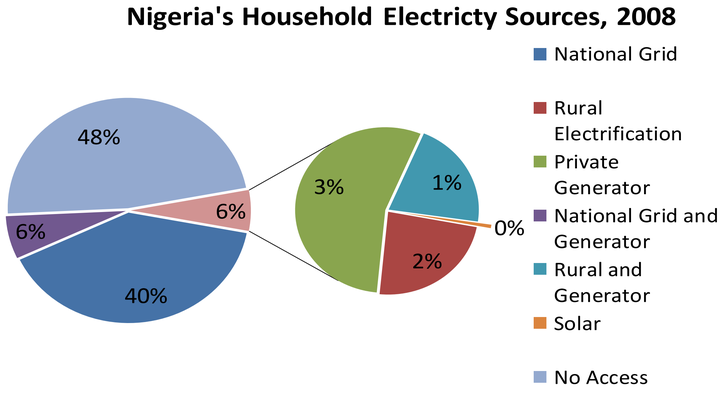
Nigeria's Household Access to Electricity, 2008

Introduction

Nigeria is endowed with abundant natural energy resources including crude oil, natural gas, coal and lignite, hydropower, solar radiation, wind and biomass (fuel-wood, animal and plant wastes). It is the 6th largest exporter of crude oil in the world and has the 14th largest natural gas reserve in the world and first in Africa. However, some of these resources are yet to be tapped while the maximum utilization of others is not in view, thus making energy a major concern and priority in the country. Poor access to electricity continues to be the result of resources underutilization and a major constraint for houdeholds, businesses and overall economic growth.

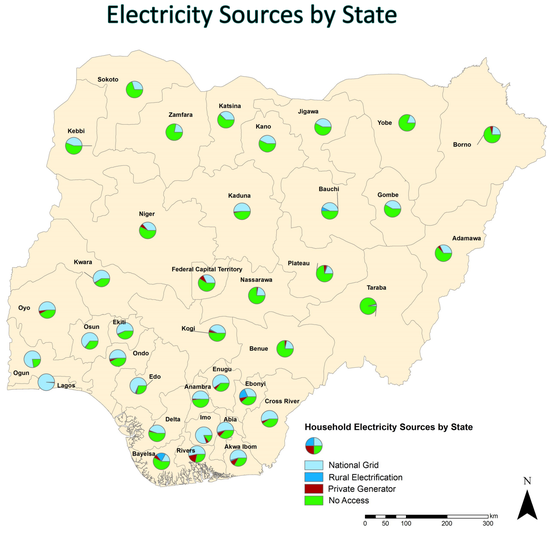
Sources of Electricity

Household sources of energy include the national grid supply, rural electrification and private generator. Nigeria's access to modern forms of energy is low despite its abundant energy endowment.



Over 40 percent of households have no access to electricity and still depend on traditional forms of energy such as firewood and kerosene. About 45 percent depend on the national grid provided by the recently privatized Power Holding Company of Nigeria.

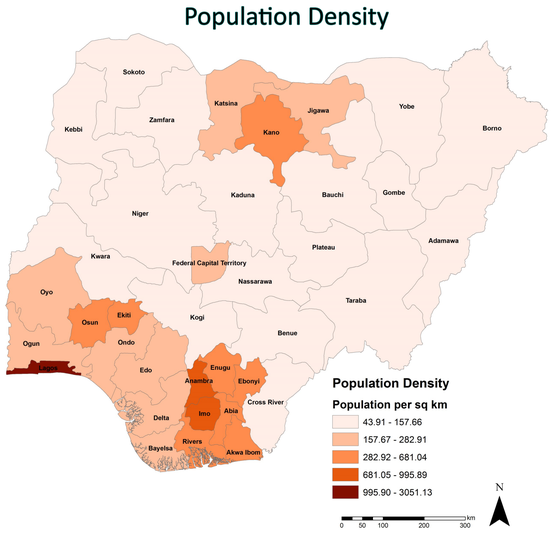
The map shows the distribution of the different energy sources by state. It reveals household dependence on particular sources of electricity and how it varies across the country.



