Ministry of Agriculture
and Forestry of Finland

The National Forest Strategy 2035

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Abstract

The National Forest Council approved The National Forest Strategy 2035 on 14 December 2022. The process to reform the strategy was based on the rapid changes in the operating environment, both in Finland and internationally. The new strategy to 2035 considers comprehensive sustainable development in a proactive and timely manner and takes into account the role of forests in climate change mitigation and adaptation. It describes the key objectives and priorities for the development of the forest sector. The strategy has numerous interlinkages to other national and international strategies.

The National Forest Strategy 2035 was prepared at the Ministry of Agriculture and Forestry by numerous experts and through an extensive participatory process. Efforts were made to account for the regional interests and the needs of different stakeholders in the best possible way. The National Forest Strategy is a sectoral strategy that coordinates the needs of people, the economy and the environment. The strategy serves as the National Forest Programme. The National Forest Strategy 2035 seeks growing wellbeing from forests and for forests.

The three key projects to achieve the objectives of the strategy are concerned with increasing forest growth, carbon sequestration and timber output, improving biodiversity in commercial forests, and creating a competitive environment for a responsible forest sector that is capable of renewal.

Keywords forest policy, natural resources policy, forest programmes, forest area, forestry, economic activities, ecosystem services

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Kansallinen metsästrategia 2035

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Tiivistelmä

Kansallinen metsästrategia 2035 hyväksyttiin kansallisessa metsäneuvostossa 14.12.2022. Strategian uudistamisen taustalla oli metsäalan toimintaympäristön nopea muutos sekä kansallisesti että kansainvälisesti. Uusi vuoteen 2035 tähtäävän strategia ottaa ennakoiden ja ajanmukaisesti huomioon kokonaisvaltaisen kestävän kehityksen sekä myös metsien merkityksen ilmastonmuutoksen hillinnässä ja siihen sopeutumisessa. Siinä kuvataan keskeiset metsäalan kehittämisen tavoitteet ja painopisteet. Metsästrategialla on lukuisia liittymäkohtia kansallisiin ja kansainvälisiin strategioihin.

Kansallinen metsästrategia 2035 laadittiin maa- ja metsätalousministeriössä asiantuntijatyönä laajasti osallistavassa prosessissa. Alueelliset intressit ja sidosryhmien erilaiset tarpeet pyrittiin sovittamaan strategiatyössä mahdollisimman hyvin yhteen. Metsästrategia on ihmisen, talouden ja ympäristön tarpeita yhteensovittava elinkeinostrategia. Strategia toimii kansallisena metsäohjelmana. Kansallinen metsästrategia 2035 tavoittelee kasvavaa hyvinvointia metsistä ja metsille.

Kansallisen metsästrategian päämäärät saavutetaan toteuttamalla kolmea kärkihanketta, joilla lisätään metsien kasvua, hiilensidontaa ja puuntuotosta, parannetaan talousmetsien elonkirjoa ja luodaan kilpailukykyistä toimintaympäristöä uudistuvalle ja vastuulliselle metsäalalle.

Asiasanat	metsäpolitiikka, luonnonvarapolitiikka, metsäohjelmat, metsäala, metsätalous, elinkeinot, ekosysteemipalvelut

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Nationella skogsstrategin 2035

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Referat

Nationella skogsstrategin 2035 godkändes av det nationella skogsrådet den 14 december 2022. Bakgrunden till reformen av strategin var den snabba förändringen av verksamhetsmiljön inom skogsbranschen, både nationellt och internationellt. Den nya strategin för 2035 beaktar på ett förutseende och tidsenligt sätt den övergripande hållbara utvecklingen och skogarnas betydelse för dämpandet av och anpassningen till klimatförändringarna. I strategin beskrivs de centrala målen och prioriteringarna för utvecklingen av skogsbranschen. Skogsstrategin har många beröringspunkter med olika nationella och internationella strategier.

Nationella skogsstrategin 2035 utarbetades vid jord- och skogsbruksministeriet. Arbetet utfördes av experter i samråd med många andra aktörer. Målet var att samordna de regionala intressena och intressentgruppernas olika behov så bra som möjligt. Skogsstrategin är en näringsstrategi som samordnar människans, ekonomins och miljöns behov. Strategin utgör Finlands nationella skogsprogram. Nationella skogsstrategin 2035 strävar efter välmående skog och växande välfärd.

Målen för den nationella skogsstrategin ska uppnås med hjälp av tre spetsprojekt som ökar skogarnas tillväxt, koldioxidbindningen och virkesproduktionen, ökar den biologiska mångfalden i ekonomiskogar och skapar en konkurrenskraftig verksamhetsmiljö för en ansvarsfull skogsbransch som förnyar sig.

Nyckelord skogspolitik, naturresurspolitik, skogsprogram, skogsbranschen, skogsbruk, näringar, ekosystemtjänster

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Contents

1 Introduction

1.1 The National Forest Strategy guides forest policy

Forests are the foundation of comprehensive wellbeing in Finland. Forests play an important role in solving national and global challenges concerning livelihoods, security of supply, climate change, biodiversity loss and human health.

The National Forest Strategy 2035 is a statutory forest programme. "The Ministry of Agriculture and Forestry prepares a National Forest Programme in cooperation with other ministries and parties representing the forest-based sector and other relevant stakeholders. The objective of the programme is to promote diverse use of forests and welfare derived from these in line with the principle of sustainable development." (Forest Act 1093/1996, section 26)

The National Forest Strategy guides Finland's forest policy. The need to reform the strategy arose from the rapidly changing operating environment of the forest-based sector, both nationally and internationally. In line with the current thinking, the strategy takes into account the principle of comprehensive sustainable development and the important role of forests in climate change mitigation and adaptation. The National Forest Strategy describes the key objectives and priorities for the development of the forest-based sector.

The National Forest Strategy 2035 was prepared interactively (Appendix 1). The needs of stakeholders and regional interests were reconciled in a broad-based participatory process (Figure 1). The work on the Forest Strategy was supported by several research and study projects. The National Forest Council approved Finland's National Forest Strategy 2035 on 14 December 2022. The Finnish Association for Nature Conservation and WWF Finland presented a dissenting opinion on the strategy (page 56).

Figure 1. Groups involved in the preparation of the Forest Strategy.

The National Forest Strategy is a coordinating strategy for the whole sector that considers humans, the environment and the economy. It covers not only forestry and the forest industry, but also the production, processing, services and public goods of forests based on other products, both tangible and intangible, as well as knowledge and training issues in the forest-based sector. The strategy interfaces with several international and national strategies and programmes. International and EU forest, energy and environmental policy commitments and agreements have a significant impact on the Finnish forest sector. The processes of the United Nations (UN) shape the role of forests globally in solving the challenges of the future. Finland is committed to ecologically, economically and socially sustainable development (Agenda 2030).

Finland's long-term forest policy has guided the development in which forest owners have made a profit for the forest, while forestry and the forest industry have brought work and income to the entire country. At the same time, opportunities have been created for the nature maintenance, protection and recreational use of commercial forests. Sustainably managed forests enable diverse ecosystem services regionally and nationally, and this also includes climate benefits. Wood is Finland's most important renewable resource.

Finnish forests have remained viable, and extensive forest damage has so far been avoided. The strong knowledge base in forest bioeconomy, profitable forestry and investments in the continuous development of forest management also secure opportunities for utilising forests for future generations. Continuous development and

reform are necessary to be able to respond to the challenges posed by biodiversity loss and climate change, and to increase the wellbeing from forests and of forests in a balanced way.

1.2 Importance of forests and forestry for Finland

Finland is the most forested country in Europe: forests cover 75% of the land area. Finland has 20 million hectares of forest land suitable for timber production and 2.6 million hectares of forest land of low productivity, of which a total of 13% is protected. All in all, 23% of the commercial forest land is protected or used for limited forestry purposes. One third of the commercial forest land is peatland, and half of the peatland has been drained. (Natural Resources Institute Finland, Statistical Database)

The Sámi are the only indigenous people in the European Union. The Constitution of Finland guarantees them the right to maintain and develop their own language and culture (1999/731, section 17). About 90% of the land of the Sámi Homeland is state land. Over 90% of it consists of statutory nature conservation or wilderness areas or areas used for the natural products economy and 9% of areas used for forestry activities. The traditional livelihoods of the Sámi are particularly sensitive to the adverse effects of climate change.

Approximately 60% of all forest land is owned by private individuals. The roughly 350,000 privately owned forest holdings have some 620,000 owners. Private individuals make about 100,000 timber transactions per year. Harvesting levels vary from year to year, but on average about 3% of the forest area is harvested. Approximately three quarters of the harvesting consists of thinning and approximately one quarter is aimed at regeneration. The most common and most costly area of forest management work in terms of surface area is the management of seedling stands and young forest.

Approximately 1,000 forest professionals graduate with qualifications of different levels every year. The forest-based sector significantly strengthens employment and business opportunities in non-growth regions, in particular. In 2021, 36,000 people worked in the forest industry and 25,000 in forestry. In 2020, approximately 2,700 people were employed in companies in the natural products sector. The natural products sector, but also certain parts of forestry, are highly dependent on foreign seasonal labour. According to Statistics Finland, approximately 33,800 people were employed in nature tourism and recreational use in Finland in 2018.

In 2021, the forest sector accounted for 4.3% of the value added of the entire national economy, or EUR 9.3 billion. Of this value added, EUR 4.3 billion was generated by forestry, EUR 3.1 billion by the pulp and paper industry and EUR 2.0 billion by the wood products industry. (Natural Resources Institute Finland, Statistical Database)

In 2021, the forest industry used a total of 72.2 million cubic metres (m^3) of roundwood. The roundwood used by the forest industry is mainly domestic. Most of the roundwood is used in the pulp or sawmill industry. Wood fuel, which is mainly obtained from forest industry side streams, covers a quarter of Finland's energy consumption. Almost one fifth of the value of Finnish goods exports comes from products made of wood. The forest industry is one of the largest industries in Finland, with a turnover of EUR 26.8 billion in 2020, while the turnover of the growing natural products sector was approximately EUR 780 million that year (Ministry of Economic Affairs and Employment, Sector Reports).

