Lighting Energy Sources in Kenya

# Mapping Scenario

The Kenyan government is investing in a program to provide electricity to rural areas of the country. They want to see a spatial distribution of lighting energy usage across Kenyan counties. Specifically, they are interested in learning which counties are primarily using modern lighting sources (electricity and solar energy) and which counties are primarily using primitive lighting sources (pressure lamps, lanterns, tin lamps, etc.). They would like to know the prevalence of each lighting energy source in each county, so they can ultimately determine the feasibility, cost, and benefits of providing electricity to more parts of the county.

Kenya lighting energy usage data from 2009 is available on the Kenya Open Data Portal (<https://www.opendata.go.ke/Distribution-and-Consumption/Main-Lighting-Energy-Sources-averaged-to-Counties-/g9hi-bs9n>), but it is only available in tabular format. An interactive map would allow the Kenyan government to determine lighting energy usage patterns more clearly.

# Why am I making this product?

I am making this product to provide the customer with an interactive map showing lighting energy usage patterns across Kenyan counties, so that they can see the prevalence of each lighting energy source in each county.

# What do I want to get out of this product?

* Create an intuitive web mapping interface that visually represents lighting energy data in Kenya in a meaningful way and allows users to interact with the map to explore the data more deeply
* After seeing areas where primitive lighting sources are the most prevalent, I would like for the customer to support an enhancement to add additional infrastructure data (such as utility networks) to the map, so they can better determine the feasibility, cost, and benefits of providing electricity to more parts of the country

# What do our users want to get out of this product?

* See the prevalence of each lighting energy source (electricity, pressure lamp, lantern, tin lamp, gas lamp, fuel wood, solar, and other lighting) in each of Kenya's counties
* Learn where electricity consumption is the most and least prevalent
* Learn where solar energy consumption is the most and least prevalent
* Learn where primitive lighting sources are the most and least prevalent
* Consider the feasibility, cost, and benefits of providing electricity to areas where primitive lighting sources are the most prevalent

# Content Requirements

* Lighting energy usage data (in percentages of each county's population) will be represented as proportional symbols
* Data will be encoded as circles which represent the percentage of the population using each lighting energy source (electricity, pressure lamp, lantern, tin lamp, gas lamp, fuel wood, solar, and other lighting)
* The data from each lighting energy source will be shown in separate layers, so that users can turn each lighting energy source on and off
* The raw percentage data will be available to the user
* Data will be displayed on a standard basemap, so that users can locate the counties in a wider geography and see the road network (seeing the road network can help users determine the feasibility of providing electricity to an area)
* A legend will inform user of the relative magnitude of the circles

# Functional Specifications

* The map will be limited to Kenya
* The map will load the data dynamically from a CSV file
* Eight data layers of proportional symbols will be created from the data file: one for each lighting energy source (electricity, pressure lamp, lantern, tin lamp, gas lamp, fuel wood, solar, and other lighting)
* Data layers will be drawn to the map
* Users will be able to turn each layer on and off
* Users will be able to hover over a county to see an info panel showing the percentage of each lighting energy source in that county