



# The Future of Finnish Forests and Forest Industry

Seminar: Climate Change and the Fate of Forests  
October 31<sup>st</sup>, 2024

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## **This presentation includes:**

- 1. Finland's forest resources**
- 2. Finland's National Forest Strategy 2035**
- 3. Best Practices for Forest Management**
- 4. Biodiversity in Forests**
- 5. Wood-based products**

# Finland's forest resources



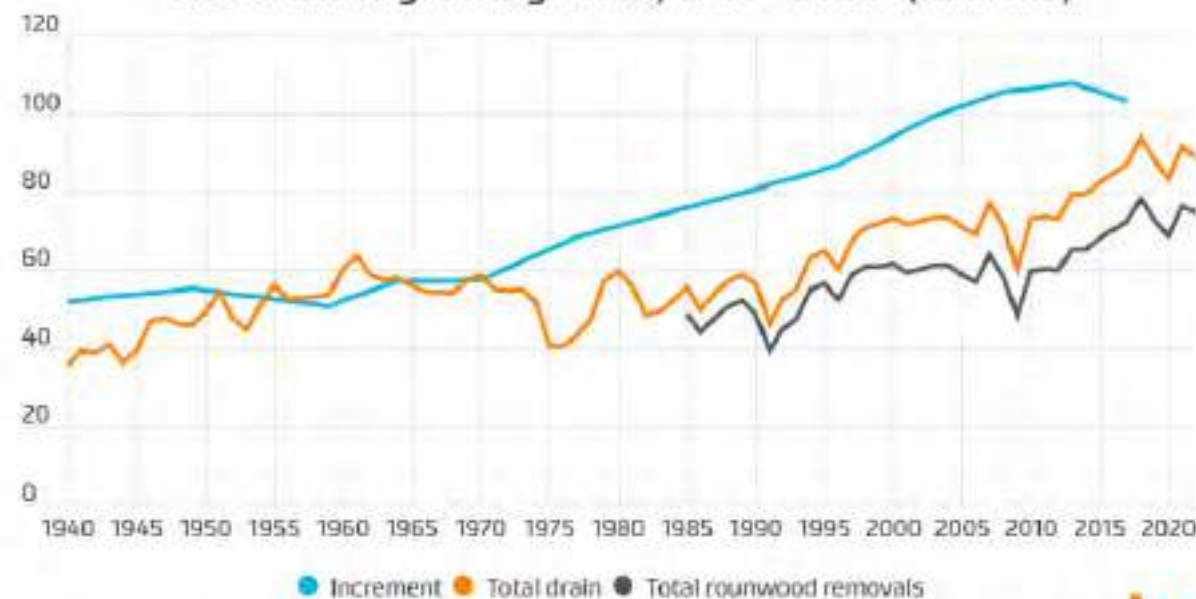
# FOREST GROWTH EXCEEDS HARVESTINGS

In 2023, about 91% of the estimated harvesting potential was harvested.

Finland's annual increment of growing stock is 103 million cubic metres each year.

In 2023, roundwood harvest totalled around 73 million cubic metres.

Total roundwood removals, increment and drain of growing stock, 1940 - 2022\* (mill. m<sup>3</sup>)



\* Preliminary

Annual increment of growing stock, roundwood removals, total drain of roundwood 1940-2022 (preliminary), million m<sup>3</sup>.