According to the latest National Forest Inventory (VMI13), the annual growth of trees is 103 million m^3, which is 4.5 million m3 less than in the previous inventory (VMI12). Since the 1970s, tree growth has exceeded removals, so the number of trees in forests has steadily increased. The volume of trees is 2.5 billion m^3.

As Finland strives for carbon neutrality, the forests as part of the land use sector play a significant but limited role in strengthening carbon sinks and reservoirs in the short and long term. According to Statistics Finland, the net carbon sink of Finland's forest land was -20.6 million tonnes of CO_2e in 2020 and -8.4 million tonnes of CO2e in 2021. The fluctuation in the carbon sink is explained by annual harvesting levels, global wood demand and the development of forest growth. Despite the large annual variation, the volume of trees and carbon storage have increased and forests are a net carbon sink.

Finland is committed to doing its part to halt the decline of biodiversity. According to the latest comprehensive assessment of threat to species published in 2019, 11.9% of Finnish species (2,668) are threatened (Hyvärinen et al. 2019). Nearly one third of threatened species live primarily in forests, and 9% of forest species are endangered. The threatened species in forest habitats are found especially in groves and old-growth forests.

Ninety-six per cent of Finnish adults enjoy outdoor recreation. The right to roam, or everyman's right, enables extensive recreational use by allowing people to move around in the forests and to pick wild berries and mushrooms. In addition, there are approximately 300,000 hunters in Finland who value the game population maintained by forests. Regular visits to nature promote and maintain human health and wellbeing. Most outdoor recreation takes place in nearby forests and local nature.

2 Changes in the operating environment

This chapter is based on a report on the National Forest Strategy for the Preparation of 2035 commissioned by the Ministry of Agriculture and Forestry from the Natural Resources Institute Finland (Taustaselvitys Kansallinen metsästrategia 2035:n valmistelua varten, Natural Resources Institute Finland publication 61/2022). The report examines the operating environment of the forest-based sector, defines scenarios describing the use of forests and produces calculations based on them. The scenario analyses were used to assess the economic impacts of different scenarios and the impacts on wood production and other ecosystem services.

2.1 Megatrends and drivers of change affecting the forest-based sector

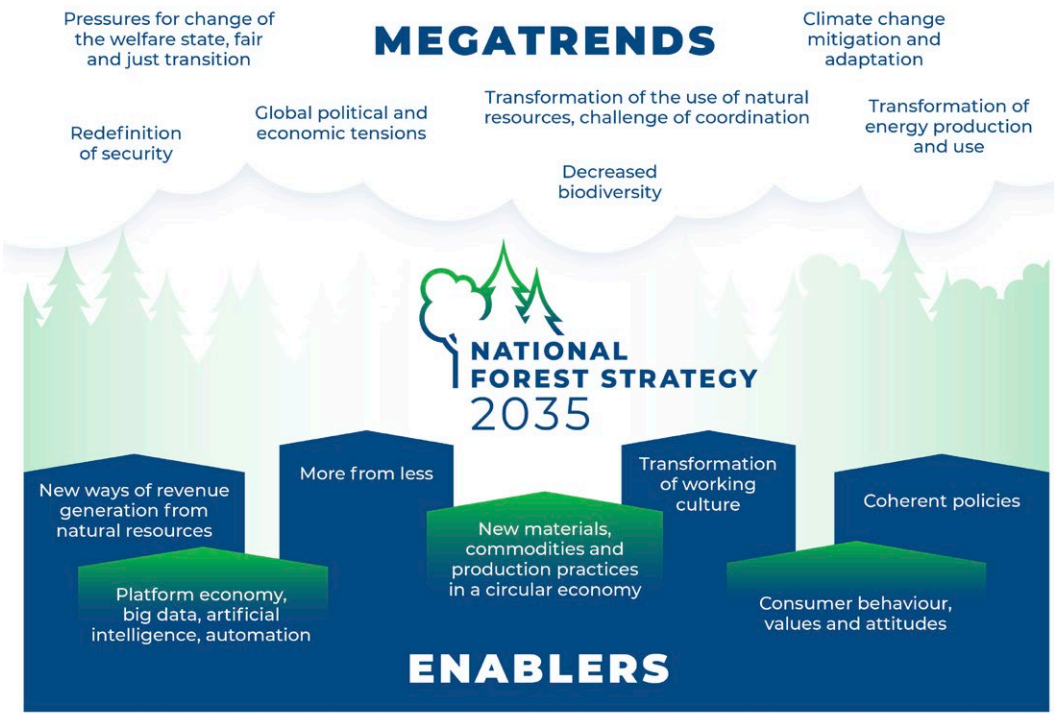
2.1.1 Foresight

Forests are subject to high expectations both in Finland and globally as a source of renewable raw material, a prerequisite for biodiversity and a carbon sink. In an interdependent world, there is a growing need for global solutions. Responsible operations require foresight and the reconciliation of different goals, but also value-based choices at different levels of decision-making.

Geopolitical tensions have increased and become one of the Top 10 global risks (World Economic Forum 2022). The increasing tension in the international security environment creates instability in the economy and rules-based international systems. Together with the depletion of natural resources, this may lead to new kinds of conflicts and a natural resource policy that emphasises the importance of self-sufficiency and security of supply. In particular, the Russian invasion of Ukraine has led to uncertainty about the availability of raw materials and production inputs. Similarly, the market outlook for the end products of the forest sector has become more uncertain. The energy crisis and high inflation are also reflected in the Finnish welfare state. The forest sector plays a key role in securing energy self-sufficiency and transitioning away from the fossil economy, as well as in the longer-term green transition.

Identifying and anticipating drivers of change is challenging, but still necessary (Figure 2). The relevance of development measures requires that efforts are made to systematically identify uncertainties and risks related to the forest-based sector and their effects.

Figure 2. Megatrends and facilitators affecting the forest-based sector (Source: Natural Resources Institute Finland 61/2022).



2.1.2 Drivers of change in society

Population growth and urbanisation are predicted to continue globally. According to the UN World Population Prospects revised in 2019, the global population is expected to reach 8.5 billion by 2030 and 9.7 billion by 2050. By 2030, approximately 60% of the world's population will live in cities. Although population growth will slow down in the future, there will be more problems in food production and land use, especially as advancing climate change weakens production conditions globally.

Consumership and the markets are in turmoil. Rising prices affect consumer behaviour. At the same time, consumers and the owners of production factors are becoming increasingly aware of the climate, environmental and ethical impacts of production and consumption, which motivates companies to pay special attention to the life-cycle global sustainability impacts and responsibility of their operations, products and services.

The changing security situation increases the importance of comprehensive security and security of supply in the natural resources sector. It is increasingly challenging to reconcile national and international interests, especially EU regulation.

Global energy demand is expected to increase by almost 50% from current levels by 2050. If global warming is to be halted at 1.5°C, the share of renewable energy in consumption in 2050 should be at least 65% instead of the current 15%. The need for bioenergy from forests is likely to remain high, as it is needed especially as a transitional solution.

The importance of reliable information is further emphasised. The traditional division between data producers and data users is changing. The social media, in particular, with its rapid information cycle has an impact on decision-making in the forest-based sector at various levels.

2.1.3 Environmental drivers of change

The three most significant global risks are related to environmental factors: climate action failure, the increase in extreme weather phenomena and biodiversity loss (World Economic Forum 2022). Some of the harmful effects of climate change can be prevented, but this requires quick action to transition to a carbon-neutral society. As even effective measures to mitigate climate change have a delayed effect, adaptation measures are also needed.

Globally, as many as one million species are threatened with extinction (IPBES 2019). The most significant threats are changes in land and sea use, direct exploitation of organisms and climate change. The loss of biodiversity and the ecosystem services it provides, as well as the impoverishment of nature, also threaten the wellbeing of humanity. Biodiversity loss is reflected, for example, in the ability of the food system to produce sufficient food in different parts of the world. Biodiversity loss also increases uncertainties related to production chains and markets.

The Dasgupta Review on the Economics of Biodiversity (2021) sparked public debate on the link between the value of natural diversity and economic decision-making. The UN has also adopted a statistical standard on ecosystem accounting. The objective of ecosystem accounting is to measure the supply, use and value of the benefits people derive from ecosystems.

2.1.4 Technological drivers of change

New technologies and more efficient use of technology are ways of responding to changing needs and creating sustainable value chains and networks. Various forms of the data economy and platform economy already exist today. However, many opportunities related to automation and the utilisation of big data are still untapped in the development of a cost-effective and renewable forest-based sector.

New products with a high level of processing are emerging alongside existing products. Many promising experiments are under way, but the development of products for industrial-scale production takes time. The bioeconomy is an integral part of a sustainable circular economy, which combines the wise use of renewable and non-renewable natural resources. The circular economy is an operating model for the economy and society as a whole, in which new products, service concepts and added value can be obtained from different main and side streams. At the same time, it also means optimised material cycles and, for example, the repair and reuse of infrastructure and products.

The success of the economy is increasingly being examined from the perspective of wellbeing and the environment, instead of just based on the size and growth rate of the economy. The examination of the economy requires a new kind of thinking, as wellbeing and the carrying capacity of the Earth are seen as signs of a successful society. The transformation of the social structure means the transformation of technology, knowledge, thinking, attitudes, work and entrepreneurship. Production systems are permeated by autonomous technology based on artificial intelligence and the platform economy. Their impact on the future of the forest-based sector is also increasing. Ownership and management of data are emphasised in both the political and economic exercise of power.

With the development of artificial intelligence, machine learning and real-time positioning solutions, automation and robotisation are gradually leading to machinery operating more independently. Autonomous technology and the digital transformation are also changing management and decision-making. Increasing amounts of information and the self-directed nature of process decision-making are posing increasing challenges to decision-making criteria and consistent policies.

2.2 Future outlook for the forest-based sector in Finland

2.2.1 International policies

Finland is committed to more than one hundred international agreements on forests and the environment. Central to this are the UN's Sustainable Development Goals (SDGs), which forests play an essential role in achieving.

