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EVALUATION OF ENERGY FACILITIES AND SERVICE AVAILABILITY IN THE VALUE OF RENTAL APARTMENTS IN KARU LOCAL GOVERNMENT AREA, NASARAWA STATE, NIGERIA

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Abstract

Erratic and unstable energy and electricity resources and facilities have greatly hampered a lot of human activities globally. This study is aimed at examining the roles of electricity supply, energy facilities and services availability on residential property rental and capital values in Karu Local Government Area of Nasarawa State. 383 questionnaires were administered on the systematically sampled respondents in urban places of the Area. This was complimented by the authors' observation and on the spot record taking. The study identified the different types of apartments with electricity and energy facilities and estimated the capital and rental values of each of these residential properties in the study area and ascertained the major attractions of tenants to the apartments and willingness to live in the neighbourhoods. The study found among other things that 31.9% of the respondents stated that their lights are mostly available in the midnight while 33.9% are of the view that their light was erratically available at varied times and that tenants are willing to stay in the neighbourhood due to its proximity to their work place in the FCT. The study therefore recommended that Abuja Electricity Distribution Company energy supply uptime should be enhanced and access to these facilities and services should be increased across all locations in Karu Local Government to enhance the rental value of residential property and improve the quality of urban life of most residents.

Keywords: Quality of Life, Rental Apartments, Rental Value, WASH Facilities, Water Supply

INTRODUCTION

Nigeria, the most populous nation in Africa, has one of the lowest per capita energy consumption rates globally, with a significant prevalence of energy poverty (Ashagidigbi *et al*., 2020). The focus on Nigeria is due to her energy challenges and the broader implications for improving clean energy programs, such as the Nigeria Energy Transition Plan and the National Renewable Energy and Energy Efficiency Policy. Energy deprivation and poverty, particularly in relation to household access to modern, green and sustainable sources, exacerbate socio-economic disparities (Adedeji 2016). Omer (2017) opined that modern energy sources are more efficient and environmentally friendly compared to traditional sources. According to the International Energy Agency (IEA), (2009), over 2.5 billion people worldwide lack access to clean energy for daily activities such as cooking, while more than 1.3 billion people lack basic energy supplies. A substantial proportion of this population resides in sub-Saharan Africa, including Nigeria.

Household energy consumption in Nigeria serves multiple purposes, including cooking, lighting, heating, cooling, and powering electronic devices and appliances (Oyedepo, 2012). Recent studies such as Oyedepo, (2014); Bamiro & Ogunjobi (2015) and Ubani *et al* (2024), have highlighted several factors influencing household energy use, including income distribution, which affects expenditure on energy consumption and that energy usage patterns also exhibit gender disparities, and household attitudes toward energy technologies are influenced by social norms, cultural values, family size, and educational attainment. Additionally, geographic factors such as regional economic development, urbanization rates, vegetation types, and climate conditions—including temperature and rainfall—affect household energy choices (Baiyegunhi & Hassan 2014).

Despite Nigeria's growing electricity grid coverage, approximately two billion people in developing countries still rely heavily on biomass for their energy needs (Sambo, 2009). The proportion of the Nigerian population with access to electricity was estimated at 60.5% in 2022, reflecting a 1% increase from the previous year, residential power consumption was approximately 58,900 terajoules in 2020, marking the highest volume recorded in recent years (Adeshina et al., 2024). By the second quarter of 2024, nearly 13 million customers were registered with the country's eleven electricity distribution companies (DisCos). Ibadan DisCo had the highest number of registered customers, with approximately 2.5 million, followed by Abuja and Enugu, each with about 1.4 million registered customers (Bello *et al,* 2024)

According to Abraham (2024) Nigeria's renewable energy capacity was recorded at 2.98 megawatts in 2023, with only marginal growth from 2.12 megawatts in 2011 to 2.27 megawatts in 2022. The installed renewable electricity generation capacity per person stood at 10 watts in 2022, maintaining a relatively stable trend since 2020. In 2023, renewable energy accounted for approximately 20.5% of Nigeria's total power generation, a slight decline from previous years. The highest recorded share of renewable energy in Nigeria's electricity mix was 25.6% in 2019 (Ekpotu *et al.,* 2024)

Energy distribution in Nigeria remains inconsistent, with DisCos supplying over 24,000 gigawatt-hours of electricity in 2023, while approximately 21,820 gigawatt-hours were billed in the previous year (Oyewunmi & Ehanmo 2023). Regional disparities in electricity access persist, with urban areas benefiting from more extensive infrastructure compared to rural regions. According to Onyekachi (2024) a 2020 study found that households in Nigeria's southern states possessed more electrical appliances than those in the northern regions, particularly in the North-East, highlighting significant energy access inequalities.

Concerns about climate change, environmental sustainability, and energy efficiency have intensified the focus on energy consumption patterns in the 21st century (Sorrell 2015). Data from the U.S. Energy Information Administration (2020) indicate that key energy-consuming sectors include commercial, industrial, transportation, and residential sectors. In developed nations, space heating, lighting, appliance usage, and air conditioning contribute significantly to domestic energy consumption and greenhouse gas emissions similarly, in Nigeria and other sub-Saharan African countries, household energy demand is influenced by factors such as dwelling location, household size, economic status, cultural practices, and education levels Lawal *et al.*, (2024)

According to Sachs (2015) Sustainable Development Goal (SDG) 7.1 aims to ensure "universal access to affordable, reliable, and modern energy services" by 2030. Achieving this target requires addressing regional and socio-economic disparities in energy access rather than merely assessing national electrification rates (Modibbo, Ali, & Ahmed 2021). Alabi *et al.*, (2023) argued that disparities in household energy choices based on gender, wealth, education, urban or rural residence, and geopolitical region must be analysed to track progress and implement targeted interventions.

Beyond energy access, infrastructure availability significantly impacts residential property values and economic development. Critical infrastructure such as roads, potable water supply, and drainage systems play a vital role in enhancing property values and improving living conditions (Ajibola, Awodiran & Salu-Kosoko 2013). Studies have shown that real estate investment interest continues to rise due to the increasing demand for residential properties in urban centres and the potential for rental income appreciation also Infrastructure development, including access to electricity, transportation networks, and waste management systems, contributes to improved economic activities, productivity, and social stability (Oyedeji & Olorunisola 2024; Alexander & Okpakam 2024; Okeke & Okoye 2024).

