

Reaching Universal Energy Access in Ghana by 2020 and 5th Mini Grid Action Learning Event and Summit

Geospatial Planning – Focusing on remaining 15% non-electrified communities

Venue: Movenpick Ambassador Hotel - Accra

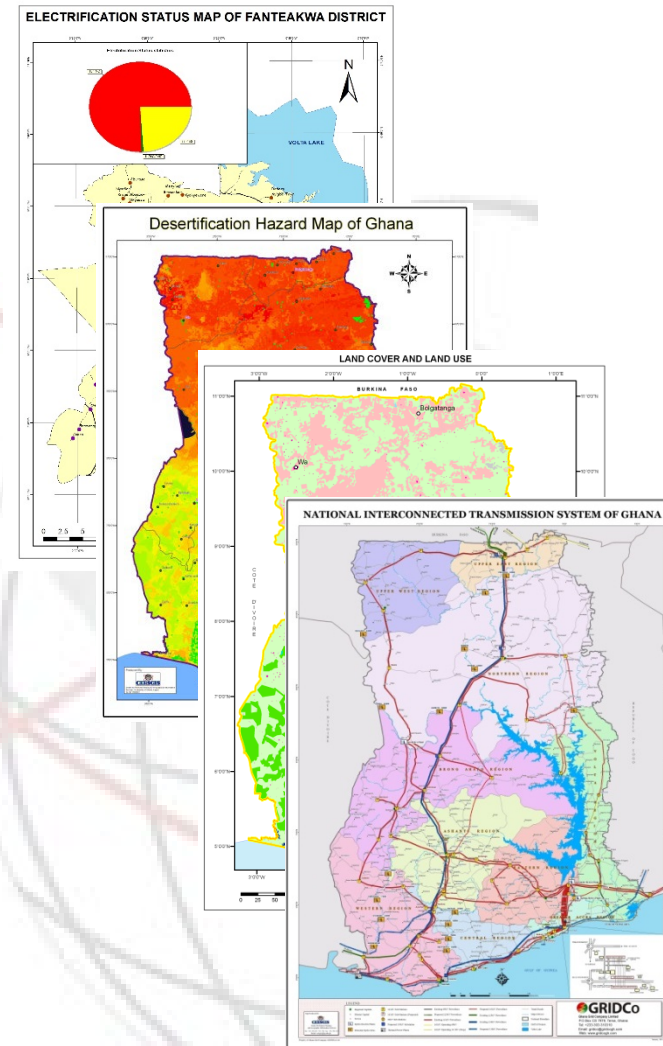
27th June 2019

Presented by: Mr George Owusu
(Senior GIS Specialist, CERSGIS)

