consisted of homeowners across Lagos State. Given the absence of a comprehensive sampling frame and logistical constraints (e.g., limited access to gated communities), a non-probability purposive sampling technique was used to target homeowners in diverse residential zones (e.g., Ikeja, Lekki, Surulere) to ensure geographic and socioeconomic variation. A sample size of 121 respondents was determined based on feasibility considerations, including resource limitations and alignment with similar urban energy studies (e.g., Kyere et al., 2024), while ensuring adequate data for descriptive analysis. Ethical compliance was ensured through: written informed consent obtained before survey participation, anonymity of respondents and confidentiality of data and voluntary participation with the right to withdraw at any stage.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Table 1: LGA Profile of Respondents

Local Government Areas (LGA)	**Percentage (%)**
Ikeja LGA	12.5%
Mushin LGA	11.6%
Eti-Osa LGA	15%
Kosofe LGA	10%
Alimosho LGA	8.3%
Ibeju Lekki LGA	5%
Agbado/Oke-Odo LGA	1.6%

Source: Author (2025)

The respondents come from various local government areas (LGAs) across Lagos State, with notable representation from key urban and suburban regions. The most represented

areas include Ikeja (12.5%), Mushin (11.6%), Eti-Osa (15%), Kosofe (10%), and Alimosho (8.3%). Additionally, respondents from emerging suburban areas like Ibeju Lekki (5%) and Agbado/Oke-Odo (1.6%) also contribute to the study. This diverse distribution covers both highly urbanized regions and expanding suburban areas, offering a broad perspective on the acceptance of solar energy across Lagos.

Table 2: Housing Type Profile of Respondents

Housing Type	**Percentage (%)**
Flats	55%
Bungalows	26.6%
Semi-detached houses	10%
Terrace buildings	5%
Detached houses	6.6%

Source: Author (2025)

The respondents reside in various types of housing, with the majority living in flats (55%), primarily in blocks of multi-unit buildings. Bungalows, which house single households, account for 26.6% of the respondents. Other housing types include semi-detached houses (10%), terrace buildings (5%), and detached houses (6.6%). The high proportion of flat dwellers, especially in urban areas, reflects the commonality of multi-unit residential buildings in Lagos, while the presence of bungalows is more typical in suburban or semi-urban areas.

Current Adoption of Solar Power

In the study, 45% of respondents reported using solar-powered photovoltaic (PV) panels to meet their electricity needs, highlighting the growing trend of renewable energy adoption in Lagos State. The distribution of solar power usage across various local government areas (LGAs) and local council development areas (LCDAs) shows notable variation. In more urbanized regions like Ikeja, solar adoption is relatively high, with 66.7% of respondents reporting solar usage. Similarly, in affluent areas such as Eti-Osa and Kosofe, solar adoption stands at 66.7% and 57% respectively. These areas tend to have better infrastructure and financial capacity, which likely encourages the shift to renewable energy.

Table 3: Solar Power Adoption by LGA

Local Government Areas (LGA)	Solar Adoption (%)
Ikeja	66.7%
Mushin	30%
Eti-Osa	66.7%
Kosofe	57%
Alimosho	37.5%
Ibeju Lekki	40%

Source: Author (2025)

In contrast, more suburban or traditional areas like Alimosho and Mushin show lower levels of solar adoption, with 37.5% and 30% of respondents using solar energy, respectively. These regions may face financial or infrastructural barriers that make it more challenging to invest in solar systems. Interestingly, Ibeju Lekki, a rapidly developing suburban area, has 40% of its respondents utilizing solar power, reflecting a rising trend of renewable energy adoption in emerging neighborhoods. In terms of property types, solar power is more commonly adopted in bungalows and semi-detached houses. Approximately 60% of respondents living in bungalows and 45% in semi-detached houses use solar energy. These property types provide more roof space for solar panel installations and often allow homeowners greater control over infrastructure decisions. In comparison, only 35% of respondents residing in flats reported using solar power, although there is a growing trend of solar adoption in gated communities where communal installations are possible. This shows that solar energy is becoming more accessible across different property types, even in multi-unit buildings.