According to Olaseni and Alade (2022) infrastructural challenges remain prevalent in Nigeria, with significant disparities in facility availability and maintenance across different regions. Research indicates that in some Nigerian cities, up to 34% of households lack access to essential services such as electricity, water, and motorable roads (Oyetunji *et al.*, 2023). The proximity of residential areas to new infrastructural projects often correlates with increased property values additionally, infrastructural development drives economic growth by creating employment opportunities and supporting various economic activities (Oyedeji & Olorunisola, 2024).

This study aims to assess the effects of infrastructure on rental property values in Karu, Nasarawa. By analysing household energy access, infrastructure availability, and their impacts on real estate values, the study seeks to provide insights that can inform policy interventions aimed at promoting equitable energy access and sustainable urban development.

MATERIALS AND METHOD

Study Area

Karu Local Government Area (LGA) of Nasarawa State is situated between latitudes 8° 5' N and 10° 42' N and longitudes 9° 25' E and 7° 54' E of the Greenwich Meridian, as illustrated in Figure 1. Karu is an

unplanned urban area covering an estimated spatial extent of approximately 800 square kilometres (Chukwuma, Mutaka & Adamu-Ja, 2023). It extends from the eastern boundary of the Federal Capital Territory (FCT), Abuja (Old Nyanya), to Gora, about 15 kilometres from Keffi.

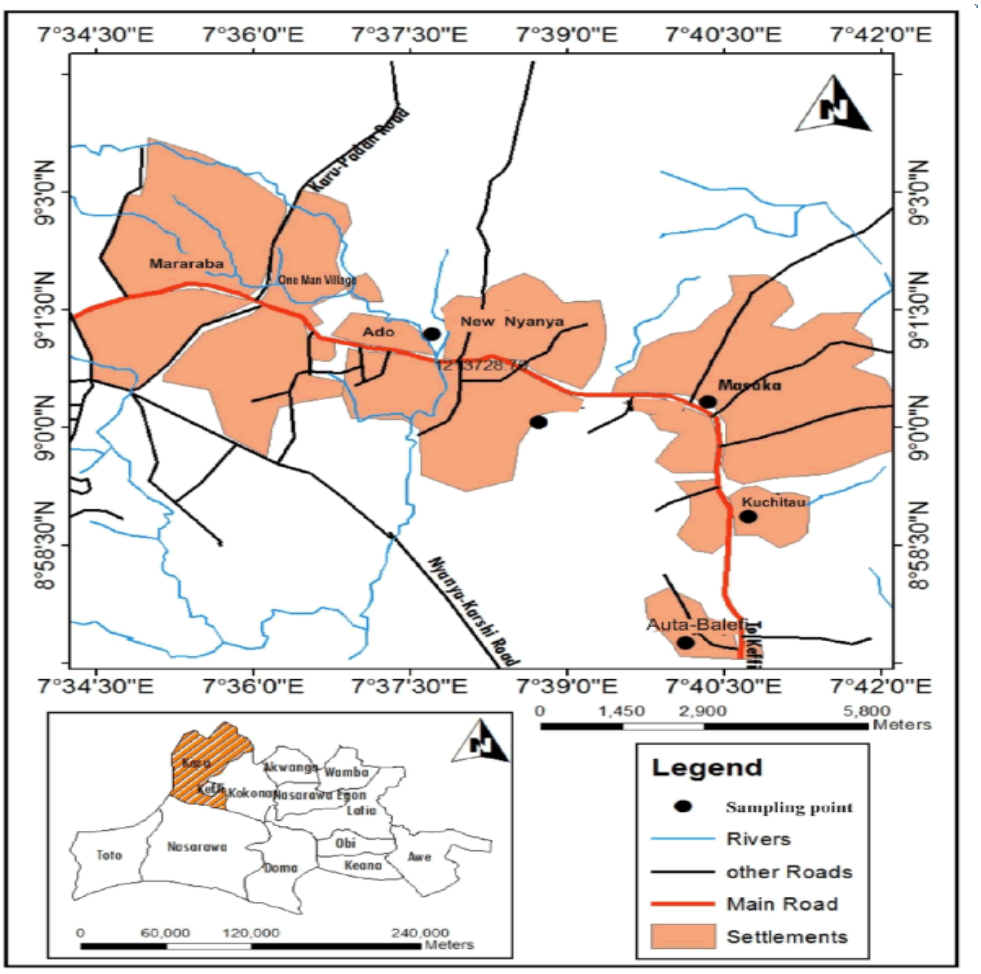

Figure 1: Karu, the study area

Source: National Centre for Remote Sensing, Jos

The population of Karu has experienced rapid growth due to continuous migration from various parts of the country. The estimated population was 10,000 in 1991, which increased to 50,000 by 2001 and 130,000 by 2010 and the current population is estimated at 205,477 (Chukwuma, Mutaka & Adamu-Ja, 2023)

Topographically, Karu lies within a broad undulating plain with elevations ranging from 300 to 500 meters above sea level. The area is characterized by deep, well-drained soils with high fertility, derived from underlying rock formations. The soil texture varies along streambeds, where the clay content is relatively higher (Kanayochukwu & Dogo, 2019). The natural vegetation is park savannah, consisting of dense tropical woodlands, shrubs, and grasses. Local variations in vegetation are influenced by factors such as relief, soil

composition, and anthropogenic activities. Karu has a tropical climate with distinct wet and dry seasons, typical of north-central Nigeria. The mean annual rainfall ranges between 1,100 mm and 2,000 mm, with variations influenced by the north-central highlands (Rikko & Wapwera, 2016).

Karu is a cosmopolitan community inhabited by various ethnic groups coexisting harmoniously. The indigenous ethnic groups include the Gbagyi, Koro, Yeskwa, Gwandara, and Gade. In addition, numerous settlers from different parts of Nigeria, including the Mada, Eggon, Hausa-Fulani, Igbo, Tiv, and Yoruba, have migrated to the area, largely due to its economic opportunities (Kanayochukwu & Dogo, 2019).

Research Design and Data Collection

A qualitative research approach was employed in this study, incorporating primary and secondary data sources. Primary data were obtained through structured questionnaires, interviews, and direct observations, while secondary data were sourced from books, journals, and theses. The questionnaire was designed to gather information on the nature of urban growth and housing challenges in seven selected districts of Karu. It was administered to households in the study area. Additionally, interviews were conducted with traditional rulers, urban developers, housing experts, and officials from the Karu Development Planning Authority (KAPDA) to obtain expert insights relevant to the study.