Government of Ghana / World Bank ESMAP/ DFID / SREP

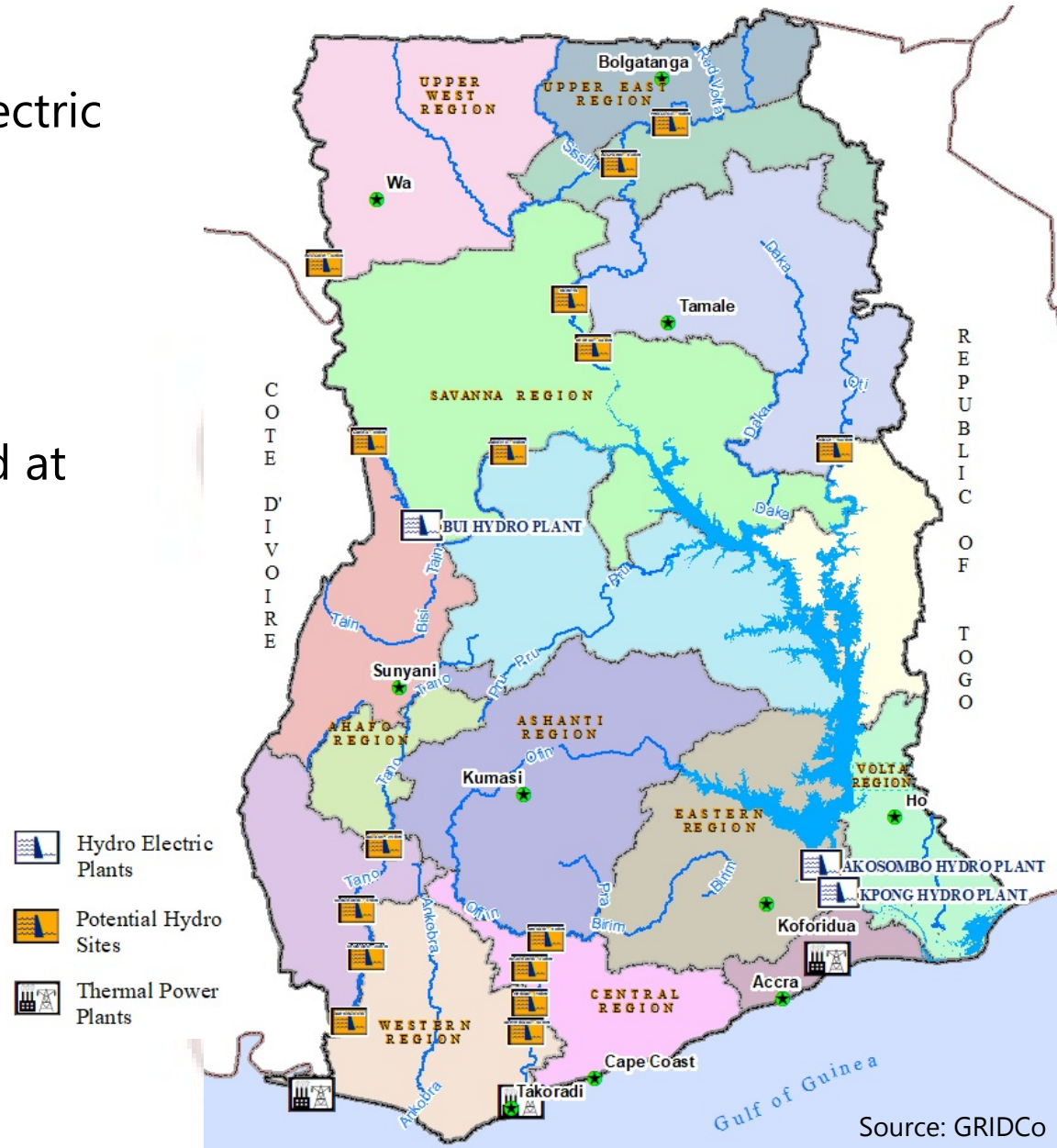
Centre for Remote Sensing and Geographic Information Services (CERSGIS)

- Established by EPA and University of Ghana in 2000 as a self-financing GIS service and research support centre
- Provides geographic information services and the application of GIS and remote sensing to sector specific projects
- Clients include government and non-governmental organizations, development partners and the private sector



Major sources of power in Ghana

- Three major hydro-electric dams located at
 - 1) Akosombo
 - 2) Kpong
 - 3) Bui
- Thermal Power located at
 - 1) Aboadze (Karpower)
 - 2) Atuabo
 - 3) Tema (Asogli, TICO)



Background

At 84% access to electricity, Ghana is second only to South Africa in sub-Saharan Africa. Nonetheless, about 33% of rural households are not electrified. Majority of these rural areas are islands and lakeside communities along the Volta Lake, where it is not economically feasible to extend the national grid mainly due to lack of infrastructure (bridges, roads, etc.) and the high cost of laying underwater cables from the nearest grid facilities. A more feasible and less demanding option for providing dependable electricity to remote regions lies with mini-grids.



