

**TECHNICAL AND FINANCIAL VIABILITY
OF BIOMASS POWER PLANTS FOR GRID ELECTRICITY
GENERATION IN SRI LANKA**

J.A. Roshan Lasantha de silva

A Research Project submitted to the in partial fulfillment of the requirement for the Degree of
Master of Engineering in Energy Technology

Department of Mechanical Engineering,

University of Moratuwa

Sri lanka

November 2007

91259

ABSTRACT

The technical and financial viability of biomass power plants for grid electricity generation in Sri Lanka is analyzed. To fulfill this requirement, present energy scenario, renewable energy sources in Sri Lanka for grid electricity generation, policy initiative for biomass grid electricity generation, present status of biomass electricity generation and biomass conversion technologies are discussed. A methodology is developed for setting up of commercially accepted biomass power plant and energy plantation for grid electricity generation. This methodology is applied for 5MW power plant. The technical and financial viability of this 5MW power plant and the methodology are analyzed to conclude the objective of this study. Higher end 5MW power plant is selected because the issues associated with large scale plant could be identified and analyzed. A biomass power plant with company own energy plantation and direct combustion turbine based technology is technically viable for grid electricity generation. The costing and cash flow statement derived from the sizing of energy plantation and power plant revealed that 5MW power plant is financially viable.