In the future, the use of forests and wood raw material, as well as the acceptability of their use, will be more strongly influenced by EU policy measures, which include not only strategic guidelines but also legal regulations binding on the Member States. The EU does not have a common forest policy, but issues related to forests and their utilisation are nevertheless addressed in a number of EU sectoral policies, in particular climate, energy and environmental policies, for which the EU has competence over national decision-making.

EU policy measures related to forests emphasise objectives related to biodiversity and the carbon sequestration of forests. However, economic objectives related to the production of wood and the diverse use of forests, and their impact on, for example, the vitality of the countryside, entrepreneurship and security of supply have been neglected. There is also a noticeable shift from voluntary measures towards detailed statutory regulation.

Imports of roundwood from Russia to Finland ended in 2022. The EU has agreed extensive sanctions in response to Russia's invasion of Ukraine. It is expected that the frozen situation in Russia's trade relations will continue for years, which will be reflected in the global market for wood-based products.

2.2.2 National policies

Finland's forest policy is prepared and directed by the Natural Resources Department of the Ministry of Agriculture and Forestry. Forest policy is guided by means of legislation, public funding and information steering, as well as institutional arrangements. Regional forest programmes are regional development plans and work programmes for the forest sector. They bring together information and development needs related to the region's forests.

The goals of the Forest Strategy are also implemented in several other programmes and strategies (Figure 3). Similarly, numerous strategies have an impact on the Forest Strategy and its goals. The Forest Strategy has many links with the Bioeconomy Strategy, the Biodiversity Strategy, the Nature Recreation Strategy, the Climate and Energy Strategy,

the Climate Plan for the Land Use Sector (MISU) and the Climate Change Adaptation Plan (KISS2030). The METSO and Helmi programmes complement the National Forest Strategy with targets related to ecological sustainability.

Figure 3. National strategies and programmes linked to the National Forest Strategy.

2.2.3 Demographics and value changes

Low birth rates, a decrease in the number of people of working age and a rapid increase in the number of people over the age of 75 are strongly changing Finland's demographic structure. Regional differences in population development by county and region are significant. Urbanisation and regional differentiation affect the relationship with nature and forests of children and young people, in particular. According to the Young People's Forest Barometer (2022), young people consider forests important, and 55% of the respondents visit a forest at least weekly. However, one in five feel that the forest is an alien environment.

In the future, the evolution of population concentration, regional differentiation and changing population age structures will have a particularly strong impact on the labour force and its availability in the forest-based sector, as well as in people seeking training for the sector. Urbanisation, global population growth and awareness of the health and wellbeing benefits of nature increase the demand for nature tourism and recreational activities and the prerequisites for business activities.

The values of consumers influence the demand for products and, consequently, raw materials. Consumers' environmental awareness and requirements for sustainability are increasing. Changes in values are also reflected in ways of utilising nature and the ecosystem services it provides, i.e. the tangible and intangible benefits provided to humans by ecosystems. Consumers' choices can contribute to ensuring that the utilisation of forests remains within the carrying capacity of nature.

2.2.4 Forest industry

The outlook for demand for forest industry products is expected to remain good, with growing demand. However, the level of demand varies according to the prevailing economic situation.

Climate change mitigation measures increase the popularity of wood construction and, consequently, the demand for the products of the sawmill and wood products industries. Long-lived wood products act as carbon storage and replace, for example, construction materials with more polluting greenhouse gas emissions, especially concrete and steel. The positive outlook for wood construction supports the demand for sawn timber and further processed construction products in domestic and export markets.

The demand for northern long-fibre softwood pulp as a basic raw material for the forest industry's key end products and intermediates is likely to remain strong. Demand for chemical forest industry products is also expected to remain good in the near future, with the exception of graphic papers. The demand for paperboard is supported by the increasing volumes and applications in packaging, as the food industry, for example, strives to move away from plastic packaging. The growth of e-commerce increases the need for conventional packaging. Demand for packaging is also supported by the gentrification of the population and economic growth. Expectations are high for multi-purpose lignin. The use of pulp, both in paperboard production and in new products, such as textile fibres, is likely to increase. New innovations and products create new jobs in bioeconomy.

In recent years, Finland has invested particularly in the production of paperboard and packaging materials, as well as in the pulp and sawmill industry. During the cyclical upturn after the start of the COVID-19 pandemic, the cash flow and profitability of the sawmill industry increased and enabled the financing of capacity expansion and repair investments. In addition, investments have been made in the production of planed sawn timber and the modernisation of production technology. The investments are aimed at improving production efficiency and securing future competitiveness.

In addition to the investments already made, investments are being planned, which, if realised, will increase production capacity and the demand for roundwood. Even if, from a market perspective, there is a demand for products made of wood, future production growth and investments may be limited by the availability of wood.

More than a quarter of Finland's total energy consumption has been produced with wood fuels in the past few years. The growth in the use of wood fuels in Finland has been based on the growth in the use of side streams of the forest industry, in particular. Wood fuels have been and will increasingly be used to replace the use of imported fossil fuels: coal, oil and natural gas. A target has been set to at least halve the use of domestic peat by 2030. For reasons of security of supply, the status of peat needs to be re-examined. As the share of imported wood decreases, the importance of energy wood and forest processed chips from the thinning of young stands increases in securing energy self-sufficiency.

In Finland, many efforts have been made to increase the value added of forest industry production. Finland's Bioeconomy Strategy (2022) aims to add value by developing new raw materials, manufacturing methods, products and services, increasing added value and resource efficiency, and utilising side streams and circular economy operating models.

2.2.5 Natural products sector and other services provided by forests

The Finnish natural products sector is strongly built on the picking, processing and export of berries and mushrooms collected under everyman's rights. The use of natural products that are not subject to everyman's rights is increasing not only in the food and beverage industry, but also in, for example, the cosmetics industry, wellness services, medicinal products, handicrafts and floristics.

The increasing use of natural products tied to land ownership may provide forest owners with new forest-based earning opportunities. Increased use offers opportunities to diversify the use of forests and to promote activity in rural areas. A higher level of processing of natural products facilitates the increase of their added value.

The nature tourism sector is already a significant employer and export sector, especially in northern Finland and elsewhere near nature tourism centres. Nature is one of the most important environments for physical exercise in Finland. People also seek health and wellbeing from nature. As a travel destination, Finland has several advantages related to clean nature and distinct seasons. Recreational use is particularly concentrated in the vicinity of population centres, and local forests play a key role in this. Wellness services based on nature have growth potential. The core of the industry consists of companies providing nature-based activity services, as well as accommodation and catering services in the natural environment.

The growth of the natural products sector and other services enabled by forests supports the green transition and the shift towards a more climate-resilient and self-sufficient food system. For the time being, little use is being made of the opportunities offered by trade in landscapes, nature values and carbon. The development and consolidation of new operating models and innovations takes time and requires perseverance both in development work and in the transfer of new knowledge to operators and into practice.

2.2.6 Forestry

Measures to increase the growth and vitality of forests can further improve the economic viability of forestry and its adaptation to changing conditions. However, changes in tree species choices, for example, will not have visible results until years or decades later.

The methods of forest management have diversified. In forestry, continuous-cover forest management methods and the cultivation of mixed forests will become even more common. With the development of technologies, it can be assumed that precision forestry will also gain popularity. Precision forestry combines forest data from many sources and makes mass data and digitalisation part of forest management.

Nature management is an integral part of forestry practices. In addition to regulation at the legal level, market-based systems have an impact on forest biodiversity measures. As the multi-use of forests and multi-objective forest management increase, the need to combine different uses will be emphasised in the future. Forests are increasingly subject to restrictions on use and various protection pressures.

About a quarter of Finland's forest land for timber production is peatland forest. The comprehensive management of peatland forests is also influenced by their important role for the climate, biodiversity and water systems. This causes a need to improve the

diversification of expertise and peatland harvesting technologies. There is a demand for skilled water resources management, timber harvesting and transport personnel in the entire forestry sector and especially in peatland forestry.

Weather conditions are expected to vary more and more, and mild winters to become more common, which will shorten the winter harvesting season and weaken the transport capacity of the smaller roads, in particular. On the other hand, the dry periods in summer may improve non-winter logging opportunities, especially in southern Finland. However, climate change increases the risk of forest damage. Growing cervid populations also cause forest damage, affecting tree species choices and forest management. The incidence of forest damage due to insects, fungi and storms is increasing, which emphasises the importance of preparedness and risk management.

2.2.7 Forest ownership

Finnish forests are mainly owned by private individuals and families. In many places, the structure of forest holdings is fragmented. About three quarters of the forests in southern and central Finland are privately owned. Most state-owned forests are located in northern and eastern Finland.

Forest owners attach importance to respecting their personal objectives and property protection. According to a study of Finnish forest owners conducted in 2020 (Suomalainen metsänomistaja 2020), forest owners seek both tangible and intangible benefits from their forests. For most owners, wood sales are the most important benefit produced by forests. Of the means of safeguarding biodiversity, nature maintenance is most often of interest, and just under a quarter of forest owners think that the safeguarding of nature values in private forests should be increased from the current level.

The increase in the educational level of forest owners and the share of urban forest owners may increase the demand for diverse forest services as the structural change in forest ownership progresses (Karppinen et al. 2020).

Ownership of forest holdings often changes in the form of inheritance or trading with relatives. In 2022, the estates of dead persons held 9.3% of the area of collective forests and 5.9% of the area of private forests. The percentage of collective forests has increased. Forest ownership by forest funds has grown particularly rapidly in recent years. Funds and investment communities own about 0.5 million hectares of forest in Finland. However, as monetary policy tightens and interest rates rise, the growth rate of forest fund holdings

may slow down in the coming years. The change in land ownership has also been affected by an increase in the proportion of forest ownership held by foreign investors and investment companies.

3 Intent

3.1 Vision – Growing wellbeing from forests and for forests

The vision of the National Forest Strategy 2035 is to seek *growing wellbeing from forests and for forests*.

Besides the wellbeing forests produce for Finns, the vision emphasises the wellbeing of forests themselves. Responsibility and sustainability are the main themes of the entire Forest Strategy – it considers people, the economy and the environment and bears responsibility for social, economic and environmental impacts.

