

## **Potential co-generation of electrical energy from mill waste: a case study of the Malaysian furniture manufacturing industry**

### **ABSTRACT**

Furniture manufacturing in Malaysia is an established industry driven primarily by the availability of raw materials and labor. However, the industry suffers from the low-recovery rate of its materials, as it produces a substantial amount of waste during the manufacturing process. Although smaller waste fragments, or off-cuts, are recovered for other purposes, the splinters, shavings, and coarse dust have little economic value and are often discarded. Because wood is a well-established source of bioenergy, this study investigated the potential use of mill waste from the furniture-manufacturing industry for electrical energy generation. Waste from the rubberwood, bamboo, and rattan furniture industries was evaluated for its potential electrical energy generation, and the amount was compared with the electrical energy that was consumed by the furniture industry. The study also compared the emission of greenhouse gases from the combustion of these waste materials against fossil fuels used to generate electricity to assess its potential in terms of the environmental benefits. In conclusion, such mill waste could be utilized as substitute for fossil fuel to generate energy in the furniture industry.

**Keyword:** Mill waste; Furniture industry; Energy; Greenhouse gases; Carbon footprint