

SUBURBAN GROWTH AND THE CHALLENGES OF PUBLIC POWER SUPPLY IN THE LAGOS MEGACITY REGION, NIGERIA

By

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Abstract

One of the features of a megacity is the unprecedented development towards the periphery. This has a significant effect on the provision of infrastructural facilities, towards improving accessibility to the basic social services. Among such services is public power supply. Lagos with a population of over 15 million is among the megacities that have witnessed rapid informal development. The main thrust of this study is to access the challenges facing the residents of Lagos megaregion in public power supply, the adopted coping methods and the impacts on socio-economic development. The study found that the suburban areas of Lagos can be found in six local governments, from where Ifo was selected for this study. Ijoko and Oyero-Oluke communities were sampled from the urbanised and the peripheral areas respectively. The study found that 71.78% of the public electricity facilities were provided by the residents, but later taken over by the government. The facilities provision was not properly coordinated. Hence, the provision was lacked adequate planning. The use of substandard materials and low power voltage were observed. The cost of public power connection was much due to the expansive and scattered development nature of the area. Hence, 64.42% of the residents found public power connection very expensive than power tariff payment, while 9.2% could not connect their apartments with the public power. The common coping method was the use of alternative public power supply, with a significant effect on the accessibility to reliable and cost effective power supply for socio-economic development. Towards reducing Lagos Megacity expansion and ensuring cost effective public facilities provision, the study among others suggested the adoption of sites and services housing development and smart city concept, with the creation of cities within the city.

Key words: accessibility, megacity, public power, sites and services, smart city, social services.

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INTRODUCTION

The roles of infrastructural facilities in urban socio-economic development cannot be overemphasised. Hence, no city can sustain its growth without improvement in its infrastructural facilities provision. Such roles played by the urban infrastructures can be noticed in the area of easy means of movement, adequate drinking water provision, effective waste management and adequate power supply. In order to ensure that these roles are effective, there is a need to keep the pace of urban expansion with the provision of infrastructural facilities. Thus, when there is urban expansion, through population growth, there should be corresponding increase in the provision of the basic needs of life for sustainable urban development.

Despite the importance of infrastructural facilities to ensure adequate accessibility to the basic needs of life, some major cities in Nigeria are facing the challenge of decay and inadequate provision of these facilities. This is mostly common in the suburban areas, at the edge of the urbanised area of the cities, where there is a large number of urban agglomerations. The challenge of inadequate provision of the basic needs of life has been attributed to a number of factors. Among such factors include rapid population

growth, spontaneous urban expansion, lack of funds, poor urban planning, among others. The most conspicuous one among these factors are rapid population growth and spontaneous urban expansion [1], [2].

Due to the high degree of spontaneous and scattered development of suburban areas of Lagos Megacity in Nigeria, there has been a challenge of inadequate provision of the basic needs of life. This study identified public power supply, as one of the major challenges facing the inhabitants. However, the purpose of this study is to access the challenges faced in the public power provision by the residents of Lagos megaregion, the adopted coping methods and the impacts on socio-economic development. The study identified the suburban areas of the Lagos megaregion, from where investigation was carried out to assess the public power provision, the level of availability and methods adopted by the inhabitants to cope with the situation.

Two major communities were selected for data collection: Ijoko was selected as most urbanised, while Oyero-Oluke was selected as less urbanised area. However, both selected communities shared boundaries with each other. See figure 3. In order to collect data for this study, both physical and questionnaire surveys were conducted. From each of the two selected communities, four neighbourhood areas were selected making a total of 8 sampled neighbourhoods. The number of residential buildings in the selected neighbourhoods and the number sampled for the surveys are as indicated in Table 1. Systematic random sampling was adopted to sample at least 10% from 1610 houses identified from the 8 sampled neighbourhood areas. Hence, 163 residential buildings were eventually sampled. Inspection survey was carried out from the 8 sampled neighbourhoods, while questionnaire survey was conducted on one adult from each of the sampled 163 residential buildings.

Table 1: The Sampled Communities and Neighbourhood Areas for the Study

S/No	Neighbourhood Areas	Community	No of Buildings	Samples Taken
1	Gasline	Ijoko Area	278	28
2	Ntabo		262	27
3	Agoro Road		219	22
4	Ijoko Township		237	24
5	Oyero	Oyero-Oluke Area	170	17
6	Oluke		156	16
7	Lisa		149	15
8	Olayemi		134	14
Total	8	2	1610	163

Source: Field Work (2020)

LITERATURE REVIEW

Urban population growth in Nigeria has been so spectacular in recent times. Compared to a growth rate of 2.8% for the total population, the urban population in Nigeria over the last three decades has been growing close to about 5.8% per annum [1]. The urban population is about 48.2% and projections indicate that more than 60% of Nigerians will live in urban centres by year 2025. There are more than 840 urban centres and well over 10 cities with populations of over a million [3]. Lagos State, one of the 36 states of the Federal Republic of Nigeria is the second largest city in Africa, with a population of over 15million. Due to high level of urbanisation, in another decade, four additional cities in Nigeria will attain the status of a megacity.

