



GSJ: Volume 5, Issue 9, September 2017, Online: ISSN 2320-9186  
[www.globalscientificjournal.com](http://www.globalscientificjournal.com)

## ASSESSING HOUSEHOLD ACCESS TO MUNICIPAL ELECTRICITY SUPPLY SERVICES IN MAIDUGURI

Abdullahi Babagana, Fandi Shettima Ali

Department of Urban and Regional Planning, Ramat Polytechnic, Maiduguri. babagfly@gmail.com  
Department of Geography, Ahmadu Bello University, Zaria. yafandishettima@gmail.com

### KeyWords

Electricity supply, Urban services, Access, Energy, Household, Maiduguri, Service Delivery

### Abstract

This study was designed to assess household access to municipal electricity supply services in Maiduguri. Questionnaires were administered to 381 households within Maiduguri metropolis using cluster sampling at ward level and systematic sampling within each ward. Interview was also conducted with key management staff of Yola Electricity Distribution Company (YEDC). Descriptive statistics was utilised in analysing the collected data and was presented in tables and charts. The analysis revealed that, 97% of the households are connected to the national grid. The majority constituting 53% utilised a single phase, while 31 utilised two phase. Majority of the households, that is, 63% have no metre to ascertain the amount of electricity consumed per month. It was revealed also that, 48% get electricity supply for less than 5hours in a day and 65% agree that the electricity tariff is not affordable. It was therefore recommended that, a power station should be immediately built for the other power line supplied to Maiduguri town from Yobe state. Prepaid meres should be enforced for all households in the town.

## 1.0 INTRODUCTION

Urban services in cities have been identified as vital ingredients for survival as well as a pull factor for investment and development [14]. But in recent years, the provision of and access to these services have not been even, throughout cities [15]. This is because the city is usually unprepared in tackling the challenges of provision and access to the services [9]. Access to urban services is believed to be essential for health, security, livelihood, and quality of life, and is especially critical for women and children.

Improved electricity supply for example, could thus, provide a wide range of benefits such as mitigating maintenance cost; through preventing frequent tampering with installation, supporting the effectiveness and efficiency of other dependent services such as emergency service, water supply service, ICT services, health services among others [1], [4], [5].

Urban services are crucial for the development and functionality of urban areas. It provides the foundation on which any city will thrive. Adequate access to urban services contributes to the sustainability and economic growth of urban areas, promotes the competitiveness of local businesses, improves labour productivity, enhances the investment climate in the city and contributes to its attractiveness [6], [8].

Universal access to affordable, efficient and clean energy services is essential for inclusive economic development. For some parts of the world, such as urban South Asia and sub-Saharan Africa, access to energy is a key challenge. About 1.3 billion people in the world do not have access to electricity and this number could grow as the population increases [7]. Among urban populations, 700 million lacked access to clean fuels in 2005, with 279 million lacking electricity [11].

In Nigeria, 75% of the population depend on firewood for cooking, with the majority in the north, and 40% have access electricity [3]. In urban areas, 56% depend on firewood, 27% kerosene, 6% charcoal, 4% electricity, 2% sawdust and 5% gas for their household energy source [13]. Eleri et al, [3] argued that, the reason for this situation are that,

Nigeria has no budgeting for cooking energy programmes, weak institutional champions, inadequate access to finance and no clear service delivery models among others.

In meeting the millennium development goals, the Nigerian government need to step up the electricity supply to needed nationwide to 10,000mega watts [13]. In Maiduguri, there are two supply points under the Yola Electricity Distribution Company (YEDC), but since inception only the power grid from Yola is operational, while that from neighbouring Yobe state is dormant till date. This has seriously affected the supply of electricity in the town stalling and slowing down commercial, administrative and institutional activities. This study therefore assesses the household access to electricity in the town taking into consideration the source, tariff, consumption, coverage area and duration of supply.

## 2.0 STUDY AREA

Maiduguri is the oldest town in North Eastern Nigeria which is a creation of the British colonialists to serve as a new capital for the relic of the Kanem Borno Empire that came under their influence in the late nineteenth century. However, there were several small settlements nearby including one called Maiduguri which was in existence since early seventeenth century [16]. It is located on latitude 11° 46'N, 11° 55'N and Longitude 13° 4'E, 13° 15'E. It rose to primacy due to it, being an administrative seat since colonial times and being a gateway to Niger, Chad and Cameroun republic. As the capital of Borno state from long till date, the city has continued to grow, with various ethnic group from within and outside the country. Spatially, Maiduguri lies in the Sudan-Sahel transition zone covering an area of about 15-18km long and 11-15km wide [2], [16]. Demographic studies of the area reveals that population of Maiduguri as 540,016, out of which 282,409 are males and 257,607 are females [12].

