



Assessment of forest biomass for use as energy. GIS-based analysis of geographical availability and locations of wood-fired power plants in Portugal

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ABSTRACT

Following the European Union strategy concerning renewable energy (RE), Portugal established in their national policy programmes that the production of electrical energy from RE should reach 45% of the total supply by 2010. Since Portugal has large forest biomass resources, a significant part of this energy will be obtained from this source. In addition to the two existing electric power plants, with 22 MW of power capacity, 13 new power plants having a total of 86.4 MW capacity are in construction. Together these could generate a combination of electrical and thermal energy, known as combined heat and power (CHP) production. As these power plants will significantly increase the exploitation of forests resources, this article evaluates the potential quantities of available forest biomass residue for that purpose. In addition to examining the feasibility of producing both types of energy, we also examine the potential for producing only electric energy. Results show that if only electricity is generated some regions will need to have alternative fuel sources to fulfil the demand. However, if cogeneration is implemented the wood fuel resource will be sufficient to fulfil the required capacity demand.

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