Sampling Frame and Sample Size

The study focused on seven districts within Karu: Mararaba, One-Man Village, Ado, New Nyanya, Masaka, Kuchikau, and Auta Balefi. The sample size was determined using the Krejcie and Morgan (1970) sampling method, which yielded a total of 397 which were administered on respondents proportionally based on population size of the selected districts. Out of this, 383 questionnaires were executed and returned after one week as presented in Table 1.

Table 1: Sample Population Distribution

District	2014 Population	2024 Projection	Number of Respondents
Mararaba	3,693	4,574	68
One Man Village	1,675	2,075	36
Ado	343	435	15
New Nyanya	931	1,153	27
Masaka	11,286	13,984	172
Kuchikau	1,845	2,286	41
Auta Balefi	432	535	22
Total	**20,205**	**25,032**	**397**

Source: NUDB (2014) & Ismail (2015)

To ensure representative sampling, a stratified random sampling technique was employed. Each district was stratified, and respondents were randomly selected from each stratum. This approach ensured that all segments of the population were adequately represented, thereby enhancing the reliability and validity of the study findings.

RESULTS AND DISCUSSION

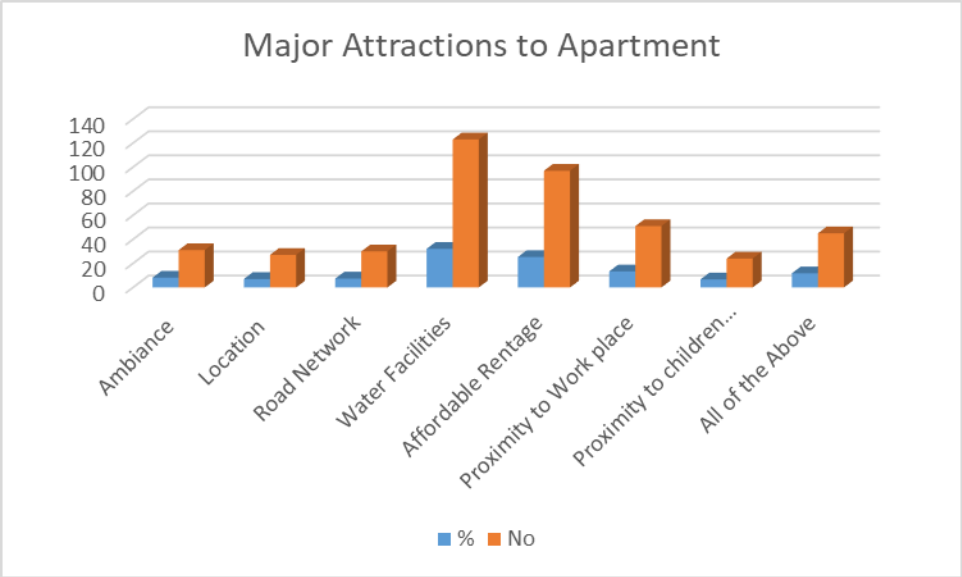

Figure 2: Major Attractions to Apartments in Karu
Source: Field Survey, 2024

Figure 2 provides insights into the key factors attracting people to apartments, expressed in both percentage (%) and absolute numbers. Ambiance (8.1%, 31 responses) appeals to a smaller group of tenants, while location (7%, 27 responses) ranks lower despite often being a crucial factor in real estate decisions. Road network (7.4%, 30 responses) suggested moderate importance in accessibility considerations as most roads within the area have no serious road networks, yet a lot as most roads within the area have no serious road networks, yet they are heavily inhabited by a lot of people. 25.3% of the respondents stated that affordable rent which emerged as the second most important factor attracted them to their current apartment; this highlights the significant role of affordability in apartment selection. 13.3% of respondents were attracted by factor of proximity to their workplace in Abuja city and the busy Karu settlements of Masaka, Ado, New Nyanya and Mararaba. Proximity to children's schools (6.7%) ranks the lowest, indicating that schooling considerations are less influential compared to other factors. Energy facilities (32.1%, 123 responses) stand out as the most significant attraction for apartments, underscoring the critical importance of a reliable electricity supply. Lastly, 11.7%, of the respondents indicated that "All of the Above" factors attracted residents to the area and this reflects holistic considerations influencing tenant decisions.

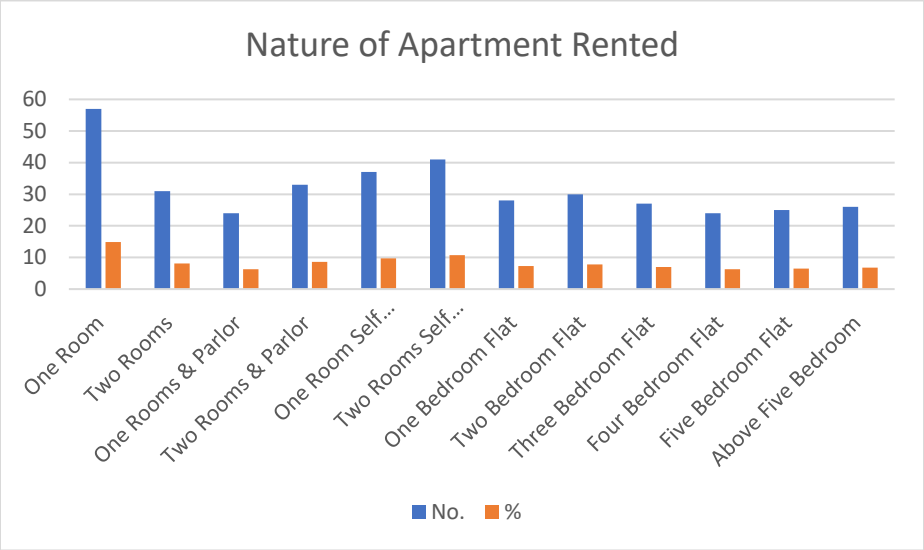

Figure 3: Nature of Apartments and Rent Paid
Source: Field Survey, 2024

Figure 3 showed the distribution of households based on the rent paid (in thousands of Naira) for housing with electricity connections. The highest percentage of households (10.9%, 42 respondents) pay rent within the ₦301,000 - ₦350,000 range annually, making it the most common rent bracket. Other notable rent brackets include ₦401,000 - ₦450,000 (10.4%, 40 respondents), ₦351,000 - ₦400,000 (9.7%, 37 respondents), and ₦101,000 - ₦150,000 (9.4%, 36 respondents). The lowest percentage of households (6.5%, 25 respondents) pay between ₦251,000 - ₦300,000 annually and this has indicated that there is lower demand for properties in this price range. Rent of above ₦551,000 is relatively uncommon (7.8%, 30 respondents). These findings suggest that rent ranges between ₦301,000 - ₦450,000 are the most common and preferred among respondents with electricity connections.