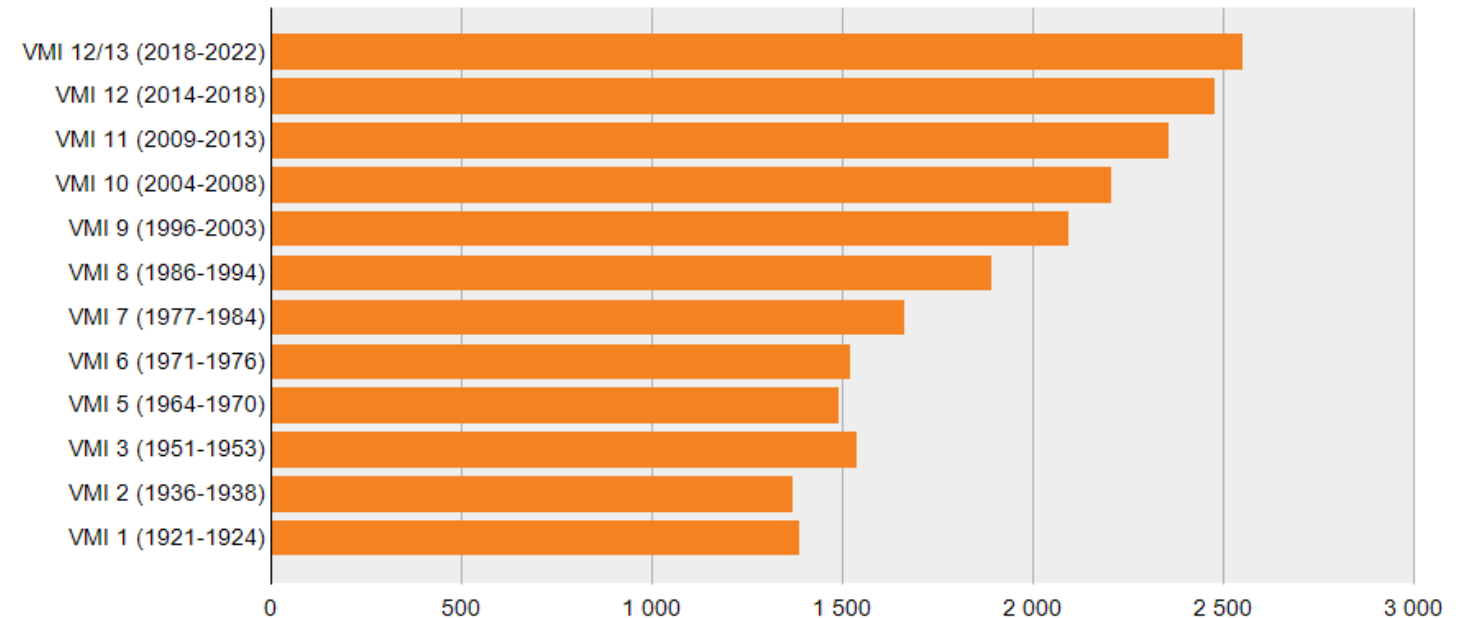
Source: Natural Resource Institute Finland

## GROWING STOCK IN FINLAND'S FORESTS HAS INCREASED OVER THE LAST 50 YEARS

Sustainable forest management ensures that the increasing trend will continue also in the future

The volume of growing stock and the state of forests have been monitored in Finland since the 1920s.

The growing stock volume in Finland's forests totals 2.55 billion cubic metres. This is 1.8 times the volume recorded in the 1920s.



Total volume of growing stock by inventory period, million m<sup>3</sup>

Source: Natural Resources Institute Finland

# Finland's National Forest Strategy 2035

<https://mmm.fi/en/nfs2035>





# Finland's National Forest Strategy 2035

- Provides outlines to Finland's forest policy
- Prepared during 2022
- Reform driven by changes in national and international environment
- Drawn up in cooperation between experts and as an interactive process
- Aim to coordinate the needs of humans, economy and environment
- The National Forest Council adopted Finland's new National Forest Strategy in December 2022

Pressures for change of the welfare state, fair and just transition

# MEGATRENDS

Climate change mitigation and adaptation

Redefinition of security

Global political and economic tensions

Transformation of the use of natural resources, coordination a challenge

Transformation of energy production and use

Loss of biodiversity



New ways of revenue generation from natural resources

More from less

Transformation of working culture

Coherent policies

Platform economy, mass data, artificial intelligence, automation

New materials, commodities and production practices in a circular economy

Consumer behaviour, values and attitudes

# ENABLERS







# NATIONAL FOREST STRATEGY 2035

## Vision and strategic objectives

Finland is a competitive operating environment for a responsible forest sector that is capable of renewing itself.

Forests are in active, sustainable and diverse use.

## GROWING WELLBEING FROM FORESTS AND FOR FORESTS

We strengthen the vitality, diversity and adaptability of forests

We strengthen knowledge-based management and competence in the forest sector.