Urbanisation is a global phenomenon, and it can be defined as a process of city development [1]. Hence, the challenges associated with the incidence vary from one country to another, which depends on the level of good governance, planning and management of urban growth. In Nigeria, the incidence of urbanisation is always accompanied by rapid suburban development, such as urban sprawl and spontaneous development. However, spontaneous settlements are referred to as an outward spread of built-up areas

caused by expansion, with inadequate provision of facilities. The formation of suburban settlements is as a result of urbanisation, occasioned by housing challenges, leading to movement of people particularly the low income earners to the city edge and urban peripheries [4]. Although, some urban literatures have identified the types of suburban area to include industrial, residential, transportation, cultural and resort [2]; the most common one in Nigeria is spontaneous residential suburban area.

According to Karakayaci [5], urban sprawl characterises to a large extent discontinuous and fragmented occupation together with random population density. Apart from having environmental and social impacts on the residents, urban sprawl brings a great burden on the government as well [6]. Such burden may include economic discrimination, local administrations and financial unbalance between societies. It has been noted that the rapid growing incidence of urban sprawl increases the cost for public services provision. Although, some studies have argued that urban sprawl emerged due to people's desire to live in big houses and vast areas [7], but this argument has been very subjective.

As it has been observed, some factors have been identified to be responsible for spontaneous development of urban sprawl [5]. These may differ from country to country, varies according to development level and structure of society. Indicators of economic growth such as increase in income per capita, increase in the number of workers and increase demand for dwelling [8] can aggravate the growing incidence of urban sprawl. Low cost of land acquisition in the agricultural land at the edge of the city encourages movement from the most urbanised area to the suburbs. This is a confirmation of Von Thunen theory, which states that entrepreneur will like to move from the city centre where the cost of land is higher to the outside city where the price of land is lower [9]. Rapidly increasing population may cause the problem of urban sprawl. Population increase occasioned by internal and external factors has great impact on rapid urbanisation. Because of this situation, city may become crowded and influence movement of people from the city centre to the edge of the city. Hence, urban sprawl is inevitable. Whatever factors that may be adduced for the incidence of suburban growth, it can be logically argued that this type of urban development is mechanically emerged where there is unplanned and disorganised development. When the urban growth is coordinated by an effective urban development mechanism, functional urban development would be assured.

Over the years, particularly since 19th century, cities in the developing countries, Nigeria with no exception have been facing the challenge of inadequate accessibility to the basic needs of life. The most pressing one among these needs include movement of people, goods and services, comfortable accommodation, durable and cost effective power supply. The area of the city that bears most of the brunt of this challenge is the suburban area. This ugly situation has been attributed to poor planning and ineffective management of cities growth, occasioned by lack of good governance [10]. This scenario has created a wide gap between suburban population growth and the provision of public infrastructure. Hence, the poor suburban inhabitants have no choice than to result into finding solution to the challenge through self-help. This is based on the premise that the efficiency of any form of human activity system largely depends on the provision of adequate infrastructural facilities [11]. However, the availability of infrastructure in most developing countries is drastically low. According to Iremiren [12] a significant proportion of 34% of the houses in some cities in Nigeria have no access to electricity, water, descent and safe waste disposal systems and unconnected by good roads.

THE CONCEPT OF INFRASTRUCTURE

Infrastructure comprises essential facilities aimed at improving political, social and economic activities. It has been used in a broad sense to mean collectively: the transportation of people and information, the provision of public goods, services and utilities such as water, power, health, education, telecommunication, and the removal, minimisation and control of waste and environmental restoration [13]. Infrastructure is the physical structures and facilities that are provided, developed or acquired by the public agencies to enhance government efforts at providing public goods and other social services to

facilitate the achievement of common social and economic objectives [14], [15], [10]. Without adequate provision of infrastructure, cities may not be able to function effectively.

Public goods and services possess some unique characteristics which include non-excludability, joint supply and non-rejectability [16], [17]. Non-excludability implies that once the good has been made available to one person, it cannot be withheld from another person wishing to consume it. Joint supply means that once the good has been made available, equal quantity of non-identical quality is made available to any number of additional people at no additional cost, while non-rejectability implies that once the good is supplied, it must be fully and equally consumed by all [16], [17]. Non-competiveness means that the demand of public products or services should not be competitive because of their importance to peoples' life. These attributes explain how essential public goods are to the survival of humans because one cannot ignore their usage. Because of the attributes of basic goods and their importance to society, government intervention becomes necessary [18].