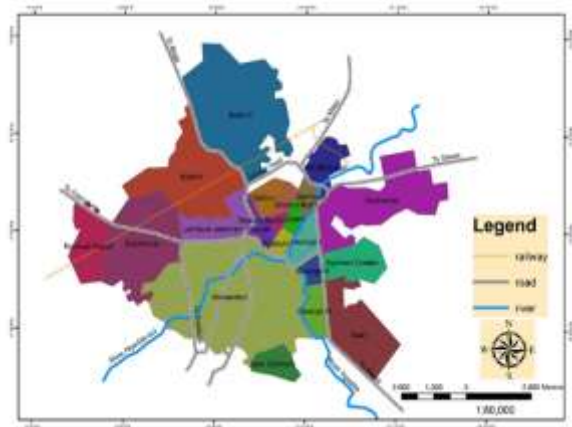


Fig 1: Wards of Maiduguri Metropolis (Source: [10])

### 3.0 Materials and methods

Questionnaires were administered to 381 households, drawn from the total of 56159 households of the metropolis. The 381 questionnaires were administered to household heads in the 21 wards of Maiduguri metropolis using cluster sampling at city level, with each ward being a cluster, and systematic sampling at ward level to select individual households. In the absence of a male household head, it is administered to a female. Interviews were also conducted with key management staff in the two main business units of Yola Electricity Distribution Company (YEDC) responsible for municipal Electricity supply in the town. The questionnaire was analysed using descriptive statistics to assess the level of access to electricity supply services to households in Maiduguri.

### 4.0 RESULTS AND DISCUSSION

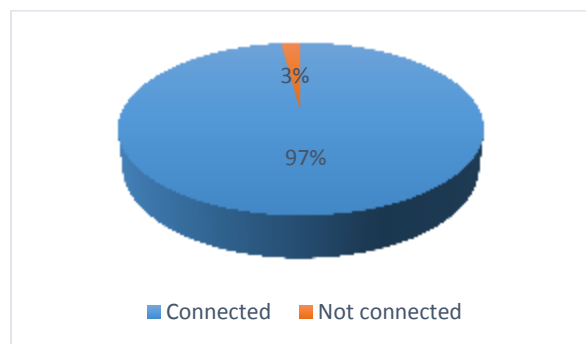


Fig 2: Connection to National Grid (Author's field work, 2016)

Fig. 2 shows that 97% of the households are connected to the national grid while just 3% are not connected. This means that, majority of the households have first level access to the service by being connected, which is an important asset for the city.

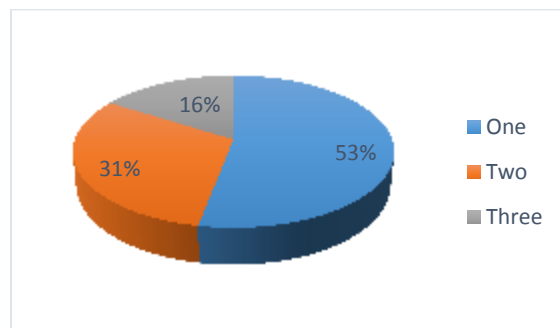


Fig. 3: Number of phases or lines used by household (Author's field work, 2016)

Fig. 3 shows that, 53% of the households use a single phase that supplies electricity to them, while 31% and 16% use two and three phases respectively. Municipal electricity supply to households have a maximum of three phases. Therefore the number of phases determines the level of access to the service. Since more than half of the respondents have a single phase, it implies that the level of access is low compared to the households with double and triple phases.

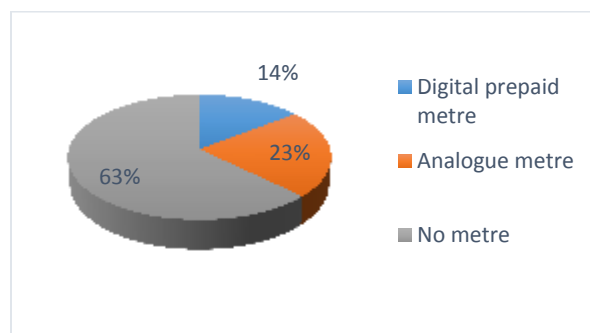


Fig. 4: Type of Connection Metre Utilised (Author's field work, 2016)

Fig. 4 shows that, 63% which are the majority of the households don't have metres with which they were connected with. Some 14% and 23% of the households utilise the new digital prepaid meter and the old analogue metre. This indicates that, taking track of actual electricity consumption for the majority will be difficult. Though YEDC

collects a flat rate from those without metres, some households still are not captured.