# Best practices for forest management



# The story behind the Best Practices for Sustainable Forest Management

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Best Practices for Sustainable Forest Management offer alternatives for forest management and information on their effects.

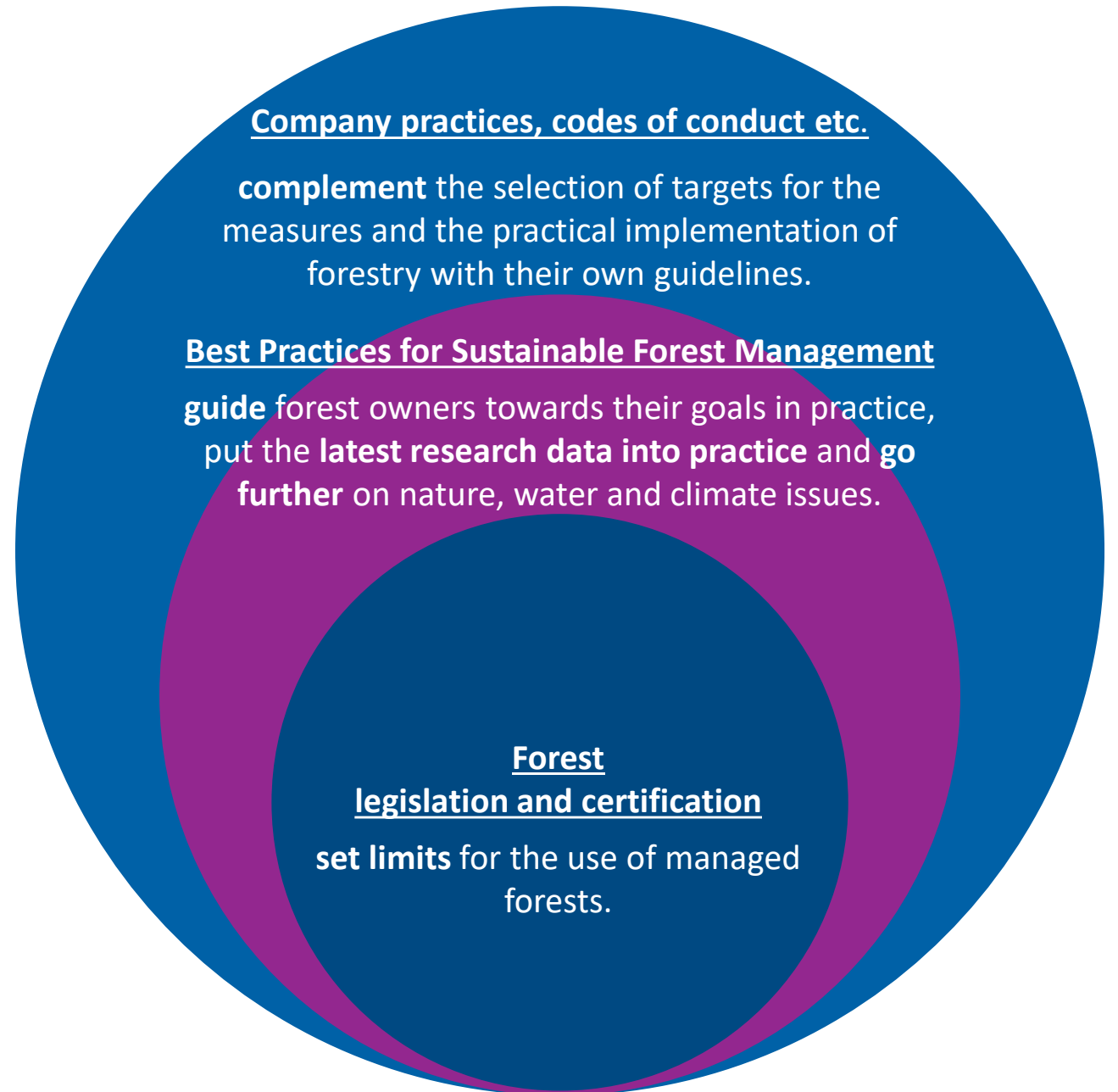
Different elements of sustainability are taken into consideration: **economy, nature, recreational use** of forests and **climate change mitigation and adaptation**.