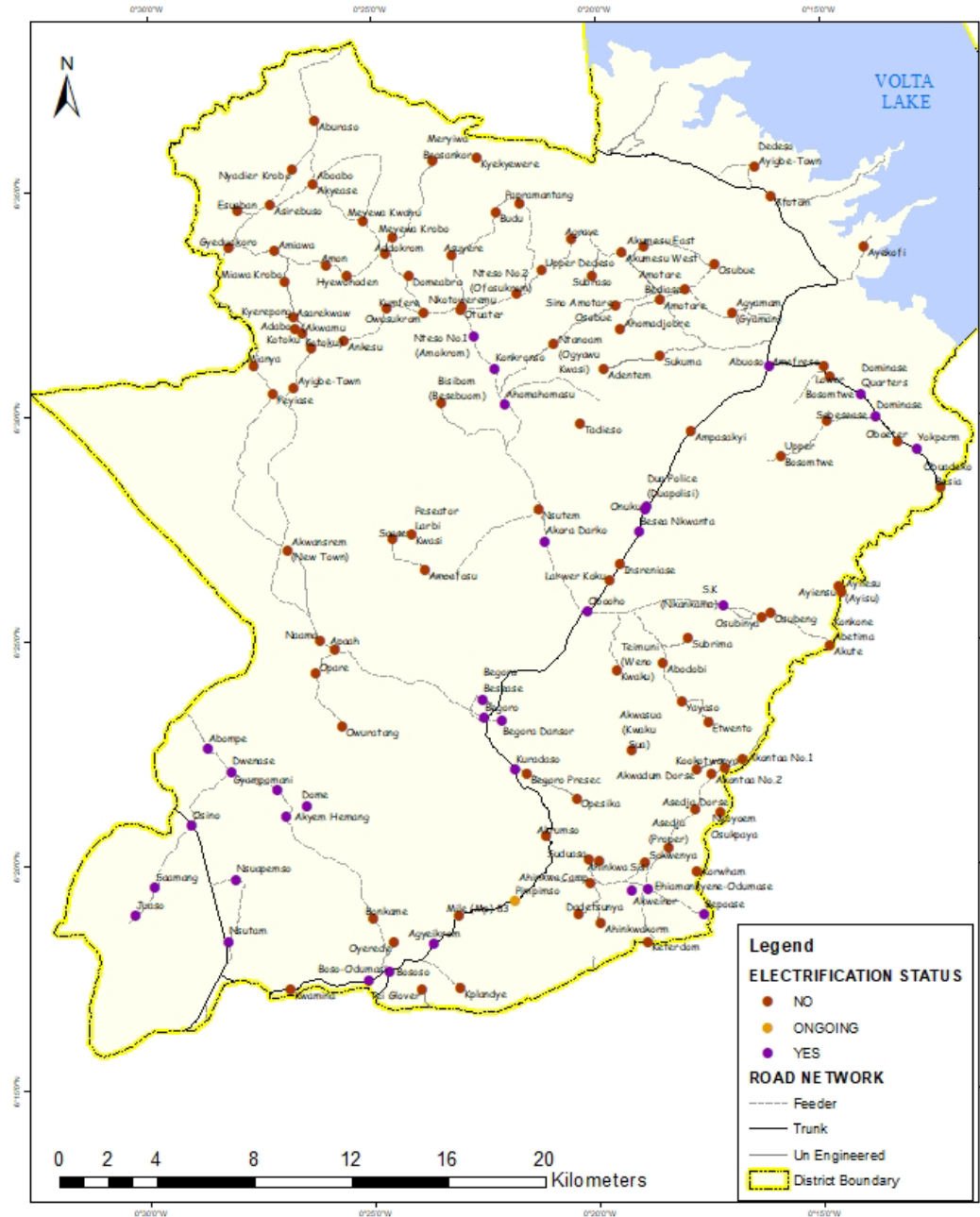
Introduction

The greatest boost to mini-grids came from The World Bank under the Ghana Energy Development and Access Project (GEDAP) in 2013 where the Ministry of Energy piloted mini-grids in five island settlements. The beneficiary communities are;