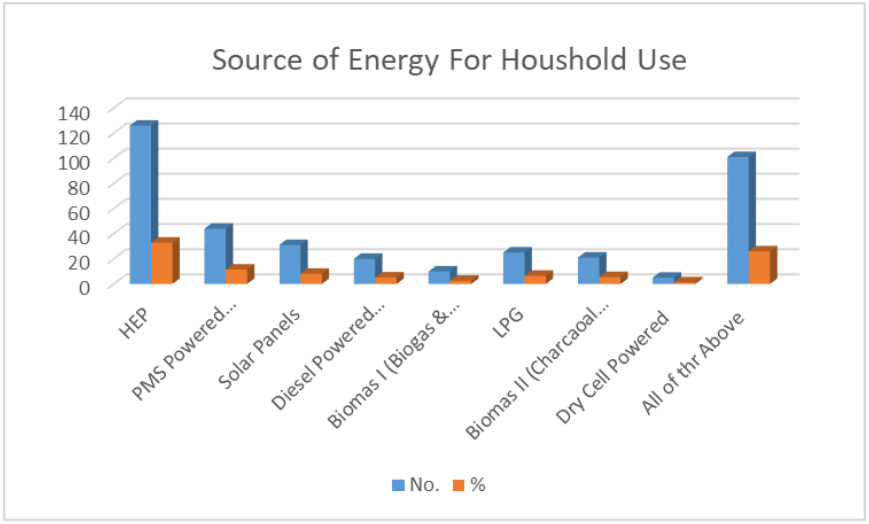

Figure 4: Source of Energy for Household Use
Source: Field Survey, 2024

Figure 4 provided data on energy sources for respondents, showing usage, percentages and household numbers. Household Electricity Provision (HEP) is the most common energy source (32.9%, 126 respondents), despite known reliability issues. PMS-powered generators (11.5%, 44 respondents) and diesel-powered generators (5.2%, 20 respondents) collectively reflect a reliance on fuel-based generators. Solar panels account for 8.1% (31 respondents), indicating some adoption of renewable energy, though still relatively low. Biomass I (biogas & firewood) represented 2.6% respondents' view, while Biomass II (charcoal & biodigesters) accounted for 5.5% of respondents' opinion. Liquefied petroleum gas (LPG) is used by 6.5% of the respondents, indicating a cleaner but underutilized energy option maybe due to its daily rising cost and unaffordability. Dry cell-powered energy is the least used household energy source as only 1.3% of the respondents utilized it mostly for inverters. Majority of respondents constituting 26% stated that "All of the energy sources are used by most members of households in the area and this reflected a significant reliance on multiple energy sources, indicating insufficient reliability of a single energy source.

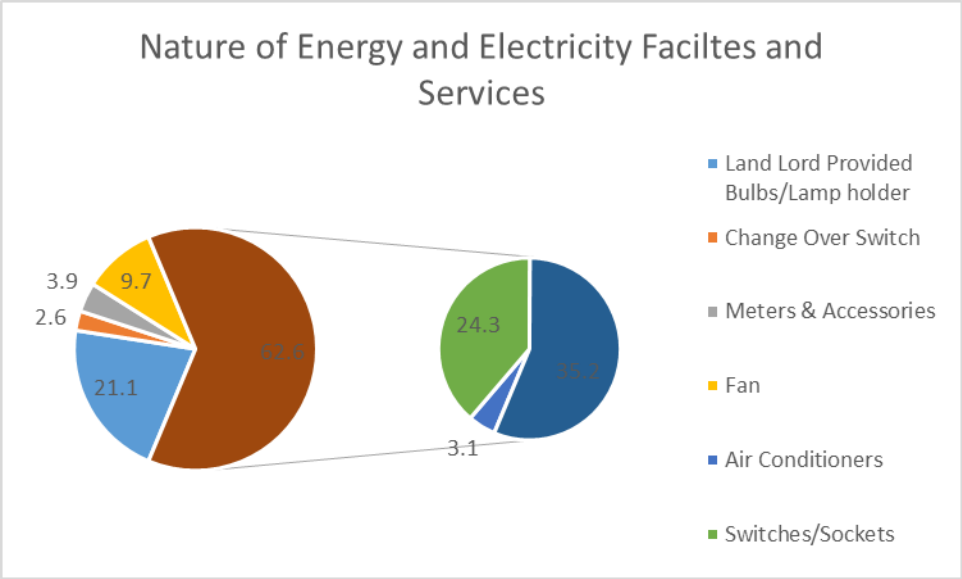

Figure 5: Nature of Energy and Electrical Facilities
Source: Field Survey, 2024

Figure 5 outlines available electricity facilities used by households. Switches/sockets (24.3%, 93 households) are widely available, while landlord-provided bulbs/lamp holders (21.1%, 81 households) are also common. Fans (9.7%, 37 households) suggest limited availability and use of cooling devices, while air conditioners (3.1%, 12 households) indicated a very low utilization of advanced cooling systems. Meters & accessories (3.9%, 15 households) and change-over switches (2.6%, 10 households) are the least common. "All of the facilities" as indicated by the majority is the most common response (35.2%, 135 households), indicating that many households have comprehensive energy infrastructure which is the major attraction of most residents to the area.