In order to combine the wellbeing and growth of the National Forest Strategy with sustainable development, the economy of wellbeing was chosen as the perspective. The economy of wellbeing creates sustainable wellbeing and economic growth at the same time. In the economy of wellbeing, human wellbeing rises to the core of decision-making and decisions are made by identifying the combined effects of economic, social and ecological factors on wellbeing (OECD 2019). Wellbeing refers to prosperity, good quality of life and health. The OECD defines the economy of wellbeing in terms of material factors like housing, income and jobs, and factors related to the quality of life, such as education, competence, health, safety and the quality of the environment. The Forest Strategy promotes a sustainable and comprehensive economy of wellbeing.

The core aim of the Forest Strategy is to reconcile partly conflicting needs and goals in a sustainable manner. The vision also emphasises the fact that the Forest Strategy is a growth strategy. In growth accounting, sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The Forest Strategy is based on four strategic objectives, which together form a whole (Figure 4). The vision – *growing wellbeing from forests and for forests* – will not be achieved through individual objectives but by coordinating the four equally important objectives.

Objectives

- Finland is a competitive operating environment for a responsible forest-based sector that is capable of renewing itself.
- Forests are in active, sustainable and diverse use.
- We strengthen the vitality, diversity and adaptability of forests.
- We strengthen knowledge-based management and competence in the forest-based sector.

Figure 4. Vision and objectives of the Forest Strategy.

3.2 Strategic objectives and goals

3.2.1 Finland is a competitive operating environment for a responsible forest-based sector that is capable of renewing itself

The objective includes taking care of the investment conditions and security of supply, availability of raw materials, as well as diversification of the forestry sector. In addition, the objective includes well-functioning governance structures, an encouraging operating environment and influencing in international contexts.

Goals

- Forest-based business is increasingly diverse and continues to grow.
- Proactive and effective cooperation and influencing in the EU and in international processes improve the operating environment of the forest-based sector.
- Smooth administration and well-functioning infrastructure create a predictable and encouraging operating environment.
- Well-functioning markets ensure access to raw materials and services.

3.2.2 Forests are in active, sustainable and diverse use

The objective, which emphasises the use of forests, covers diverse ecosystem services and the perspectives of profitable forestry. This objective also includes climate change mitigation and ensuring the vitality of regions.

Goals

- Use of forests is target-oriented and based on knowledge and active decisions by forest owners.
- Active and increasingly diverse forest management increases forest growth and supports climate change mitigation.
- Services and incentives to forest owners and operators support active, sustainable and diverse use of forests in a way that takes the special characteristics of regions into account.
- Ecosystem services offered by forests enhance people's wellbeing and create new earning opportunities.

3.2.3 We strengthen the vitality, diversity and adaptability of forests

The dimension includes safeguarding the biological and other kinds of diversity of forests. It also comprises measures to ensure the health and resilience of forests. Adaptation to climate change and general risk management, such as the protection of water systems and soil, are also included in this objective.

Goals

- The biodiversity trend in commercial forests is directed onto a path to recovery.
- The climate change resilience of forests is strengthened and risks of damages are in control.
- Environmental risks caused by forestry are managed and in control.

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

The objective of knowledge-based management and competence is based on scientific research and promoting this in an interdisciplinary manner, a good knowledge base and constantly improving competence. This objective also includes the attractiveness of the forest-based sector as a field of study and work.

Goals

- High-quality research, advancing spatial data and usability of data create a strong knowledge base for decision-making and foresight work.
- Forest expertise is diverse, responds to changing needs and attracts more people to seek employment in the forest-based sector.
- Communication and interaction enhance understanding of the use of forests and of forest environment and culture in society, especially among the young.

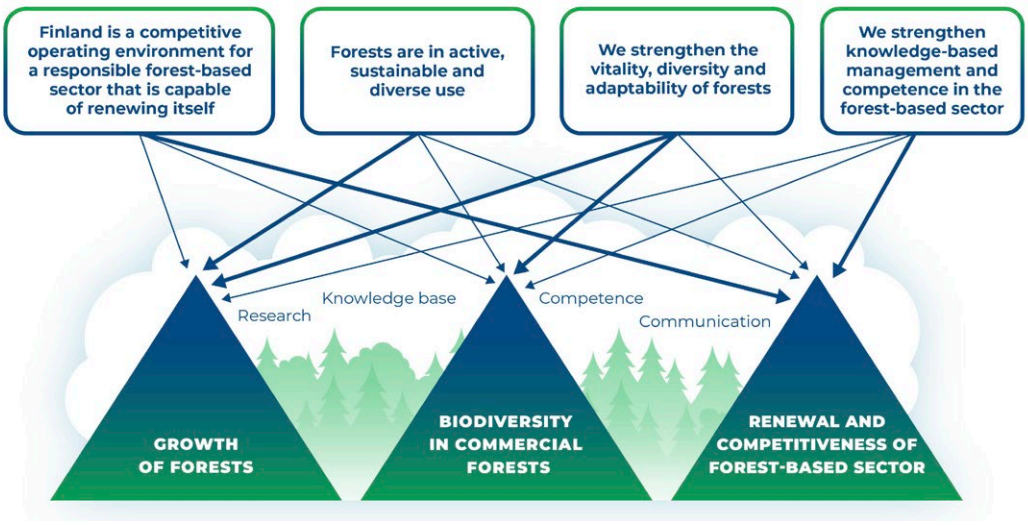
4 Implementation

4.1 Project portfolio

The National Forest Strategy will be implemented in 2023–2035. A project portfolio has been prepared for the implementation of the strategy, describing the most important measures to achieve the objectives and goals. The project portfolio consists of three key projects: Growth of Forests, Biodiversity in Commercial Forests, and Renewal and Competitiveness of the Forest-Based Sector (Figure 5).

The key projects implement the vision, objectives and goals of the strategy together. Each key project affects several objectives and goals, and has a specific task and perspective, but the links between the key projects are strong. It is part of the implementation of a responsible and coordinated strategy that a single key project is not promoted in a way that makes it more difficult to achieve all the objectives of the strategy. Cross-project effects will be examined in all key projects. Measures related to coordination are particularly included in the key project Renewal and Competitiveness of the Forest-Based Sector.

Figure 5. Objectives and key projects of the Forest Strategy: The objectives are linked to the three key projects of the project portfolio.



In particular, the key project Growth of Forests implements the objective of the active, sustainable and diverse use of forests, and contributes to the objectives of the vitality and adaptability of forests. The key project Biodiversity in Commercial Forests, on the other hand, focuses on the goal of strengthening the vitality, diversity and adaptability of forests. The key project Renewal and Competitiveness of the Forest-Based Sector implements the goal of knowledge-based management and competence, in particular, creating a competitive operating environment for a renewable and sustainable forest-based sector.

Research, the knowledge base, competence, digitalisation, the utilisation of open data, interaction and communication are included in each of the key projects. A separate RDI programme has been drawn up to support the research, development and innovation work of the project portfolio (see Chapter 4.3, RDI programme to support the goals of the National Forest Strategy, 7 November 2022).

The Forest Strategy is closely linked to the Bioeconomy Strategy. The Forest Strategy includes the production of sustainably produced wood raw material, while the Bioeconomy Strategy is responsible for increasing the value added of wood raw material by developing new products and services. The Forest Strategy implements measures of the Bioeconomy Strategy concerning the forest sector.

The key measures of the key projects of the Forest Strategy are presented in Tables 1–3. The project portfolio is not an exhaustive list of necessary measures. The proposed measures respond to the challenges of the operating environment described in Chapter 2. The measures in the key projects are needed to achieve the goals and objectives of the strategy.

4.2 Key projects

4.2.1 Growth of Forests

The key project Growth of Forests strives to increase forest carbon sequestration and wood production in a profitable, sustainable and responsible manner. Maintaining and increasing the carbon sink and striving to meet the sink and emission targets are part of this key project. The measures will also develop risk management and improve the accessibility of forests. One of the goals of the package is to improve self-sufficiency and security of supply and to create a basis for the functioning of the timber market, the competitiveness of the forest sector and growth.

Measures to increase growth are targeted either at the tree stand or the site. The use of cultivated forest reproductive material and an efficient forest cultivation chain accelerates the growth of the tree stand. The development of the tree stand is influenced by seedling stand management and thinning by regulating tree species ratios, tree density and tree size distribution. Fertilising can increase the growth of trees. Ash fertilisation of peatlands also helps with the water resources management of the site and reduces the need to rebuild ditches. The key project will contribute to the implementation of the Climate Plan for the Land Use Sector.

Rising temperatures and extreme weather phenomena caused by climate change are expected to increase the risk of forest damage in the future. Research, monitoring and foresight are also important for the prevention of forest damage and, consequently, for yield and carbon sinks.

The implementation of the measures needed to increase growth, practical timber harvesting, the prevention of damage and versatile accessibility of forests and sparsely populated areas require a road network that is usable all year round, which is why this key project also includes the maintenance of the road network and bridges, as well as the functionality of the entire logistics chain.

