

Opportunities with GIS tech for Brazilian Renewable Energy Matrix

UC

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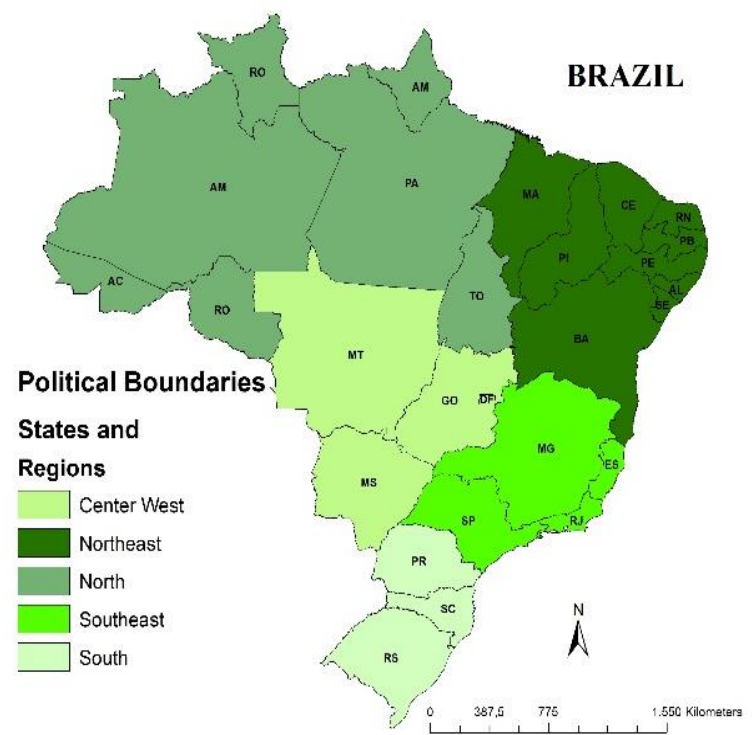
Introduction

Energy demand is growing

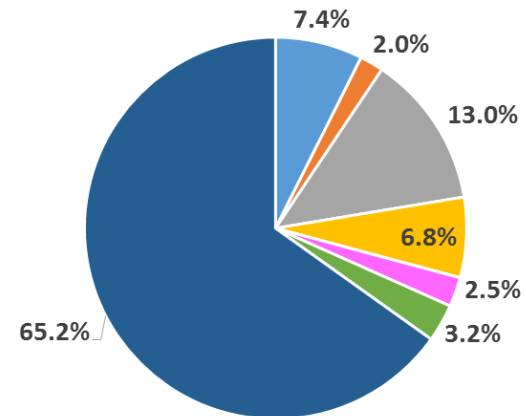
Regulatory barriers



Large scale generation is become more complex



Brazilian Electrical Matrix - 624.3 TWh



- Biomass
- Wind
- Natural gas
- Petroleum products
- Nuclear
- Coal and derivatives
- Hydraulic

Introduction

Population concentrated in South/Southeast and near to the coast

Human Development Index (HDI) is lower in the North/Northeast regions



Eco-technologies as an option to increase regional development



Objectives

Technology Approach

- Join data from Public Agencies and Brazillian institutes;
- Create a multidisciplinary database;
- Uses the potential of GIS analysis;



