

CHAPTER 1

INTRODUCTION

1.1 Background of the project

The rapid growth of the economic and industrial ventures there is high demand for power and energy growing all over the globe. The situation of Sri Lanka also no exception. Concurrently the rapid growth of development in post war situation in the country the demand of electricity is rapidly increased. To cope with this situation in 2007 established Sri Lanka Sustainable energy authority under Act. No. 35/2007 for participate private sector to generate electricity by using renewable sources in environmental friendly manner.

The Upper Kdurugaldola Project initiated with concurrent with above needs to develop the electricity in sustainable manner.

1.2 Objective and justification of the project

The objective of the proposed project is to construct a mini hydropower plant utilizing the flow of Padiayan dola a tributary of Bambarabotuwa oya. The proposed weir location belongs at Dehenakanda-Bambaralakanda area. The Power house is located in the stream Villages Pahalagama (Right) and Bambarabotuwa (Left) just above the bridge of B391 Rathnapura Wewelwatta road. The both are located in Ratnapura divisional secretariat area at the Ratnapura District. The aim of the proposed project is to establish a 2MW plant generating 5.9 GWh annually, by installing two 1000 kW power Pelton turbines.

Accelerated development programs are been conducted at a national level throughout Sri Lanka at present in the back drop of a stable post war political situation. This is mainly observable in the northern and eastern areas. Additionally, other parts of the country are also remarkably increasing their economic and development growth. On the whole, Sri Lanka is expecting over 6% economic growth by the end of the 2011 (World Bank, 2011). The increasing requirement for power to facilitate this massive development process is ever challenging, with the demand for electricity increasing at a rate of 7% annually. (Sustainable Energy Authority, 2008). The current power supply has only approximately 25% of

economically viable renewable energy sources, whereas a large proportion of energy production depends on inflating oil and coal based thermal power generation.

The exacting demands of urbanization and industrialization require continuous electricity in order to maintain efficiency and produce products and services at globally competitive prices. It is essential that electrical energy is provided to the consumer at a reasonable price, enabling more foreign investment to the country.

This increase in demand for electrical power occurring within the country cannot be adequately supplied by large scale hydropower plants presently operated. The alternative use of Diesel and Coal Power plants have led to a complexity of problems both at an economic and environmental level, amongst which, the ever inflating price per unit of electricity, loss of foreign exchange for importation of fossil fuels as well as the uncontrolled emission of Green House Gases (GHG) are extreme critical issues.

In view of the above, the government of Sri Lanka has been encouraging the development of environmentally safe, small scale, alternative electricity sources which can be linked to the National Grid effectively. The proposed Upper Kadurugaldola Mini hydropower plant in comparison to coal power plants which emit harmful Green House Gases (GHG) and discharge hot water into waterways, aims to generate 5.9GWh of electricity annually in manner that is not harmful to its surrounding environment, This hydro power project located in upper rim of Ratnapura basin which have high rainfall around the year. particularly in the annual drought periods, when the main hydropower plants are facing a crisis. The monthly rainfall data reveals all the months gets above 200mm of mean rainfall excepts month of February. Which has more or less year around favourable rainfall. This shows that the proposed project can contribute energy when the power system is operating during the most of the period in the year.

Utilizing Sri Lanka's abundant hydrological resources such as Upper Kadurugaldola, and linking the generated power to the national grid in order to supply energy to the rapid and demanding development projects of the country is essential to secure a profile of low carbon foot printing and produce electricity in accordance to the Clean Development Mechanism (CDM) of the Kyoto Protocol of the United Nations.

Thus the proposed project will positively contribute towards the energy requirements of Sri Lanka as it will be able to generate power in an environmentally and socially acceptable manner, enhancing the economic growth of Sri Lanka.

1.3 . Objectives of the IEE Report

The main objective of this Initial Environment Examination report is to explore the existing environmental conditions in the proposed Upper Kadurugaldola mini hydropower project area. An assessment of the potential environmental impacts resulting from the construction and operation of the project is also aimed at. The report will also include the most suitable solutions for possible problems resulting from the project. This IEE report will also propose a suitable monitoring program to ensure that the proposed strategies are implemented to meet the objectives proposed.

Extent and scope of the project

The scope of the IEE report covers, evaluate the present physical hydrological, Environmental and Social conditions in and around the Upper Kadurugaldola project area.

Find out the possible impacts to the natural environment and social well being in the area by the proposed project also a part of the scope. And proposed the possible remedial measures to reduce the negative impacts by the proposed project activities.

The extent of the study area is physically limited from 50m upstream from the weir location and 50 m downstream from the tail race outlet point. Including a breadth of the 50m of stream and project components. As in the TOR stipulated by the Central Environmental Authority.

Methodologies adopted in report preparation

For the preparation of IEE report multiple methods were adopted including field surveys, Referring other published resources, Using remote sensing methods by referring authentic maps and Satellite images, information collection from the villagers.

For the hydrological analysis, use the rainfall data from the relevant metrological stations and generating flow curves by applying computer simulations (Pls. see annex viii-h detail hydrological study methodology).

The geological report compiled mainly by extensive field investigation at the site it supplemented by publish data and geological maps.

Biological survey mainly conducted by several field visits under prescribed conditions in TOR issued by CEA (annex xi) Additional description on methodology in biological survey describes under chapter 3.

Sociological survey conducted by conducting active and passive discussions on nearby house holds up to 1km radius to the project components.

In additionally information obtain form relevant Gramaniladahari in the project area to get the social and infrastructure in the area.

1.4. The approvals needed for the proposed development from state agencies

- Provisional Approval from the Sri Lanka Sustainable Energy Authority (Annex viii-a)
- Letter of Intent (LOI) Ceylon Electricity Board (Annex viii-b)
- Renewable Energy Permit; Sri Lanka Sustainable Energy Authority (to be obtained)
- Power Purchase Agreement, Ceylon Electricity Board (to be obtained)
- Electricity Generating Licence; Public Utility Commission of Sri Lanka (to be obtained)
- Central Environment Authority (to be obtained)
- Pradeshiya Sabha, Rathnapura (Annex viii-d)
- Divisional Secretariat, Rathnapura (Annex viii-e)
- National Building Research Organization (Annex vii)
- The National Water Supply & Drainage Board (Annex viii-f)
- Irrigation Department (Annex viii-g)

1.5. Any conditions laid down by state agencies in granting preliminary approval for the project

- Conditions laid down by the Pradeshiya Sabha, (Annex viii-d)
- Conditions laid down by the Divisional Secretariat, (Annex viii-e)
- Conditions laid down by water board (Annex viii-f)
- Recommendations and Guidelines of National Building Research Organization (Annex vii)
- Recommendations and Guidelines of department of Irrigation (Annex viii-g)