Table 1. Measures to promote forest growth

Measure	Description	Impact
Surface area of forests increased	Afforestation increased and deforestation mitigated	Carbon sinks and reservoirs strengthen
	Land-use objectives and planning influenced	Wood production potential increases
High-quality forest regeneration carried out without delay	Methods for forest regeneration and early management introduced that provide fast yielding and fully dense stands	Carbon sequestration and wood yield increase
	Methods developed, training and communication increased	Profitability of timber production improves
Young forests managed in a timely manner with high quality, backlogs in management removed	Amount of forest management increased and the quality of first thinning improved	Use of wood production potential becomes more efficient
	Smooth introduction and implementation of the forestry incentive scheme ensured	Growth of forests increases
	Quality monitoring developed	Profitability improves
	Methods developed and their use, training and communication increased	Risk management improves

Measure	Description	Impact
Growth and carbon sequestration increased with sustainable forest fertilisation	Research and promotion of fertilisation and peatland ash fertilisation Information on potential fertilisation sites produced for use as spatial data, for example in the Metsään.fi service Forest owner training and communication increased	More growth, roundwood, turnover and carbon sinks Less rebuilding of ditches
Forest tree breeding promoted	Forest tree breeding programme carried out Programme for the establishment of forest-tree seed nurseries implemented	Timber yield and quality improve Adaptation improves
Forest damage anticipated and prevented	Forest damage prepared for through contingency and recovery planning Methods developed for the anticipation and prevention of damage	Forest growth and carbon sequestration secured Large-scale forest damage avoided Quick recovery from damage
Accessibility of forests improved, logistics developed	Cooperation model created for the overall service of road project implementation and financing, as well as for activating road municipalities Repair of roads and bridges resourced Wood supply terminal network developed Professional management and stewardship of road municipalities developed Coverage and circulation of road and bridge information improved through interfaces	Transport connections improve Accessibility of forests and availability and competitiveness of raw materials improve Conditions for recreational use and rescue operations improve Business opportunities in rural areas improve
Means of carbon storage developed	Research and development activities implemented and promoted to increase the carbon stock of forests, forest land and wood products	Carbon sinks and reservoirs grow in the short and long term Non-renewable materials replaced with wood

4.2.2 Biodiversity in Commercial Forests

The key project Biodiversity in Commercial Forests develops cost-effective methods based on nature values to turn the development of forest biodiversity onto a path of recovery. The project strengthens the competence and implementation of the methods.

To reconcile forestry, other uses and biodiversity, methods based on nature values are sought that support the goals of forest owners. The measures of the key project are targeted cost-effectively at commercial forests with above-average biodiversity values.

The measures will be used more extensively to implement effective water protection solutions and to develop climate-resilient management of peatland forests. The key project will strengthen the climate resilience and adaptability of forests in accordance with the Climate Plan for the Land Use Sector and the Climate Change Adaptation Plan.

The research will increase knowledge of forest management methods and their impact on biodiversity. The measures of the key project will strengthen the diversity and adaptability of forest nature and reduce the risks of forest damage.

Table 2. Measures to promote biodiversity in commercial forests

Measure	Description	Impact
Financing models to protect biodiversity developed	Impact of METSO's and Helmi's commercial forest measures assessed, continuation of funding and opportunities for expansion secured New incentives and connections explored and introduced, for example to improve recreational and nature tourism environments	Diversity strengthens Recreational and tourism values increase
Nature management competence, planning and putting these to practice strengthened	Ex-ante planning, biodiversity measures and monitoring of nature management improved and increased Regional and landscape planning in a land owner-oriented manner developed Competence of operators developed and communication with forest owners increased	Aims of forest owners and society meet Diversity and multi-use increase Finland is able to implement its commitments in a cost-effective manner

Measure	Description	Impact
Structural features of forests increased	Good practices from forest management recommendations adopted Communication, advice and education provided on the importance, benefits and risks of deadwood, retention trees, deciduous trees and old trees Market, financial and governance mechanisms developed	Diversity strengthens Forest structure diversifies Damage risks controlled
Mixed forest stands promoted	Exploring and seeking practical solutions for establishing and growing mixed forests suited to the site Ways developed to regulate cervid populations more effectively to diversify the range of tree species in forests Diversity work reconciled with damage risk management	Forest biodiversity and adaptability strengthen Forest damage risks decrease
Water protection methods introduced in forestry	Ways to capture nutrients and carbon developed and deployed more widely Stress risk points in the catchment area identified Competence of operators developed	Load to water systems decreases Water systems' status improves
Climate-resilient and sustainable peatland forest management promoted	Comprehensive planning and implementation of peatland forest management promoted Peatland forest management methods developed Metka's peatland forest planning operating model and catchment area reviews implemented Tools to support decision-making in peatland forest management developed Competence of operators strengthened	Growth of carbon sinks and reservoirs, and adaptation in the short and long term Load to water systems decreases
Market-driven operating models and ground rules developed to secure environmental benefits	Market-oriented and contractual means identified and introduced into the selection of alternatives Operating models for voluntary ecological offsetting developed Methods created for demonstrating the environmental benefits produced Production of biodiversity and other natural values promoted	Local and additional benefits secured Diversity and natural values improve Financial base for measures broadens Carbon sequestration strengthens

4.2.3 Renewal and Competitiveness of the Forest-based Sector

The key project Renewal and Competitiveness of the Forest-based Sector focuses on foresight and knowledge-based management. The measures create a basis for a competitive operating environment for a renewable and sustainable forest-based sector. Key measures include developing skills and training and securing the availability of skilled labour. The development of spatial data is also part of this key project. In addition, innovative development work and long-term forest research are needed.

In order to strengthen business activities, market information will be increased and the activities of forest and nature services enterprises, as well as the prerequisites for recreational use and nature tourism, will be developed. Cooperation, agility and customer-orientation are also needed for the development and coordination of administrative branches and actions by the authorities.

The key project emphasises international interaction, particularly proactive advocacy work in EU and international politics. Resources will be increased for the overall assessment of EU initiatives and position-taking.

Interaction and cooperation will be strengthened, especially with forest owners and young people. The key project will consolidate national and regional measures to increase understanding of forest use, the forest environment and forest culture. The key project Renewal and Competitiveness of the Forest-based Sector places importance on multidisciplinary coordination.

Table 3. TMeasures to promote the renewal and competitiveness of the forest-based sector

Measure	Description	Impact
Foresight work strengthened	Forest Bioeconomy Science Panel established and consolidated Functioning of the operating environment, legislation and administrative structures monitored, the need for change responded to Development needs related to operating conditions identified and tax obstacles to the utilisation of forest ecosystem services removed	Foresight capacity strengthens Smoother administration and better cooperation between administrative sectors Knowledge base strengthens and interaction increases Businesses' operating conditions strengthen Reconciling different goals becomes easier

Measure	Description	Impact
Data collected on the functioning of the market	Market information and statistics (data on the wood, forestry, energy, harvesting and transport market) increased Comprehensive timber market survey carried out	Competitiveness of the forest-based sector increases Sustainable availability of wood raw material secured Transparency increases Conditions for service development improve
Growth programme on forest and nature service entrepreneurship implemented	Entrepreneurial skills increased Availability of forest resource information and the usability of electronic services promoted Market-driven business for ecosystem services developed and valued Cooperation and networking between companies increased	Use of forests becomes more diverse and conditions for sustainable use improve Service market develops and services become more diverse Growth and vitality of forests improve
Conditions for recreational use of forests and nature tourism developed	Attractiveness of the operating environment for recreational use and nature tourism improved in areas with demand and business potential Network of hiking areas and services developed Contractual operating models developed	Businesses' operating conditions strengthen Recreational opportunities become more diverse Health benefits increase
Accuracy, quality and accessibility of spatial data improved	Spatial and environmental information and its usability developed Implementation data utilised and quality monitoring developed Decision-making and operations supported with more accurate soil information Knowledge base on habitat types and their species strengthened Competence, advice and communication developed through service design	Operators and landowners have more information on how to plan measures and make better use of information on quality Forest management planning has better prerequisites for increasing forest growth, identifying and taking into account biodiversity aspects, and reducing soil emissions

Measure	Description	Impact
Tools produced to forest owners and operators for knowledge-based decision-making	Content and functional development of forest management recommendations continued Knowledge base and service features of the Metsään.fi service developed Tools produced for comparing forest use and management methods, as well as for assessing the impact and cost-effectiveness of biodiversity measures to support the decision-making of forest owners with various objectives Forest owner and operator training and communication enhanced	Forest owners become more active Forest owners become more aware of the possibilities of their forests and able to make decisions in accordance with their goals
Data collected on forest owners and ownership structures developed	Up-to-date information collected on the values and objectives of forest owners Winding up of undistributed forest-owning estates expedited Generational changes streamlined and legal confirmation of possession of estates automated Forest owner counselling and communication increased	Decision-making of forest owners becomes more active Ownership structure becomes clearer, holding size increases Reaching forest owners and providing services becomes easier
Interest in forests aroused and communication to young people enhanced	School and youth communication funded and cooperation with schools strengthened Youth Forest Council made part of the implementation of the National Forest Strategy	Understanding of forest use, the forest environment and forest culture increases Applying for training and jobs increases Children and young people have up-to-date knowledge of the diverse natural resources economy and forest professions
Attractiveness and ability to react of the forest-based sector and forestry education developed	The diverse possibilities of the sector and its job opportunities communicated Cooperation models that go beyond qualification levels and region, as well as training contents and methods to meet future needs developed National aptitude tests for forest machine operator training introduced and training for timber truck driving developed as a separate area of expertise Opportunities for continuous learning secured and funding models reformed	Enough professionals suited to the jobs with up-to-date skills who meet the needs of the labour market graduate for and work in the field Training is regionally accessible

Measure	Description	Impact
International competence, cooperation and influence increased	Funding and human resources increased Young experts encouraged and supported in building international careers EU and international forest policy proactively influenced Impact and synergies of EU initiatives assessed	Forest sector operating environment secured through international cooperation Position-taking is accelerated and holistic Finland's influence increases
Positive 'handprint' of the forest-based sector determined	Research data and monitoring data on the impacts of the forest-based sector on the environment, society and regional economies acquired Communication on handprint increased	Consistency of decision-making increases and effectiveness of communication strengthens
Innovative development work and long-term forest research ensured	Development of high value-added products and implementation of the bioeconomy strategy supported Multi-objective and multidisciplinary forest research strengthened National forest inventories and the financing of long-term experimental series secured Forestry technology and the possibilities of utilising spatial data and big data researched and developed	Business in the forest-based sector grows, competitiveness and profitability improve Decisions are based on researched information Preparation of forest policy safeguarded for the future Forest operations are more cost-effective, diverse and accurate

4.3 Organisation and funding

The Ministry of Agriculture and Forestry coordinates the implementation of the Forest Strategy and its monitoring. The task of the National Forest Council is to monitor the progress of the implementation of the strategy. The Forest Council working committee prepares the matters to be brought to the deliberations of the Forest Council and promotes the implementation of its decisions. The implementation of the strategy will also be promoted by networks consisting of experts and stakeholder representatives to be established for the key projects of the Forest Strategy. In addition to this, the International Forest Policy Network will continue to operate. It is also possible for the Ministry of Agriculture and Forestry to use other groups to promote the implementation of the strategy and to ensure coordination. A more detailed action plan related to the goals of the strategy will be prepared to ensure implementation.

