News and Views
from SNS – Nordic Forest Research Co-operation Committee
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"We are gradually realizing the magnitude of the challenge to become fossil carbon neutral".
Palle Madsen, project manager
Photo: Mats Hannerz

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Woody biomass needed to terminate our dependence on fossil fuels

"Strengthen the role of Nordic forestry as a significant contributor to the development of competitive, efficient and renewable energy systems". That is the prime objective of the newly launched joint-Nordic project ENERWOODS – *Wood based energy systems from Nordic forests*.

The Nordic countries have adopted an ambitious strategy: independence from fossil fuels in the energy sector by 2050.

"We gradually realize the magnitude of the challenge to become fossil carbon neutral. This is, perhaps, the largest single component of future sustainability", says Palle Madsen, University of Copenhagen and project manager of the ENERWOODS project. The project aims to strengthen the whole energy system from forest to consumer, allowing woody biomass to replace as much fossil fuel consumption as possible.

ENERWOOD is being funded by *Nordic Energy Research* as a result of their call for *Sustainable Energy Systems 2050.* The project runs over the period 2011–2014 and has a total budget of over 18 million NOK. About 14 million is coming from Nordic Energy Research, and the rest is from various national sources.

The project is based on three main hypotheses:

1. Woody biomass energy systems can be developed and designed to support both the 2020 and 2050 energy and climate policy goals efficiently, without compromising the sustainability and environmental benefits of forests.

2. Depending on the site, Nordic forest productivity can be increased by up to 80% relative to standard production levels without jeopardising sustainability.

3. Cost- and greenhouse gas mitigation efficiency, as well as the degree of utilisation of the harvesting and transport fleet, can be markedly improved by adapting and matching harvesting systems.

Increased biomass production

Vivian Kvist Johansen, University of Copenhagen is project owner for ENERWOODS. She stresses the role of increasing forest productivity.

"In the first 25 years following the

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Brundtland commission the main emphasis was on the social and environmental pillars of sustainable development, while productivity was taken for granted. Now we realise that much more green carbon is needed to meet the stated goal of the Nordic countries for 2050", she says.

There are several ways to increase forest productivity. The project will analyse production levels and adaptation potentials of e.g. introduced tree species, tree breeding and fertilisation. The tasks will include reviews of current knowledge as well as establishing new field experiments to fill knowledge gaps. Demonstration experiments will also be established.

Douglas fir, a fast-growing alternative. Photo: Kristina Wallertz

Spreading the risks

The choice of species to grow for biomass energy has focused greatly on fast-growing poplar and aspen clones. However, these species are not the most productive trees – they are just fast starters. ENERWOODS will, therefore, also look at fast-growing conifer species such as grand fir, Douglas fir and Sitka spruce.

While poplar and aspen may reach production levels of 9–11 tonnes dry matter/ha/year in 20–30 year rotations, the fast-growing conifers may produce 20 tonnes dry matter/ha/year in longer rotations.

A changing climate will force the forestry owners to use a wider range of genetic material (species, provenances and clones) than in the past. A broader selection is also a means to spread the risks associated with an unknown future. Introduced species and selected clones should perhaps not replace the main species of today's forests, but be added to ensure a reduced risk.

Efficient harvest

Besides increased production, efficient utilisation of energy resources is important. ENERWOODS will place an emphasis on topics such as efficient harvesting and logistics technologies, as well as analyses of the whole energy system in order to optimise biomass use. Important tasks include evaluating long distance transport solutions, precision supply of biomass to meet fluctuating demands at biomass plants and harvesting techniques that minimise costs and energy consumption.

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Webpage: www.enerwoods.dk

Project institutions involved

Skogforsk (the Forestry Research Institute of Sweden)

Norwegian Forest and Landscape Institute

METLA (the Finnish Forest Research Institute)

Linnaeus University, Sweden

SLU (the Swedish University of Agricultural Sciences)

SYKE (the Finnish Environment Institute)

University of Eastern Finland

University of Copenhagen, Denmark

Shortcuts

Norway

Study on forest workers´ muscle problems

The Norwegian Institute for Forest and Landscape has received a grant to study muscle pain in forest machinery operators. In the four-year project, muscle work will be measured and related to pain experienced. The project is run in cooperation with researchers in Finland (Metla) and Sweden (Skogforsk). About 20–25 workers will be studied in each country.