Table 4: Solar Power Adoption by Property Type

Property Type	Solar Adoption (%)
Bungalows	60
Semi-detached houses	45
Flats	35

Source: Author (2025)

Extent of Solar Power Usage

The extent of solar power usage among homeowners in Lagos State varies significantly. On average, respondents who use solar energy report that it covers a wide range of their electricity needs, from as low as less than 10% to over 90%. For example, a significant number of respondents, particularly in areas like Eti-Osa and Ikeja, stated that their solar installations cover between 31% to 60% of their electricity needs. In some cases, homeowners in more affluent areas or those with larger properties, such as in the Kosofe

area, report higher levels of coverage, with solar systems meeting 71% to 100% of their energy demands.

Table 5: Extent of Solar Power Usage by LGA

Local Government Areas (LGA)	**Solar Coverage (%)**
Eti-Osa	31-60
Ikeja	31-60
Kosofe	71-100

Source: Author (2025)

The variation in solar power coverage is also influenced by property type and household size. Households with larger roof spaces, such as those living in detached houses or bungalows, tend to have solar systems capable of covering a greater proportion of their electricity needs. For instance, homeowners with semi-detached houses often report solar coverage of 51% to 80%. On the other hand, households in flats or more densely populated areas tend to have lower solar coverage, often citing less than 30%.

Table 6: Extent of Solar Power Usage by Property Type

Property Type	**Solar Coverage (%)**
Detached houses	71-100
Bungalows	51-80
Semi-detached houses	51-80

Source: Author (2025)

Barriers to Solar Power Adoption

Barriers to Solar Power Adoption include high initial installation costs, which remain a significant deterrent for many potential users. Based on the responses, 81% of participants rated this concern as a 6 or 7. Additionally, 70% of respondents expressed limited awareness or knowledge of solar technology, with 60% rating their awareness as a 7. Concerns about efficiency and reliability contribute to hesitancy, with 53% expressing doubts, where 39% rated this concern as a 7.

Table 7: Barriers to Solar Power Adoption

Barrier	**Rating of 6-7 (%)**
High initial installation costs	81%
Limited awareness or knowledge of solar technology	70%
Concerns about efficiency and reliability	53%

Source: Author (2025)

Commitment and Intentions to Install Solar

In terms of short-term intentions to install solar systems, 37% of respondents indicated they intend to install solar within the next six months, with 21% giving a rating of 7 and 16% rating it as a 6. Factors influencing these decisions include financial capacity, with 42% stating they can afford to install a solar-powered system (rating of 7), and 29% feeling they can source funds (rating of 7). Additionally, 36% expressed that the initial cost is a source of discouragement, significantly impacting their decision.

Table 8: Short-Term Intentions to Install Solar

Factor	**Rating of 6-7 (%)**
Intention to install solar within the next six months	37%
Financial capacity to install solar	42%
Ability to source funds for solar	29%
Initial cost as a deterrent	36%

Source: Author (2025)

Respondents expressed a strong long-term commitment to maintaining solar systems once installed, with 34% indicating they would intend to maintain a solar-powered system on the long run. This highlights the potential for sustainable solar usage and expansion, with 71% confident they will install a solar-powered electricity system, even if it is slightly more expensive than conventional alternatives.

Discussion of Findings

The findings of this study provide a comprehensive overview of the demographic profile of respondents, current adoption rates, perceived barriers, and intentions towards solar power adoption in Lagos State. The demographic data indicates a diverse representation across various local government areas (LGAs), showcasing both urban and suburban perspectives. The significant presence of respondents from LGAs such as Ikeja, Mushin, and Eti-Osa highlights the urban inclination towards renewable energy adoption, supported by better infrastructure and financial capabilities.

The analysis reveals that a noteworthy 45% of respondents currently use solar-powered photovoltaic (PV) systems. This aligns with global trends indicating an increasing shift toward renewable energy sources, particularly in developing regions where electricity supply is inconsistent and often unreliable (Ahmad, Khan, Anser, Nassani, Hassan & Zaman, 2024). The data reflects higher adoption rates in affluent urban areas like Ikeja and Eti-Osa, where 66.7% of respondents reported using solar energy. This finding is consistent with existing literature emphasizing the role of socio-economic factors in the adoption of renewable energy technologies (Hassan, Viktor, Al-Musawi, Ali, Algburi, Alzoubi & Jaszczur, 2024). Areas with better financial resources are more likely to invest in solar systems, attributed to increased awareness, availability of financing options, and

favorable policies promoting renewable energy (Qadir, Al-Motairi, Tahir & Al-Fagih, 2021)

