

ASSESSMENT OF BIOENERGY POTENTIAL FROM EUROPEAN FORESTS USING A SPATIALLY EXPLICIT METHOD

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INTRODUCTION

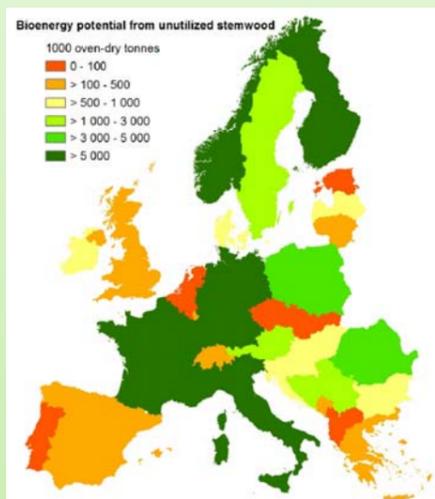
European forests can play a big role in providing resources for bioenergy production. While harvesting wood for industrial use, a significant amount of tree biomass (which usually has not been utilised) could be used for energy production. The current forest inventory practice does not pay attention to assessment of amount of biomass to support energy production. There are some statistics available on regional level for some countries, but solid, homogenous information is missing. A method that allows quick assessment of the bioenergy potential of European forests was needed. Therefore we developed a spatially explicit resource-focused method to estimate the bioenergy potential of stemwood and primary forest residues (branches, stumps) at the European level.

METHOD

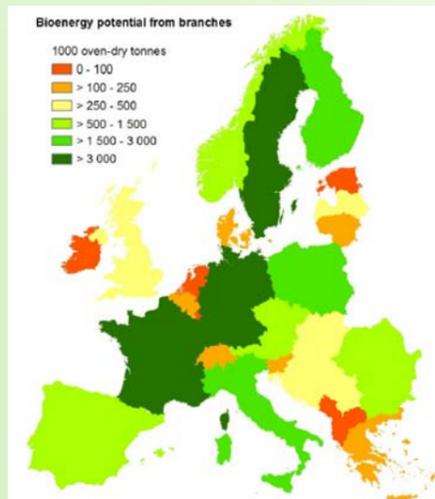
The method starts from a forest area map, integrates national forest inventory statistics on net annual increment (NAI) and biomass expansion factors (BEFs). Then harvesting constraints were implemented for stemwood and forest residues based on environmental sustainability criteria and basic technical limitations. These were derived from soil characteristics data, slope/elevation data and data on the location of protected areas.

While most of the constraints are implemented at pixel level (1km resolution), the resulting bio-energy potential is presented at country level because, due to the lack of precise harvesting models, the annual harvesting potential can only be estimated at larger scales.

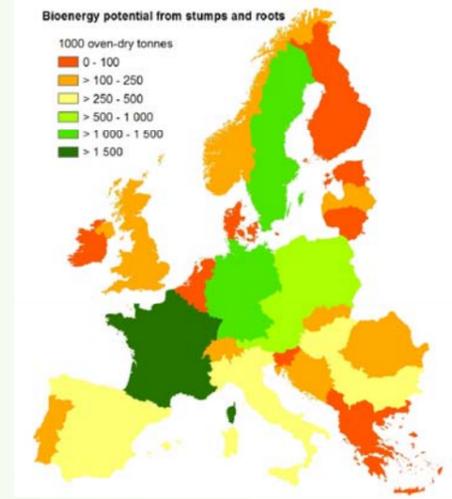
RESULTS AND DISCUSSION



Technical bio-energy potential of stem wood per country



Technical bio-energy potential of above-ground forest residues (branches) per country



Technical bio-energy potential of below-ground forest residues (stumps) per country

The proposed method gives an estimate of about 1500 PJ of energy per year that can be provided from European forests.

The method offers cost-effective estimates based on the best available data. The biomass potential can only be calculated at country level, though the intermediate GIS based results can help scoping for the location of more detailed local studies.

The main challenge of the method is the dependence of the results on the proposed sustainability criteria selection. A second issue is the fact that we cannot quantify the confidence interval for the estimates, due to many large-scale datasets of variable accuracy or for which the accuracy was not quantified.

More information on BEE:

BEE project concentrates on harmonising the biomass resource assessments in Europe and its neighbouring countries. This harmonisation will improve consistency, accuracy and reliability of biomass assessments, which can serve the planning of a transition to renewable energy in the European Union. The project will be carried out during 2008 - 2011. www.eu-bee.com

CEUBIOM, the "twin project" of BEE, works on classification of European biomass potential for bioenergy using terrestrial and earth observations. www.ceubiom.org

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