

Universities and research institutions in seven landscapes within the Barents region



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Summary

Multiple use of forests can be one way forward for sustainable development of rural communities in the Barents region. The boreal forests of Sweden, Finland, Norway and Russia is of vital importance for the economy in the region. Together, they constitute the foundation of forest industries, tourism and outdoor recreation, reindeer herding, and they are important for food supply and food industry.

The region has the framework to play central role in the transition to a biobased circular society. At the same time the long distances, sparse population, lack of competence and deficient infrastructure can be an obstacle. To achieve sustainable development of the bioeconomy in rural communities there is a need for collaboration, knowledge and research.

In this study, universities, research institutes and projects in seven landscapes within the Barents region have been mapped: Vindelälven-Juhttátahkka Biosphere Reserve and Leader-area Tornedalen 2020 (SWE), North Karelia Biosphere Reserve and Rokua Geopark (FIN), Sør-Varanger Kommune (NOR), Metsola Biosphere Reserve and Vodlozersky Biosphere Reserve (RUS). "Relevant research" is defined broadly for topics as sustainable forest management, wood industry, wood fibre industry, reindeer herding, nature tourism, climate change and forests, food from forests, cultural heritage, and nature heritage.

The report shows that there are close to twenty (or more) universities, research institutes and collaboration platforms/networks operating within the studied landscapes. Of the relevant research areas mapped in this study, 21 projects/collaborations focus wood, 21 focus non-wood, and 25 focus environmental issues. Topics including wood industry, and climate change and forests are most common.

The study clearly shows that there are a wide range of projects generating knowledge and awareness of different bioeconomy aspects through research, learning and building networks across the Barents region. A developed collaboration between the landscapes, enables knowledge and exchange on different aspects of bioeconomy transition, multiple use of forests and symbiosis between countries.

Suggestion of cross-border collaborative activities and organisation/partners in full-scale project should take in consideration established contacts. It is vital to explore and develop good bioeconomy practices and local experience in the search for added value, innovation, job opportunities and the wellbeing of people in the local communities.

Background

This is one of several pilot studies (2021–2022) with descriptions of present situations in seven landscapes in the Barents region: two in Sweden, two in Finland, two in Russia and one in Norway. The pilot studies will also suggest activities and organisations/partners for future cooperation. Results from the pilot studies will be used for an application for a full-scale project (2022), that hopefully can start 2023 (three-year project, 2023–2026).

Aim/focus

Research and description of present situation in model landscapes

- Existing universities, research institutions and research infrastructures
- Relevant research at universities, existing cross-border exchange and cooperation between universities, research institutions and research infrastructures, etc

Delimitations

The choice of "relevant research" is not easy to do. We have searched for research that increase the knowledge about forest ecosystems, multifunctionality of forests, and different values forests bring to local communities.

Sustainable management and utilization 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 Agreement have also been of interest.

Inspiring examples of cross border collaboration is also important for our plans for future projects.

In this report "relevant research" is defined broadly as:

Wood

- (Sustainable) forest management
- Wood industry (e.g. sawmills, wood manufactories, house construction)
- Wood fiber industries (e.g. pulp, paper and other products, bio-fuels, bio-energy)

Non Wood

- Food from forests
- Nature tourism
- Outdoor recreation
- Reindeer herding

Environment

- Climate change and forests (mitigation and adaptation)
- Natural heritage (e.g. biodiversity)
- Cultural heritage (e.g. ancient memory, cultural relics)

Each university/institute is described briefly, and 1–3 ongoing or just finished projects (relevant research) or collaborations are presented.

Vindelälven-Juhttatahkka Biosphere Reserve, Sweden

Research and higher education have a high profile in the region. There are two major universities within the Biosphere Reserve, Umeå University and the Swedish university for Agricultural Sciences. There are also a number of research institutes, e.g. the Institute for Subarctic Landscape Research (INSARC). Krycklan catchment, Svartbergets and Ammarnäs research stations are examples of well-established research infrastructures within the area. A substantial part of the research and higher education is focused on forests and bioeconomy.

Umeå University, UmU

Umeå University is Sweden's fifth university, formally established 1965. Today the total number of students, including those at the postgraduate level, is approximately 36,300. Many of these students are taking courses via distance education, or online learning. Additionally, there are 4,197 teachers, researchers, and technical and administrative staff members employed by the university.