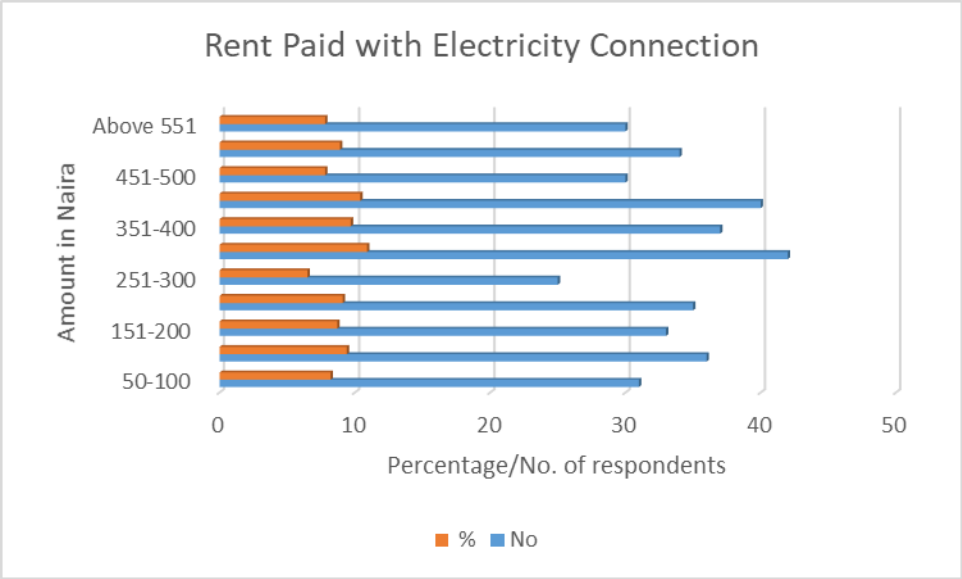

Figure 6: Rent Paid with Electricity Connection
Source: Field Survey, 2024

Figure 6 presented the distribution of rent (in Nigerian Naira) paid by households with electricity connections. Below is the analysis based on the percentages and the number of households paying rent within each category. The common rent range is 301,000 - 350,000 Naira, this rent category has the highest percentage (10.9%) and the largest number of households (42). It indicated a preference or affordability concentration for households within this range, followed by 401,000 - 450,000 Naira, the second-highest category, as stated by 10.4% of the respondents and this shows another significant cluster of renters in a slightly higher rent bracket, this range represented 8.2% of the household members surveyed. While 6-5% of the respondents pay for affordable housing, likely in less developed areas or for smaller units of 50,000 - 100,000 Naira. The highest rent category of above 551,000 Naira accounted for only 7.8% of the population surveyed in the area. This reflects a relatively small proportion of households capable of affording luxury or premium accommodations. Rent ranges between 301,000 - 450,000 Naira capture significant proportions of households of about 21.3% collectively. This indicated that these ranges are likely considered low cost. Lower rent ranges (50,000 - 100,000 Naira) still accommodated 31 households, suggesting affordability is a concern for a segment of the population. Electricity connections appear consistent across all rent brackets, highlighting a uniform infrastructure availability regardless of rent level and focus on increasing housing availability in the lower rent brackets (50,000 - 300,000 Naira) to accommodate lower-income households.

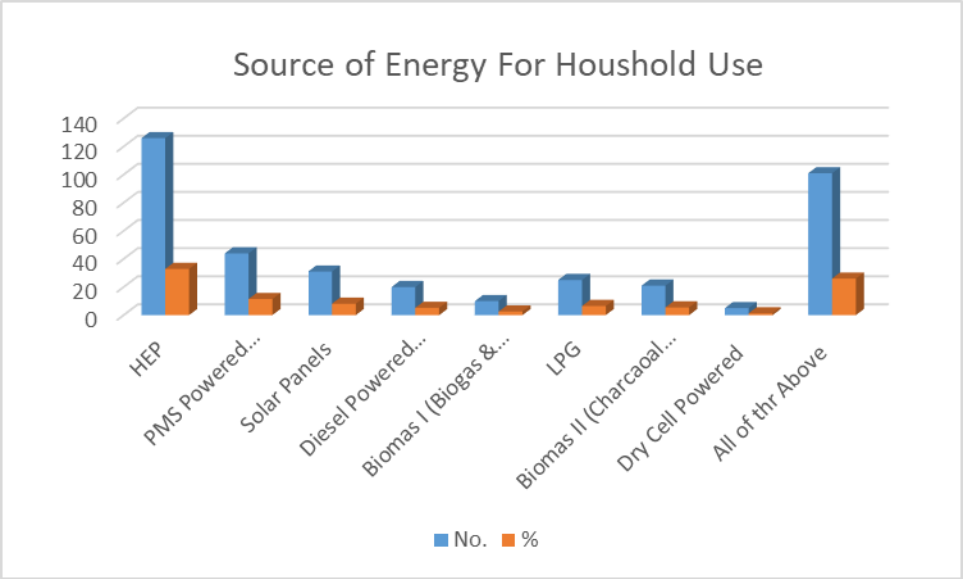

Figure 7: Sufficiency of Household Energy

Source: Field Survey, 2024

Variable energy sources are utilized in many households across Karu urban areas of Nasarawa state as shown in Figure 7. Hydroelectric power energy sources is the widely used and most sufficient as about 30% of the respondents stated that they are connected and use this source, This is followed by about 20% of respondents who stated that all of these sources are exploited and used in the area while dry cell usage is the least with only less than 8% of users who constituted the solar panel users in the area.

Table 2: Tenants' Provided Items in their rented Apartments in Karu

S/N	Variable	No	%
1	Television	85	22.2
2	Refrigerator	33	8.6
3	Washing Machine	15	3.9
4	Digital Camera	51	13.3
5	Pressing Iron	12	3.1
6	Sound System	4	1.0
7	Cooking Appliances	25	6.5
8	Computer Accessories	61	15.9
9	Room Heater	3	0.8
10	Wash Accessories/ Appliances	2	0.5
11	All of the Above	83	21.7
	Total	**383**	**100**

Source: Field Survey, 2024

Table 2 presents items provided by tenants at the point of rentage as Television, 85 respondents representing (22.2%), Refrigerator, 33 respondents having (8.6%), Washing Machine 15 of the respondents was (3.9%), Digital Camera 51 respondents (13.3%), Pressing Iron 12 respondents (3.1%), while Sound System 4 respondents of (1.0%), Cooking Appliances 25 respondents (6.5%), Computer Accessories 61 respondents

(15.9%), Room Heater 3 respondents (0.8%), Wash Accessories/ Appliances 2 respondents (0.5%) and All of the Above 83 respondents which amount (21.7%) were having this item.

