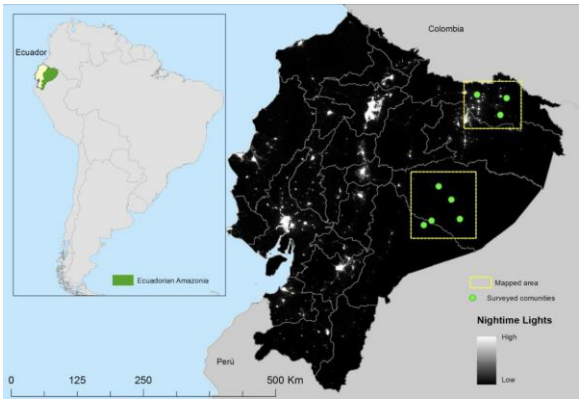
Participatory Mapping to Support Sustainable Energy for All in the Amazon (SE4Amazonian)



Summary:
Large numbers of indigenous groups in the Amazon are facing high levels of poverty, at times exacerbated by their level of isolation and lack of access to basic services like electricity. The project Participatory Mapping to Support Sustainable Energy for All in the Amazon (SE4Amazonian) developed rural electrification plans based on remote sensing imagery combined with participatory mapping involving indigenous local technicians. The combined data fed into a GIS-based suitability analysis of renewable energy power options for the remote indigenous communities.

This methodology sped up decision making by providing rapid, cost-effective, and spatially explicit information on the energy needs of indigenous communities in the Amazon region.

Data Innovation:
Remote sensing and GIS were the main methods used. To provide services to indigenous communities, it is necessary to know their location, size, and how dispersed they are. This information is missing in most cases and thus the project engaged the use of Earth Observation (EO) data and a participatory mapping approach conducted by the indigenous local technicians. The project employed mostly free and open data to conduct analyses and develop the approach, increasing the project's sustainability. The local indigenous technicians of AmazonGISnet will be able to replicate the approach for other communities and transfer to additional countries in the Amazon basin.

Work was coordinated by the project partners in Ecuador (TRATURAL, AmazonGISnet) and aimed to validate and complement the analysis and products (i.e., EO-based and socioeconomic mapping) obtained by the lead organization, ZFL-University of Bonn. Indigenous technicians carried out household surveys in remote indigenous communities using an innovative cellphone app (GeoFarmer) that eased participatory data collection focused on the communities' development and energy needs. This work was consolidated for long-term rural electrification planning in the study area.

At a Glance:

SDGs: 1 - No poverty, 7 - Affordable & clean energy, 13 - Climate Action, 15 - Life on Land.

Project Objective: To improve the lack of data available within remote areas of the Ecuadorian Amazon by integrating those who are usually left out of the electricity supply.

Geography: Ecuador*

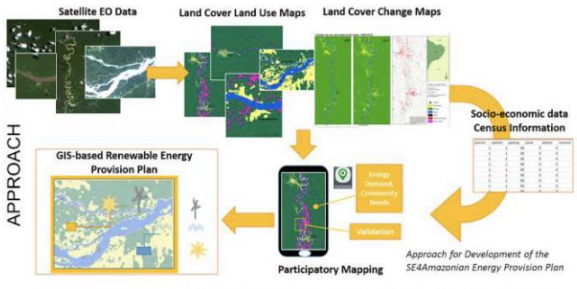
Technologies: Earth Observation (EO), GIS, participatory mapping, socio-economic survey and Census information, renewable energy resource information.

*Can be easily replicated in Colombia and Bolivia

The process of linking remote sensing approaches to defining the number of people without electricity in the Amazon Region and participatory mapping for data collection, map validation, and capturing indigenous viewpoints

SE4Amazonian, submitted in response to the 2017 call for proposals by the World Bank's Development Data Group and the Global Partnership for Sustainable Development Data, was supported by the World Bank's Trust Fund for Statistical Capacity Building III with financing from the United Kingdom's Foreign, Commonwealth & Development Office, the Department of Foreign Affairs and Trade of Ireland, and the Governments of Canada and Korea, from October 2018 to April 2020.

was very well received. Representatives of electricity companies perceived this tool as useful to support activities related to planning, operation, and maintenance activities of rural electrification programs. This approach (versus a field survey) could help save money and a reduction in time from around three years to only a few months.



Lessons Learned:

- Between national stakeholders and indigenous communities, the situation is often challenging. Preliminary workshops were held only with the indigenous and local technicians to listen to their perspectives. It was important to build a basis of trust and collaboration with the communities.
- Working with indigenous peoples requires understanding their way of living and thinking. The project broke down some of its approaches to make them more understandable.
- Technical issues can always occur. In the Amazon rainforest, analysts faced high cloud-covered images. Therefore, the work with radar data was integrated.
- Land cover maps with high thematic accuracy are usually needed. However, using a remote sensing proxy to map the location and size of the communities could be a much more efficient approach. In this case, the tasseled cap wetness component worked well.
- Data collected was sensitive and protected at all times and was only used to develop the geospatially explicit energy model. Close communication between the project leader, local partners, and the indigenous communities led to ways to show results but still secure their data.

Results:

Increased capacities of indigenous people: An important outcome was the ability of indigenous people to make their own maps and manage their own GIS and geodatabases.

Fast data generation: Integration of the GeoFarmer app with the indigenous technicians' data resulted in faster and weekly data uploads that could be immediately received in research institutes.

Data generation: There is almost no or only marginal quantitative information about the indigenous communities in the Amazon. The project was able to generate and geolocate information on over 700 households. This was fundamental when building the spatially explicit energy model.

Earth Observation (EO) validation: Remote sensing results need to be validated to achieve correct interpretations. Products could be validated with training data collected by the indigenous technicians. The GeoFarmer app collected geolocated photos of validation points looking towards North, East, South, and West. This was used to validate and improve the results derived from EO based analysis.

References:

SE4Amazonian

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