Title: Utilization of wood characteristics in constructions and novel wood products
Network title. Northern European Network for Wood Science and Engineering
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Preamble: The aim of the network is to contribute to the optimization of the resources spent individually and by society on research projects within Wood Science and Engineering in the EFI NORD area. The goal is to coordinate Northern European research in this field by maintaining a network between senior researchers, PhD students and industrial representatives.

Timber is one of very few structural materials that are derived from atmospheric carbon dioxide. It can be used to replace other construction materials that have much higher associated embodied energies, providing additional benefit. The use of timber provides additional benefits by supporting the economic health of the forestry sector, such as rural employment, providing incentives for replanting and for forest management for a variety of other benefits. The forest industry uses certification and chain of custody schemes, linked to forest management plans to ensure that the timber is produced and harvested in an environmentally responsible and sustainable manner.
The current status of our forests provides opportunities for increased use of biomass for energy, to substitute more energy demanding construction material by wood, create employment opportunities - and to enhance the environmental values of our forests.
EFI: "The forest products sector has been dominated for over a century by the pulp and paper and wood products industries. In the coming two decades, the sector will also increasingly merge with the construction, energy, chemicals and textile industries to become an essential

part of the bioeconomy. It will turn from a much-focused sector into a much more diversified one."

This opportunity calls for an enhanced collaboration of researchers, and that is what this WSE network will focus on onwards.

Scientific exchange in this particular field of interest is of immanent importance and will strengthen the initiatives undertaken by the various members. An increase in the size of the Harvested Wood Products (HWP) pool is of benefit to the climate change mitigation, since this results in a net sequestration of atmospheric carbon, provided that the amount of carbon stored in the forests from which the wood is derived is either stable or is increasing. This means that the timber must come from sustainably managed forests. The HWP pool size can be increased by raising the amount of wood harvesting and/or by increasing the lifespan of wood products in the HWP pool (increased levels of recycling, improved durability, etc.). The best overall strategy is to increase the level of HWPs and other biogenic materials in the pool as well as increasing the retention time by extending the life of products (enhanced durability) and by adopting a cascade materials management structure. Finally, the biogenic carbon can be returned to the atmosphere by incineration with energy recovery, thereby obtaining credits by substitution of a fossil fuel source (Hill & Zimmer 2018)

National and international environmental requirements will demand the development of ecologically, economically, and socially responsible forestry practices and use of wood products in the Nordic countries.

Materials development will be enhanced and methods for increased and new uses of wood products will be performed.

The North European WSE networking will be strengthening these areas.

*Hill, Callum Aidan Stephen; Zimmer, Katrin; The environmental impacts of wood compared to other building materials.