



# The solution is in expertise

## Wood supply vision 2030

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Information and expertise for developing  
wood supply and ecologically, financially and  
socially sustainable forestry.

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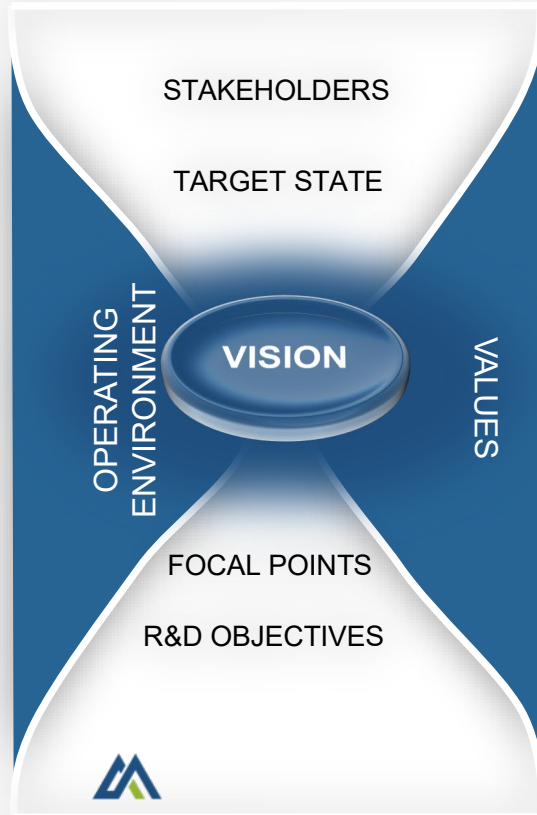


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# Wood supply vision 2030



# Wood supply vision in R&D



The speed and scale of global changes and the crises of the 2020s have proven the rate of change in the operating environment and target state. The importance of the green transition and ensuring the security of supply have been emphasised.

In wood production and nature management a ten-year period is short. However, there is an immediate need for the measures, and the impacts will be there for decades.

The vision worked aimed to review the future development over acute crises and respond to the identified megatrends concerning the forest sector. The development path was reviewed on the basis of other parties' megatrend descriptions and interviews with stakeholders.

The vision coordinated by Metsäteho is intended to be a vision for development in all wood supply. R&D is carried out in extensive cooperation with different research sectors in Finnish as well as international joint projects. Metsäteho will implement the vision for its part in accordance with its resources and expertise.

# Forest Finland



Forests and the use of forests are important to us in Finland. Forests provide economic security, job opportunities, recreational and hobby opportunities, nature peace, berry and mushroom harvests and landscapes that dominate rural regions. Recently, the importance of forests and their use and the diversification of values have become emphasised.

Wood supply refers to the network of forest industry wood procurement organisations, forest owners, forest logistics companies, forest service providers and system suppliers.

Wood supply is responsible for the supply of raw materials to industry while promoting growth in forests and their carbon sinks and protecting biodiversity. At the societal level, wood supply plays an important role in providing, securing and aligning forest nature, the health and recreational values of forests and many other forest-related values, not forgetting tax revenue. Wood supply is a significant part of the sustainable use of Finland's key natural resource, forests, and maintaining their diversity.

# Finland lives off forests



Shortages of the availability of labour in sparsely populated areas also affect wood supply in the forest sector. To solve this problem, new technology and solutions that enhance the appeal of jobs in rarely populated areas are required. Jobs in the forest sector are deemed to be meaningful and independent; this message should also be conveyed to those thinking about their career choices.

As forest owners age and urbanise, the values associated with forests become more diversified. The forest sector plays a responsible role in aligning the different uses of forests while securing the raw material needs of wood-based products.

Forests are a manifestation of Finnish nature, and forestry provides economic security to an enormous number of Finnish people. Income from the forestry is divided between slightly over 600,000 forest owners, and with its multiplier effects, the forest sector provides employment to approximately 74,000 people.

# Wood-based products as trailblazers of the green transition



The green transition refers to the gradual transformation of production chains into sustainable ones by maintaining biodiversity and binding atmospheric carbon dioxide instead of producing emissions.