THE CONCEPT OF COMPACT CITY

There is a rich planning history of urban compactness, translating into a multitude of reasons why the compact city gained momentum during the late 1970s and early 1980s as a planning paradigm shift [19], in the Western Europe and North America. It has been noted that the dispersed expansion of settlement areas, particularly at the fringes of urban regions not only threatens open space, increases social costs for urbanisation, provision of public facilities, and transport, leads to growing energy consumption, air and noise pollution [19]. Sporadic expansion of cities generally, threatens agricultural activities, endangers urban culture and the associated capabilities and achievements of social and cultural integration, of tolerance and responsibility for the common good.

The compact city is based on three major assumptions [20]. It has an assumed capacity to relieve cities' surrounds from demand for more settlements and the promotion of social interaction in public spaces. Compact urban structures do indeed save on transportation needs. However, compact city is a city of containment, with a minimum density that guarantees the viability of user-friendly, i.e. frequent and accessible public transit and of neighbourhood retail and services within walking distance. It also encourages multi-functionality through integration of land uses; concentration of development in nodes, and cost-effective provision of public facilities, particularly water and electricity [4]. There are some cities built on the concept of compact city. Such cities include Amsterdam, Delft, Bern, Halle, Oxford and Portland [20]. Compact city is more energy efficient and less polluting because the dwellers can live closer to shops and work. They can walk, bike, or take transit. Proponents claim it promotes more community-oriented social patterns.

BACKGROUND OF LAGOS URBANISATION AND METROPOLITAN PROCESS

Lagos Megacity situated within latitudes $6^{\circ} 23'N$ and $6^{\circ} 41'N$ and longitudes $3^{\circ} 42'E$ and $3^{\circ} 42'E$. The megaregion spreads across Lagos and Ogun states of the Federal Republic of Nigeria. It comprises 24 local governments, which includes 20 of Lagos state and other 4 from Ogun State; such as Ado-Odo/Ota, Ifo, Obafemi-Owode and Sagamu. The outward spread into Ogun State still continues, because of rapid and uncontrolled informal settlement development. Fig 1 is a map of Nigeria showing the location of Lagos Megaregion, while Fig 2 is a map showing the local governments in both Lagos and Ogun states, identified as part of the Megaregion.

Lagos Metropolis, the nucleus of Lagos Megacity took its origin from a settlement located along the narrow coastal plain of the Bight of Benin. The settlement emerged during the colonial period as a heterogeneous town populated by groups of people of various origins, dominated by the Yoruba people. This gave the town its eclectic character, with increasing social stratification and contrasting lifestyles [21].

The creation of Lagos State from the old Western Region and the Federal Capital in 1967 enlarged the size of Lagos metropolis to extend northward. Table 2 describes the spatio-temporal population growth of Lagos from 1911 to 2010. Odumosu [22] narrated that geographically, Lagos changed from the tiny island

of 4.55km² in 1890 to about 64.13km² in 1962, 115.97km² and 205.65km² in 1976 and 1985 respectively. The built up areas of the metropolis have been estimated to cover 3,000 km² [23].

Lagos is the most agglomerated city in Nigeria. When its spatio-temporal growth is compared with other cities, its population density is of much concern. As of 2019, while the population densities of Ibadan and Kano were 1,150 and 26,474 persons per km² respectively, that of Lagos was 36,664 persons per Km². However, Lagos State has about 90% of its population living in urban areas. It still remains the most urbanised state in Nigeria. Lagos which came last among the 21 giant cities identified in 2009 is the second megacity in Africa. By the year 2025, it was expected to be in the 11th position, while its population was expected to increase from 10.2million to 15.8million.

Among the major attributes of Lagos metropolis is its morphological transformation. This has paved way for sporadic change in the use of land, mostly from residential to commercial [4]. The incidence has acted intermittently to force some Lagos residents out from the city centre to the peripheries, where informal form of settlement is allowed. This has made distribution and provision of social services to be too expensive and problematic. Plate 1 is a picture showing the area view of development in the suburban area of Lagos Metropolis.

Table 2: Spatio-Temporal Expansion and Population Growth of Lagos State

Year	Census Area (km ²)	Total Population	Growth Rate (%)
1911	46.6	74,000	0.0
1921	52.3	99,700	34.73
1931	66.3	126,000	26.38
1952	69.9	276, 407	118.99
1963	69.9	676,246	144.66
1991	3,345	5,725,116	746.60
2006	3,345	9,113,605	59.19
2008	3,345	9,706,208	6.50
2009	3,345	10,016,807	3.20
2010	3,671	10,358,095	3.41

Sources: [1], [24]