Since the earlies days of Umeå University, interdisciplinary collaboration has been a strong trait. Research at Umeå University spans the fields of humanities, medicine, natural sciences, social sciences and the science of education.

Umeå University have ongoing research in all of the topics above (relevant research), except for forest management.

Collaborative centres and projects

Food from forests

- Research network Berries, Centrum för Regional vetenskap
- Forest ecosystem services Dep of Ecology and Environmental Science

Wood industry

• Circular economy – New possibilities for (local) wood industry, Dept of Applied Physics and Electronics. The project aims at supporting regional SMEs to overcome difficulties to reach a circular economy. A collaboration between Finland and Sweden.

Nature tourism/climate change

 Climate Change and the Double Amplification of Arctic Tourism: Challenges and Potential Solutions for Tourism and Sustainable Development in an Arctic Context. Arcum, Dept of Geography etc. The project addresses this situation by analysing how local and regional government, industry and community stakeholders in Arctic Sweden tackle challenges and opportunities related to tourism, globalization and climate change and what future development they aspire.

Climate change

- Greening of the Arctic: gradual or abrupt? Department of Ecology and Environmental Science. Climate change is leading to more productive Arctic ecosystems, but changes in the vegetation are not happening everywhere at the same speed. This project will use drones, satellite data and modelling to investigate factors that lead to vegetation adjustment consistent with climate change or delayed adaptation due to ecosystem stability. This aims to get a better understanding of Arctic carbon dynamics.
- The role of forests in climate change. Dep of Ecology and Environmental Science. The project will investigate the climate impact on forest biodiversity with the aid of weekly air samples

that have been collected over several decades, using DNA sequencing to study the changes in abundance of all types of organisms.

Reindeer herding/indigenous people

- What causes internal conflict in Indigenous and local communities? Arcum, Várdduo Centre for Sami research. A project that investigates lateral violence in indigenous and local communities on the Swedish side of Sápmi.
- Damage done. Arcum, Várdduo Centre for Sami research. The project looks into Indigenous peoples' experiences of and recommendations for energy production (hydropower).

Swedish University of Agricultural Sciences, SLU

SLU is a young university with a long history. It was founded in 1977 out of the agricultural, forestry and veterinary university colleges, the Veterinary School at Skara and the Forestry School at Skinnskatteberg.

SLU has facilities and activities in many parts of Sweden and can therefore rightly call itself Sweden's longest university. Alnarp, Umeå and Uppsala are the main locations for the international degree programmes but SLU conduct education, research, experimentation and environmental monitoring and assessments in several other places in Sweden.

SLU in Umeå performs research in all relevant research areas, except wood industry and wood fibre industry.

Collaborative centres and projects:

Sustainable Forest management

- SLU Future Forests. Future Forests is a platform for interdisciplinary forest research and research communication.
- Trees and Crops for the Future TC4F. Trees and Crops for the Future (TC4F) is a Strategic Research Area (SRA) at SLU with Umeå University and the Forestry Research Institute (SkogForsk) as collaborative partners. TC4F has enabled a focus in several key areas of forest management: continuous cover forestry, fast growing deciduous trees, regeneration, adaptation to climate change and modelling of genetically improved material.

Reindeer herding/indigenous people

- FutureArticLives. CERE (Centre for Environmental and Resource Economics, CERE. An interdisciplinary research centre in the areas of environmental and natural resources economics in Umeå). The research program concerns how the climate change affects the Inuit and Sami communities and its policy implications.
- Reindeer herding: An indigenous food system in transition. Department of urban and rural development, SLU. The traditional food systems of the indigenous peoples in the Arctic are good examples of a holistic use of reindeer meat as a resource, of good adaptability, coexistence with the local environment and of the interaction with local biodiversity.

Cultural heritage

• Biocultural heritage in species-rich road verges. Swedish Biodiversity Centre currently runs two parallel projects about links between species-rich road verges and the surrounding landscape, today and in the past. It is about the importance of current and past surrounding environment, for the possibility to create and maintain biodiversity-rich roads. (Swedish Transport Administration)

Wood/wood fibre industry

• Resource-efficient and non-toxic material flows from wood waste. Department of Forest Biomaterials and Technology. The main objective of the project is thus to develop a resource efficient characterisation system that will improve the recyclable feedstock and enable the use of WW as a source for nontoxic secondary raw materials

The Forestry Research Institute of Sweden, SkogForsk

Skogforsk is a central research body for the Swedish forestry sector and is financed jointly by the government and the members of the Institute. The mission is to develop and communicate knowledge, services and products to support even greater sustainability in forestry to benefit the society.