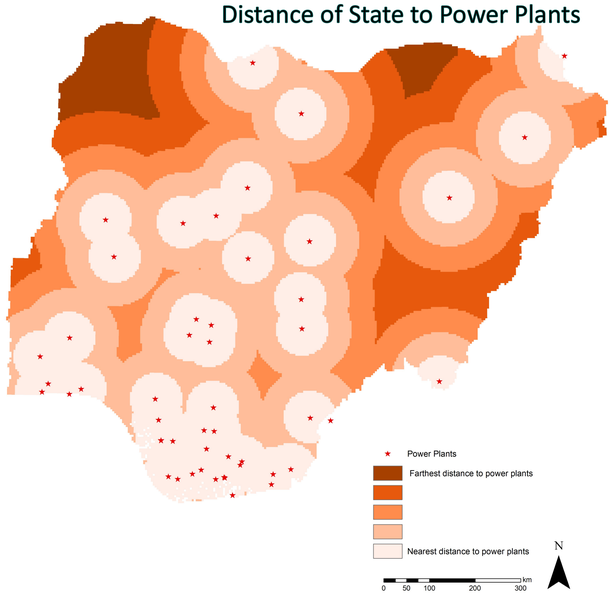
Methodology

To provide a basis for this analysis, I began with a map of Nigeria that included layers of admin boundary level 1, power plants, population and percentage household access to the different sources of electricity. The layers were projected to the UTM Zone 32N coordinate system.

I sought to determine areas with the greatest need for more electricity. To achieve this, I considered certain factors including: the areas with highest population density, the percentage of households with the least access to all forms of electricity and the distance of each state to the nearest power plant. To derive the population density by state, I divided the population data by the area (in square kilometers) of each state. While certain states have a higher population, it is important to use the density result because some states more crowded relative to the area of the state, increasing their energy consumption and need for more electricity.



Using the power plants layer, I determined the euclidean distance to power plants using the Euclidean Distance Tool. The zonal statistics table transfers the euclidean distance to the states and calculates the minimum, maximum, average and Standard deviation of each state to the nearest power plant. I used the average distance in my analysis.



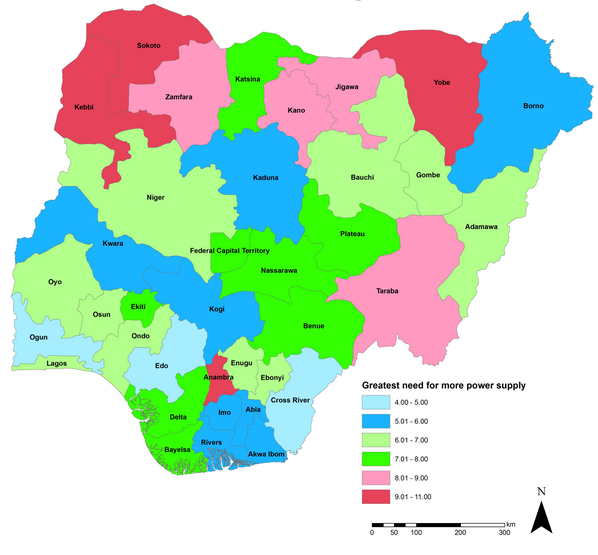
I ranked each of these factors in 5 classes (Good = 5 and Bad = 1) using natural jenks interval. Then I used the select by attributes function to map out the states within each junk and that became a new field which I later added up all the ranks to determine the population with the greatest need for more electricity. The categories are shown below:

Population Density	Rank	% with no access	Rank	Distance to Power Plants	Rank	Total Rank
0 - 158	1	0 - 15	1	0.1 - 0.5	1	3
159 - 183	2	16 - 34	2	0.51 - 1.0	2	6
184 - 681	3	35 - 48	3	1.01 - 1.5	3	9
682 - 996	4	49 - 60	4	1.51 - 1.8	4	12
997 - 3051	5	61 - 89	5	1.81 - 2.2	5	15

Conclusion

According to my analysis, Kebbi (Northwest), sokoto (Northwest, Yobe (North East) and Anambra (South East) have the greatest need for more electricity. These findings correlate with the percentage of households with no access to electricity in these states.

I observed that Taraba state recorded the highest percentage of households without electricity while Lagos recorded the least. Conversely, Ogun State had the highest percentage of households depending on the national grid, while Taraba State had the least. It is clearly shown that the rural electrification programme in the country is yet to record a remarkable progress with about 2 percent of household utilizing it as a source. Solar energy is yet to be substantially utilized despite Nigera's solar potential. Energy supply forms the bed rock of economic development and therefore, more effort should be geared towards improving households access to electricity.



Cartographer: Florence Young-Aragbaiye

Data Sources: National Bureau of statistics and World Bank

Projection: NordSahara 1959 UTM Zone 32N

Date: May 5, 2015