Source: [4]
Fig 1: Map of Nigeria Showing the Location of the Lagos Megaregion

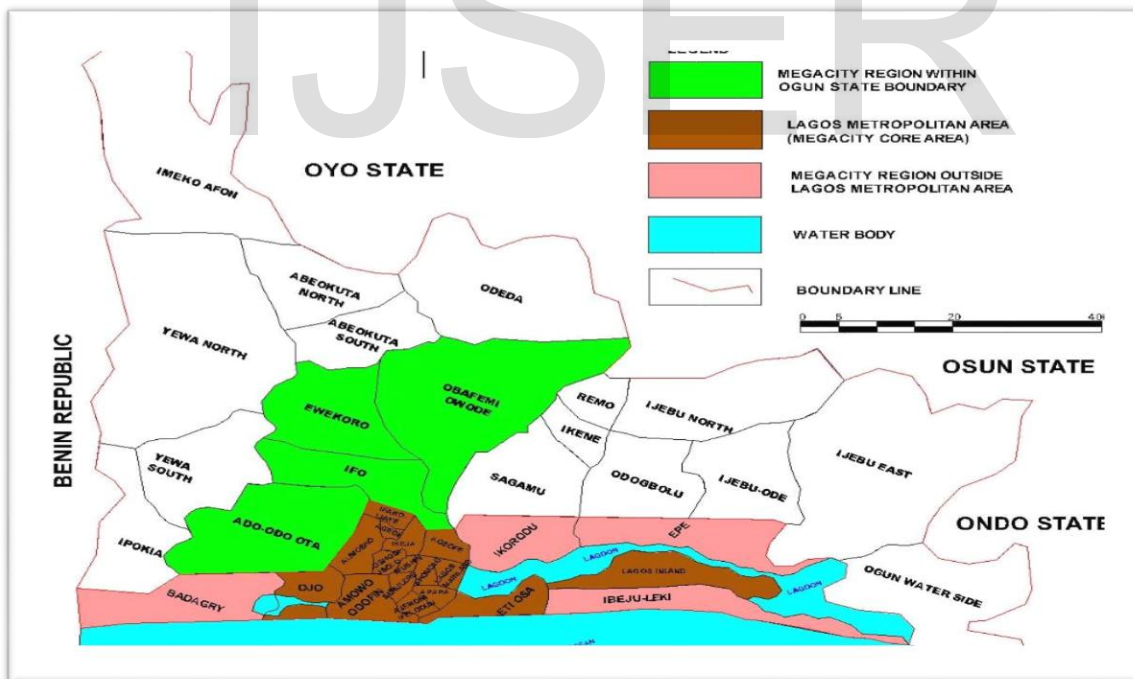


Fig 2: A Map Showing Lagos Megacity Region; Scale: 1:40Km
Source: [4], [23]



Plate 1: Early Stage of Urban Sprawl at the Edge of Lagos Metropolis

Source: Field Work (2020)

THE STUDY AREA

Geographically, Ijoko popularly called Ijoko Salt City and Oyero-Oluke areas are located in the north-west of Lagos metropolis and situated in the central part of Ifo Local Government of Ogun State. It is bounded in the south by Sango-Ota, in the east by Agbado suburban area, in the west by Lagos Abeokuta Expressway and in the north by the agricultural land, which has been fragmented by housing development. The study area is about 22km from Ikeja, the capital city of Lagos. The major settlements within the study area include Ijoko, Oyero, Oluke, Lisa, Kajola, Kajola Railway Station, Seriki, Agoro, Ibaragun, Itoki, Ijoko-Abule and Lemonde. Presently, all of them have merged to become a suburban area for Lagos. Politically, the study area is straddled between Ifo and Ado-Odo/Ota local governments comprising three political wards; Ijoko Ward in Ado-Odo/Ota local governments, Ososun and Ibaragun in Ifo Local Government area. Ijoko, the most urbanised area of the study area covered about 30km². Fig 2 is a map showing the main settlements of the study area.

Ijoko Salt City was formerly called Ijoko village, and later became part of Sango-Ota, the emerging metropolitan area. It is now appeared that the area has the characteristics to be recognised as an independent urban area [4]. Since 1930s when railway transport commenced in the country, Ijoko had become one of the stations. By then it was, only serving as agricultural products collection for the colonial masters in Lagos. Prior the construction of railway, Ijoko was predominantly small settlement occupied by the people, which their occupation was mostly farming. The presence of rail transport system added trading in agriculture to the economic activities of the area. It became Ijoko Salt City when the Federal Government decided in 1970s to site one of its national salt companies in this settlement.

The establishment of the salt company led to the construction of two access major roads to connect the area to Lagos. The first one was through Sango-Ota via Lagos-Abeokuta road, while the second one was Agbado-Iju through Agidingbi, Ikeja in the southeast. The existence of a functional railway transport in the 1970s made the area a viable place to be reckoned with because of its agricultural importance. Sango-Ota industrial axis has expanded rapidly to the area. Substantial number of industries in the study area was

located along Sango-Ota road. In the 1980s, there was Federal Government housing development to cushion the effect of housing challenge [4].

Based on the National Population Commission data, 2006, the population of the study area can be estimated at 180,000, with a population concentration of 250-800 persons per km². The study area is vastly becoming urbanised, it is evident that the area is facing the challenge of inadequate accessibility to public infrastructural facilities.

