



Applying small-scale liquefied natural gas supply chain by fluvial transport in the isolated systems: The case study of Amazonas, Brazil



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ABSTRACT

There are currently several studies about the necessity of increasing access to sustainable electricity for isolated communities or in remote areas using alternative energy sources. There are about 212 energy grid isolated systems in Brazil, mainly concentrated in the North of the country, especially in the state of Amazonas, largely supplied by diesel power plants. The isolated systems in Amazonas present significant logistical challenges due primarily to the dependence on fluvial transport. The small-scale liquefied natural gas by fluvial transport can be an alternative to natural gas supply to remote areas and isolated systems and the non-dependence or construction of new pipelines. Based on this context, the work aims to evaluate the small-scale liquefied natural gas economic costs by fluvial transport to replace diesel oil with natural gas in power plants in the state of Amazonas. It then also analyses whether this substitution can significantly mitigate greenhouse gas emissions of the electricity sector at the local level. As a result, the use of natural gas in just a few scenarios elaborated from the case studies can provide energy security, decrease local emissions of CO₂eq, and reduce the electricity cost to the final consumer.