As part of the reform of the Forest Strategy, the Ministry of Agriculture and Forestry has, together with the research bodies of the Forest Council's working committee, drawn up an RDI programme (Research, Development and Innovation Programme to support the objectives of the National Forest Strategy, 7 November 2022), the purpose of which is to support the achievement of the objectives and goals of the strategy. The RDI programme includes three work packages linked to the key projects of the Forest Strategy. The results of the programme will be evaluated and, if necessary, the programme may be updated.

The Forest Strategy is being implemented by several ministries. Close cooperation is needed in its implementation and in the coordination of the strategies of different administrative branches. Achieving the objectives of the Forest Strategy requires targeted resources in the administrative branches of other ministries implementing the strategy. The Ministry of Economic Affairs and Employment is responsible in particular for the development of a forest-based business environment and energy policy. In addition, the Ministry of Economic Affairs and Employment is responsible for the development of international business opportunities in the forest-based sector. Nature tourism and the recreational use of forests are promoted jointly by the Ministry of Economic Affairs and Employment, the Ministry of the Environment and the Ministry of Agriculture and Forestry. The Ministry of Transport and Communications plays a key role in the development of infrastructure, while the Ministry of the Environment is responsible for issues related to climate, biodiversity, environmental protection, construction and land use, and the Ministry of Finance is in charge of tax policy measures. The tasks of the Ministry of Education and Culture include the development of teaching and research, the promotion of physical activity, youth work, cultural tourism and cultural heritage. The Ministry for Foreign Affairs handles trade policy related to international forest issues and the implementation of development policy.

The Forest Strategy will be implemented at the Ministry of Agriculture and Forestry through performance management, legislation, support systems, development projects, and regional forest programmes. Fully or partly performance-guided organisations related to the Forest Strategy include the Natural Resources Institute Finland, Metsähallitus, the Finnish Forest Centre, the National Land Survey of Finland, the Finnish Wildlife Agency, the Finnish Food Authority and the Finnish Environment Institute, the Regional State Administrative Agencies and the Centres for Economic Development, Transport and the Environment. The regional forest programmes implement the National Forest Strategy in the regions. They promote the diverse and sustainable use of forests, taking into account local starting points, development needs and objectives.

The Forest Strategy will be implemented within the framework of the central government spending limits decisions and the budget. The level of the subsidies to be granted and the financing of the key projects of the Forest Strategy and their measures in the central government spending limits and budget processes will be decided upon annually. EU project funding can also be applied for to implement the measures.

4.4 Monitoring

To monitor achievement of the objectives of the Forest Strategy, a set of indicators has been prepared describing the general development of the forest-based sector, implementation of the strategy, and the effectiveness of the measures taken.

At least one performance indicator has been set for each goal of the Forest Strategy. Target levels for the indicators have been defined for 2035 either as a numerical value or as a direction of change. The performance indicators are related to the key projects of the project portfolio, so they can also be used to monitor the implementation or effectiveness of the measures. The indicators also include general spatial indicators describing the development of the forest-based sector and input indicators for the measures. Some of the indicators are carried out as surveys, and there are also indicators that require development work to define and obtain data. The indicators are shown in Appendix 2.

The National Forest Strategy website of the Ministry of Agriculture and Forestry has a link to the statistics page of the Natural Resources Institute Finland, where the indicators of the Forest Strategy are maintained and monitored.

The Forest Council annually reviews the implementation of the objectives of the Forest Strategy and the progress of the projects. The Forest Council assesses the success of the strategy objectives for the past year and prioritises the focus areas for the coming year. If necessary, a mid-term review of the strategy is carried out.

As the operating environment and needs change, the indicators and measures can be specified and the need for changes arising from strategy monitoring, mid-term reviews and government programmes can be taken into account.

5 Strategy evaluation summary

This chapter is a summary of the final report of the preliminary assessment of the National Forest Strategy 2035. The report was prepared by Susanna Sepponen, Tuomas Raivio and Matleena Moisio from Gaia Consulting Ltd, and by Paula Horne, Jani Laturi, Maurizio Sajeva and Matti Valonen from Pellervon taloustutkimus PTT. The report has been published in full on the website of the Ministry of Agriculture and Forestry (Kansallinen metsästrategia 2035: Ennakkoarvioinnin loppuraportti).

The objective of the ex-ante evaluation carried out in connection with the preparation of the strategy was to support the quality and effectiveness of the updated strategy. The evaluation focused on developing the structure and content of the strategy and the functioning of its implementation, monitoring and financing, as well as on assessing of the overall impacts of the strategy from the perspective of sustainable development. The assessment of the preparation and content of the programme was carried out in accordance with section 3 of the Act on the Assessment of the Effects of Certain Plans and Programmes on the Environment (200/2005). The evaluation was conducted by Gaia Consulting Ltd and Pellervon taloustutkimus PTT between February and October 2022. The ex-ante evaluation was an interactive process, in which evaluation experts prepared analyses of the strategy preparation and the draft strategy and brainstormed recommendations without participating in the actual strategy work. Below is a summary of the results of the assessment.

5.1 Assessment of the preparatory process

With regard to strategy preparation, the evaluation examined whether the changes in the operating environment and the expectations of stakeholders, including forest-related policies and commitments, had been sufficiently taken into account in the preparation.

Relevant research data was utilised in the preparation of the strategy, especially an operating environment analysis of Natural Resources Institute Finland completed in June 2022. The content brainstorming group, the evaluation of the National Forest Strategy 2035, the brainstorming of the preliminary assessment, and the Forest Academy futures workshops were also utilised in the strategy preparation. The analysis of the operating environment is diverse and sufficient for the purpose of strategy preparation. However, it

only assesses the impact of megatrends on the forest-based sector to a limited extent, and the scenarios mainly focus on wood production and not on the rest of the forest-based sector. At the time of the target setting in spring 2022, the operating environment analysis was also only available as internal drafts, so it is difficult to assess on the basis of the assessment data whether the target setting was able to utilise the scenario calculations and other foresight work at the planned scale. It should also be noted that, during the preparation of the strategy, the operating environment underwent revolutionary changes, particularly in terms of security policy, security of supply and energy self-sufficiency.

The inclusiveness of the strategy process was estimated to be diverse and sufficient. Strong stakeholder involvement in the drafting phase of the strategy increased dialogue between different operators and improved the chances of identifying commonly agreed objectives. Stakeholders' expectations were also strongly taken into account in the formulation of both goals and measures. Adequate opportunities for participation were provided, but, in the end, it is difficult to influence the balance of participation, and having a wide range of operators becomes a challenge in drawing up the strategy, especially when translating the goals into concrete measures. The number of stakeholders making use of forests is constantly expanding, and the implementation of consistent goals under the unifying strategy is becoming more and more challenging. Regional Forest Councils played an important role in proposing measures, but the composition and working methods of the Forest Council working committee were of course particularly significant for the formation of the final key project portfolio. The public officials of the Ministry of Agriculture and Forestry played an important role in the management of the participation process, and the ministry's preparation team intentionally allocated time and human resources to the preparation of the strategy.

It is also essential for the effectiveness of the strategy that it has been implemented at regional level. In general, it can be said that the contributors have succeeded in creating a model in which regional programmes follow the national strategy and implement their own priorities under the umbrella of the national strategy. The review of the preparation of the strategy supports the view that a sufficient balance has been achieved between the national strategy and the regional programmes.

When examining policy coherence, it is good to point out transparently that National Forest Strategy 2035 is primarily a strategy for industries that utilise forests (especially forestry and the forest industry). However, it is essential that the strategy supports biodiversity and climate objectives, or at least does not contradict them. Other policies and strategies affecting the Forest Strategy were highlighted well in the preparation of the strategy. At the level of goals, no clear conflicts with international, EU or national climate, environmental, equality or non-discrimination requirements were identified. It is good governance that the goal-setting of the Forest Strategy does not overlap with, for

example, the Biodiversity Strategy. However, this means that the evaluation of the strategy preparation can only take a limited position on how well the strategy will be in line with other policy developments. Particular uncertainty is associated with the significant commitments that are only being prepared, especially with regard to the restoration of nature. Realistically, it must be assumed that conflicts with climate and biodiversity objectives may arise in the implementation of the strategy, and it is particularly important to ensure that the nature perspective is comprehensively and cross-cuttingly considered also in the implementation of the strategy.

In many ways, the strategy preparation succeeded in taking into account the experiences and lessons learned from previous programmes and strategies. The content and structure of the strategy were clarified, and it focuses more clearly than its predecessor on the nature management of commercial forests, for which measures have also been defined. In addition, the role of forest owners, for example, is highlighted more strongly, and the importance of common position-taking in EU policy is emphasised more clearly under the goal of reforming the forest-based sector. However, the impact of strategy implementation is weakened by the fact that the monitoring and financing side of the strategy have not been clarified. There is still great uncertainty surrounding the implementation of measures in the field, especially in matters that are not the direct responsibility of the Forests and Bioenergy unit of the Ministry of Agriculture and Forestry. In terms of monitoring, the evaluation of the preparation is hampered by the fact that the evaluation was completed at a time when the planning and indicator work for monitoring the strategy was still ongoing.

5.2 Ex-ante evaluation of impacts and effectiveness

The strategy is clearly more focused than its predecessor in terms of both content and structure. The links between the strategy's vision, goals and objectives are clearer than before, and the number of goals has been better narrowed down. On the other hand, linking the key project portfolio to goals and objectives could be clearer in some places. Ambiguities in connections may reduce impact, although it is worth remembering that the strategic portfolio with its key projects is only one way to implement the strategy. However, in the management and monitoring of the strategy, it is important to keep the link between the project portfolio and the goals and objectives sufficiently highlighted, and the outlining of impact pathways carried out during the preparatory phase is a good tool in this regard.

