

Off-Grid Market Selection in Zambia

Who We Are

We are an interdisciplinary research group made of students and faculty of Duke University (USA) that has been working over the past year to develop policy roadmaps and business development suggestions for off-grid energy companies in Zambia.

Our goal is to create tangible and practical tools in addition to guidelines and suggestions that will accelerate electrification in areas in Zambia and enable the different players in the field to work together to properly understand each other's needs as they scope out the future of the Zambian energy space.

Besides this application, we also aim to help the Zambian off-grid energy space with

- Policy and financing guidelines to enable off-grid companies to succeed in the space.
- Determining the willingness to pay for electricity in localities in Zambia by integrating data from Living Conditions Monitoring Survey (2015).

Interested in More Information? Contact us

We appreciate your feedback! Please let us know how this application could be useful to you and other kinds of data we could add to the model to improve it.

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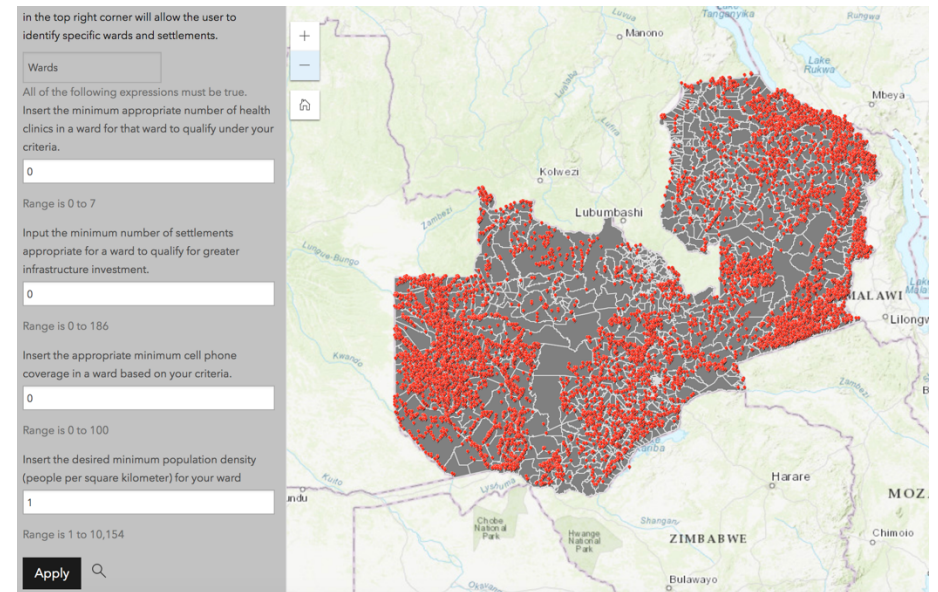
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Overview

Private off-grid companies in Zambia usually have difficulty identifying new settlements for expansion. Scouting settlements is tedious and data mining can be costly in both time and resources.

The application is designed to facilitate the process of site and market selection and allow users (especially microgrid developers and Solar Home System companies) to identify the most proper location based on multiple criteria.



Check out our new online app in which you can toggle attributes and find what suits your organization's needs!

Link: <http://bit.ly/2H4GLTY>

App Functions

This application has two types of layers. Primary Layers (“Settlements” and “Ward”) are the layers with which the user will visualize possibilities for siting. Reference Layers (“Protected Area”, “Electrification Status”, distance to electricity infrastructure, etc.) can be used to elucidate more information about selected sites.

This application can identify appropriate wards based on:

- Desired Minimum number of health clinics
- Desired Minimum number of settlements
- Desired Minimum cell phone coverage
- Desired minimum population density

After identifying desired wards, the application can identify appropriate settlements based on:

- Maximum distance from a railroad
- Maximum distance from a road
- Maximum distance from existing distribution lines
- Maximum distance from existing transmission lines
- Maximum distance from existing substations
- Whether a settlement is within electrified area
- Whether a settlement is within protected area

The search function allows users to identify information for specific wards and settlements if they have prior knowledge pertaining to a location about which they are curious.

Acknowledgement

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Data Source

Data	Source	Specification
Zambian 2006-2010 Ward Boundaries	Standard University	
100m Population Density	WorldPop Africa (Zambia) – School of Geography and Environmental Science, University of Southampton	Use 2015 estimates of people per hectare, unadjusted
Electrification Status	USAID Zambia Electrification Geospatial Model	
Substation	USAID Zambia Electrification Geospatial Model	
Distribution Lines (11kv)	USAID Zambia Electrification Geospatial Model	More data around Lusaka
Zambia Transmission Network (69 kV or above)	African Development Bank and Open Street Map	Only use existing transmission network
GSM Signal Coverage (2015)	ZICTA, Investment Profile	
Zambia Road Network	UN World Food Programme, GeoNode	All road types are considered
Zambia Railroad	DIVA-GIS	
Health Clinics (2006)	The World Bank Group	
Protected Area (2019)	UNEP- WCMC. World Database of Protected Areas	