Apart from the nearness of the area to Lagos, the rapid population growth of Ijoko area can be attributed to the incidence of plane crash of 2006 in Lisa Village, near Oluke, which lead to the construction of road from Ijoko linking the crash site to the outside world. The Federal Government plan to build new railway engineering terminus at Kajola Village was another contributing factor. The reconstruction of rail transport, improvement in the road transport system and provision of electricity facilities after the plane crash opened up the area to the land speculators and individual developers. Although, there was a wide gap between the need and provision of these facilities, coupled with the low quality, but significantly contributed to the mad rush for land acquisition for housing development.

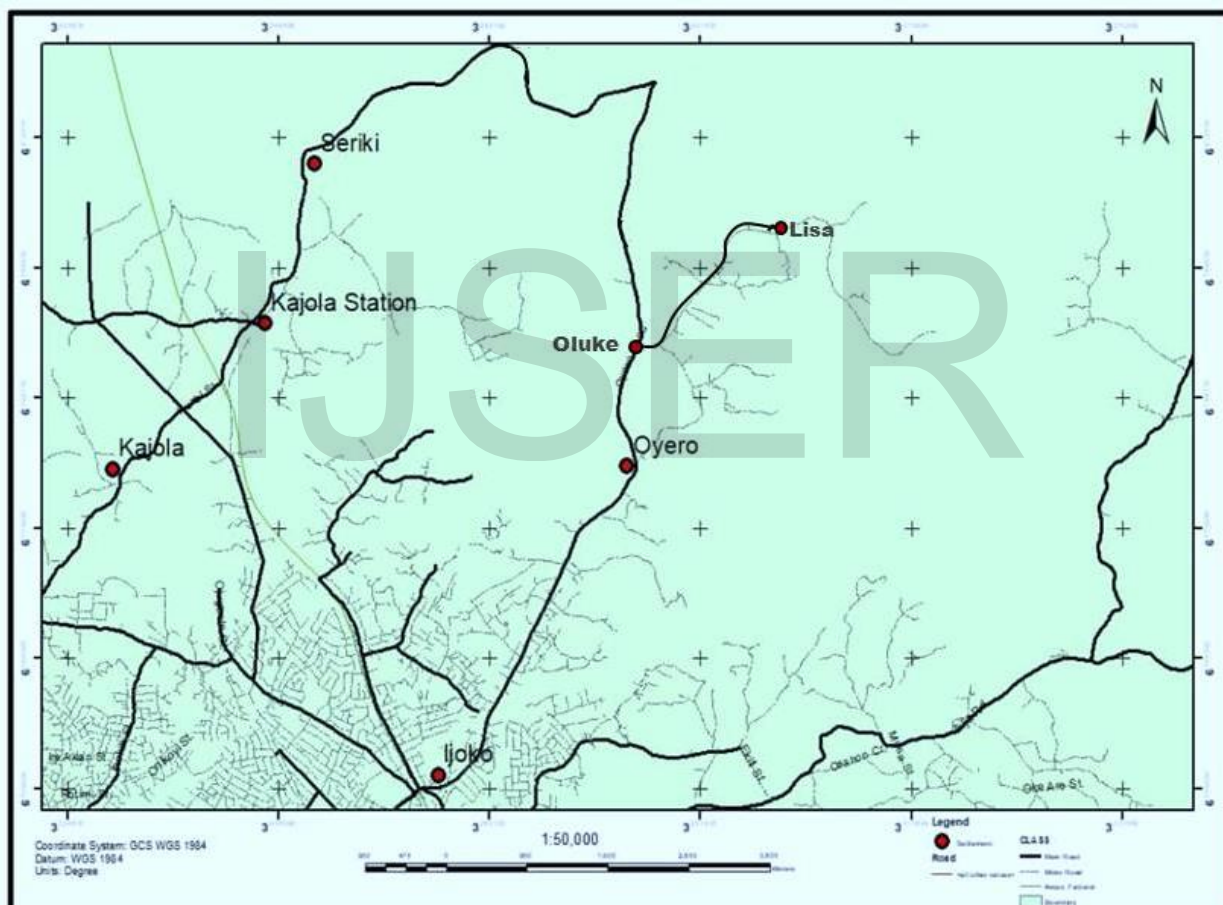


Fig 3: Map of Ijoko-Ota Area

Source: Field Work (2020)

DATA ANALYSIS AND DISCUSSION

Educational Qualification and Occupation of the Inhabitants

As shown in Table 3, the study found that 46.63% and 17.18% of the inhabitants of the study area have secondary and NCE/ND certificate, while 22.09% and 9.2% were HND/first degree and postgraduate degree holders respectively. It was only 4.91% of the inhabitants that have just primary school education.

Similarly, the study discovered that 6.75% were practicing agriculture, such as farming, poultry and fishing, while 13.5% and 41.1% of them were traders and skill workers respectively. However, 25.15% were salary earners in different fields, while the remaining 13.5% participated in other types of occupation, such as school proprietorship, land agency and labour in construction activities.