The Best Practices reflect **long-term research** and societal values among the key stakeholders as well as the main targets set by the Finnish national forest policy.

The Best Practices are **provided by the Ministry of Agriculture and Forestry** as a service for Finnish forestry.

# Best Practices in relation with laws, certificates and other practices

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# Biodiversity in Forests



# Nature management conserves the biodiversity of commercial forests

Nature management is part of everyday forestry. The end result is always the sum of forest management and nature management objectives and measures.

## Nature management of forests:

- Conserves valuable habitats
- Leaves retention tree groups and game cover
- Leaves buffer zones at the edges of river basins
- Conserves decaying wood and creates high stumps
- Protects trees hosting birds of prey
- Carries out controlled burning of forests and burning of retention tree group

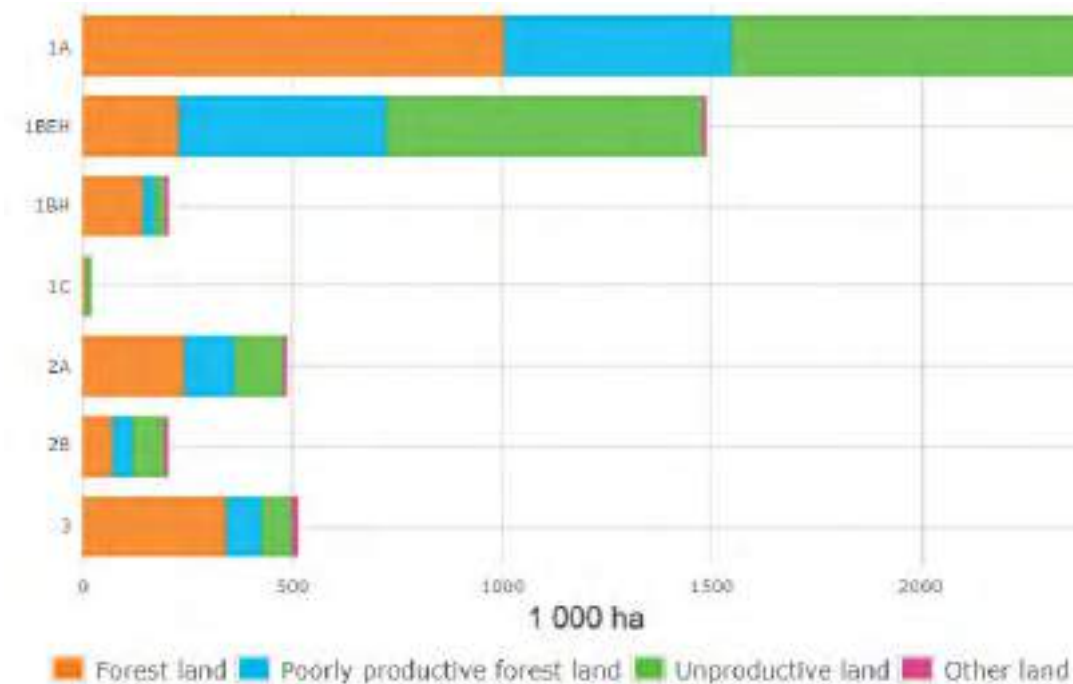
Thanks to the development of forestry practices and operating models, around 30 previously threatened species were removed from the threatened species list in 2019.



# 13 PER CENT OF FORESTS IN FINLAND ARE PROTECTED

The amount of protected forest area has tripled since the 1970s.

Altogether 2.94 million hectares of Finnish forests are protected, which is equivalent to 13 per cent of the country's forest area. Forestry measures are not permitted in most of the protected areas. The majority of protected areas are located in northern Finland.



Area of protected areas, biodiversity conservation sites of commercial forests, and special areas supporting conservation of nature values by land class (2022).