Furthermore, the study identified that solar power adoption is more prevalent in bungalows and semi-detached houses, with 60% and 45% adoption rates, respectively. This trend highlights the impact of housing type on solar energy utilization. Previous studies suggest that property owners in single-family homes have greater control over infrastructure decisions, such as solar panel installations, compared to residents in multi-unit buildings (Roberts, Sharma & MacGill, 2022). In contrast, the lower adoption rate of 35% among flat dwellers underscores the challenges posed by shared ownership structures, which often complicate decisions regarding communal installations. However, the emergence of solar solutions in gated communities indicates a growing trend toward collaborative approaches to renewable energy adoption in densely populated areas (Ahmed, Ali & D'Angola, 2024).

The extent of solar power usage among homeowners varies significantly, with many reporting that their solar systems cover between 31% to 60% of their electricity needs. This finding suggests that while solar energy is increasingly integrated into households, it may not yet fully replace conventional energy sources for all users. Literature supports this observation, highlighting that initial installations often serve as supplementary power sources, particularly in regions with unreliable grid access (Sanni, Oricha, Oyewole & Bawonda, 2021). The variability in coverage is influenced by factors such as property type and household size, with larger households and properties generally achieving higher solar coverage.

In examining barriers to solar power adoption, the study identifies high initial installation costs as a predominant concern, rated as a 6 or 7 by 81% of participants. This finding is corroborated by previous studies, which highlight financial constraints as a significant barrier to renewable energy adoption (Do, Burke, Baldwin & Nguyen, 2020). Limited awareness and knowledge of solar technology also pose challenges, with 70% of respondents expressing concerns. These barriers are critical, as they reflect individual perceptions and suggest the need for enhanced education and outreach programs to increase understanding of solar technology's benefits and functionalities (Gai, Shittu, Attanasio, Weigelt, LeBlanc, Dehghanian & Sklar, 2021).

Regarding short-term intentions, 37% of respondents indicated they plan to install solar systems within the next six months. This willingness to adopt solar power reflects a growing awareness of the technology's benefits, including potential cost savings and environmental advantages. However, financial considerations remain a significant factor, as seen in the 42% of participants who expressed financial capacity to install solar systems. The barriers of high initial costs and the perception of solar energy as an expensive option must be addressed to enhance adoption rates. Additionally, a robust long-term commitment to solar maintenance was observed, with 34% of respondents indicating their

intent to sustain solar systems post-installation, highlighting the potential for solar energy's growth trajectory in Lagos State.

Policy Implications

The empirical findings of this study reveal distinct leverage points for policymakers seeking to accelerate solar adoption in Lagos State. First, the stark geographic disparities in adoption rates, with affluent urban LGAs like Ikeja and Eti-Osa (66.7%) significantly outperforming underserved areas like Mushin (30%), call for spatially targeted interventions. The state government should implement geographically tiered subsidies, offering higher capital cost rebates (40–50%) and property tax exemptions in low-adoption LGAs to counteract financial barriers identified by 81% of respondents.

Second, the 25% adoption gap between property types (60% in bungalows versus 35% in flats) demands housing-specific financing models. For multi-unit buildings (where ownership complexities deter investment), a Landlord-Tenant Cost Sharing Scheme could be introduced, with state-backed loans covering 60% of installation costs, split between property owners (30%) and tenants (10% via reduced utility bills). For standalone homes, expanding microfinance partnerships offering pay-as-you-go (PAYG) solar plans with 0% interest periods would align with the 42% of homeowners reporting financial capacity.

Third, the triad of dominant barriers (high costs (81%), limited awareness (70%), and reliability concerns (53%)) requires integrated mitigation. A Solar Credit Guarantee Fund, underwritten by Lagos State, could de-risk loans for low-income households. Concurrently, mandatory solar literacy modules in secondary schools and landlord associations (delivered through a Lagos State Energy Academy) would address knowledge gaps. To build trust, a State Solar Certification Program should provide free performance audits and publicly rate installers.

Finally, the finding that 45% of users rely on solar for only 31–60% of their electricity needs highlights an opportunity for grid integration. Policymakers should incentivize feed-in tariffs for excess solar generation fed into community mini-grids, particularly in suburban zones like Ibeju Lekki where grid instability persists.

