Demonstration of output useability

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What is the potential for production of electricity (PV off-grid) at subnational level: example at first administrative subdivision?
Objective of the exercise
• Demonstrate usability of the data generated during the project
• Prioritize locations for potential projects of solar energy generation in rural areas in ECOWAS region

Practically
• Layer(s) used are available through ECOWAS Map Viewer
• You can use your own dataset with administrative boundaries subdivisions
• Only open source software will be used (QGIS)
Process
• Utilize the Zonal statistics function
• Calculate statistics (sum of pixels) using the raster layers:
  • Potential of solar electricity production (GWh/year) - grid-connected PV systems
  • Potential of solar electricity production (GWh/year) - off-grid PV systems
• Use your own dataset with administrative boundaries subdivisions as polygon layer congaing the zones (in this example we employed the publicly available FAO-GAUL adm1 dataset)
Potential of solar electricity production (GWh/year) - grid-connected PV systems and renewable energy generators (PV solar plants)

Potential of solar electricity production (GWh/year) – off-grid PV systems
Objective of the exercise

• demonstrate useability of the data generated during the project
• Prioritize locations for potential projects of Wind Power generation in rural areas in ECOWAS region

Practically

• All layers used are available through ECOWAS Map Viewer
• Only open source software will be used (QGIS and R)
Start a new GIS project

- National Boundaries
Start a new GIS project

- National Boundaries
- Wind plants (original dataset need to be filtered)
Calculate the lack of electricity demand

- Electricity demand for rural areas (kWh/year) - based on real demand
- Electricity demand for rural areas (kWh/year) - based on threshold level

Substract one layer from the other
Identify areas with higher lack of electricity demand

- Calculate quantile
- Visualize values distribution
- Extract all values higher than 75% quantile (646)
Identify areas with higher land suitability

- Wind Land Suitability for off-Grid installations - ecological scenario
  - Extract all values higher than 75% quantile (280)
Identify areas with higher land suitability

- Intersect higher demand with higher suitability
Buffer potential areas of interest

- Apply a 10 km buffer
Extract population on buffered potential of interest

- Download Population Distribution
- Clip it with the buffer
Extract Analyse your output

- Compare with existing and planned infrastructures
- Look at new potential areas
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- Compare with existing and planned infrastructures
- Look at new potential areas