GRID3

GEO-REFERENCED INFRASTRUCTURE AND DEMOGRAPHIC DATA FOR DEVELOPMENT

Case Studies on the use of geospatial technology in the development sector

Part 4: Examples from **population and census planning**

BILL & MELINDA GATES foundation

UKaid from the British people

Center for International Earth Science Information Network
EARTH INSTITUTE | COLUMBIA UNIVERSITY

UNFPA

WorldPop

FLOWMINDER.ORG

Automatic creation of pre-enumeration areas

Challenges of enumeration area Delineation

- Traditional manual creation of EAs is resource intensive
- EAs can be outdated or incomplete, unavailable & require regular update
- Restrictions on survey access to high risk, conflict and violent areas

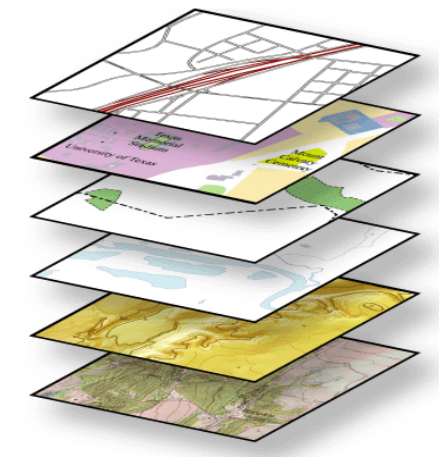
Automatic pre-EA creation tool

Input data

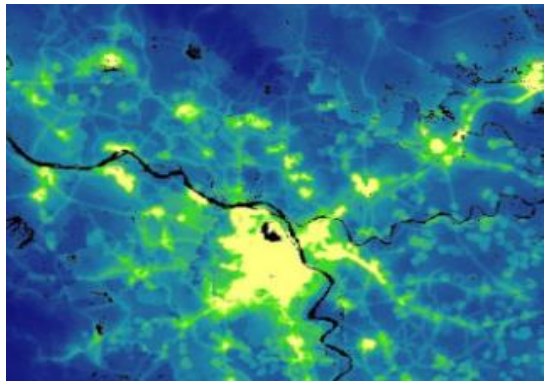
Splitting process

Merging process

Georeferenced layers

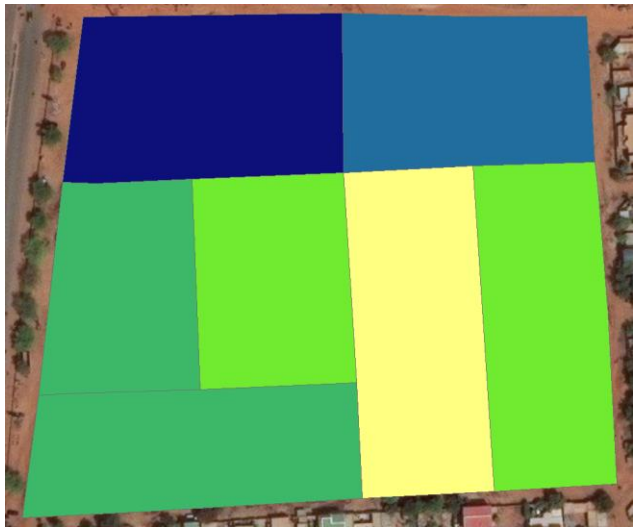


High-resolution gridded population data



Building blocks

Splitting units with total population



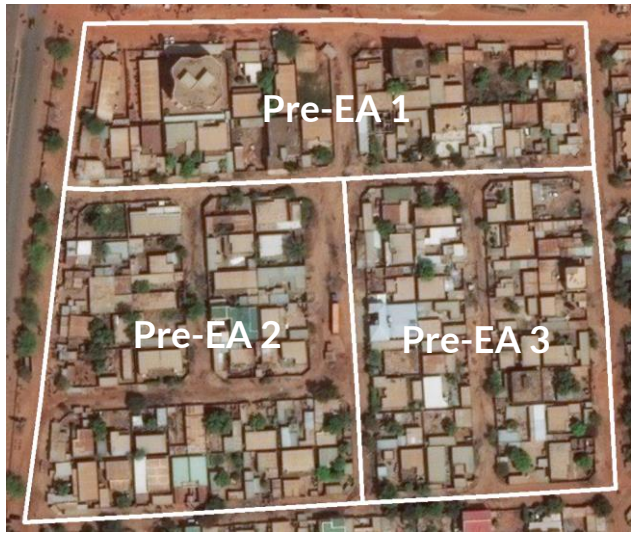
Hard Constraints:

- Population (Max & Min)
- Area (Max and Min)
- Uncrossable Border

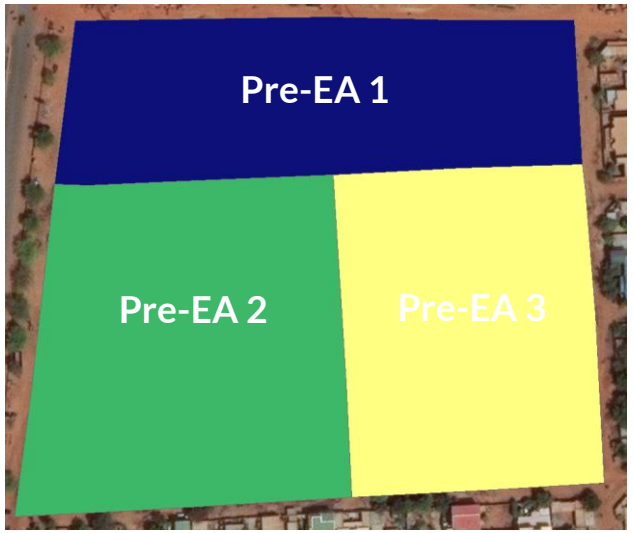
Soft Constraints:

- Target (Pop & Area)
- Homogeneity (Socio-economic)
- Shape (Compactness)