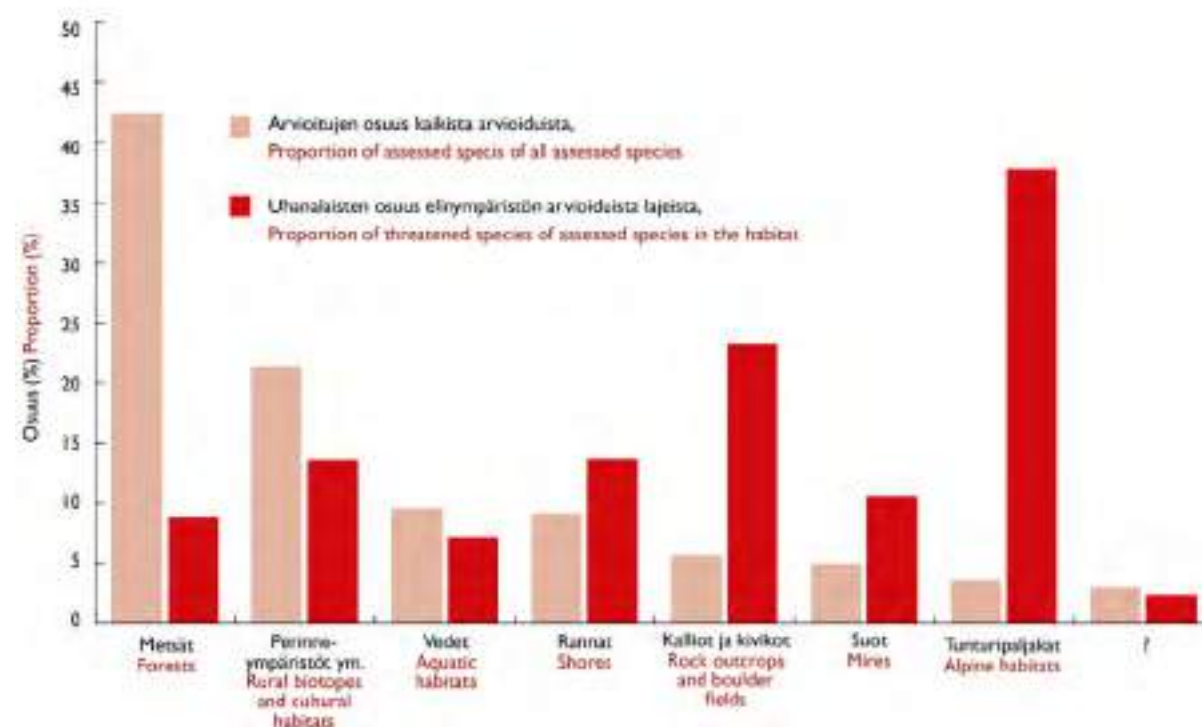
Source: OSF: Natural Resources Institute Finland

## THE STATUS OF ENDANGERED SPECIES IS ASSESSED REGULARLY

The status of endangered species was assessed for the fifth time in 2018.

A total of 833 threatened species live primarily in forests. Forests are home to the majority (31 per cent) of threatened species. The number of threatened forest species is high because the number of forest species in general is high. The proportion of threatened species out of all species is lowest in forests (9 per cent).

The majority of endangered forest species in Finland are fungi, lichens and insects.