Table 3: Educational Qualification and Occupation of the Inhabitants

Qualification	Frequency	%	Occupation	Frequency	%
Primary School	8	04.91	Agriculture	11	06.75
Secondary School	76	46.63	Trading	22	13.50
NCE/ND	28	17.18	Skill and handwork	67	41.10
HND/First Degree	36	22.09	Salary earning	41	25.15
Postgraduate	15	09.20	Others	22	13.50
Total	163	100	Total	163	100.00

Source: Field Work (2020)

Reason for Choosing To Live in the Study Area and the Inhabitants Workplace

The study identified 5 reasons why residents of the study area decided to live in the study area. The study found that 30.06% of the inhabitants decided to live in the area because they could not afford rent cost in the urban area, while 21.47% decided to do so because of cheap opportunity to become homeowner. However, 9.82% lived in the area because it was closed to their workplace, while it was a place of origin for 19.63% of the residents. The study found further that 19.02% of the residents lived there because they wanted to live closer to their property under construction.

The study investigated into the place of work of the inhabitants and found that 32.52% of the inhabitants worked in Sango-Ota area, 22.7% worked around Ijoko, while substantial proportion of 41.72% worked in the metropolitan Lagos. The study discovered further that it was just 1.843% and 1.23% of the inhabitants that worked in Ifo and Agbara area respectively.

The Available Public Facilities and the Community Public Power Facilities Providers

The study identified 5 main public facilities and the percentage of the households that have accessibility to these facilities. These include public electricity (65.03%), streetlight (3.68%), paved road (6.75%), unpaved road (27.61%) and borehole/deep well (11.04%). As the main subject of the study, the study went further to investigate into the providers of the public power and found that 26.38% of the inhabitants have access to public power facilities provided by the government, 2.46% have access to the one provided by an individual, while 10.44% of the inhabitants have public power facilities provided by either the NGO or the religious organisation. The study discovered further that higher proportion, 58.9% of the inhabitants have public power facilities which were provided by their community development association (CDA). It was just 1.84% of them that have public power facilities provided by the industrial establishment in their area.

Level of Contribution to the Public Power Provision by the Inhabitants

The study identified that the inhabitants of the study area contributed for the provision of the public power in different way. It was discovered that 71.78% of the inhabitants contributed money for the purchase of electricity provision materials, such as poles, wires and transformers, as well as installation. Also, 12.88% of the inhabitants participated in monitoring the installation, 81.6% contributed money for connecting their house with the public power supply facilities. The remaining 18.4% who did not contribute money for connection were tenants. The study also discovered that 64.42% of these inhabitants contributed money for the repair of the public electricity facilities when there was breakdown. It was only 18.41% of the inhabitants that did not contribute money in any form.

Distance Point of Connecting Public Power to the Area

One of the factors that determine the cost of connecting public power to a community and different dwelling units is distance. As shown by Fig 4, the study investigated into the distance of the public power

facilities connection point and found that 9.82% of the inhabitants connected public power to their area from a distance of less than 1km, 47.85% connected their own area to the public power from a distance of 1 to 2 km. The study discovered further that 33.74% did the connection from a distance of 3 to 4km, while 6.7% brought public light to their area from a distance of 5 to 6 km. It was only 1.84% that connected their area to the public power from a distance of more than 6km.

However, 64.42% of the inhabitants of the study area observed that the payment of the monthly tariff for the public power consumption was not an issue of more economic concern to them, compared to what they were contributing for the public power installation, connection and maintenance. The study observed that majority of the households have no metre to actually determine what they should pay as tariff at every end of the month, while it was only very insignificant proportion, 9.2% that have prepaid metre. Hence, majority of the inhabitants paid their electricity tariff, based on estimated billing.

Planning Implications of the Nature of the Public Power Provision

The study found that due to individualistic approach to the public power connection by the communities, the provision lacked proper planning. Hence, the study area has no approved land use plan. The erection of the electricity poles at inappropriate places, without given adequate setback from roads and buildings were observed. Since each community did the procurement of electricity materials separately from different manufacturer, without being guided professionally, some of the materials used for the installation of the public power were substandard. Although, the cases of electrocution has not been reported. However, literature has discovered that the use of substandard materials, poor installation, among others contributed to poor public power supply and electric sparks [25].