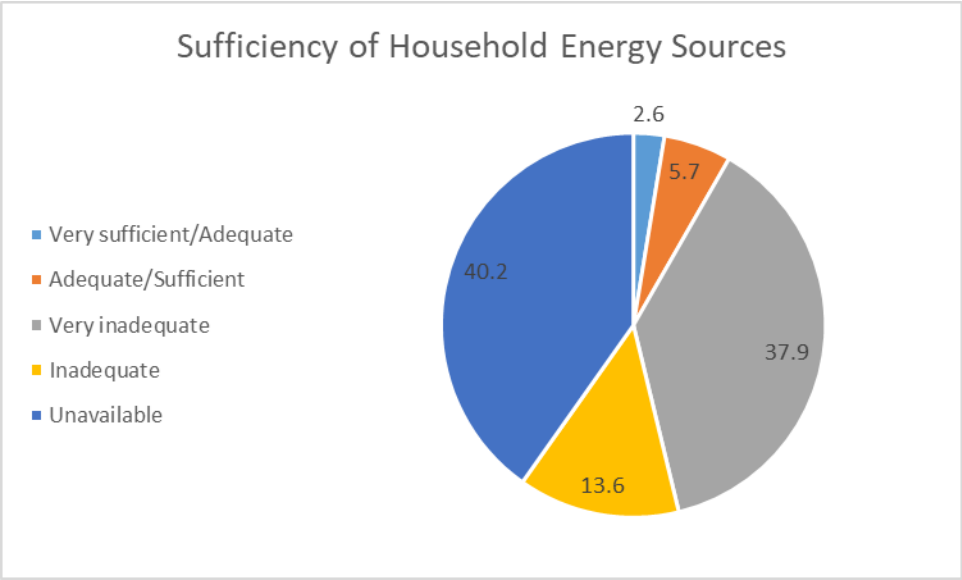

Figure 8: Sufficiency of Households Energy

Source: Field Survey, 2024

Figure 8 categorized energy sufficiency using the 5-point Likert scale. "Very sufficient" (2.6%, 10 respondents) and "Adequate/Sufficient" (5.7%, 22 respondents) ratings are low, while "Very inadequate" (37.9%, 145 respondents) and "Unavailable" (40.2%, 154 respondents) highlight severe energy deficiencies.

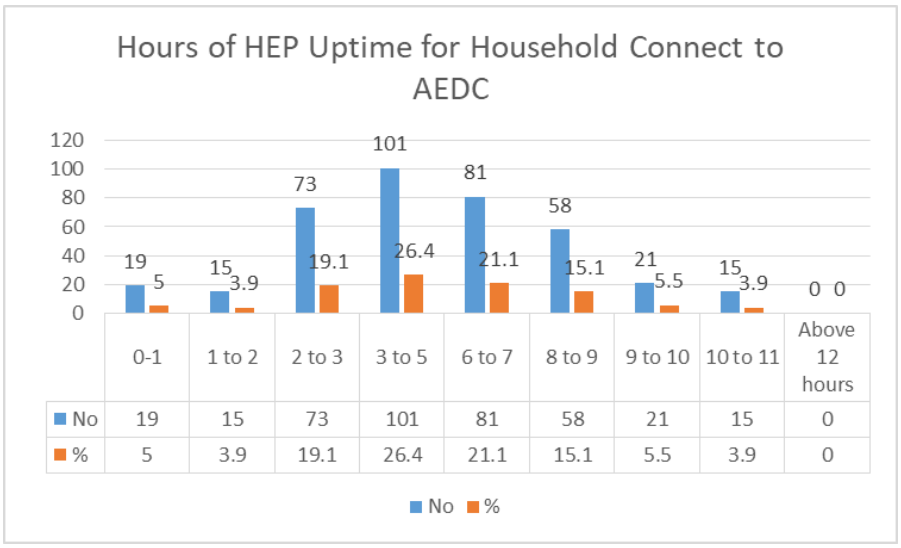

Figure 9: Hours of HEP Uptime for Households

Source: Field Survey, 2024

Figure 9 presented data on the uptime of Household Electricity Provision (HEP) for households connected to AEDC (Abuja Electricity Distribution Company) over different hour ranges, showing the number of households and their respective percentages. From 0-1 hour was 19 respondents of 5%, 1-2 hours had 15 respondents of 3.9%, 2-3 hours got 73 respondents, 19.1% while the most frequent range was 3 - 5 hours, with 101 respondents (26.4%). This suggests that a significant proportion of household's experience moderate electricity availability, also 6-7 hours was 81/21.1%, 8-9 hours the respondents were 58 had 15.1%, 9-10 hours 21 respondent and 5.5%, 10-11 hours 15 respondent 3.9% said they have electricity for this period of time and above 12 hours there was no respondent it was not available. It implication is that the majority of households (73.6%) experience electricity uptime between 2 and 9 hours, this indicates that while some households have access, the duration remains far from ideal.

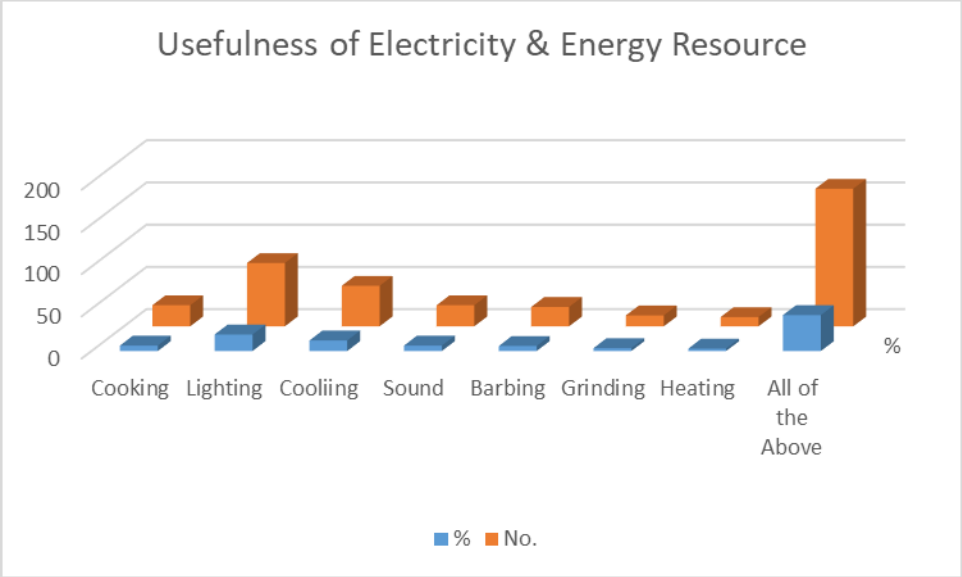

Figure 10: Usefulness of Electricity & Energy Resources
Source: Field Survey, 2024

Figure 10 highlighted the various uses of electricity and energy resources. Lighting (19.6%, 75 respondents) is the most commonly used, followed by cooling (12.5%). Cooking and sound system usage (6.5% each) indicated moderate importance. "All of the Above" (42.6%) underscores the broad reliance on electricity for multiple household needs.