Forests bind carbon, and they are a significant carbon sink in Finland. Wood-based products store the bound carbon and replace fossil raw materials, preventing new carbon from being released to circulation. Increasing the growth of forests is the best climate action that can be taken in forests.

Efficient and effective nature management that promotes securing biodiversity is a major part of forestry. Keeping forests in production requires nature management measures that promote maintaining biodiversity. The nature management measures must be dimensioned and allocated cost-efficiently so as to maximise their impacts and make them a part of forestry that every forest owner pursues and wants.

Measures that promote the good growth and health of forests are key to preventing forest damage across generations of trees and people.



# Information and technology promote functions



Digitisation moved data transfer to information networks, connecting people, businesses and society. Industrial internet connected smart machines and devices and the people who use them. Technology is developing further and being embedded in everything, making our day-to-day activities and well-being easier and securing it from dawn till dusk.

Finland has been a pioneer in using forest resource data. With open and free distribution of information, information has become a day-to-day part of Finnish forestry and wood supply. In the near future, especially data generated in connection with operations will offer new opportunities for controlling operations as well as monitoring and reporting actual outcomes.

Facilitated by automation and robotics, the human's role will increasingly shift from controlling to partly anticipative and partly supervisory work, which in part will change the required level of expertise for forestry employees and make it easier to recruit new personnel. Evolving technology will also increase productivity and enhance the cost-, energy- and environmental efficiency of operations.

# We have a solution



- Forestry is the foundation of the Finnish national economy.
- Forests, forestry and forest industry products play a key role in combatting climate change.
- Effective precision forestry and nature management improve the growth and biodiversity of production forests.
- In wood procurement and harvesting technology, Finland is a trailblazer, which strengthens the forest sector's international competitiveness and also offers export potential in the field of expertise.

**The responsible position requires new R&D measures, communication about the measures and societal discussion from us!**



# Focal points of the 2030 vision

The forest sector's wood supply is socially trusted, appreciated - the world's best in the field.

The vitality of nature and wood production capability of forests are taken care of with the help of diverse forestry and nature management, seeing to the property of forest owners.

Wood supply operations are cost-, energy- and environmentally efficient.

The use of technology is being enhanced. Technology is being embedded in everything. The data economy shares information efficiently.

Finland's forests are growing, binding carbon and producing raw materials for fossil-free Finnish products.

Forestry is a desired and sustainable sector. Jobs in the forest sector have appeal.



# Nature management and social responsibility



**The forest sector is active and visible, and it is a major part of Finland's economy. The forest sector's wood supply is socially appreciated, and there is confidence in the responsibility of measures and their comprehensive sustainability. High-precision forest and nature management uses open-source and private sources of information and allocates actions into grid- and stand-level measures, ensuring the wood production capability of a diverse forest ecosystem.**

- Forest and nature management concepts take into account the wood production potential, climate sustainability and biodiversity at the grid and stand level. Our goals include increasing mixed forests, diversifying forest management, thinnings supporting forest biodiversity, stand growth and harvesting productivity as well as effective protection of water systems. This requires cooperation between R&D organisations with regard to impact analyses and decision-making support systems.
- As part of responsible and sustainable forestry, we collect more detailed information about operations in the forest, and the data is used for verifying the quality of harvesting, nature management measures and the preservation of nature sites and planning future operations. The theme requires more accurate positioning and the development of sensor technology, data analyses and (semi)autonomous systems.
- Climate change and the biodiversity loss are a concern to many, and the soil is receptive to many alternative views. The forest sector offers solutions to the challenging questions of our times and participates in the public debate through them. Acceptability and trust in the operation of the forest sector will be secured through open communication. We need to point out the impacts of our operations in sufficient detail so that we can also show the improvements brought about by the measures.

# People



**Forestry professionals are highly valued experts to whom forest offers interesting and diverse work tasks, well-being and livelihood. The forest sector has appeal among young people, and the continuous development of the sector's technology and expertise will ensure the retention of labour as the processes, job descriptions and skill requirements change.**

- Work for the appreciation of the forest sector, occupational safety, well-being at work and responsibility is part of continuous development. Degree education and lifelong learning are enhanced by developing e-learning environments and gamified learning. Measures to reduce seasonal fluctuation will also improve year-round employment and the sector's labour retention.
- The occupational safety and well-being at work of operations are improved with the development of technology, such as automation and robotics. Tutoring systems and automation make operators work easier, reduce stress and help to concentrate on the essential while improving the productivity of work. Technological development is also needed for preventing hazardous situations.
- The need for diverse expertise and leadership will be emphasised going forward, because the sector is facing major change pressure. In training people, there is a need for developing diversity particularly in the direction of understanding society and people.