Read more: www.skogoglandskap.no

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Wind power in certified forests – a delicate problem

FSC (Forest Stewardship Council) has clarified the requirements for the establishment of wind turbines within FSC-certified forests. Establishment of a wind turbine within a forest entails conversion of the land, and must comply with the FSC's requirements on conversion. The windmill should not affect areas with high conservation values, and should be approved by local stakeholders. If these criteria are not met, that portion of the land may be excised from the forest management unit.

Read more: www.fsc.org

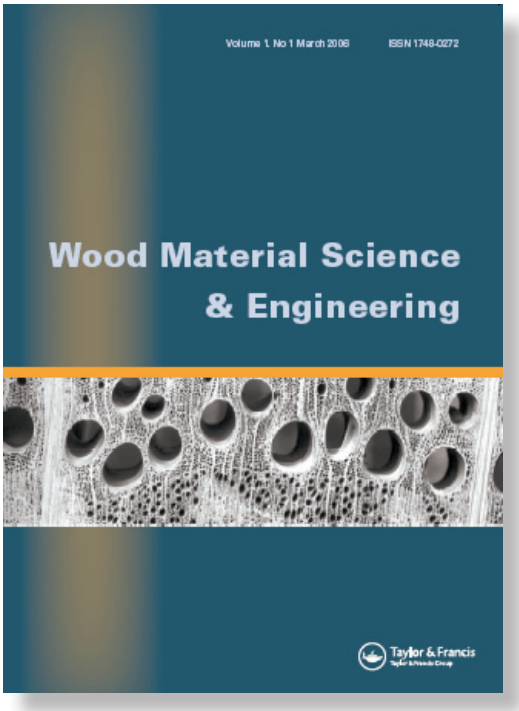
Finland

Handbook on the Russian forest sector

The Finnish Forest Research Institute – Metla – has published a handbook about the Russian forest sector. The book addresses general questions about forestry, forest policy and forest industry that are common to all regions of the Russian Federation. The handbook is aimed at specialists and decision-makers in companies, forest administration and management.

More information about "Northwest Russian Forest Sector in a Nutshell" can be found on www.metla.fi

‘Wood Material Science and Engineering’, an important player in wood science publication



“We have a good inflow of high-quality manuscripts, and we publish our issues on time. Therefore, I consider the health of Wood Material Science and Engineering to be very good.”, says Professor Dick Sandberg, editor-in-chief of the journal.

SNS initiative

Wood Material Science and Engineering was first published in March 2006. It started because of an SNS initiative, specifically through its Nordic-Baltic network Wood Science and Engineering. The motivation was the shortage of journals within the field, particularly wood engineering, and the long lead times for publication in the main international journals.

SNS is sponsoring the editorial work, which was originally headed by Professor Magnus Wålinder at KTH Royal Institute of Technology. Dick Sandberg from Linneaeus University took over in 2009, with Dr Jimmy Johansson, Prof Magnus Wålinder and Dr Charles Frihart as co-editors.

Wood Material Science and Technology has recently applied to be indexed by the Thomson Reuter Web of Science.

“The decision will be taken in 2013, but we are convinced that the board will regard the journal as a high-quality actor that fulfils the requirements. The journal will become even more attractive once we can specify an impact factor”, says Dick Sandberg.

Currently, about 50 manuscripts are received per year, and about 70% are finally accepted for publication. Authors from Europe dominate, but contributions also come from other parts of the world. A current topic that receives much attention is wood modification, including heat treatments and thermodynamic modification.

Nordic net-working

The journal operates within a field of science where the Nordic and North European countries are very important actors. These countries have a large forest resource, and forest industry is important. The journal therefore focuses on issues important for the competitiveness of forest-based actors in these regions. The journal is, however, widely read and downloaded throughout the world. Outside Europe, most engagement is found in the USA and Canada.