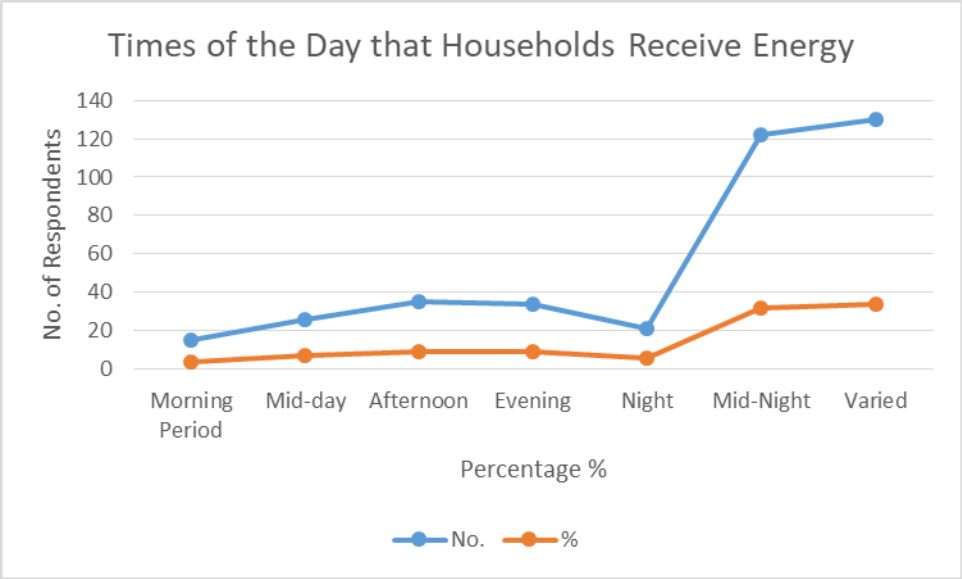

Figure 11: Time of the day that Households Receive Energy
Source: Field Survey, 2024

Figure 11 showed the number of times during the day when households receive energy, based on the number of respondents and their percentages. The least reported period with 3.9% (15 respondents) having energy access is the morning period, followed by Mid-day 6.9% (26 respondents). This showed limited availability of power during critical daytime hours when households are most active and in dire need of electricity. Also, in the afternoon, 9.1% of the respondents stated that they receive power while 8.9% said they have slightly higher energy availability in the evening.

Mid-Night is the second most reported time, with 31.9% respondents receiving energy during this period. This shows that the Abuja Electricity Distribution Company supplies power at late-night, potentially due to reduced grid demand during these hours and the 33.9% received energy at varied times, indicating that many households receive energy at inconsistent or unpredictable intervals. This implies that the dominance of respondents with varied times suggests an inconsistent energy delivery, which may disrupt household routines and planning.

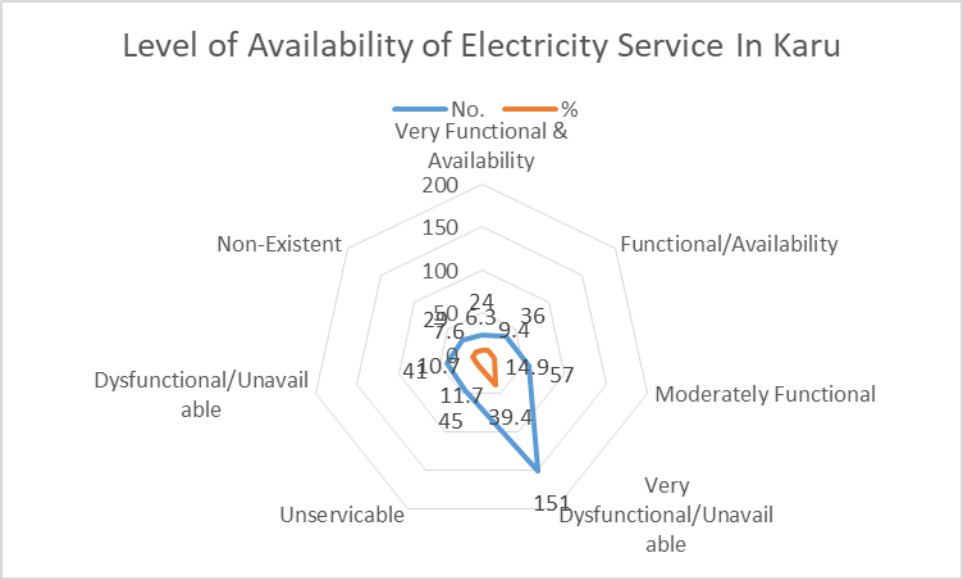

Figure 12: Level of Satisfaction with Electricity Service in Karu
Source: Field Survey, 2024

Figure 12 showed an overview of the availability and functionality of electricity services in Karu, with responses distributed across various levels of service. The majority, 39.4% of the respondents reported that electricity services in the area are "very dysfunctional/unavailable," while 7.6% of the respondents stated that they experience non-existent electricity. Over 70% of respondents faced significant challenges with electricity reliability.

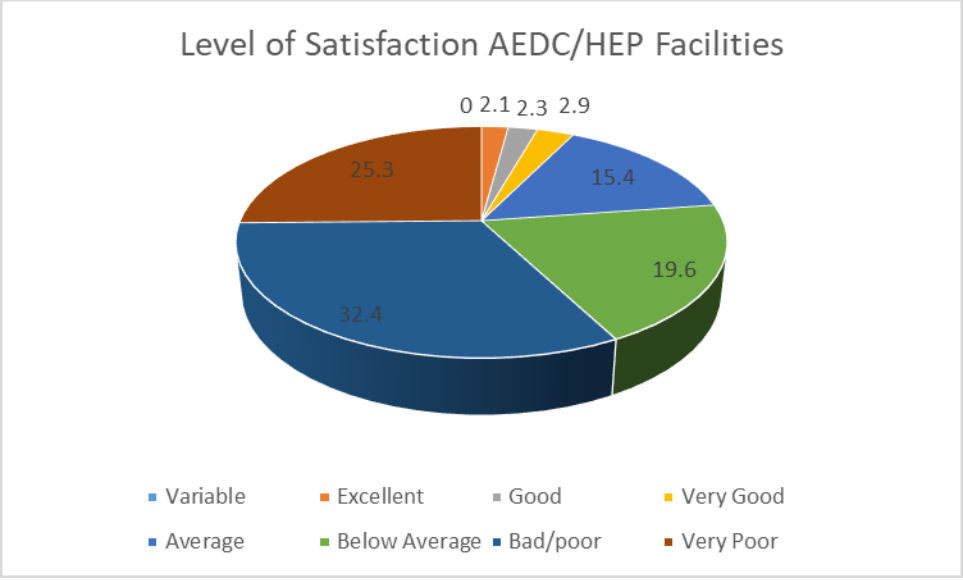

Figure 1: Level of Satisfaction with AEDC/HEP Facilities
Source: Field Survey, 2024