Pre-Enumeration Area (EA) outline

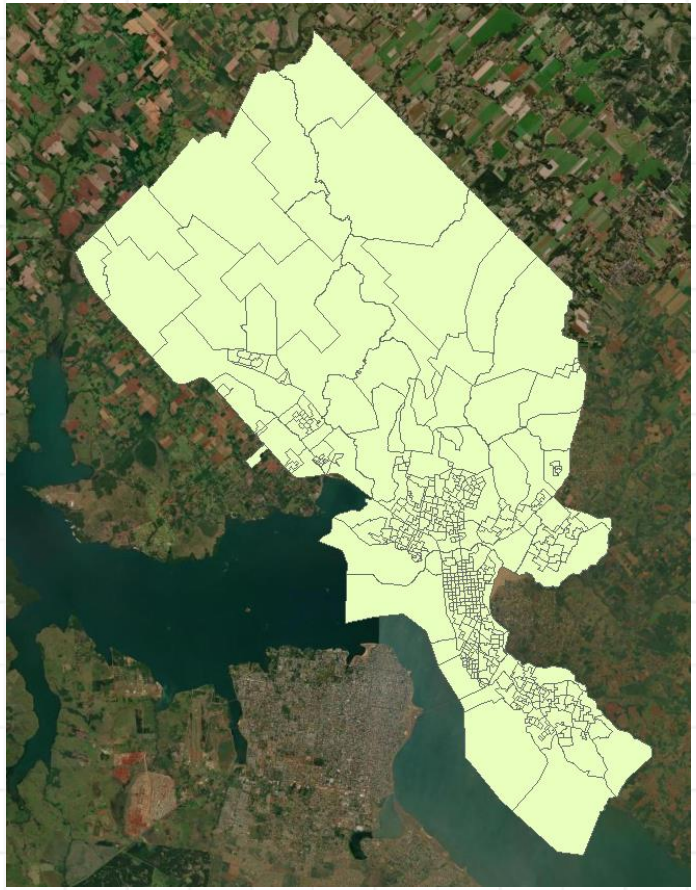


Pre-EAs with total population

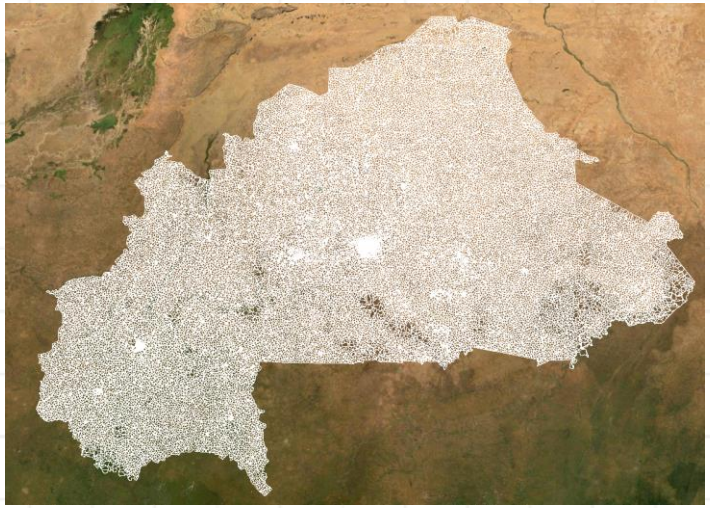


How the PreEA tool works

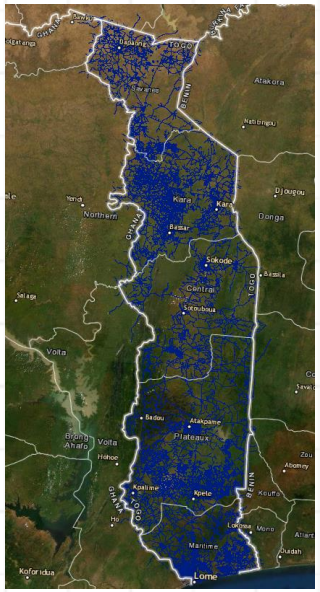
Example outputs of the pre-EA tool



Paraguay



Burkina Faso



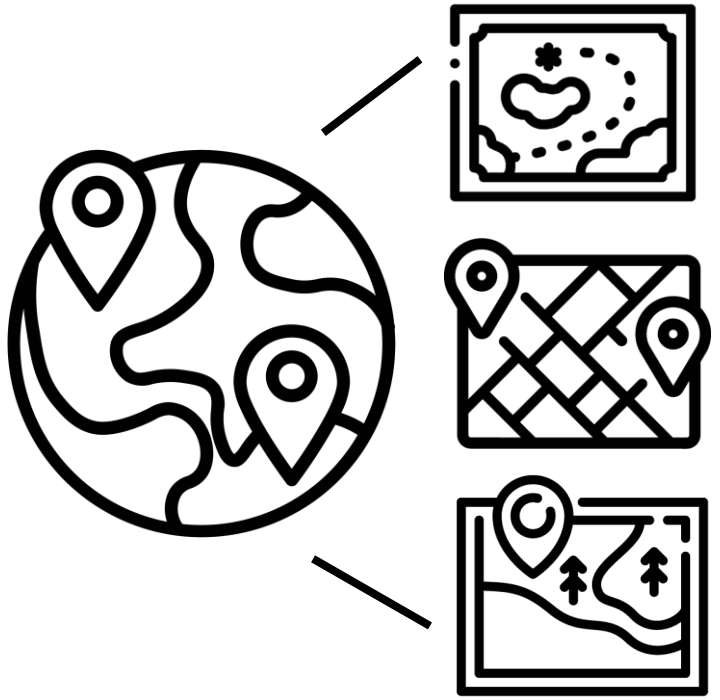
Togo

Niger

Zimbabwe

Summary of the tool

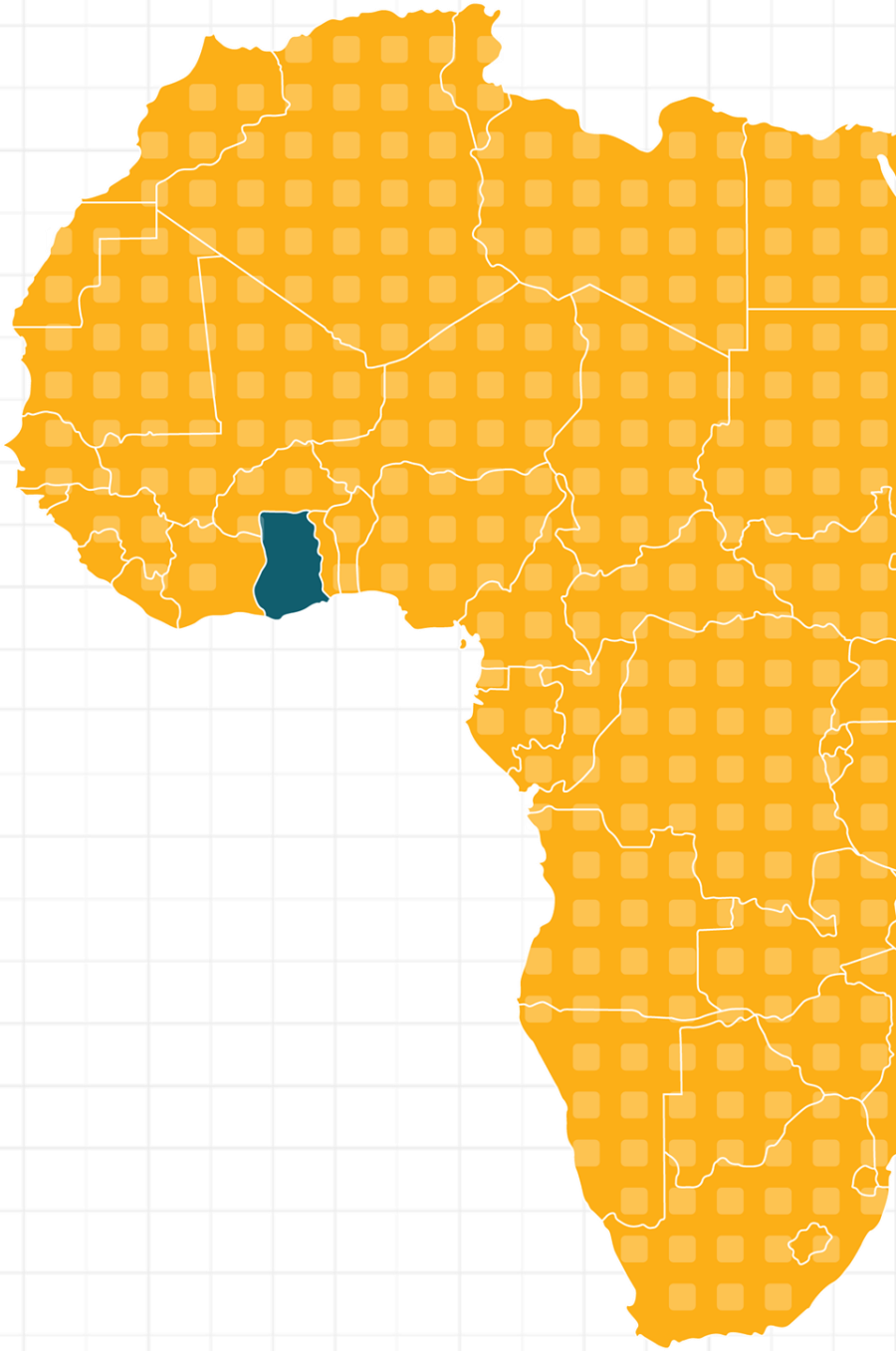
- Create comprehensive national sampling frame of pre-enumeration areas
- User-defined rules/constraints on pre-EA creation
