

Electricity consistency typology using nightlights satellite data

Faculty Member: [Karen Seto](#)

Proposal Description:

About 759 million people globally do not have access to electricity. This figure has been continuously improving over the past decade with major gains made in developing countries of Asia. But there is a catch! Does accessibility to electricity alone means people can experience improvement in their socio- economic conditions? Does electrification means having the same consistency across time and space? Can we look into the past and current trends to develop a typology of electricity consistency that help in better identification of energy poverty? These are some of the questions that motivate us to contribute to the universal access to energy services target of the Sustainable Development Goals and think beyond availability and accessibility of electricity.

Nightlights data collected from satellites are proven to be valuable indicators of electrification and highly correlated with poverty and national GDP. This project leverages the nightlights data – Black Marble, provided by NASA to develop a typology of electricity consistency over different temporal scales and relate its variation with socio-economic data available in public repositories. India, where rural and urban electrification rates have significantly increased in the past decade is used as the case study.

The RA would gather data on availability, usage, and quality of electricity from publicly available datasets and literature sources to help select testing data points. The work would also involve the compilation of data on electricity-dependent economic indicators from surveys and the development of relevant metrics to test its relation to electricity consistency. Data cleaning and geocoding are also part of the work. Other tasks involve exploring and processing supporting geospatial and population datasets such as Global Human Settlement Layer (GHSL) and WorldPop to estimate changes in settlements using projection models.

Requisite Skills and Qualifications:

Proficiency in data analysis and management using software such as Python or R. Experience in geospatial processing and data integration. Ability to search, download and analyze large datasets from different sources.

Award: Jackie Dong

Tobin Application Link: [Tobin Application](#)

Project Type: Tobin RA

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