Nordic cooperation in wood engineering is strong and important. Recent projects supported by SNS have covered topics such as communication to the market of the environmental values of wood products, xylan modification, surface modification with wood hemicellulose and the use of wood to mitigate climate change.

The Nordic-Baltic network Wood Science and Engineering has a busy agenda with workshops, conferences and exchange programmes (see News & Views No. 2, 2012).

“The network provides arenas to meet, and such meetings are prerequisites for cooperation and high-quality research”, says Dick Sandberg, who is actively involved in the network.

The editor
Dick Sandberg has been Professor of Forest Products at Linnaeus University in Växjö since 2008. He heads the Technology & processing unit and is involved in several wood engineering research projects in close cooperation with the woodworking industry.

Linnaeus University was formed in 2010 after a merger between the universities of Kalmar and Växjö in southern Sweden. The Forest Products unit is one part of the sphere “Forest products and sustainable development” with about 50 employees, including nine professors. Forest Products supports the development of forest products and timber industries in the country, particularly in southern Sweden. Linnaeus University cooperates extensively with the industry, for example with the forest owners association Södra, IKEA and the Swedish Forest Industries Federation.

Shortcuts

Climate warming promotes renewable energy

With increased biomass growth and greater inflow of water to hydropower reservoirs, predicted climate change will, in general, be beneficial for renewable energy resources in the Nordic-Baltic region, according to a recent report from the Nordic Council of Ministers.

The report analyses the impacts of 21st century climate changes on the development and use of renewable energy in the Nordic and Baltic countries. It is the final product of the research project "Climate and Energy Systems", which involved 30 scientific institutes and companies in eight countries during the period 2007–2011.

Fossil fuels accounted for 81% of global energy consumption in 2009, and renewable energy sources for 16%. The most important renewables are hydropower, wind power, bioenergy, geothermal energy, solar energy and ocean (tidal) energy.

The Nordic and Baltic countries are doing much better than the average; in particular in Norway and Iceland, where renewables dominate with shares of 62 and 81%, respectively. Most of the other countries in the region have also already reached the average EU-goal of 20% renewables by 2020.

Read more: www.norden.org, search for Climate and Energy Systems and download the report free.

Finnish forest activist wins the Nordic Council Environment Prize

The Nordic region's most prestigious environmental prize goes to the environmental activist Olli Manninen from Finland. The prize is given for his efforts to preserve the forests and his mobilising of environmental NGOs across the Nordic countries.

Read more: www. nordicforestresearch.org

Sweden

Rodents, moose, tree genes and restoration – topics for new professors

Four new forestry professors were installed at SLU in May, 2012.

Birger Hörnfeldt is an expert on small rodent dynamics and their impacts on predators such as Tengmalm's owl.

Göran Ericsson takes an ecosystem approach and adds the human dimension to his studies on hunting, fishing, forestry and outdoor recreation.

Magnus Löf is particularly interested in the early phases of forest stand development and forest restoration.

Harry Wu unravels the genetic basis of important traits in trees, such as growth, form and hardiness.

Read more: www.slu.se

Denmark

Some ash trees can survive pathogenic attacks

Danish researchers have studied the fungal infections responsible for the decline in ash across Europe and have found that a small proportion of trees have a natural resistance to the disease. The resistance is inherited and seems to be linked to phenology. The studies also demonstrated that resistance was due to an active defence that limits the fungal growth. The researchers warn that healthy ash trees must be protected before they are lost to logging.

Read more: www.sl.life.ku.dk,

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Dying ash tree. Photo: Lars-Göran Stener

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More info about SNS:

www.nordicforestresearch.org

We strongly encourage our readers to contribute to a lively and interesting journal. Letters to the News & Views section will be published if they are:

- short
- relevant to the Journal
- interesting for the readers.

Examples: comments on papers published in the Journal, views on ongoing research, trends in research policy, opinions about forestry practice etc.

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