

Feasibility of BioMass Power Generation in Punjab Province of Pakistan

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Abstract : The primary objective of this feasibility study is to conduct a techno-financial assessment for installation of biomass based power plant in Faisalabad division. The study involves identification of best site for power plant followed by an assessment of biomass resource potential in the area and propose power plant of suitable size. The study also entailed comprehensive supply chain analysis to determine biomass fuel pricing, transportation and storage. Further technical and financial analyses have been done for selection of appropriate technology for the power plant and its financial viability, respectively. The assessment of biomass resources and the subsequent technical analysis revealed that 20 MW biomass power plant could be implemented at one of the locations near Faisalabad city i.e. AARI Site, Near Chak Jhumra district Faisalabad, Punjab province. Three options for steam pressure; namely, 70 bar, 90 bar and 100 bar boilers have been considered. Using international experience and prices on power plant technology and local prices on locally available equipment, the study concludes biomass fuel price of around 50 US dollars (USD) per ton when delivered to power plant site. The electricity prices used for feasibility calculations were 0.13 USD per KWh for electricity from a locally financed project and 0.11 USD per KWh for internationally financed power plant. For local financing the most viable choice is the 70 bar solution and with international financing, the most feasible solution is using a 90 bar boiler. Between the two options, the internationally financed 90 bar boiler setup gives better financial results than the locally financed 70 bar boiler project. It has been concluded that 20 MW with 90 bar power plant and internationally financed would have an equity IRR of 23% and a payback period of 7 years. This will be a cheap option for installation of power plants.

Keywords : AARI, Ayub agriculture research institute, biomass - crops residue, KWh - electricity Units, MG - Muhammad Ghaffar

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