

EVALUATION OF HYDRO POWER POTENTIAL IN
UMA OYA BASIN

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A C K N O W L E D G E M E N T S

ABSTRACT

The Author wishes to express his appreciation and sincere thanks to Dr. H.C. Kariyawasam and Dr. Sunil Wickremasooriya of the Department of Civil Engineering of the University of Moratuwa, Sri Lanka for the encouragement, guidance, assistance and valuable suggestions offered for improvement throughout the study and in the presentation of this dissertation.

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ABSTRACT

A substantial quantity of untapped hydro energy will still exist in Sri Lanka, even after the completion of the Accelerated Mahaweli Programme, as still a number of rivers and tributaries will remain unexploited. Hence it is imperative to launch a project on formulating a methodology to calculate the quantity of technically feasible hydro energy of a river basin as accurately as possible. The actual hydropower available depends on technical, economical, political and physiographic factors.

This dissertation formulates a methodology to evaluate available hydropower potential in the Uma Oya basin, which is a sub catchment of the river Mahaweli, at four different levels of gross and net potentials.

They are,

- (a) Gross precipitation potential
- (b) Gross surface runoff potential
- (c) Gross river potential
- (d) Net potential with individual reservoirs

The relationships between different levels of gross and net potentials are analysed and the technical feasibility of the Uma Oya basin for the development of hydropower is examined.

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SOURCES OF ENERGY

Man has tried to exploit the nature for the welfare of mankind. The tides of seas, heat of sun, energy of wind, all have provided an impetus to him for their energy utilization towards the welfare of human-being. However, large scale power development from such sources has not become routine yet. According to the criterion of mass generation of power the three most important sources, which have become common and are called conventional, be mentioned as

(i) Thermal power (ii) Hydro power and (iii) Nuclear power. Few other sources of power generation are also valuable but in comparison with the quantum of power produced by the said three sources, their contribution is limited. Such other sources, therefore, have been classified as unconventional and can be listed as below.

(i) Tidal power (ii) Solar energy (iii) Geothermal energy
(iv) Wind power.