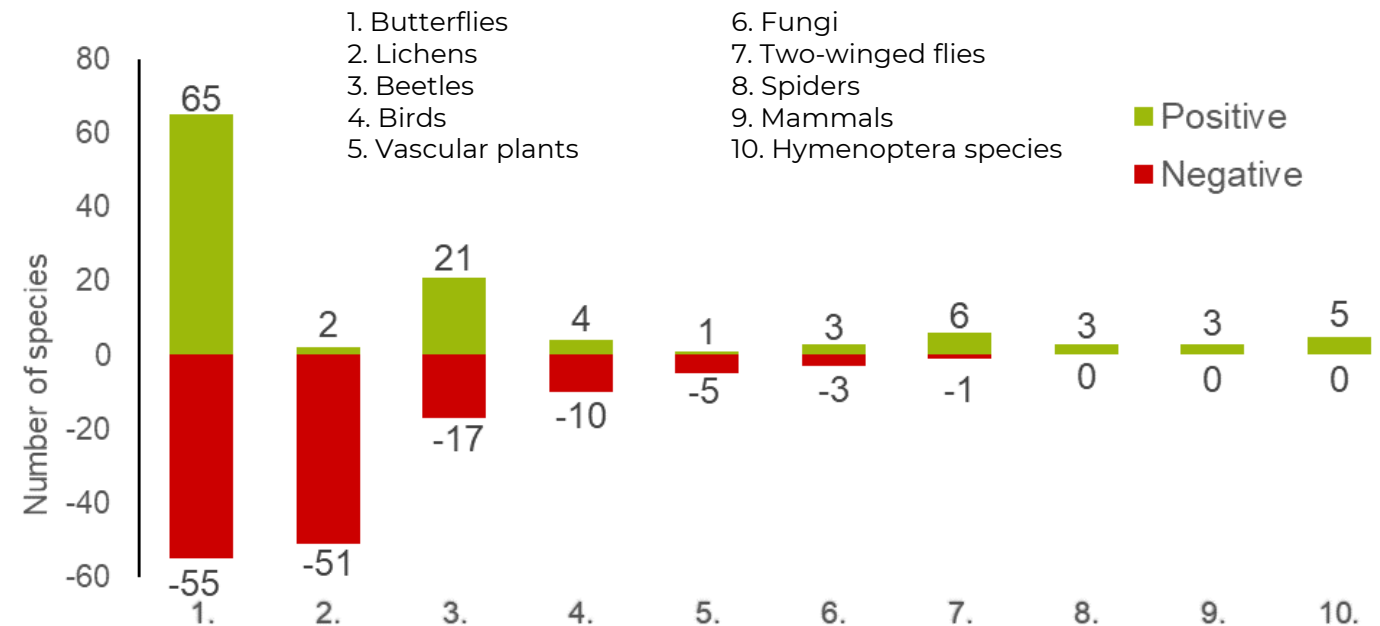




# THE CHANGE IN ENDANGEREDNESS OF FOREST SPECIES

Measures to restore endangered populations are slow to take effect

According to the latest inventory (2018), there are both positive and negative changes in endangeredness of forest species. However, there are still more negative changes than positive ones. The negative change has been greatest in butterflies and lichens.



Sources: Ministry of the Environment and Finnish Environment Institute



# WOOD-BASED PRODUCTS

# WOOD IS USED IN MANY EVERYDAY ITEMS



Building and living



Packaging



Medicine and wellbeing



Material combinations



Energy, bio fuels and chemicals



Bio-polymers and bio-plastics



Pulp and paper

# WOOD-BASED MATERIALS CAN REPLACE PLASTIC

In recent years, a great deal of new products based on wood raw materials have been developed in Finland. Wood-based materials can be utilised to substitute plastics made of fossil raw materials. Bio-based and biodegradable plastics are made from cellulose or side streams of forest industry.

Approximately 80 million tonnes of plastic packaging is produced worldwide each year. Up to 30 per cent of plastic packaging ends up in nature, untreated. Wood-based packaging material, like cardboard, can replace plastic packages.



Photos by: Kotkamills, VTT, DS Smith

## TEXTILES ARE MANUFACTURED FROM WOOD AND RECYCLED MATERIALS

By-products of the forest industry and recovered paper can also be utilised in the manufacturing of textiles.

In the last few years, several innovations have been made in Finland on textiles produced from wood fibres. Textiles based on wood fibres can substitute, e.g., cotton.



Kuva: Juhani Kandell / Tasavallan Presidentin Kanslia



Photo: Saku Ruusila

Ioncell is a technology that turns used textiles, pulp or even old newspapers into new textile fibers



# WOODEN BUILDINGS ARE CARBON STORAGE

## New solutions for using wood as building material

Wood as a material for construction and interior decoration has long traditions in Finland, but new innovations are gaining ground also in wood construction.

In Finland, wood accounts for about 40 per cent of all building materials. Nearly 80 per cent of detached houses have a wooden frame. Wood is also used in structures, windows, doors and finished surfaces.

There are new solutions for using wood as the main building material in e.g. multi-storey housing buildings and office buildings. The development of fire resistant structural elements of timber and prefabrication of wooden blocks of flats enable the breakthrough of multi-storey wooden buildings.

A wooden building acts as a carbon storage throughout its life – even hundreds of years.