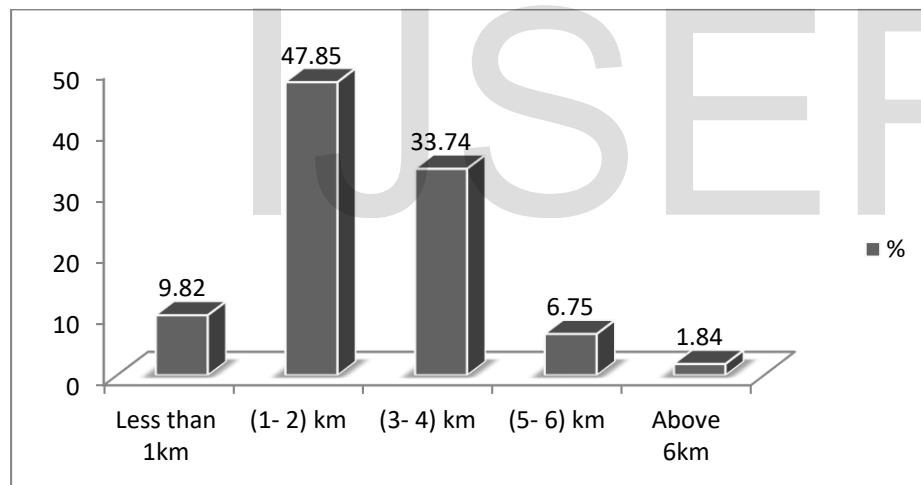


Fig 4: Distance Covered to Connect Public Power by Different Community

Frequency of Public Power Availability and the Number of Power Interruption per Day

Frequencies of the public power availability determine how long the inhabitants will enjoy the power supply for social and economic development. As shown in Table 4, the study measured power supply frequency and interruption from such dimensions as daily frequency, weekly frequency and level of power interruptions. From these measurements, it was found that 7.36% of the inhabitants have public power supply for just 1 to 2 hours per day, 44.79% have the supply for 2 to 4 hours per day, while 38.65% have power supply from the public source for 4 to 6 hours per day. It was only 6.75% and 2.45% of the inhabitants that have access to electricity power supply from the public source for 6 to 8 hours and 8 to 10 hours respectively. None of the inhabitants have power supply from the public source for more than 10 hours per day.

On the weekly frequency, the study found that 8.59% of the inhabitants of the study area have access to power from the public source for 1 to 2 days per week, 28.45% have public power supply for just 2 to 3

days per week. Furthermore, 43.56% and 14.72% have power from the public source for 3 to 4 days and 4 to 5 days per week respectively. However, it was just 3.68% of the inhabitants that have access to power from the public source for 5 to 6 days per week. Hence, none of the inhabitants have access to power from the public source for more than 6 days per week.

Looking at the number of times in which the public power was interrupted per day, the study found that whenever there was light from the public source, 4.3% of the inhabitants experienced power interruption 2 times per day, 43.56% experienced the incidence 3 times per day, while 21.47% experienced it 4 times per day. However, 11.66% of the inhabitants experienced power interruption 5 times per day, 4.91% experienced the incidence of power interruption 6 times per, while 14.11% experienced it in an uncountable number of times per day.

Table 4: Frequency of Public Power Availability and the Number of Interruption per Day

Daily Frequency	Frequency		Weekly Frequency	Frequency		Interruption Number Per Day	Frequency	
	Freq	%		Freq	%		Freq	%
(1-2) hours	12	7.36	(1-2) days	14	8.59	1	0	00.00
(2-4) hours	73	44.79	(2-3) days	48	29.45	2	7	04.30
(4-6) hours	63	38.65	(3-4) days	71	43.56	3	71	43.56
(6-8) hours	11	6.75	(4-5) days	24	14.72	4	35	21.47
(8-10) hours	04	2.45	(5-6) days	06	3.68	5	19	11.66
(10-12) hours	0	0.00	(6-7) days	0	0.00	6	08	04.91
Above 12 hours	0	0.00	Everyday	0	0.00	Uncountable	23	14.11
Total	163	100	Total	163	100	Total	163	100

Source: Field Work (2020)

Quality and Stability of the Public Power Supply

Efficiency of the power supply from the public source was measured using the power supply quality and stability. The study found that 28.22% of the inhabitants observed that the quality of power from the public source was adequate to run their electrical equipment and machines, 38.65% believed that it was fair, while 33.13% observed that the quality of the power was bad to use it for a meaningful purpose. Measuring it from power supply stability and regular voltage, the study found that 6.75% of the inhabitants observed that the public power supply was stable, 39.88% observed that the power was fairly stable, while 53.37 observed that power from the public source was not stable at all. Hence, power supply instability and fluctuation can cause light sparking, damage electrical equipment and burning [24].

Coping Mechanism with the Public Power Shortage

Due to the challenges faced in the public power availability, the inhabitants of the area have devised some mechanisms to cope with the situation. As shown in Fig 5, the study found that 55.83% of the inhabitants used private power generating machines to provide electric power when there was blackout, 3.68% of them used solar power, while 38.04% used lamp, such as rechargeable lamps and lamps that use batteries. However, 2.5% of these inhabitants used hurricane lantern.