In order for the strategy to respond to the challenges of change in the operating environment, it is important to utilise relevant research data in its implementation. On the positive side, the key project portfolio includes a measure to strengthen foresight work, as

the operating environment is expected to be affected by significant changes affecting the strategy (global markets, energy crisis, security of supply pressures and possible EU policy regulations, such as restoration requirements). In order for foresight to have a real impact on the management of the strategy and the direction of operations, the strategy also needs a sufficiently light and agile updating model with which it can respond to changing needs.

The measures of the strategy were evaluated on the basis of a draft key project portfolio on 10 October 2022. The analysis shows that the strategy and its measures are relatively strong in the pursuit of economic impact. However, many measures include the development of methods, research and programmes, which have no direct impact on forest growth, let alone on the national or private economy or business economics. Assuming that the results of the measures are disseminated among forest professionals and widely adopted by forest owners, the economic impact on the national economy, companies and forest owners will be considerable. In terms of social and cultural impacts, the impact chains of the strategy are longer and partly indirect, involving more uncertainties. The impacts depend in many respects on, for example, the commitment of other administrative branches to the implementation of the strategy, which, at the time of the evaluation, did not appear to feature in very concrete plans. With regard to the ecological impact, many of the measures were still at a stage where it was not possible to assess them. Some measures could also have negative ecological effects, but this depends to a large extent on the method and scope of implementation. Some of the effects may be positive from an ecological point of view but harmful in another respect.

The distribution of the planned project portfolio under the goals and objectives is reasonably balanced, and the projects contribute in a relatively balanced way to different the impacts. However, some of the goals currently have no clear link with any of the planned project portfolio measures. A fairly large number of the measures are clearly at a level from which they need to be further specified. This emphasises the importance of project portfolio management: balanced content requires monitoring and measurement of the portfolio. In addition to general industry status indicators, it is necessary to measure the strategy's inputs, activities and results.

Impact assessment shows how important it will be, in the implementation of the strategy, to focus the measures in a controlled and balanced manner. Attention should also be paid to putting the results into practice so as to move past the level of increasing knowledge. Particular attention should be paid to the implementation and use of results, particularly in terms of climate and biodiversity goals, already at the project planning stage. Consideration should also be given to exploiting the added value and authority of the strategy in communication and as a basis for information exchange.

The potential impact of the strategy is also strongly dependent on how realistic the objectives are in relation to the resources and the range of measures. The evaluation examined the potential of the strategy to steer the activities of the field. Resource management includes, in particular, the performance management of agencies and sectoral research institutes in the administrative branch of the Ministry of Agriculture and Forestry, as well as ownership steering of state-owned companies, financial steering (such as subsidies), available RDI funding and other available project funding. At the level of information steering, other administrative sectors can be influenced through various cooperation networks, informal cooperation and the sharing of information, with the aim of, for example, a change in behaviour. Social or network-based guidance can also be distinguished from information guidance, which aims to create added value through networking, for example, on the authority-operator axis. In the area of normative guidance, efforts can be made to channel national position-taking into EU decision-making, and, naturally, the ministry is responsible for the drafting of legislation in its own administrative branch and participates in influencing the drafting of legislation in other administrative branches.

The greatest impact of the strategy is likely to be generated by the activities carried out within the framework of the strategy and by making the results available for further use and exploitation. The existence of the strategy is already significant in itself, provided that it works well together with other policies and guidelines of the central government that affect the use of forests. The strategy itself will probably serve the forest-based sector well by bringing it together under a common vision and objectives and by increasing networking.

The strategy is likely to shine in areas where the objectives are directly linked to the forest and where action is achieved through resource management. As the transition to information steering and network management is made, the chances of achieving action and further results and impact are diminished. The power of decision in private ownership also poses challenges: ultimately, forest owners can at most be advised or supported in changing their behaviour.

Finally, it must be noted that the operating environment is also subject to uncertainties that may have an impact on the implementation and impact of the strategy. In particular, the energy crisis caused by Russia's war of aggression and the new kind of security of supply pressure, as well as measures to accelerate the green transition and changes in the forest policy field caused by EU regulation, may affect the implementation of the strategy in many different ways. The final impact of the strategy can only be verified in the monitoring of strategy implementation. Impact requires successful implementation and significant exploitation of the results and, if necessary, quick reactions to changes in the operating environment.

DEFINITIONS

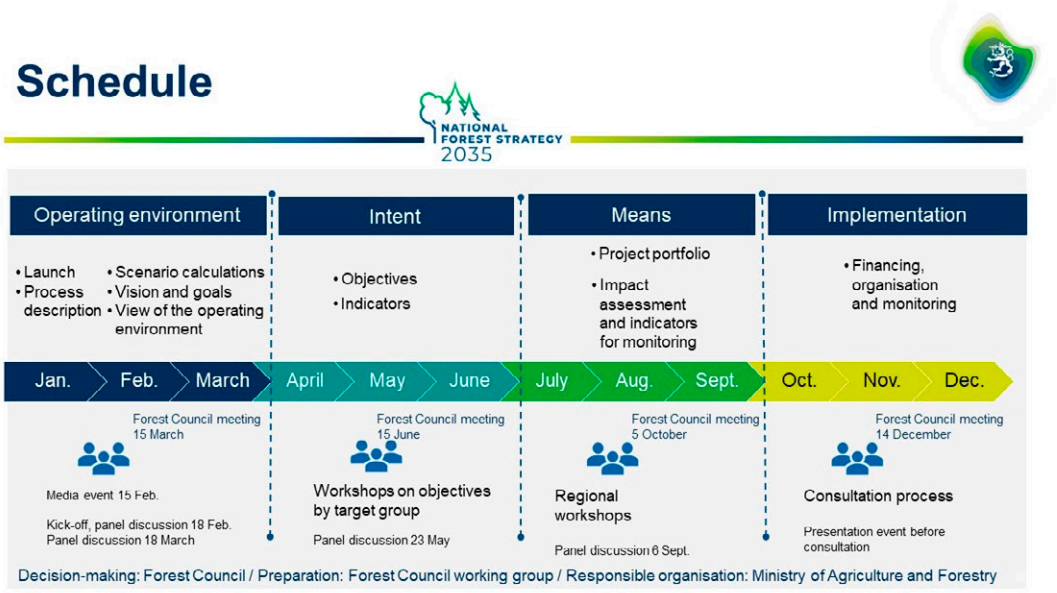
Bioeconomy	In Finland, bioeconomy refers to an economy that uses renewable biological resources wisely to produce food, energy, products and services. The most important renewable, biological resources in Finland are the biomass, or organic matter, in the woods, soil, fields, water systems and the sea, as well as fresh water. These are used as raw materials and processed products. Ecosystem services are part of the bioeconomy. The bioeconomy can also include the development and production of technologies, applications and services based on the sustainable exploitation of natural resources.
Ecosystem services	Ecosystem services are divided into three main categories: production services, regulatory and maintenance services, and cultural services. Forest production services include timber, berries and mushrooms, other natural products, game and bioenergy. Forest management and maintenance services include carbon sequestration and recycling, water retention and purification, pollination, erosion control, nitrogen sequestration, nutrient retention, air purification and noise abatement. Cultural services include recreational use, nature tourism, cultural heritage, forest landscape, forests in art and popular culture, as well as forests in science and education.
Economy of wellbeing	The economy of wellbeing creates sustainable wellbeing and economic growth at the same time. In the economy of wellbeing, human wellbeing rises to the core of decision-making and decisions are made by identifying the combined effects of economic and ecological factors on wellbeing. The economy of wellbeing places emphasis on meaningful life, the interaction between humans and between humans and nature, the common good and the satisfaction of needs within the limits allowed by the planet.
Sustainable development	Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Its basic elements are ecological, economic, social and cultural sustainability. The Sustainable Development Goals aim to help people learn to live in harmony with nature and each other.
Sustainable management and use of forests	Sustainable forest management refers to the management and use of forests and forest lands in a way that preserves their biodiversity, productivity, regenerative capacity, vitality and potential to carry out, now and in the future, relevant ecological, economic and social functions at local, national and global level, and in a way that does not cause damage to other ecosystems.
Forest-based sector	The forest-based sector covers not only the forest sector but also the production, processing, services and public goods based on other forest products, both tangible and intangible. However, in the context of training, the forest-based sector has traditionally mainly referred to occupations related to forestry.
Deforestation	Deforestation means the conversion of forest land to other forms of land use.
Forest sector	The forest sector covers forestry and the forest industry.
Forestry	Forestry covers timber production, forest management and logging, as well as nature and landscape management.

Biodiversity loss	Biodiversity loss refers to a rapid loss of natural diversity caused by human activity.
Natural products sector	The natural product sector refers to activities related to wild berries, mushrooms and herbs and other natural products, such as the extraction of raw material from nature and its further processing and trade, as well as the utilisation of natural products in various tourism and wellness services. The natural products sector also includes training, advisory services, development work and research.
Nature tourism	Nature tourism is broadly defined as tourism in which nature is the primary attraction.
Recreational use of nature	Recreational use of nature means spending time in the natural environment for recreational purposes during leisure time. Recreational use of nature includes outdoor activities carried out in nature under everyman's rights, hunting and the parts of recreational fishing not covered by everyman's rights. Recreational use also includes various sports and cultural events organised in nature.
Sink	A process, function or mechanism that binds a greenhouse gas, aerosol or greenhouse gas precursor from the atmosphere. A carbon stock that accumulates more carbon than it releases into the atmosphere or transfers to another stock can also be called a net sink. When the sum of carbon dioxide emissions and removals from forest land is negative, forest land is a net carbon sink.
Green transition	The green transition supports the structural adjustment of the economy and helps to build a carbon-neutral welfare society. The green transition refers to a shift towards an ecologically sustainable economy and growth that is not based on overconsumption of natural resources or fossil fuels. A sustainable economy relies on low-carbon solutions that promote the circular economy and biodiversity.

Appendix 1. Interaction in the drawing up of the Forest Strategy

The National Forest Strategy 2035 was prepared extensively as an interactive process. The phases of the process are described below.