Of the Institute's staff of about 130, some 90 are researchers. The institute is situated at three sites: Uppsala (head office), Sävar and Ekebo.

Relevant research areas are sustainable forest management, wood industry and climate change and forests.

Collaborative centres and projects

Sustainable forest management

 NextFOOD. Objectives are for example to create an inventory of the skills and competencies needed for a transition to more sustainable agriculture, forestry and associated bio-value chains, facilitate case studies to identify gaps and needs and test new relevant curricula and training methods. 13 different countries are involved.

Silvermuseet, Department of Subartic research, INSARC

In 2009 the Department of Subarctic Research was established. The institute conducts basic research that focuses on the connection between human land use and changes in the ecosystems in northern environments. Its work takes the form of interdisciplinary collaboration, principally between archaeologists and ecologists.

The research also includes other scientific disciplines and the researchers affiliated with the institute all possess leading expertise in their fields and extensive experience of international publication. Operations are conducted using Arjeplog as a base and with a focus on the international research arena.

The objective of the institute's efforts is to deepen knowledge about the connections between social processes, land use and changes in the ecosystems in subarctic environments and to develop theories, techniques and methods applicable to landscape studies.

Relevant research areas are reindeer herding and cultural heritage.

Collaborative centres and projects:

Cultural heritage/reindeer herding

- Cultural Heritage, Landscapes and Identity Processes in Northern Fennoscandia¹
- De samiska skattelandens ursprung. New project that started Jan 2022.

Research Institutes of Sweden, RISE

RISE is a Swedish research institute and innovation partner. Through international collaboration programmes with industry, academia and the public sector, RISE work with competitiveness of the Swedish business community on an international level and contribute to a sustainable society. Close to 3,000 employees engage in and support all types of innovation processes. RISE is an independent, state-owned research institute, which offers unique expertise and 130 testbeds and demonstration environments for future-proof technologies, products and services.

Relevant research areas are wood industry, wood fiber industry, food from forests.

Collaborative centres and projects

Food from forests

• FINEST- Swedish berries in healthy food. RISE. The target is to promote increased use of berries and to reach the front row of berry industry, by development of the Swedish wild berry value chain. The developed value chain will hopefully create new jobs.

Wood building technology

• Design for the future. RISE. The focus on the project is to enable the circularity of timber buildings through that they are designed to be easy to disassemble, flexible when changing destination use and innovative. The wooden building products are planned to be prepared for reuse, including how their strength and durability can be maintained over time.

¹ Cultural Heritage, Landscapes and Identity Processes in Northern Fennoscandia. <u>www.recallingthepast.se</u>

Leader-area Tornedalen 2020, Sweden

The non-profit association Tornedalen 2020 was founded for Leader-area Tornedalen 2020 that includes Karesuando and Vittangi parishes within Kiruna municipality, both Pajala and Övertorneå municipality as a whole together with central and northern parts of municipality of Haparanda. The association aim for locally controlled development of the area. The local development strategy will inspire to smart, including and sustainable progress of the area.

This will be performed in three main points:

- 1. Development of attractiveness, local engagement and cross-border cooperation.
- 2. Development of new competence and entrepreneurship of existing and new SMEs/actors
- 3. Development of new innovative products and companies based on natural and cultural resources in the area.

Leader-area Tornedalen 2020 cooperates with Outokaira tuottamhan and Tunturi-Lappi Leader-areas in Finland.

Relevant research connected to any university was difficult to find but a few interesting collaborations are listed.

Collaborative centres and projects

Cultural heritage

 Vasikkavuoma 2040 – preserving and developing a cultural landscape of ancient lineage for the future. Activities are to restore and manage a landscape of hay bogs, streams, wooden barns and trails.

Food from forests

• Katalysatorn för bärförädling i Tornedalen (A catalyst for refinement of berries in Tornedalen). The project aims for creating possibilities for local processing of berries through education in entrepreneurship.