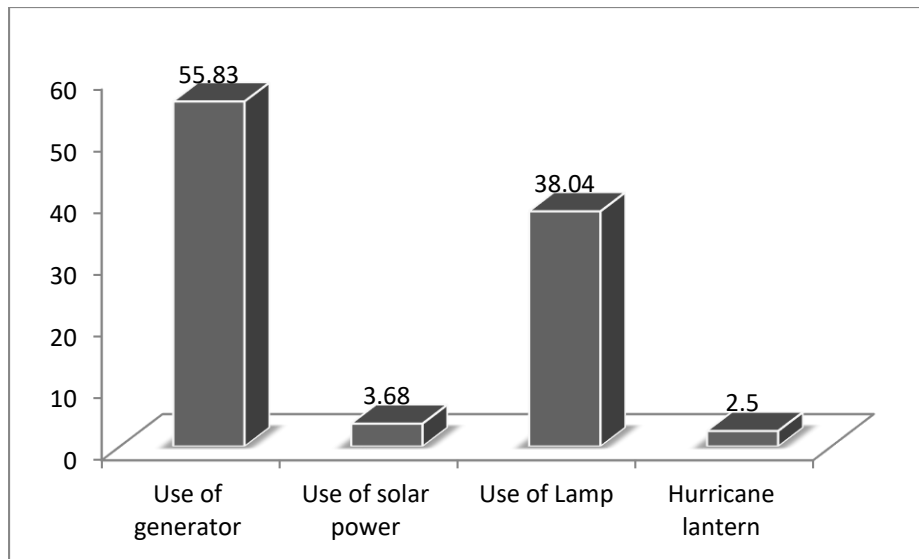


Fig 5: Coping Mechanism with the Public Power Shortage

Effects of the Existing Level of Public Power Availability

The study found that the existing level of public power accessibility in the study area affected the inhabitants in different ways. The first one is the economic activities, which have something to do with the use of power supply, such as welding, gridding, sawmilling, repair of electronic and electrical equipment, hairdressing and barbing among others. Those who made use of power supply faced the challenge of high cost of production and low economic return on their investment, because more money was needed to fuel their power generating set. Some inhabitants observed that the existing level of power availability from the public source was making social life difficult to live. Lack of regular light and streetlights was identified as one of the causes of security challenge.

SUMMARY OF THE MAJOR FINDINGS

The rate at which Lagos Megacity is expanding to the suburbs is very alarming and very organic in nature. This incidence could be attributed to poor planning and inadequate housing provision in the city centre, where the most of the economic activities are located. Hence, the morphological transformation in the city centres has paved way for sporadic change in the use of land, mostly from residential to commercial, thereby reducing the available accommodation, in the face of high rate of urban population concentration.

The development pattern in the suburbs was very dispersed, lacked proper planning and adequate provision of basic needs of life, particularly public power supply. The residents decided to live there, not because it was the best option, but to avoid high rent cost in the city and to have opportunity to build their own personal shelter; also to live very close to workplace.

The dispersed expansion on the fringes has increased the social costs for urbanisation, specifically the provision of the public electricity power infrastructural facilities. The provision has been almost abandoned completely by the government for the suburban residents' initiatives. The level of financial contribution to the public power provision by the inhabitants has properly described the level of abandonment of the suburban areas of Lagos.

Due to the expansive nature of the suburban growth of Lagos, the distance covered by some communities to connect their area to the public power grid is very enormous. Because of this situation, majority of the inhabitants believed that what they spent to connect with the public power was of much of concern than what they pay monthly as tariff on the public power consumption.

Despite the fact that the inhabitants did most of the installation and connection of the public power supply to their communities, they were faced with low frequencies of power availability, poor quality of power supply, power fluctuation and interruption. Hence, the majority of the households have no metre to actually determine what they should pay at every end of the month as tariff. Hence, it was only little number of them that have prepaid metre. However, the estimated billing gives room for cheating and exploitation by the government agency in charge of power.

Resulting from the epileptic power supply in the study area, some of the inhabitants have come up with their different coping method. The most common one was the use of power generating machines, solar power and the used of lamps, such as rechargeable lamps and dry cell battery lamps.

CONCLUSION AND RECOMMENDATIONS

It can be concluded that the suburban areas at the edge of Lagos are facing the problem of planning and adequate provision of public electricity power. Hence, the expansive growth of the area has made the provision of the public power facilities to be very cost ineffective. Therefore, there is a need for sustainable urban development planning and infrastructural provision.

Towards reducing Lagos Megacity expansion, it is important to adopt the concept of compact city that will create cities within the city; a city with the multi-nucleus centre that will contain many high risings for residential and commercial uses. This will reduce pressure on housing that forced residents to the suburban area. However, compact city will ensure cost effective procurement of public infrastructural facilities, because it will bring many activities together in a small area and reduce the challenge of geographical coverage in facilities distribution. Increasing accessibility to public transit would have eliminated the traffic problem that may arise from bringing many activities together in a small area. It should be noted that the adoption of compact city does not mean that the existing expansive cities and their agglomerations should be destroyed. Urbanisation should be encouraged in a guided manner, through planning and re-planning.

Site and service scheme should be introduced into the planning of the suburbs. This will promote adequate provision of the basic needs of life and ensuring cost effective public facilities provision. Hence, self-built housing provision approach that is common in the suburbs of Lagos should be adequately coordinated and supported with adequate public infrastructure.

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