- Pre-EAs are a starting point, they must be checked and validated
- Developed under GRID3 by WorldPop



Automatic pre-EA creation tool

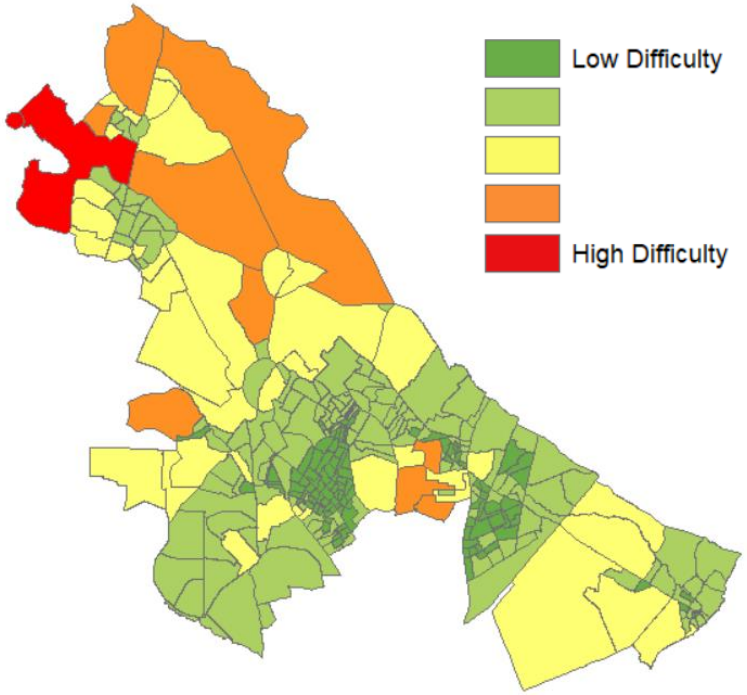
GIS support for census modernisation in Ghana

- Ghana Statistical Service (GSS) requested technical support and training in **geospatial data processing and analysis** for their census
- GSS Transitioning from manual procedures around data capture and processing, towards **digital geospatial alternatives**