Wood industry

• Skog- och träförädling i Sattajärvi (Forest and wood refinement in Sattajärvi). The project aims to develop local processing and development of wood products together with local companies.

North Karelia Biosphere Reserve, Finland

Diverse expertise in the forestry and bioeconomy research sectors is one of the strengths of the region. For example, in Joensuu there are the University of Eastern Finland (UEF), Karelia University of Applied Sciences, Natural Resources Institute Finland (Luke), Finnish Environment Institute (Syke), Joensuu Science Park, and the European Forest Institute (EFI).

University of Eastern Finland, UEF

The University of Eastern Finland is one of the most multidisciplinary universities in Finland. They perform research and offer education in nearly 100 major subjects. It was established in 2010, following a decision by the University of Joensuu (est. 1969) and the University of Kuopio (est. 1972) to join forces in a merger.

The Faculty of Science and Forestry is one of four faculties at the University of Eastern Finland. They operate on two campuses, in Joensuu and in Kuopio. The faculty comprises four departments, two schools, and the infrastructural unit SIB Labs.

Relevant research areas are sustainable forest management, wood industry, wood fibre industry, food from forests, nature tourism, climate change and forests, cultural heritage.

Collaborative centres and projects

Sustainable forest management

• FOBI – Forests and Bioeconomy. Research community at the UEF focusing on forests and bioeconomy. The aim is to provide the necessary scientific knowledge needed to transform from current forest-based bioeconomy into a bio-society.²

Wood industry/fiber

Wood Materials Science (research group). Studies and research on products and valorization
of wood, wood-based products, chemical refining of wood material and any industrial side
streams generated thereof. The properties, performance and versatility of available raw
material resources is the basis for our research on which mechanical, chemical and biological
conversion is being developed. We conduct research on wood materials in close
collaboration with the forest-based industry.

Nature tourism

• Research Center for Sustainable Circular Economy (research group). No ongoing projects was found.

Food from forests

• Remote sensing enables the prediction of potential berry picking locations. By combining nationwide airborne laser scanning data and data on berries collected in connection with forest inventories, it is possible to make small-scale berry yield predictions for an entire country. Collaboration between Sweden and Finland.

Cultural heritage

• Mire Trend Research project – Nakedness, puddles and critical comments: mire trend as changing the cultural heritage. Using the methods of humanistic environmental research,

² FOBI: <u>https://www.uef.fi/en/research-community/forests-and-bioeconomy-fobi</u>

this multidisciplinary project is exploring new and unconventional uses of nature that are changing the cultural heritage of mires.

Finnish Environment institute, SYKE

SYKE is a multidisciplinary research and expert institute. The most important task is to solve society's most burning questions that have an impact on the environment. SYKE provide necessary information, multidisciplinary expertise and expert services for public and private decision-making. SYKE have some 650 experts and researchers and work in close co-operation with Finnish and international partners. SYKE has four office and research facilities in Helsinki, Oulu, Jyväskylä and Joensuu.

Relevant research areas are climate change and forests, outdoor recreation.

Collaborative centres and projects

Outdoor recreation

• ORIGIN: Outdoor recreation, nature interpretation and integration in Nordic countries. A project about how nature-based solutions may have the potential of offering an efficient way for better integration of immigrants. One of the key characteristics across all Nordic societies is a lifestyle which highly values active outdoor recreation and living close to nature – even in urban areas. We have traditionally had a very distinctive human-nature relationship characterised by, for instance, the public right of access to natural areas, foraging traditions and appreciation of natural and rural landscapes and pastoral traditions. Moreover, there is increasing evidence on the positive benefits of natural and rural landscapes for human health and social, psychological and physical well-being.

Karelia University of Applied Sciences, Karelia UAS

Karelia UAS operates in seven study fields offering 21 programmes out of which five are master-level studies. The study areas are health care and social studies, business, engineering, forestry, media and hospitality management. Karelia UAS operates in two campuses in close proximity of the Joensuu city centre in easternmost Finland.

Relevant areas of research are sustainable forest management, wood industry, cultural heritage.

