

Forests have played an important role in Finland, Norway, and Sweden as a source of shelter, food, products, and welfare for both local communities and nations as long as there have been settlements. Today they still contribute importantly to the national GDP and offer a multitude of ecosystem services such as providing products like timber and non-wood forest products, storing carbon, preserving biodiversity, and offering an environment for recreation.

Moving towards future that addresses all aspects of sustainability and the crucial environmental challenges we are currently facing, requires a societal transformation to bio-circular economy where bio-based materials and innovations support an efficient use of renewable resources, cascade use of old materials, and replace fossil-based resources. This report focuses on the role of forests in the transformation to sustainable bioeconomy in Finland, Norway and Sweden and related policy implications considering ecological, economic, and social values.

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- Forests play an important role in the three northmost countries in Europe.
- In the green transition, technical innovation is not enough. Social innovation and innovative governance structures are just as important.
- Green transition is a long-term commitment. Research and societal development should go hand in hand.
- Green infrastructure investments are important in a green transition.
- Consumers attitudes and values are one of the driving forces in development of new materials and products, thus driving the bioeconomy transformation.
- Demand for forest ecosystem services (e.g., biomass, carbon sequestration, recreation, and biodiversity) exceed the potential supply. Decisions on sustainable forest management need to consider tradeoffs between the provision of these service and wood production.
- Forests, forest-based sectors, and social values of the forest are different between countries in Europe and should be acknowledged in policies.
- Collaboration between regions (like Baltic Sea region, or Barents region) is essential to bring forward the unique features of the northern forest in bioeconomy transformation.



Technical innovations

In a green transition, technical innovations are needed for advancing research as well as for business development. However, technical innovation is not enough, social innovation and innovative governance structures are also vital for green transformation. A systemic, informed, and envisioned view of bioeconomy-based future is needed at national and international levels. It should encompass the ecological, economic, and social functions of forests.

This entails a shift from prioritizing economic values and growth in forest management towards considering multiple values. It will also require policy changes to enhance bioeconomy transformation, support climate change mitigation and adaptation, foster biodiversity, and to improve biomass production in striving towards replacing non-renewable materials.

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Regulations, policies and instruments

The transformation into a bioeconomy-based society will take time and requires a long-term perspective. The development of new materials and products depend on both finance and policies.

To promote potentially game-changing renewable materials and products, research and development should go hand in hand with the development of regulations, policies and instruments like taxes or subsidies. Typically, innovations can be hindered by stringent regulations, as exemplified by the fire safety regulations that prevented the building of wooden multi-story buildings.

Green infrastructure investments are importantly needed for a green transformation. Yet investments in biorefinery, biofuel or similar are expensive, which can slow down development. Strengthening collaborations and networks across sectors and research fields could support the development of high-cost forest-based innovations.

“Research and development should go hand in hand with the development of regulations, policies and instruments”



Consumers

The development of new materials and products depend on consumers' values and attitudes, and their power to drive bioeconomy transformation. The challenge consumers face is how to make sense of a mixed market consisting of both new, bio-based goods and fossil-based goods to be able to make informed decisions and choices. Additionally, bio-based goods are typically more expensive than fossil-based ones.

Research and innovation to develop new cost-competitive materials is important, but so is producing and providing information to support consumers in choosing environmentally sustainable goods. Continuing urbanization might hinder the development of rural bioeconomy leading to shortage of work force for e.g., ensuring continuous supply of renewable raw material.

"The development of new materials and products depend on consumers' values and attitudes, and their power to drive bioeconomy transformation"

Forest Ecosystem Services

"Increasing demands on forest goods and services are exceeding the potential supply leading to decision on trade-offs between different forest functions and uses"

Forest is a renewable resource, but the increasing demands on forest goods and services are exceeding the potential supply leading to decision on trade-offs between different forest functions and uses like biodiversity, carbon sequestration, timber harvesting and social values. The provision of forest ecosystem services has to be well understood, managed and monitored, and adapted to stakeholder preferences and prioritizations.

Forest owners, managers and policymakers have a key role in making the choices about which goods or services to provide; choices that are complicated by the fact that demand for wood- and non-wood forest products are high while most of the ecosystem services forests provide have no monetary value.

Potential synergies between different forest ecosystem services in combination with decisions on trade-offs, stakeholder preferences, society decisions on sustainability and development of policies affect transformation to a just bioeconomy, realizing the full potential of forest ecosystem services.



Collaboration

The role of forest in bioeconomy transformation differs among regions and countries. It depends on the specific characteristics of the forests, forest-based innovations, knowledge development, green investment structures and national institutions and policies. Additionally, the traditions and social values associated with forests affect the management and use of forests. The bioeconomy transformation, thus, must address not only economic outcomes and economic growth but also the ecological and social dimensions which must be included in future policies. Increasing policy coherence is needed to balance societal demands, including industrial needs, with sustainable use of forests and ecological boundaries at different scales, e.g., in the Baltic, Barents or Nordic region, and international scales.

EU bioeconomy policy should acknowledge and appreciate regional differences, collaborate and bring forward the unique features of the northern forest in bioeconomy transformation.

Given that European countries differ considerably with respect to forest resources, forest-based sectors, and social values, EU bioeconomy policy should acknowledge and appreciate regional differences and take them into consideration. For the Nordic as well as the Baltic and Barents regions', it is thus essential to collaborate and bring forward the unique features of the northern forest in bioeconomy transformation, including the potential for synergies in the provision of forest ecosystem services and the challenges related to trade-offs among their provision.

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BEAC, a forum for intergovernmental cooperation in the Barents region to strengthen peace, stability and sustainable development. WG BFS constitute a cross-border platform for civil servants and professionals to cooperate and promote sustainable management and utilisation of forest resources and ecosystem services in line with the 2030 Agenda for Sustainable Development, the United Nations Strategic Plan for Forests as well as the Paris Climate Agreement.

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