Background

- **Hard-to-count" enumeration area (EA) indicators** - a means of estimating GSS enumeration effort in terms of resources and field staff
- GRID3 Flowminder-led engagement
- is strengthening the capacity of GSS to assess and validate enumeration areas in order to **reduce the number of people 'missed'** by enumerators



Example of a district

Red indicates problems such as the area being too large or difficult to access due to forest cover or other factors; these problems may have an impact on coverage by census teams

"Hard to count" indicators

Geometry indicators

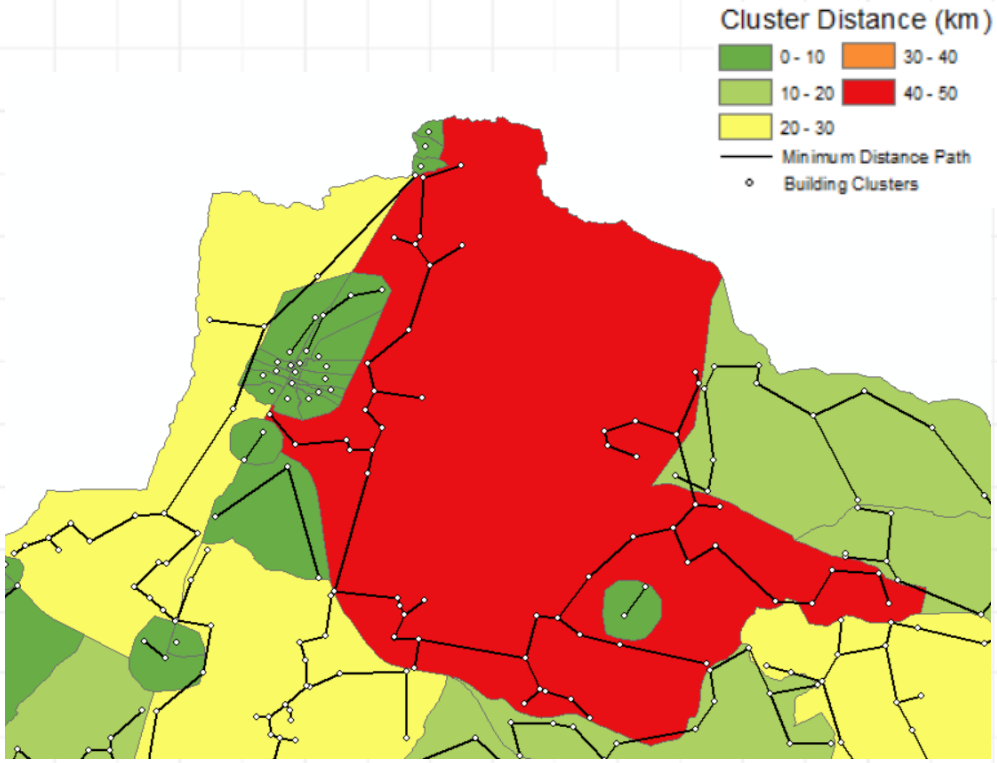
- Area of EA
- Polsby-Popper score (boundary complexity)

Accessibility indicators

- Road density per EA
- % Tree cover per EA
- General accessibility per EA

Population and building indicators

- Number of buildings per EA
- Settlement cluster distance per EA
- Estimated population per EA



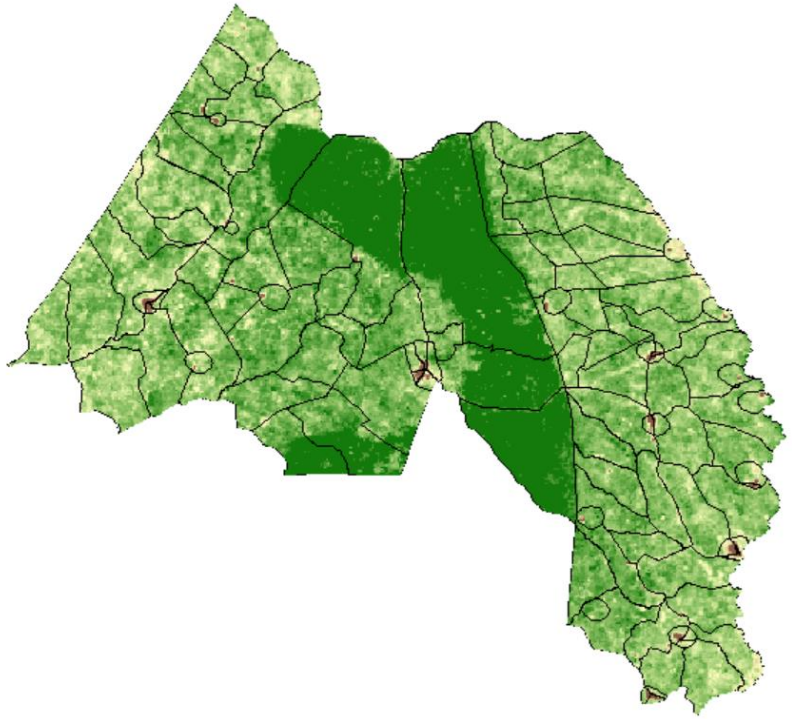
Distance between groups of buildings per EA