Collaborative centres and projects

Cultural heritage

• A Return To Interspecific Coexistence – Posthuman Interpretations From Folklore, Oral History, And Popular Culture. The focus of this project is the human-nature relationship. Not only does natural world surround human beings but nature also permeates our humanity to the core. The project investigates the human-nature bond by using the methods and materials commonly used in folklore research (the study of traditions and folk poetry).

Wood industry (WoodJoensuu³)

• Inegrate – Support for forest owner decision making in a changing environment (lit. transl.)

³ <u>https://woodjoensuu.fi/teemat/</u>

"Recent discussions have highlighted the importance of forests in the bioeconomy that goes far beyond the mere production of biomass. This issue is also clearly identified in North Karelia's recent Sustainable Forest Bioeconomy Growth Package, which emphasizes the need for sustainable forestry that takes into account the multiple functions of forests, forest growth capacity, health and biodiversity management, and sustainable logging and timber use. The project is directed at increasing the competence among people making decisions regarding forests, i.e. forest owners. The project includes the creation of marteloscopes, a digital app tthat can be used in combination with the marteloscopes and educational packages.⁴

- Wood Construction Solutions for Low Carbon Construction
 The main goal of the project is to support the development of the competitiveness of the
 emerging regional wood construction value chains through new technologies, digital tools
 and new partnerships and export opportunities. Construction value chains refer to an
 operating model in which product component suppliers, designers and construction
 companies work closely together to provide total solutions to the market.⁵
- From production-based to knowledge-based wood construction ecosystem (lit. transl.) The aim of this project is to find out the conditions for the renewal of the wood products industry and the emergence of an associated ecosystem in North Karelia through the increased growth prospects of wood construction. In this context, an ecosystem refers to a network of different actors, including private and public actors, where the actors in the network together achieve more than they could separately.⁶

Natural Resources Institute Finland, Luke

The research and expert activities of LUKE are founded on broad-based competence. The competencies of four research units, statistical services unit, research infrastructure unit and six service groups are exploited in multi-disciplinary research programmes and projects carried out in collaboration with Finnish and international partners.

Relevant research areas are sustainable forest management, wood industry, climate change and forests, nature tourism.

Collaborative centres and projects

Climate change

• CarbonNudges in Climate Wise Land Use in Agriculture and Forestry, TUIMA.

Wood industry

• Wood-based value-chains as solutions to promote carbon neutrality and sustainable urbanization (WOODURBAN)

Reindeer herding

• CLIMINI, Adaptation means of reindeer husbandry to climate change. Targets of the project are: 1) make an updated evaluation on the effects of climate change on reindeer herding, 2) make suggestions for acting measures for the adaptation of reindeer herding on climate change and 3) promote spreading of good practices into reindeer herding.

⁴ <u>https://karelia.fi/projektit/?RepoProject=6197</u>

⁵ <u>https://karelia.fi/projektit/?RepoProject=6177</u>

⁶ <u>https://karelia.fi/projektit/?RepoProject=6200</u>

Wood industry/roundwood

• BSRforest. Information and research on the forest sector in Northwest Russia. Statistics in English about Russian forest sector until Dec 2020. The Finnish version have statistics from 2021. In November 2021 it was announced that the service will expire at the end of the year.

Wood industry

 BOFORI – Boosting Forest Cluster SME Business in two Karelias. General aim of the project is to support growing cross-border trade of SMEs. The specific objective is increased crossborder business activities and cooperation of SMEs in forest sector. SME:s in the Finnish and Russian Karelias. Some Russian institutes are also involved.⁷

Joensuu Science Park

Business Joensuu is the body responsible for managing Joensuu Science Park, which develops business life in and around Joensuu by offering high-quality facility services and business development services to support company growth. The aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions.

It is difficult to find relevant research. The park offers facilities and networking possibilities, but does not appear to promote forest-related research generally.

Collaborative centres and projects

There have been projects connected to SMEs, "Green groWing of SMEs", but it was a few years ago (2015).

GreenHub

Project platform and advisory service for companies operating in forest bioeconomy. Operated in collaboration with LUKE, UEF, EFI, Karelia university of applied sciences and SYKE.⁸

Relevant research in climate and forest (strategies)

Collaborative centres and projects

Climate/strategies

• BIO4ECO. The project aims to improve regional and national policy processes and policy implementation and delivery addressing the transition to a low carbon economy, in relation with renewable energy use, energy efficiency of building, and forest and agricultural biomass.

