

Use of Biomass for Industrial Boilers in Sri Lanka

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Biomass plays a dominant role in primary energy supply in Sri Lanka. A large portion of the energy needs of the rural population of the country is fulfilled by firewood. It is possible to further increase the usage of biomass for energy production in the country, especially to fulfill thermal energy requirements in the industrial sector. This study was conducted with the objectives of reviewing the status of bioenergy usage in Sri Lanka and evaluating the status of large-scale industries' biomass usage in their boilers. Hundred industries with biomass boilers were surveyed and annual reports developed by relevant authorities, peer reviewed publications, news bulletins, magazines, conference proceedings, etc. were reviewed to understand the status of bio energy usage in Sri Lanka. In Sri Lanka's energy mix, electrical energy is supplied through grid, diesel generators, solar and wind power and thermal energy is supplied through furnace oil, kerosene, LPG, solar, biomass etc. Major source of biomass is fuelwood; mainly *Hevea brasiliensis*, *Eucalyptus grandis*, *Clusia rosea*, *Gliricidia sepium*, and *Acacia auriculiformis*. In 2018, 1066.88 hectares has been cultivated with fuel wood species. Around 36 MW boilers are currently in operational capacity which includes 20 MW from dendro, 12 MW from agriculture waste and the rest is from other biomasses. Of Industries installed with biomass boilers in Sri Lanka, tea and garment industries represent approximately 60% and 28%. Out of industries surveyed, the response rate was 100% as face to face surveys were conducted by prior appointments with the industry managers. Survey respondents use fuel wood, saw dust, coconut shells, paddy husk, and own waste as their major biomass sources in 70,000 kcal/hr hot water generator boilers, 1500 kg/hr wood fired steam boilers, and 6000 kg/hr - 2000 kg/hr water-wall boilers. Although *Gliricidia sepium* produces 20 mt/ha/year, major fuelwood used in industries surveyed was *H. brasiliensis*. The daily steam demand of surveyed industries was produced by boilers that consume 288,000 MT of biomass. In conclusion, the tea processing industry is the largest industrial consumer of fuel wood and any types of industries successfully fulfil a considerable percentage of their thermal energy requirement by their biomass boilers. The potential of biofuels to meet the energy demand in Sri Lanka without impacting the food industry and bio resources cannot be predicted reliably based on existing studies.

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