

**POSSIBILITY OF USING SMALL HYDROPOWER AS AN ENVIRONMENTAL
FRIENDLY AND LOW COST ENERGY SOURCE**

By

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ABSTRACT

As Sri Lanka has utilized all possible large hydro sources and is still facing problems in reliable supply of energy, it is necessary to go for alternative energy sources. Small hydropower plants are one of the solutions to the problem and according to the research, over 500MW capacity of energy can be generated from the streams in the up country. About 100MW capacity was already connected to the national grid and another 200MW capacity will be added within next couple of years.

This study is a comprehensive research about a small hydropower plant which has the capacity of 3.8MW. This plant will generate more than 22 million units per year. The project is monitored in the design, construction and operation stages. The selected stream is Delgoda Ganga which is a tributary of Kukule Ganga. The project area lies close to Kalawana where there have been many land slides and floods experienced recently. On the other hand the project area is very close to the Sinharaja reserved forest. Therefore, it is necessary to monitor environmental consequences more closely and accurately.

It is revealed that the values of the environmental effects are extremely low compared to the value of the positive impacts. Benefit transfer method was used to value environmental impacts and conversion factors to find the appropriate shadow prices. Selected social discount factor is 10% and the values obtained for NPV, EIRR and B/C are Rs. 1149.1 million, 37.3% and 4.55 respectively. The sensitivity analysis was also performed to confirm the viability of the project. Even though the project parameters show the viability of the project that does not imply that all such power projects are feasible. The reason is that the

conditions may vary with the location. However, the same procedure can be applied to study such projects.

Even though, small hydropower is low cost and environmentally friendly energy source, it is not a long term solution to satisfy increasing energy demand. According to the experts, hydro capacity should be increased as much as possible. However, the country should try another large scale source such as coal energy. However, the majority think in such a way that the community should be benefited as much as possible from small hydropower projects. Therefore, fully private sector participation is criticized. Public sector involvement is not that practicable due to their high overheads. Therefore, the solution lies in between the two extreme ends.