European Forest Institute, EFI

The European Forest Institute was established in 1993 in Joensuu, Finland with the aim of enhancing international forest research and providing decision makers with unbiased forest-related information at a pan-European level.

⁷ BOFORI: https://kareliacbc.fi/en/projects/boosting-forest-cluster-sme-business-two-karelias-bofori-ka4002#project

⁸ GreenHub: <u>https://www.greenhub.fi/</u>

Twenty-five years later, EFI has grown and developed into an international organisation, with 28 country members and c.115 member organisations from 37 countries.

Relevant research in climate and forests, nature tourism, wood industry.

Collaborative centres and projects:

Climate

 RUFORCLIM – Impacts, challenges and opportunities for Russian forests, forestry and forest bioeconomy to respond to climate change. RUFORCLIM project studies the impacts, challenges and opportunities for Russian forests, forestry and forest bioeconomy to respond to climate change. RUFORCLIM aims to facilitate the exchange of information, climate policy options and good practices between the EU and Russia with a view to enable a better science-informed practical implications.

Nature tourism/SMEs

 KIBIO – North Karelia-China cooperation in forest bioeconomy development. The Regional Programme of North Karelia (Pokat 2021) emphasizes forest bioeconomy and its new technologies and materials as the source of growth. Growth potential is also seen in tourism, especially in nature-based tourism. Recently, growing Chinese interests in North Karelia have been related e.g. to bio-based textiles and tourism. Given this background, the project is designed to unlock the forest bioeconomy development potential in North Karelia region, optimize forest bioeconomy value chains and increase capacity of the North Karelian forest bioeconomy sector related especially to SMEs to respond to the growing Chinese markets and interests on forest bioeconomy.

Wood industry/SMEs

Bioregions Facility. Regions aiming at advancing a forest-based circular bioeconomy need to
work together to unlock their regional potential on the forest circular bioeconomy. For this
reason, EFI together with those regions willing to take the lead, has established a Bioregions
Facility to support the development of the forest bioeconomy. This Bioregions Facility
supports innovation, networking, and policy learning, and develops joint strategies and
actions, capacity building plus partnering and exchanging experiences around: Innovation,
Institutions, Infrastructures and Investments.

Wood industry/SMEs/collaboration

• BIOSCOPE. The goal of the BIOSCOPE project is to grow the regional economy of North Karelia by partnering companies, researchers and international students in a new way. The new partnership model seeks a setting in which companies, researchers and students actively participate in shared value creation so that significant added value can be generated for all parties in their own areas (e.g. new business, more impressive research, student capacity). (Bioeconomy in North Karelia).

Rokua Geopark, Finland

Rokua Geopark⁹ offers unique nature experiences and multiple services around the year. River Oulujoki valley, Rokua esker and dune area and Lake Oulujärvi comprise the landscape areas of Rokua Geopark, where the geological, natural and human history form a fascinating story spanning thousands of years. This is the first tourist destination in Finland to have UNESCO Global Geopark status. Besides being a UNESCO Global Geopark, Rokua Geopark also belongs to the Global Geoparks Network and the European Geoparks Network.

Rokua Geopark values and encourages environmentally, socially and financially sustainable approaches, guaranteeing schools and colleges a safe and healthy learning environment in which students can grow. Rokua Geopark's theme is the Ice Age and the unique geological tradition it has left behind. The Geopark offers a wealth of opportunities for teaching and early years education. Ready-made teaching material is available on the Rokua Geopark area for the classroom and for outdoor teaching on nature and the environment.

The park is more of a learning environment and not so much research is performed by the organization itself. The closest University is in Oulu.

Collaborative centres and projects

Tourism/Marketing-networks

Rokua Geopark entrepreneurs and joint tourism marketing. Rokua Geopark was founded to
advance the business activities, recognisability, and education in the River Oulujoki Valley,
Rokua and Oulujärvi regions. The Geopark has a unified look that is used in trade fairs, web
pages and brochures. The pivotal element in the visual expression is the Rokua Geopark logo.
Companies operating in the area can apply for the right to use the logo and use it in the
marketing of their products and services.

