

## Alternatives to Power Crisis: Economics of Two Dendropower Plants in Sri Lanka

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Dendropower is a variety of thermal power generated using fuel wood as the raw material for producing thermal energy or electricity as the final output. Dendropower can be proposed as an option to the existing power crisis in Sri Lanka. However, proper economic analysis of dendropower plant has not yet been carried out hindering the replication of such projects.

The present study evaluates the viability of two selected dendropower plants in Sri Lanka using Cost Benefit Analysis. Data collection was done by questionnaire surveys, personal communication and with the use of secondary data sources. A power plant with a capacity of 5kW was operated under the management of a Community Based Organization in an off grid area in Moneragala district (Case1) and a power plant with a capacity of 3.5kW operated was under a private ownership in a high yielding coconut estate which were selected as two study sites. Both power plants produce electricity by gasification and internal combustion engine technologies using in -situ grown *Gliricidia sepium* sticks. The major costs of both projects were initial costs of power plant installation, operational and maintenance costs. The major benefits of case 1 were crop protection from wild animals and electricity benefit and major benefits of case 2 were fertilizer substitution benefit from *gliricidia* leaves and electricity benefit. For the calculations, it was assumed that the net carbon dioxide emission was close to zero at both sites. According to the results, case 1 is viable with a NPV of Rs.- 1,195,777.42 and the case two is viable with a positive NPV of Rs. 1,063,459.94 at 10% discount rate for 20 year period of time. Both cases are viable from the economic point of view even with a 10% increase of total cost and a 10% reduction in total benefits.

The study recommends that the dendropower plants are viable ventures from economic point of view where enough lands are available to grow sustainably grown fuel wood.

Key Words: Power; Crisis; Dendropower Plants; Fuel; Electricity

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