- Aglakope (Krachi West)
- Kurdokope (Krachi East)
- Atigagome and Wayokope (Sene East)
- Pediatorokope (Ada East)

Source: CEESD, 2018

ELECTRIFICATION STATUS MAP OF FANTEAKWA DISTRICT EASTERN REGION - GHANA



Intervention for off-grid communities

All 15% of the off-grid communities certainly will not require to be on a minigrid. Some of these communities can be reached on the mainstream grid hence the challenge here is to **identify** all off-grid communities which will require minigrid interventions and the **siting** of the minigrids;

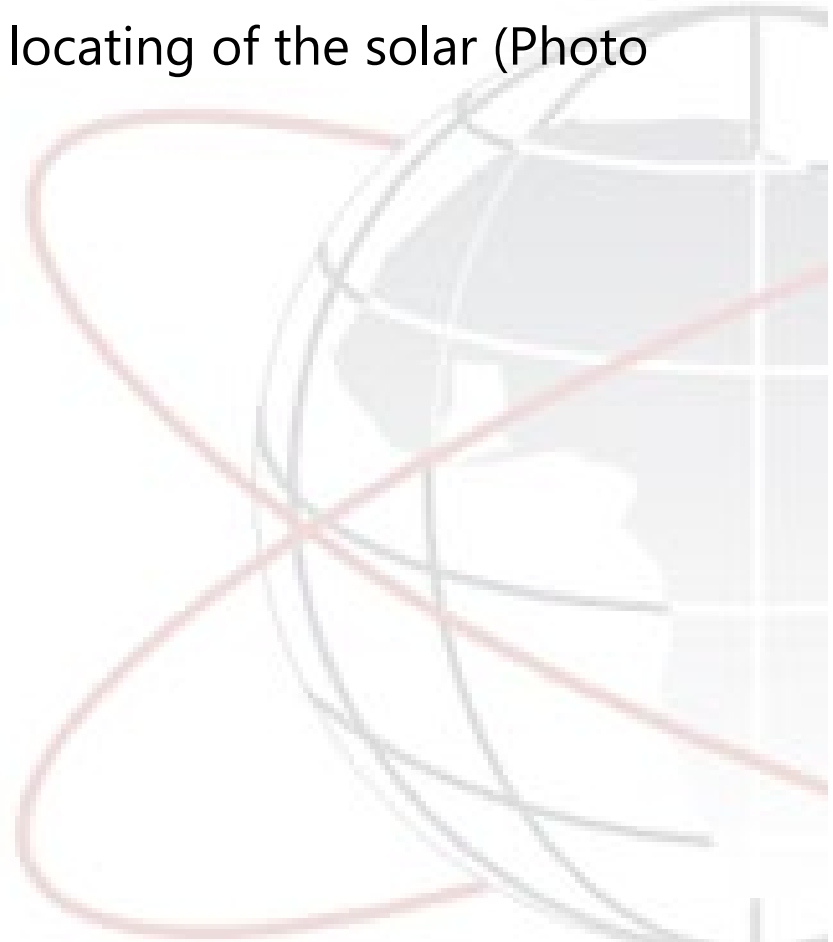
Mini Grid Categories;

1. Solar energy
2. Wind energy
3. Fossil fuel generators
4. Local hydroelectric dams



Multi-criteria analysis – Solar grid siting

Considering the siting of solar energy sites, the multi-criteria analysis can be used making use of the weights assigned to the various parameters influencing locating of the solar (Photo Voltaic) plants.