CONCLUSION AND RECOMMENDATIONS

This study provides a critical analysis of the acceptance and adoption of solar power among homeowners in Lagos State, highlighting significant trends, barriers, and intentions toward renewable energy utilization. The findings indicate a growing interest in solar energy, with 45% of respondents currently using solar-powered photovoltaic systems, particularly in urban areas characterized by better financial resources and infrastructure. However, the study also reveals considerable challenges, notably high initial installation costs and limited awareness of solar technology, which hinder wider adoption. To enhance solar power acceptance in Lagos, financial incentives and subsidies should be considered to alleviate the burden of high initial costs, making solar systems more accessible to a

broader range of households. Promoting community solar initiatives could be a viable strategy to overcome barriers faced by residents of multi-unit dwellings, such as flats, where individual installations are challenging. These initiatives can enhance acceptance rates and maximize the benefits of renewable energy in densely populated areas by fostering a sense of community and shared investment in solar energy.

Building on this study's findings, longitudinal research tracking the *actual adoption trajectory* of homeowners who expressed short-term intentions (37%) to install solar is critical. Such research would validate whether stated willingness translates into real-world adoption and identify unforeseen post-installation barriers (e.g., maintenance costs or system performance issues) that undermine long-term commitment. Second, comparative urban analyses across African megacities with similar energy challenges (e.g, Accra, Nairobi) could isolate context-specific drivers of solar uptake. Contrasting Lagos's flat-dweller adoption challenges (35%) with cities featuring successful multi-unit solar policies would reveal transferable governance models. Finally, technology-focused studies should evaluate emerging solutions like blockchain-enabled peer-to-peer solar trading or AI-optimized hybrid systems in Lagos's unique environment, particularly to address partial energy coverage (31–60% usage) and reliability concerns (cited by 53% of respondents). These directions would bridge knowledge gaps in behavioral sustainability, policy transferability, and technical innovation for emerging economies.

In conclusion, while the acceptance of solar power in Lagos State shows promising potential, addressing the identified barriers through targeted interventions will be essential for the sustainable expansion of solar energy usage. With concerted efforts from all stakeholders, Lagos can pave the way for a more energy-efficient and environmentally friendly future.

REFERENCES

Abdullahi, D., Renukappa, S., Suresh, S., & Oloke, D. (2022). Barriers for implementing solar energy initiatives in Nigeria: an empirical study. *Smart and Sustainable Built Environment*, *11*(3), 647-660.

Adwek, G., Boxiong, S., Ndolo, P. O., Siagi, Z. O., Chepsaigutt, C., Kemunto, C. M., ... & Yabo, A. C. (2020). The solar energy access in Kenya: a review focusing on Pay-As-You-Go solar home system. *Environment, development and sustainability*, *22*, 3897-3938.

Ahmad, E., Khan, D., Anser, M. K., Nassani, A. A., Hassan, S. A., & Zaman, K. (2024). The influence of grid connectivity, electricity pricing, policy-driven power incentives, and carbon emissions on renewable energy adoption: Exploring key factors. *Renewable Energy*, *232*, 121108.

Ahmed, S., Ali, A., & D'Angola, A. (2024). A Review of Renewable Energy Communities: Concepts, Scope, Progress, Challenges, and Recommendations. *Sustainability*, *16*(5), 1749.

Ajah, S. N. (2021). Roles of managers and stakeholders perception on solar technology adoption intention: a case of Micro, Small and Medium Enterprises (MSMES) in Lagos state, Nigeria.

Do, T. N., Burke, P. J., Baldwin, K. G., & Nguyen, C. T. (2020). Underlying drivers and barriers for solar photovoltaics diffusion: The case of Vietnam. *Energy Policy*, *144*, 111561.

Edoma, N., & Nwaubani, S. (2014). Energy security challenges in developing African mega cities: the Lagos experience. *Built Environment*, *6*, 1-9.

Emetere, M. E., Agubo, O., & Chikwendu, L. (2021). Erratic electric power challenges in Africa and the way forward via the adoption of human biogas resources. *Energy Exploration & Exploitation*, *39*(4), 1349-1377.

Fagbohun, P. O., & Adejugbagbe, J. A. (2023). SUBURBAN GROWTH AND THE CHALLENGES OF PUBLIC POWER SUPPLY IN THE LAGOS MEGACITY REGION, NIGERIA. International Journal of Scientific & Engineering Research, 11(9), 1472-1485

Filgueira, Á. J. D. A., Lima, A. C., & Castelo, J. S. F. (2022). Adoption intention of photovoltaic solar systems. *Revista de Administração da UFSM*, *15*(1), 137-157.

