

Article

Estimating the Energy Demand and Growth in Off-Grid Villages: Case Studies from Myanmar, Indonesia, and Laos

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Abstract: Under the Sustainable Development Goals (SDGs), the world has pledged to “leaving no one behind”. Responding to goal No. 7 on the agenda, efforts to provide modern energy to all the world population must be pushed forward. This is important because electrification in the rural area can indirectly support opportunities for social and economic development resulting in an acceleration of the eradication of poverty. The research goal of this study is to contribute insights about the scale of energy demand in unelectrified villages in the Southeast Asian countries and to discuss some factors that might influence the energy demand growth. This is done by making projections based on surveys and interviews, including a time-use survey, in three off-grid villages located in Myanmar, Indonesia, and Laos. Our analysis presented the living condition, highlight the types of energy sources, how, and in what rhythms people use energy on a daily basis in those villages. The demands in each case study villages were then projected based on several constructed scenarios. It was found that the factors of household size, proximity to the city, climate, and topography may influence the present and future growth of energy demands in the villages. The estimated energy demand may be useful for project managers to design a pilot off-grid energy system project in a similar environment and pointed out important factors to consider when formulating off-grid energy policies in the region.

Keywords: off-grid electrification; energy demand; Southeast Asia; energy use; time-use; rural electrification; rural development; sustainable development; sustainable development goals