Figure 13 showed that the satisfaction levels are low, with 32.4% of the respondents stating that the services are "poor, while 25.3% of the respondents in their ratings adjudged the services as "very poor" and only 2.1% of the respondents rated the service as "excellent," reflecting widespread dissatisfaction with AEDC/HEP facilities and services in Karu LGA.

Table 3: Value of rental apartments with energy and electricity facilities

SN	Variables	Estimated Capital Value (₦)	Rental Value (₦)
1	One room	700,000.00	50,000.00
2	Two rooms	1,500,000.00	80,000.00
3	One room and parlour	1,800,000.00	120,000.00
4	Two rooms and Parlor	2,000,000.00	140,000.00
5	Room self-contained	2,600,000.00	170,000.00
6	One-bedroom flat	3,800,000.00	300,000.00
7	Two-bedroom flat	8,500,000.00	420,000.00
8	Three-bedroom flat	13,000,000.00	580,000.00
9	Four-bedroom flat	21,000,000.00	780,000.00
10	Three-bedroom duplex	35,000,000.00	1,000,000.00
11	Three-bedroom Bungalow	30,000,000.00	800,000.00

Table 3 showed the amounts currently being paid by tenants in rent and capital values in apartments with electricity in the study area. One room apartment goes for N50,000 as rent and N700,000 thousand naira as capital value, two rooms apartment goes for N80,000 thousand naira as rent and N1,500,000 as capital value, similarly one bedroom flat with electricity and energy facilities goes for N300,000 on rent and N3,800,000 on the basis of capital value, Two bedroom flat goes for N420,000 on rentage and N8,500,000 in terms of capital value, in the same vein, three bedroom flat goes for the sum of N580,000 for rent and N13,000,000 in capital value when there are energy and electricity facilities in the apartments. Furthermore, a three-bedroom duplex will go for N1,000,000 when renting it out and N35,000,000 whenever the capital value is being considered and also a three-bedroom bungalow is being rented at N800,000 and N30,000,000 in capital value as well.

The analogy in Table 3 simply implies that as the number of rooms increase in a residential property with energy and electricity facilities, the rental and capital values increase as well and this has shown that energy and electricity facilities can directly affect capital and rental values of the residential properties in the study area

Table 4: Value of rental apartments without energy and electricity facilities

SN	Variables	Estimated Capital Value (N)	Rental Value (N)
1	One room	650,000.00	30,000.00
2	Two rooms	1,000,000.00	70,000.00
3	One room and parlour	1,100,000.00	90,000.00
4	Two rooms and Parlor	2,000,000.00	110,000.00
5	Room self-contained	2,000,000.00	130,000.00
6	One-bedroom flat	3,000,000.00	180,000.00
7	Two-bedroom flat	5,000,000.00	240,000.00
8	Three-bedroom flat	10,000,000.00	450,000.00

9	Four-bedroom flat	14,000,000.00	500,000.00
10	Three-bedroom duplex	23,000,000.00	750,000.00
11	Three-bedroom Bungalow	25,000,000.00	600,000.00

Table 4 indicated that without energy and electricity facilities, one room goes for a rent of N30,000 and a capital value of N650,000, two rooms apartment in Karu goes for N70,000 for rent and N1,000,000 capital value, also a room self-contain goes for a rent of N130,000 and N2,000,000. Similarly, a one-bedroom flat goes for a rent of N180,000 and capital value of N3,000,000, in the study area a two-bedroom flat without energy and electricity facilities goes for N240,000 as rent and N5,000,000 as capital value, also a three-bedroom flat goes for rent of N450,000 and capital value of N10,000,000.

The values in Table 4 further showed that without energy and electricity facilities, a three-bedroom duplex is being rented at the N750,000 with a capital value of N23,000,000 while a three-bedroom bungalow apartment goes for a rent of N600,000 and a capital value of 25,000,000. In comparing Tables 3 and 4, it is glaring that there is increase in rental and capital value of properties with energy and electricity facilities than those without energy and electricity facilities.

CONCLUSION

This study highlights the critical role of infrastructure and energy access in determining rental property values and housing preferences in Karu, Nasarawa. Findings suggest that reliable energy supply, road networks, and water facilities significantly influence rental costs and housing choices. Although Nigeria has made progress in expanding its electricity grid, disparities persist, particularly in rural and underserved urban areas. The continued reliance on alternative energy sources underscores the need for sustainable energy solutions and infrastructural development. Enhancing energy access and upgrading urban infrastructure will not only improve residential living conditions but also contribute to economic development and social stability.

RECOMMENDATIONS

1. Investment in Energy Infrastructure: The government and private sector should prioritize investments in renewable energy sources such as solar and wind power to complement the national grid and reduce reliance on biomass and fuel-based generators.
2. Expansion of Electricity Coverage: Policies aimed at increasing electrification rates, particularly in underserved regions, should be implemented to ensure equitable access to modern energy services.
3. Infrastructure Development: Improvements in road networks, water supply, and waste management systems should be prioritized to enhance residential property values and attract further investment.
4. Affordable Housing and Energy Efficiency Programs: Incentives for developers to construct energy-efficient and affordable housing should be introduced to accommodate growing urban populations.
5. Public-Private Partnerships (PPPs): Collaboration between the government, private sector, and international organizations should be strengthened to fund and implement large-scale energy and infrastructure projects.

6. Community Engagement and Awareness: Residents should be educated on energy conservation, alternative energy solutions, and the benefits of sustainable urban planning to foster inclusive and participatory development.

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