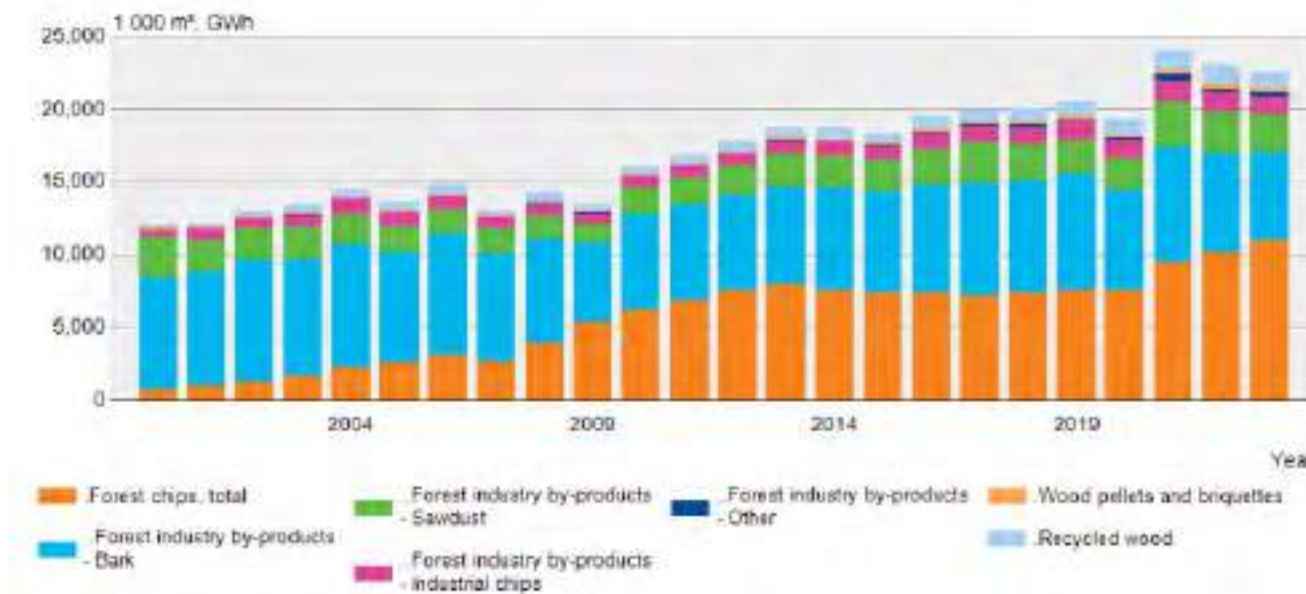
## ELECTRICITY AND HEAT FROM WOODY BIOMASS

In Finland wood fuels are derived from sidestreams and residues of the forest industry and forest management

In Finland bioenergy has a key role in the production of renewable energy. Bioenergy production is largely integrated into forestry and forest industry. Various wood processing residues are utilised as energy, including bark, sawdust, industrial wood residue chips and black liquor from pulp manufacturing. Moreover, treetops, branches and small-sized stems and stumps collected in connection with forest management work and felling can be chipped and used as energy sources.

In 2023, heating and power plants consumed a total of 22.5 million solid cubic metres of solid wood fuels. Solid wood fuels are obtained from several different sources.

Solid wood fuel consumption in heating and power plants 2000-2023 (1000 m<sup>3</sup>)



