

EUROPEAN FOREST INSTITUTE CENTRAL-EAST AND SOUTH-EAST EUROPEAN REGIONAL OFFICE - EFICEEC-EFISEE

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Impacts of biomass use in forest areas in Europe

Workshop on balancing bioenergy production and sustainable forest management in Mountains Areas





Biomass for bioenergy

- 50% of world's wood, and 20% of European wood is used for wood fuel
- 10-15% of primary energy from biomass, about 60% for households





Forest bioenergy in a bioeconomy

The competition triangle:

No level playing field for bio-based chemicals and products







Energy use of wood increasing



Mantau et al 2010





Forest resources increasing





Brus et al. 2012, Hengeveld et al. 2012, Nabuurs et al. 2009



Harvesting intensity in EU



31.3.2009

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Impact of bioenergy scenarios



Verburg et al., 2013



But how to combine biomass and





Verburg et al., 2013





... and ecosystem services?



3.2009

Verburg et al., 2013



New markets - Carbon trade and bioenergy



Limits to multi-functionality? Climate change protection biomass mitigation to be cut by average of 5 hunting biodiversity water resources recreation





What Science Can Tell Us

Forest Bioenergy for Europe

Paavo Pelkonen, Mika Mustonen, Antti Asikainen, Gustaf Egnell, Promode Kant, Sylvain Leduc and Davide Pettenella (editors)

In a fragmented policy environment







Policy impacts

Policy	Description	Effects
Common Agricultural Policy and Rural Development Policy	They aim at the competitiveness of the primary sector and at promoting rural development, amongst other things by offering financing opportunities to farmers and forest owners.	Forestry measures and related activities aimed at producing forest energy wood can be directly financed. These policies determine the availability, types and costs of forest woody biomass to the energy sector.
Directive 2002/91/EC on energy performance of buildings	It promotes energy performance of new and existing buildings, for example by fostering the efficient use of installations like boilers and air-conditioners, and of renewable energies.	It stimulates demand for energy wood, since this is among the energy sources most broadly used for efficient heating technologies like the cogeneration of heat and electricity and district heating.
EU Emission Trading Scheme (Directive 2003/87/EC)	The core of EU climate change policy – it applies a market system to cost-effectively reduce greenhouse gas emissions. It applies a 'cap and trade' system: it imposes a limit to industries ' total emissions, and it allows trading the assigned 'emission allowances' which can be used to emit or can be sold on the market.	By putting a price on greenhouse gas emissions, it fosters the substitution of fossil fuels with less carbon-intensive energy sources, therefore strengthening the economic competitiveness of woody biomass and other renewable energy sources.
Renewable Energies Directive (Directive 2009/28/EC) and Biofuels Directive (Directive 2003/30/EC)	By establishing individual legally binding targets for the share of renewable energies consumed in the various EU Member States, they promote an increased use of renewable energy sources for all energy sectors and in particular for the transport sector.	They force EU Member States to increase the use of wood and other renewable energy sources to reach the mandatory targets.



Impacts on forests

- + increased tending and thinning activities to improve resilience and stand quality
- + increasing the viability of the forestry sector and revenues
- + diversification of markets
- Intensified wood harvest may counteract with other ecosystem services
- Intensification of forest use may increase conflict with nature protection and other ES
- Stronger use of residues may increase nutrient loss





Opportunities

- Better quality of silviculture by making precommercial products economic
- Make use of non-commercial coppice and short rotation forests
- Make better use of underused resources in rural areas -> rural development
- Improve efficiency of local energy supply
- Increase local energy-self sufficiency and decrease dependence on fossil fuels





Threats

- Increased tension between use and non-use forests
- Segregation of forest ES?
- Illegal activities to get even more attractive?
- Removal of environmental assets, e.g. old trees, dead wood, residues
- Intensification and mechanisation of harvesting
- Nutrient loss on poor stands
- Afforestation of marginal land -> biodiversity loss
- Displacment effects to remote forest areas



What is needed

- Site assessment for suitability of forest stand for increased wood use -> hot-spot zoning of priority areas
- A realistic view on forest owners perspectives
- A concept of energy efficiency rather than energy provision
- A clear analysis of the CC mitigation potentials of forest bioenergy
- A clear understanding of cascade use and its potentials
- A coordinated policy framework for bioenergysustainability criteria





Thank your for your attention

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What does it mean for mountain forests?

- Wood mobilisation in remote areas
- Improved accessibility of forest areas
- Need to harmonise forest functions and ecosystem services
- But opportunities to increase resilience and adaptive management, e.g. in over-aged protection forests