Gai, D. H. B., Shittu, E., Attanasio, D., Weigelt, C., LeBlanc, S., Dehghanian, P., & Sklar, S. (2021). Examining community solar programs to understand accessibility and investment: Evidence from the US. *Energy Policy*, *159*, 112600.

Hassan, Q., Viktor, P., Al-Musawi, T. J., Ali, B. M., Algburi, S., Alzoubi, H. M., ... & Jaszczur, M. (2024). The renewable energy role in the global energy Transformations. *Renewable Energy Focus*, *48*, 100545.

Irfan, M., Hao, Y., Ikram, M., Wu, H., Akram, R., & Rauf, A. (2021). Assessment of the public acceptance and utilization of renewable energy in Pakistan. *Sustainable Production and Consumption*, *27*, 312-324.

Irfan, M., Zhao, Z. Y., Rehman, A., Ozturk, I., & Li, H. (2021). Consumers' intention-based influence factors of renewable energy adoption in Pakistan: a structural equation modeling approach. *Environmental Science and Pollution Research*, *28*, 432-445.

Isah, A., Dioha, M. O., Debnath, R., Abraham-Dukuma, M. C., & Butu, H. M. (2023). Financing renewable energy: policy insights from Brazil and Nigeria. *Energy, Sustainability and Society*, *13*(1), 2.

Kabeyi, M. J. B., & Olanrewaju, O. A. (2022). Sustainable energy transition for renewable and low carbon grid electricity generation and supply. *Frontiers in Energy research*, *9*, 743114.

Kyere, F., Dongying, S., Bampoe, G. D., Kumah, N. Y. G., & Asante, D. (2024). Decoding the shift: Assessing household energy transition and unravelling the reasons for resistance or adoption of solar photovoltaic. *Technological Forecasting and Social Change*, *198*, 123030.

Mathew, T. C., & Nagaraja Pandian, S. (2024). Unveiling the shadows: a qualitative exploration of barriers to rooftop solar photovoltaic adoption in residential sectors. *Clean Energy*, *8*(5), 218-228.

Nuru, J. T., Rhoades, J. L., & Gruber, J. S. (2021). The socio-technical barriers and strategies for overcoming the barriers to deploying solar mini-grids in rural islands: Evidence from Ghana. *Technology in Society*, *65*, 101586.

Obaideen, K., Olabi, A. G., Al Swailmeen, Y., Shehata, N., Abdelkareem, M. A., Alami, A. H., ... & Sayed, E. T. (2023). Solar energy: Applications, trends analysis, bibliometric analysis and research contribution to sustainable development goals (SDGs). *Sustainability*, *15*(2), 1418.

Ogunleye, O. S., Coenen, F., & Hoppe, T. (2022). Stakeholder perspectives on community energy contributing to the use of renewable energy sources and improving energy security in Nigeria. *Energies*, *15*(19), 7390.

Onuh, P., Ejiga, J. O., Abah, E. O., Onuh, J. O., Idogho, C., & Omale, J. (2024). Challenges and Opportunities in Nigeria's Renewable Energy Policy and Legislation. *World Journal of Advanced Research and Reviews*, *23*(2), 2354-2372.

Qadir, S. A., Al-Motairi, H., Tahir, F., & Al-Fagih, L. (2021). Incentives and strategies for financing the renewable energy transition: A review. *Energy Reports*, *7*, 3590-3606.

Roberts, M. B., Sharma, A., & MacGill, I. (2022). Efficient, effective and fair allocation of costs and benefits in residential energy communities deploying shared photovoltaics. *Applied Energy*, *305*, 117935.

Rozon, F., McGregor, C., & Owen, M. (2023). Long-term forecasting framework for renewable energy technologies' installed capacity and costs for 2050. *Energies*, *16*(19), 6874.

Sanni, S. O., Oricha, J. Y., Oyewole, T. O., & Bawonda, F. I. (2021). Analysis of backup power supply for unreliable grid using hybrid solar PV/diesel/biogas system. *Energy*, *227*, 120506.

Timiyan, M. (2022). *Nigeria's Economic Reliance on Fossil Fuels: Issues and Proposals for Transition to Renewable Energy*. Alliant International University.