**TABLE 1**  
**Electricity Service Zones**

Business Unit	Service Centres	Coverage Areas
<b>Yerwa Business Unit</b>	Main office	Balabalin ward, Shehuri South ward, Fezzan and Zango in Hausari ward, Old GRA and Lagos Street in Maisandari ward
	Kofa biyu	Old Maiduguri ward, Budam Area in Mafoni ward, Shehuri North ward, Lamisula ward
	Bama road	Customs in Mashamari ward, Gambaru Road in Gambaru ward, Gwange I ward, London Ciki in Ngomari Costain ward
	Jajeri	Jajeri Area and Ngarannam in Bolori II ward, State Low Cost Hoosing in Mashamari ward, Kumshe and Mafoni in Mafoni ward
	GRA	East of Damboa Road and Polo Area in Maisandari ward, Giwa Barrack Road and Galtimari in Bale Galtimari ward
	Mairi	Mairi Ward, Ngomari Costain, ward, New GRA in Miasandari ward, Gwange II ward, Gwange III ward
<b>Bulumkutu Business Unit</b>	Baga road	Old Bolori and Bolori layout in Bolori I Ward
	Bulumkutu	Bulumkutu Ward, Mocha Ganari in Maisandari ward
	Damboa road	West of Damboa Road in Maisandari ward
	Pompomari	Pompomari Area, Federal Lowcost Housing and Shagari Housing Units in Bolori I ward

Source: Yola Electric Distribution Company Maiduguri

The Yola Electricity Distribution Company (YEDC) is responsible for sales and servicing of electricity supply to the public in Maiduguri. The company has organised the city into spatial units consisting of Business units and service centres to ease the coordination of provision of its services. Table 1 shows the current spatial organisation of YEDC service provision units in the city. The agency well-organise the service units to ensure efficient electricity supply to the entire town. Alas, the management expressed their dismay on the rampant sabotage on power installation and illegal connections which has seriously marred the provision of the service to the public.

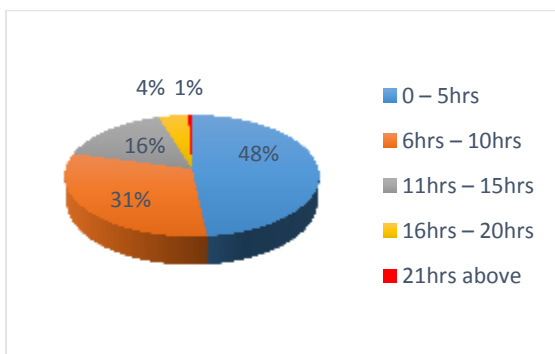


Fig. 5: Duration of Electricity Supply per day (Author’s field work, 2016)

Fig. 5 shows that, 48% of the households enjoy electricity supply in a day for 5hours or less. Only 31% enjoy electricity between 6 to 10 hours every day. 21% of the households enjoy electricity supply between 11 to 20 hours per day while just a few of 1% enjoy electric power for more than 21 hours daily. This implies a low supply of electricity to the majority of the households and is a strong disadvantage for the city.

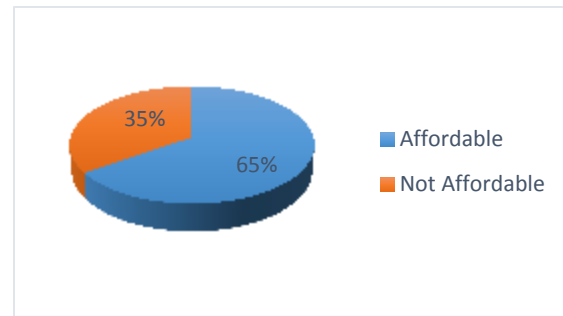


Fig 6: Affordability of Electricity Tariff (Author’s field work, 2016)

Fig. 6 shows that, 65% of the respondents agreed that the current electricity tariff is affordable, while 35% agreed it is not. This means a small part of the population have a chance of reduced access to the service as a result of the unaffordable tariff.

