Renewable Energy Resources for Small Scale Agro-Processing Unit at Tourism Area:

Case study at Telaga Warna

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ABSTRACT

In the future, Indonesia's energy consumption is expected to increase along with economic growth. To anticipate this energy problem, the Indonesian government plans to increase the number of energy-self-sufficient village. An energy-self-suffiient village is a village capable of meeting its own energy needs and in the process creating job opportunities, reducing poverty and inducing productive activities. Renewable energy, such as solar, wind, micro-hydro and biomass, is usually available in the rural area and hence, by transforming and converting these sources of energy to power various processing machines, added value of agricultural can be made.

Utilization of combined solar, wind and biomass for a small scale agro-processing unit at rural area, which uses solar, wind, and biomass as a power source to operate a small agro-processing unit, is one of method to develop rural area. The objective of this study was to explore the potency and the possibility of the use of renewable energy from solar, biomass and wind energy resources for small processing unit at Telaga Warna area, one of the tourism areas located at Bogor, West Java.

The results showed that the potency of renewable energy sources at Telaga Warna area was mostly from solar energy and biomass. Potency of renewable energy from solar was 538.6 kWh/m^2. Potency of biomass energy from paddy field was 140.17 ton/year and from other area was 2045 m^3. The average of wind velocity at Telaga Warna area was 1m/s or less than 75 W/m^2. The utilization of renewable energy sources at Telaga Warna area was demonstrated for mushroom cracker drying using GHE solar dryer. It was found that for one unit of GHE solar dryer (30 kg of sample) required energy of 25.1 kW. This amound of energy was supplied by solar energy of 4.62kW and the rest was added by biomass energy.

Keywords: Utilization of renewable energy, solar energy, biomass energy, GHE solar dryer