# Climate change and availability of wood raw material



**Growing, healthy and managed forests are a carbon sink, also offering raw material for industry that uses wood. Forests managed using diverse methods bind carbon effectively and are capable of adapting to the damage risks caused by the changing climate.**

- It is necessary to increase wood production both to mitigate climate change and to secure the supply of raw material to industry. Our targets for development include the comprehensive development and use of refined seed and sapling materials, enhancing the impacts of fertilisation, promoting mechanised technology for silviculture, improving water resource management and protecting water systems.
- With climate change, rainfall in the autumn and winter will increase in Finland. The soft soil of mild winters combined with storm winds will increase the probability and extent of storm damage. Bark beetles will benefit from the increased storm damage and higher temperatures. Increasing the damage resistance and resilience of forests requires new forest management methods, and refining data with e.g. artificial intelligence plays a key role in their use.
- Forest owners make the decisions on the use of forests. The developed forest management methods offer forest owners incentives for aligning forest health, stand growth and wood sales revenue that match their values, while taking biodiversity into consideration. The extensive acceptance and deployment of the measures developed require diverse communication.

# Resource-efficient wood procurement



**The control of harvesting and transport is based on an up-to-date situational awareness of how the forest land and roads allow harvesting and transport. The technology used in the logistics chain uses alternative sources of energy cost-efficiently and minimises the damage on the forest and roads, making year-round wood procurement possible.**

- Bridges and roads in a poor condition cause unnecessary driving and create unnecessary inefficiency, so traffic infrastructure R&D promotes the production of structural and condition data on roads and high-precision road maintenance to ensure the impact of the resources used. With crowdsourced data collection, we enrich open-source road and condition data and create a functional situational awareness of the trafficability of the road network. Transport flow analyses based on the availability and accessibility analyses of wood raw materials allow us to lay down the foundation for operational control.
- The transition from the fossil economy into the bio- and circular economy requires the cost-efficient use of new alternative sources of energy in wood supply as well. The transition into new sources of energy is based on development work by machine and automotive manufacturers. Wood supply R&D is responsible for demonstrating the cost-, energy- and environmental efficiency of the new sources of energy.
- In order to reduce seasonal fluctuations in wood procurement, the opportunities provided by new technologies and operating models will be taken advantage of to minimise harvesting damage and ensure the durability of roads.

# Information

**Wood supply actions are based on the world's best information about soil, forest stands, of the nature and roads. Open-source information is enriched with data collected connection with operations. Information ecosystems provide interface-based service platforms in which the data economy facilitates the market-based development of information services. Information services and advanced automation and robotics ensure the sustainability of wood supply, which includes ecological, economic and social sustainability.**

- Information ecosystems offer public and commercial services and solutions that make it possible to cost-efficiently produce, collate and analyse data and develop new information products. The emergence of information ecosystems in the wood supply planning, operational control and monitoring is promoted through extensive R&D work and cooperation between different parties.
- The Finnish open-source forest resource data will become more accurate tree-level data with new remote survey methods and reviews. The full-scale exploitation of future opportunities immediately as more accurate data collection commences requires a proactive approach in R&D. The entire sector will take part in maintaining and updating open-source public forest and nature data infrastructure, which will also benefit forest owners.
- The sharing of data and services is being developed through interfaces (API). Standardised data content and interfaces facilitate the better monitoring and traceability of processes from forests to production.
- Cost-, energy- and environmentally efficient wood supply calls for comprehensive and automated data collection, data analyses, decision-making support, operator guidance and (semi)autonomous functions. R&D activities will invest in the real-time collection, enrichment and distribution of information.



# Thank you!

Additional information: [\*\*https://www.metsateho.fi/en/\*\*](https://www.metsateho.fi/en/)