## 5.0 CONCLUSION AND RECOMMENDATIONS

The majority are connected to the national grid out of which are through single phase, with only a few connected through two phases and three phases. Though the new digital prepaid metre is used in some households including the old analogue metre, the majority still don’t have metres and are charged flat rates for electricity consumption. YEDC has organized its business units and service centres throughout the city to ensure equity and efficient service delivery. Despite this, the majority still enjoy electricity supply for 5hours and less per day, coupled with non-affordability as agreed by 65% of the households. This clearly indicates that, connection to the national grid alone doesn’t suffice in achieving effective access to electricity supply in Maiduguri. Other factors such as, tariff and duration of supply among others are also important in measuring the level of access. It is recommended that, the long overdue power grid coming via Neighbouring Yobe state should be

fully operational by constructing a power station for it. The use of the new digital prepaid metre should be enforced for all households, for it will not only promote the pay as you consume system for households, but it will also prevent and mitigate frequent tampering of power installations, make maintenance easy as well as mitigate power installations vandalism.

## REFERENCES

- [1] Babagana, A. (2017). *Measuring Access to Services as an Indicator of Inclusiveness In Maiduguri*. Unpublished MSc Thesis Submitted to the Department of Urban and Regional Planning, Ahmadu Bello University, Zaria
- [2] Daura, M. M. (2001). *The Physical Environment and Development: A Study of Borno Region in Ogunnika*, O., Irefin, D., Daura, M. M. and Balami, D. (eds) *Environment and Development Issues in Sub-Saharan Africa*. Seminar Series of Social and Management Science. University of Maiduguri (pp.35-47).
- [3] Eleri, O. E., Ugwu, O. and Onuvae, P. (2012). *Expanding Access to Pro-Poor Energy Services in Nigeria*. International Centre for Energy, Environment and Development. ChristianAid, Nigeria.
- [4] Evans, B. (2005). *Securing Sanitation: The Compelling Case to Address the Crisis*. Stockholm International Water Institute (SIWI).
- [5] Fewtrell, L. and Colford, J. M., Jr. (2004). *Water, sanitation and hygiene: Interventions and Diarrhea: A Systematic Review and Meta-analysis*. World Bank Health Nutrition and Population Discussion Paper.
- [6] Galiani, S., Gertler, P. and Schargrodsky, E. (2005). *Water for Life: The Impact of the Privatization of Water Services on Child Mortality*. *Journal of Political Economy* Vol 113 No.1 Doi:10.1086/426041 (pp.83-120).
- [7] International Energy Agency (IEA) (2012). *World Energy Outlook*. Press presentation, London.
- [8] Jalan, J. and Ravallion, M. (2003). *Does Piped Water Reduce Diarrhea for Children in Rural India?* *Journal of Econometrics* 112(1): 153 – 173.
- [9] Jamal Poverty Action Lab (J-PAL) (2012). *Urban Services Review Paper*. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL). Boston Massachusetts.
- [10] Kawka, R. (2002). *The Physiognomic Structure of Maiduguri*. in Kawka, R. (ed) *From Bulamari to Yerwa to Metropolitan Maiduguri*. Rudiger Koppe Verlag, Koln
- [11] Mitlin, D. and Satterthwaithe, D. (2013). *Urban Poverty in the Global South: Scale and Nature*. Routledge, Oxford. No. BKK113645
- [12] National Population Commission (NPC) (2009). *Federal Republic of Nigeria Official Gazette*. No. 2 Vol. 96. A Legal Notice on Publication of 2006 Census Final result, Abuja Nigeria.
- [13] NBS-CBN-NCC Collaborative Survey (2011): *2010 Annual Socio-Economic Survey Report*. National Bureau of Statistics (NBS).
- [14] UN-Habitat (2003). *Slums of the World: The Phase of Urban Poverty in the New Millennium? Monitoring the Millennium Development Goal, Target 11- World-wide Slum Dweller Estimation*. Working Paper. UN-Habitat, Nairobi.
- [15] WaterAid. (2007). *Water, Environmental Sanitation and Hygiene Programme for Urban Poor*. WaterAid and UN-Habitat. [www.unwac.org/pdf/brochures/water\\_poor.pdf](http://www.unwac.org/pdf/brochures/water_poor.pdf)
- [16] Waziri, M. (2009). *Spatial Pattern of Maiduguri City: Researchers' Guide*. Adamu Joji Publishers, Kano City.