Wood in energy generation 2000-2023

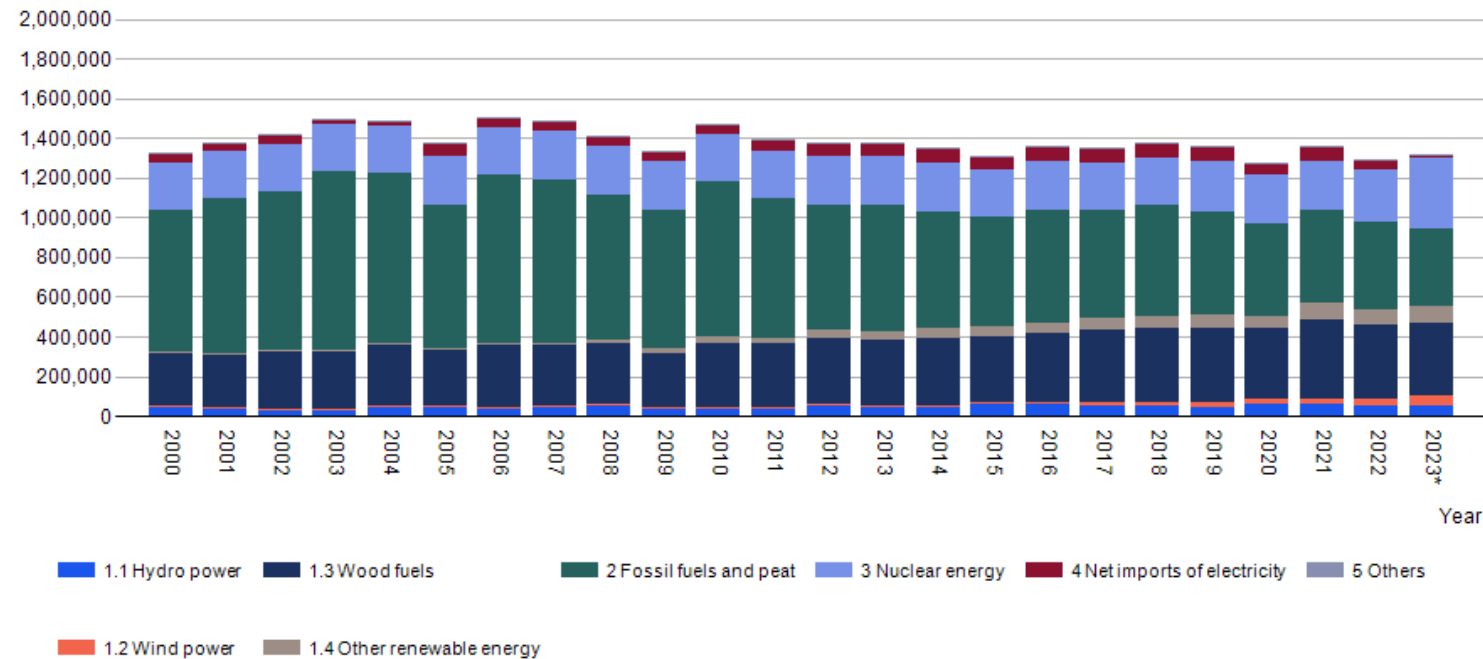
Source: Natural Resource Institute Finland

# IN 2023 WOOD FUELS ACCOUNTED FOR 28% OF FINLAND'S TOTAL ENERGY CONSUMPTION

Wood fuels are the main source of renewable energy in Finland. In recent years, the growth in the consumption of wood fuels has been based especially on increased use of forest industry by-products and wood residues.

In Finland, the goal of wood production is not the production of bioenergy, but the utilisation of wood material for higher value products.

Wood fuels are main source of renewable energy in Finland.



Total energy consumption 2000 – 2023 (TJ, preliminary)  
(Source: Statistics Finland)





## WOOD-BASED BIOFUELS FOR TRANSPORT

Forest industry residues and by-products can be used to manufacture biofuels for transport.

In Finland transport sector plays an important role in achieving the carbon emission reduction targets.

All transport fuels distributed in Finland contain bio-components. The share of biocomponents is based on the limit values of the National Fuel Quality Regulation (distribution obligation). The aim is to raise the share of biofuels in transport fuels to 30% by 2030.

Biofuels can be used in vehicles either directly or in combination with fossil fuels. The blending limit means that the maximum concentration of the biocomponent must be limited for technical reasons. At European level, the use of biofuels has been estimated to reduce carbon dioxide emissions from transport by 15% by 2030.

Biofuels are classified by generation according to the raw material, product characteristics or manufacturing process. The manufacture of second and third generation, or so-called advanced biofuels, is not in competition with food or feed production, as it does not use raw materials suitable for food. The raw materials for second generation biofuels are vegetable and wood-based cellulose, as well as waste and residues from industrial production or forest residues, for example. Third generation biofuels are produced entirely from new raw materials, such as algae. They are not yet in commercial production.



# Thank you!

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