

Bioenergy production from bamboo: potential source from Malaysia`s perspective

ABSTRACT

Global energy sectors are facing the crucial challenge of sustainability and diversification of energy resources. Seeking renewable resources with a sustainable supply is therefore a matter of the utmost concern. In this respect, bamboo, a renewable lignocellulosic material and non-food biomass, has great potential to be utilized to produce energy. Several studies have been conducted on a wide range of bamboo species and the results have shown that bamboo could potentially be used as a suitable fuel because it shares desirable fuel characteristics present in other woody biomass. Bamboo can be used as an energy source by converting it into solid, liquid, and gaseous fuels. However, to utilize bamboo as a high promise energy crop resource for biofuels, a secure and stable supply is required. Therefore, additional information on the availability, cultivation, and harvesting operations of bamboo is vital to ensure the practicability of the idea. The objective of this review is to highlight the potential of bamboo as an alternative source of bioenergy production, particularly in a Malaysian context, with emphasis on the concepts, pretreatment, and conversion technologies.

Keyword: Bamboo; Bioenergy; Biofuel; Malaysia; Energy crisis