Multi-criteria analysis – Solar grid siting

Land suitability classes

-  Excluded zones
-  Less suitable
-  Moderately suitable
-  Suitable
-  Best suitable

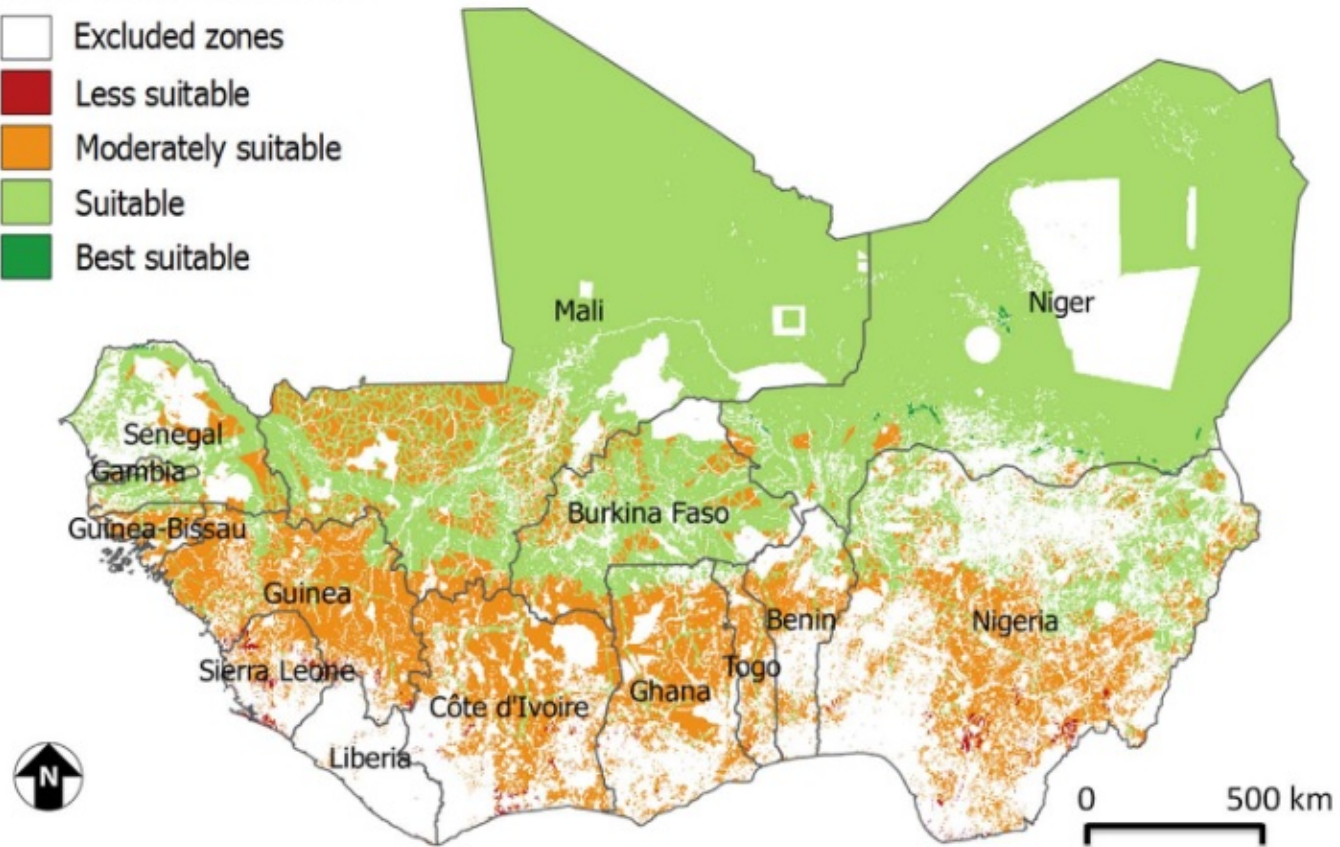


Fig. 1. Map of land suitability classes for large-scale grid-connected CSP systems according to Scenario 1.

Themes to cover

- Solar Energy (PV)
- Wind energy
- Hydro-electric
- Fossil fuel Generators



Questions under each theme

- Identification of communities falling under each theme
- Is there data available?
- What type of data is available?
- Which Institutions have these data?
- Identification of indicators to efficiently map mini grid site
- What weight will be assigned to each of the indicators?
- What type of mapping output will best represent the theme under discussion?