Figure 6. Interaction in the drawing up of the Forest Strategy.



The Forest Council, the Forest Council working committee, the brainstorming group, networks and the Regional Forest Councils played a key role in the preparation of the strategy. In addition, a wide range of stakeholders were involved in the preparation. The aim of the strategy's interaction work was to bring together the views of a wide range of stakeholders. The work was carried out in accordance with the interaction and communication plan, using many different means and channels.

Meetings:

- Meetings of the Forest Council on 15 March, 15 June, 5 October and 14 December 2022
- Meetings of the Forest Council working committee on 11 January, 8 February, 1 March, 12 April, 10 May, 31 May (goal workshop), 6 June (goal workshop) 14 June, 30 August, 13 September, 20 September, 27 September, 25 October, 1 November, 7 November and 29 November 2022
- National Forest Strategy 2035 steering group of the preliminary assessment (Ministry of Agriculture and Forestry, Gaia and PTT), 10 March, 21 March, 13 April, 23 May, 3 June, 26 August, 23 September and 2 November 2022

Inspiring dialogues:

- Meetings of the brainstorming group on 24 September 2021, 3 November 2021, 4 January 2022, 9 May 2022
- Stakeholder interviews as part of the evaluation of the previous strategy (Gaia and PTT), autumn 2021, 37 interviews
- Panel discussions on the National Forest Strategy
  - What does the future of the forest-based sector look like? 18 February 2022
  - Versatile wood, 18 March 2022
  - Forests and wellbeing, 23 May 2022
  - Forest-based sector and sustainability, 6 September 2022

Surveys:

- National Forest Strategy barometers: 4
- Mentimeter surveys: 4
- Otakantaa.fi survey (to collect information on the importance of strategy perspectives): 259 respondents, 28 April–19 May 2022
- Value creation model survey (related to the National Forest Strategy's impact assessment and measurement of impact and collection of views on the added value that the National Forest Strategy can create for people, the economy and the environment): 63 respondents, 9–30 June 2022

Goal workshops:

- Goal workshops of the National Forest Strategy: 7 with a total of 133 participants, 4–19 May 2022
  - Forest owners' workshop, 4 May 2022

- Forest-based sector experts' and employees' workshop, 5 May 2022
- Forest-based sector entrepreneurs' and forestry business representatives' workshop, 6 May 2022
- Workshop of representatives of different uses of forests, 9 May 2022
- Youth workshop, 11 May 2022
- Forestry and forest energy network, workshop of the biodiversity and ecosystem services network, 18 May 2022
- Workshop of the International Forest Policy Cooperation Network, 19 May 2022

Project workshops and measures:

– 14 regional workshops of Regional Forest Councils, 17 August 2022, a total of 249 participants
– Networking events: Forestry and forest energy network, 16 August; Biodiversity network, 24 August, 6 September and 22 November 2022
– In addition, the measures of the report of the Forestry Education Development Network and the measures presented by the International Forest Policy Cooperation Network were utilised.

Other events and meetings:

– Press conference of the Minister of Agriculture and Forestry on forest issues, 15 February 2022
– Forest Debate Year media events, 4 April and 31 May 2022
– Meetings between ministries (Ministry of Agriculture and Forestry, Ministry of the Environment, Ministry of Education and Culture, Ministry of Economic Affairs and Employment, Ministry of Transport and Communications, Ministry of Finance) on the interfaces of strategies, opening discussion on 29 September and further discussions (Ministry of Agriculture and Forestry and Ministry of the Environment) on 10 October and 18 November 2022
– Forest Academy courses for decision-makers: 28 April 2022 with a total of 29 participants, 8 September 2022 with a total of 33 participants: Future workshops of the National Forest Strategy
– Meeting with the Sámi Parliament, 3 October 2022
– Presentation event of the National Forest Strategy, 10 October 2022

Consultation process:

– Consultation period: 10 October – 14 November 2022
– A total of 139 opinions

– The opinions can be viewed at Hankeikkuna: https://mmm.fi/hanke2?tunnus=MMM034:00/2022

Tasks of the groups

Key decisions related to the strategy are taken in the Forest Council. The Forest Council has 32 members from a wide range of organisations and stakeholders in the sector that use forests. The Forest Council working committee plays a central role in the preparation of the strategy. The composition of the groups is presented on the website of the Ministry of Agriculture and Forestry.

The task of the brainstorming group was to inject new ideas into the preparation process, and it came up with many new concrete tips for the process, including ways to increase the openness, transparency, coordination and cooperation of the preparation process. The preliminary assessment of the Forest Strategy was also carried out with a brainstorming approach.

The networks are appointed expert groups, and they include the Forestry and Forest Energy Network, the Biodiversity Network, the International Forest Policy Cooperation Network and the Forestry Education Development Network. The networks brought their expertise to the preparation throughout the strategy process.

Appendix 2. Indicators of the Forest Strategy

Table 4. Objective: Finland is a competitive operating environment for a responsible forest-based sector that is capable of renewing itself

Indicator	Target level in 2035	Clarification	A key project involving (*)
Forest-based business is increasingly diverse and continues to grow			
Value added in the forest-based sector (EUR million) by sub-industry	increases	overall growth, including in smaller industries	status indicator, renewal
Carbon sequestration services and trade in natural values	increases	number of contracts, including ha and EUR	growth, biodiversity, renewal
Proactive and effective cooperation and influencing the EU and international processes improve the operating environment of the forest-based sector			
Qualitative assessment	positive development	includes resource indicators	renewal
Smooth administration and well-functioning infrastructure create a predictable and encouraging operating environment			
Lead times for decisions (Kemera and Metka)	shortened	first stage of young forest management	renewal
Road repair backlog and its development (EUR, km) public and private roads, including bridges	decreases	monitoring requires further clarification	growth
Well-functioning markets ensure access to raw materials and services			
Domestic and imported wood used in the forest industry and wood-based energy production (m^3)		by sub-industry	status indicator, growth
Investments in wood-using industry (EUR)	Investments exceed depreciations		status indicator, growth

*) Key projects: Growth of Forests = growth, Biodiversity in Commercial Forests = biodiversity, Renewal and Competitiveness of the Forest-based Sector = renewal

Table 5. Objective: Forests are in active, sustainable and diverse use

Indicator	Target level in 2035	Clarification	A key project involving (*)
Use of forests is target-oriented and based on knowledge and active decisions by forest owners			
Forest owners know their goals	awareness increases	forest owner surveys	renewal
Forest owners know the production potential of their forests	awareness increases	forest owner surveys	renewal
Active and increasingly diverse forest management increases forest growth and supports climate change mitigation			
Volume of growing wood on woodland and forest land of low productivity (million m^3)	increases		status indicator
Annual growth of growing wood on woodland and forest land of low productivity (million m^3)	increases		growth
Forest carbon sink (million tonnes CO_2e)	increase of 3 million tonnes CO_2e per year in the land use sector	Impact of additional measures under the Climate Plan for the Land Use Sector by 2035	growth
Management backlog of seedling stands and young forest (ha)	decreases		growth
Total amount of forest fertilisation (ha/year)	increases		growth
Harvesting method (%)	diversified	logging method in the forest use declaration	growth, biodiversity
Services and incentives to forest owners and operators support active, sustainable and diverse use of forests in a way that takes the special characteristics of regions into account			
Number of users of Metsään.fi service	increases	forest owners, companies and clerical workers	renewal
Implementation of Metka support (hectares by type of work)	target levels achieved	target levels of the Metka Working Group, METSO and Helmi	biodiversity

Indicator	Target level in 2035	Clarification	A key project involving (*)
Ecosystem services offered by forests enhance people's wellbeing and create new earning opportunities			
Stumpage earnings (EUR billion)			status indicator
Number of employees in the forestbioeconomy sector	increases	by industry	renewal
Wellbeing produced by ecosystem services for people	indicator to be developed	survey on the use of forests and its acceptability	renewal

Table 6. Objective: We strengthen the vitality, diversity and adaptability of forests

Indicator	Target level in 2035	Clarification	A key project involving (*)
Biodiversity trend in commercial forests is directed onto a path to recovery			
Amount of deadwood (m^3/ha)	moving towards an average level of 10 m^3/ha in commercial forests		biodiversity
Number of hardwoods, excluding birch (m^3/ha)	increases in commercial forests		biodiversity
Number of old trees (per ha)	increases in commercial forests	hardwood > 80 years spruce > 120 years pine > 160 years	biodiversity
Nature management quality of private forest harvesting sites	indicator to be developed	overall assessment	biodiversity
Climate change resilience of forests is strengthened and risks of damages are in control			
Thinning work quality	positive development		growth, biodiversity
Forest damage (ha)	does not increase	by causative agent	status indicator, growth, biodiversity
Share of mixed forests	increases		biodiversity

Indicator	Target level in 2035	Clarification	A key project involving (*)
Environmental risks caused by forestry are managed and in control			
Number of plans for the management of peatland forests at the catchment area level	increases	hectares	growth, biodiversity
Soil quality indicator	indicator to be developed		biodiversity, renewal
Forestry load on waterways	decrease in annual load and annual average concentration	solids, total nitrogen and total phosphorus, organic carbon	biodiversity

Table 7. Objective: We strengthen knowledge-based management and competence in the forest-based sector

Indicator	Target level in 2035	Clarification	A key project involving (*)
High-quality research, advancing spatial data and usability of data create a strong knowledge base for decision-making and foresight work			
Amount of public R&D funding in the forest sector (EUR)	increases		renewal
Funding for the strategy's RDI programme (EUR)	in accordance with the programme		growth, biodiversity, renewal
Utilisation of open forest data	increases		renewal
Forest expertise is diverse, responds to changing needs and attracts more people to occupations in the forest-based sector			
Correspondence of learning outcomes to working life and employment in the field	increases	training performance indicators	renewal
Communication and interaction enhance understanding of the use of forests and of forest environment and culture in society, especially among young people			
Use of forests and its acceptability		survey, including the Forest Barometer for Young People	renewal
Handling of forest issues in the media		survey	renewal

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