Highlight the market potential for renewable energy in Brazil

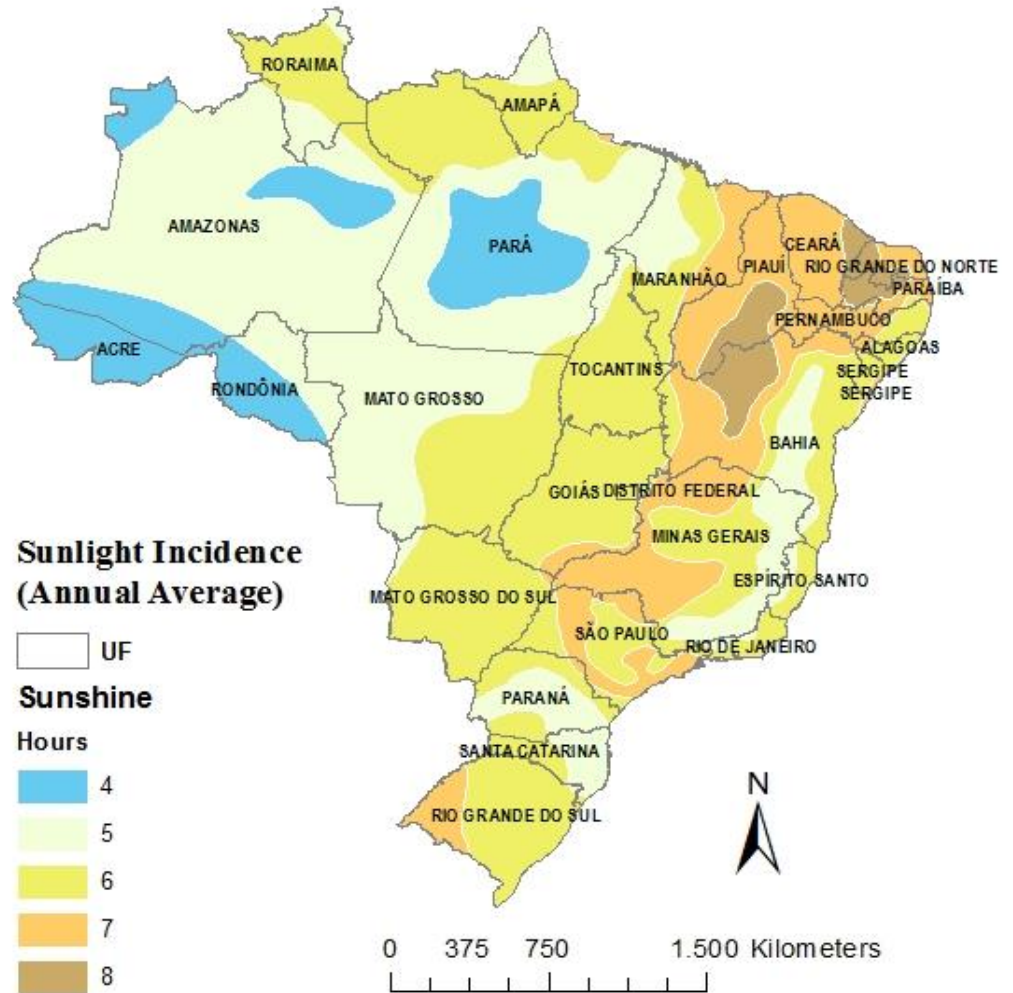


**North (Rainforest)
Northeast (Caatinga)**

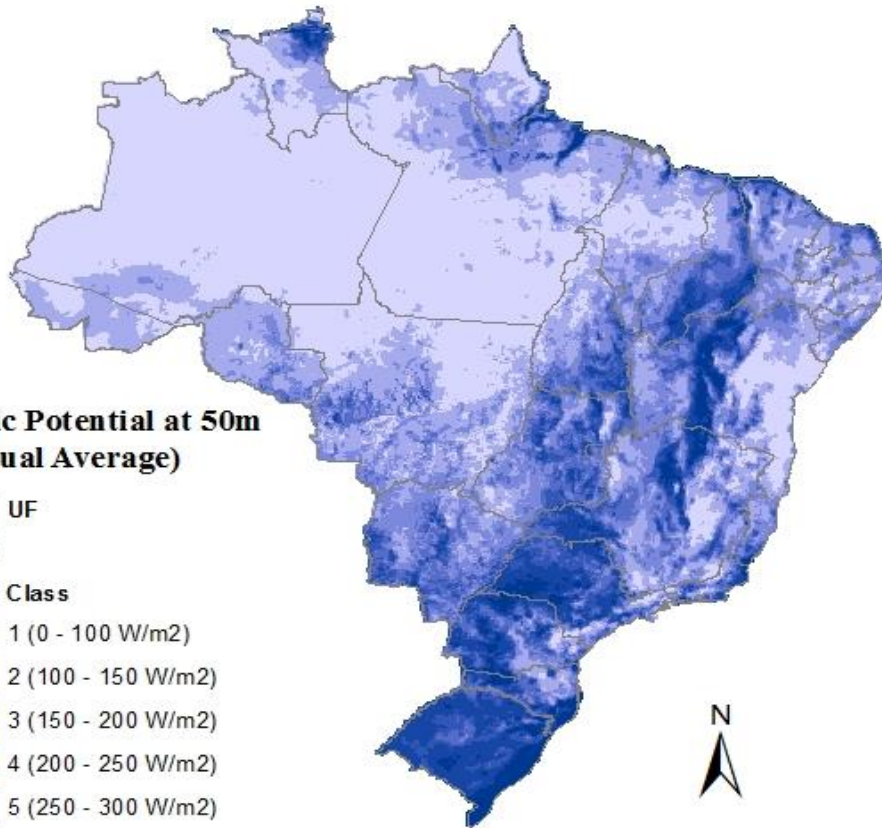


**Caatinga is very dry in the
equatorial region. High
annual average of hours of
sunshine daily**

Sunlight Incidence



Wind Potencial (at 50m height)



GIS Analysis

Kernel

- There are good opportunities for co-share Solar and Aeolian generation



GIS Analysis

Zoom

- **Most of the solar and Aeolian units are issued not in operation**



Conclusions

- **Household Electrification Rate can be improved in the Northeast region using solar energy**
- **HDI can be modified in the region with eco-technology approach**
- **Areas with high potential for co-sharing Wind and Solar generation**



Next steps

- **Aggregate other local data in the analysis as:**
 - **Transmission lines**
 - **Point of Interests**
 - **Terrain characteristics**
- **Share the content**
 - **Create a GIS Webportal in UNESP**
 - **Publish the results in specialized papers**
 - **Integrate the model builder and publish as a service**

Thanks!

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