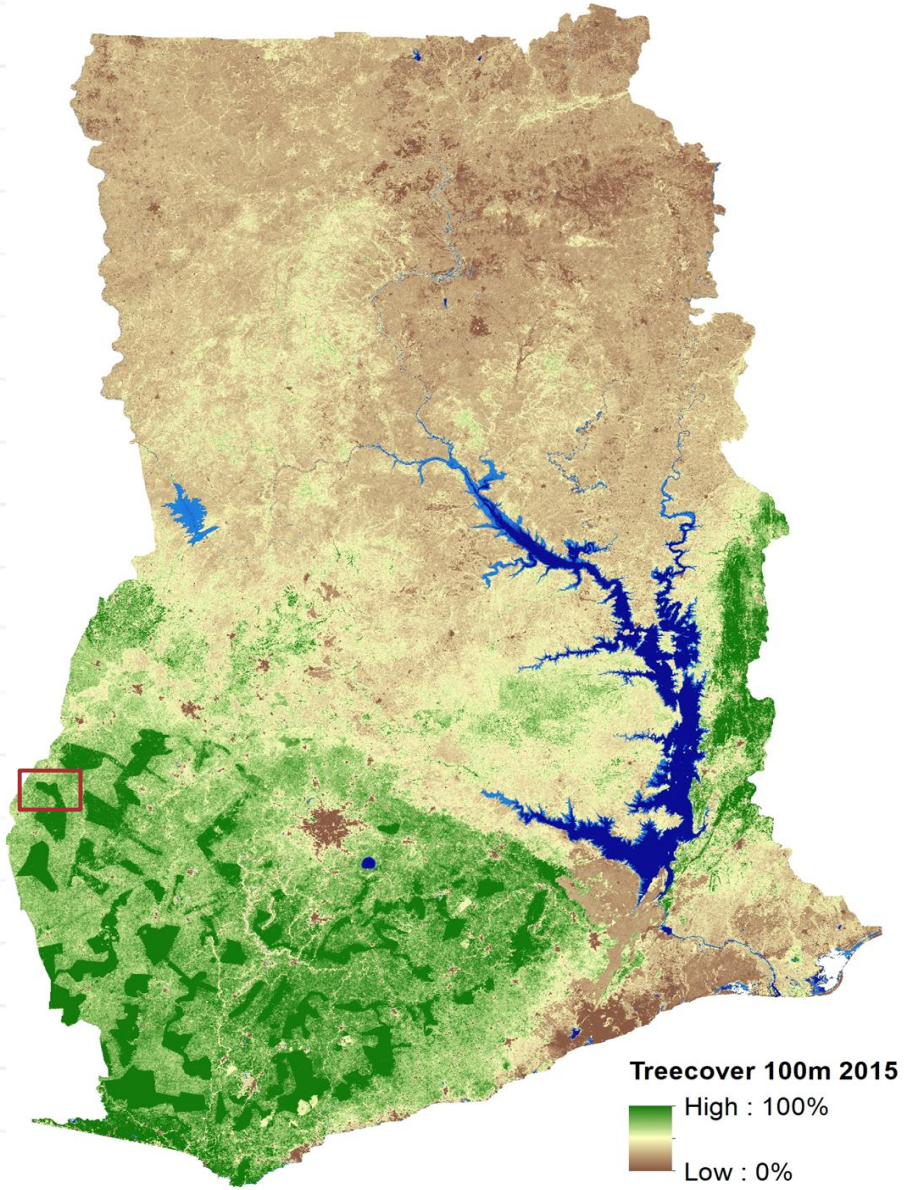
The distance between defined "groups" of buildings. A higher distance is marked as high difficulty, as it means that there is more to travel between buildings.

"Hard to count" indicators

Accessibility indicators

Percentage of tree cover per EA





"Hard to count" indicators

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Questions?

Please post any questions or comments in the course forum below!