Food from forests/Marketing-networks

Geofood – a sign of local food in the Geopark areas. Rokua Geopark companies that sell or
produce food can apply for the right to use the international Geofood label, which indicates
that the food has primarily been grown and produced in a unique UNESCO Global Geopark
area.

Oulu University

The University of Oulu was founded in 1958 and is one of the biggest and most multidisciplinary universities in Finland. Research areas are for example:

- Environmental governance
- Biodiversity change climate
- Land use resource management traditional knowledge of resource use

Relevant research areas are reindeer herding, climate.

Collaborative centres and projects

Reindeer herding/climate

⁹ <u>https://en.unesco.org/global-geoparks/rokua</u>

- SAAMI Adaptation of Saami people to the climate change. In the project, reindeer herders were interviewed in the Saami home region, i.e. in the municipalities of Utsjoki, Inari, Sodankylä and Enontekiö.
- ReiGN. Reindeer Husbandry in a Globalizing North Resilience, Adaptations and Pathways for Actions, 2016 2020). Nordic Center of Excellence.¹⁰

¹⁰ ReiGN: <u>http://www.reign.no/networking/</u>

Sør-Varanger municipality, Norway

Sør-Varanger is a municipality in Troms and Finnmark county, Norway. The administrative centre of the municipality is the town of Kirkenes. Other settlements in the municipality include the villages of Bjørnevatn, Bugøynes, Elvenes, Grense Jakobselv, Hesseng, Jakobsnes, Neiden, and Sandnes. Located west of the Norway–Russia border, Sør-Varanger is the only Norwegian municipality that shares a land border with Russia, with the only legal border crossing at Storskog. The closest university is University of Tromsø.

University of Tromsø – Norway's Arctic University

Finnmark University College merged into University of Tromsø in 2013 and became University of Tromsø – Norway's Arctic University. The university has two key areas of interest: Energy, climate, society and environment; and Sustainable use of resources.

Collaborative centres and projects

Projects specifically performed in Sør-Varanger was not found.

Norsk institutt for bioøkonomi, NIBIO

NIBIO Svanhovd in Pasvik valley is strongly committed to environmental research cooperation in the Barents region. The station disseminates knowledge and performs R&D based upon the natural environment of this region. It also runs an up-to date DNA-laboratory, a national park centre, a botanical garden and a conference centre. Svanhovd has extensive cooperation with all countries in the Barents region.

Relevant research areas are wood industry, food from forests, cultural heritage and tourism.

Collaborative centres and projects

Wood industry

CircWood – Circular use of wood for increased sustainability and innovation. The project will
investigate aspects of wood use in the Norwegian economy, with particular emphasis on the
reuse of wood in construction projects, and recycled wood as raw material in today's wood
industry.

Cultural heritage/tourism

 ArcticAlpineDecay – Deterioration and decay of wooden cultural heritage in Arctic and Alpine environments. In ArcticAlpineDecay, researchers study how tourists and climate affect vulnerable cultural heritage on Svalbard and Hardangervidda in Norway. ArcticAlpineDecay will increase the resilience of wooden cultural heritage through cross-disciplinary cooperation and basic research involving stakeholders, public authorities, tourist trade, commerce, cultural historical science, wood science and societal science.

Food from forests

• NovelBaltic. The Baltic Sea areas are full of NTFP. Several of these products are seen as very valuable, among others, in the Asian market. But close relationships with the cultivated species as well as misleading marketing of origin leads to risk of scams. To preserve food

security and the quality stamp of the raw material, manufacturers and processors have a need for simple authentication methods to ensure genuine goods.

Sustainable forest management

 Management for multifunctionality in European forests in the era of bioeconomy (2019– 2022).¹¹

Food from forests

• Kompetansenettverk for lokal mat i nord (competence network for local food in the north). The main target group is primary producers and food companies with the goal of developing, refining and selling quality products based on local raw materials or tourism companies that have development projects in collaboration with local food producers. The competence network will assist these small and medium-sized companies in gaining access to the competence they need to develop further. Senior advisors in Tromsø, but also contacts in Troms, Finnmark and Nordland. Main office in Holt, which is responsible for the work in northern Norway (Nordland, Troms og Finnmark).

¹¹ <u>https://www.nibio.no/en/projects/management-for-multifunctionality-in-european-forests-in-the-era-of-bioeconomy</u>

Metsola Biosphere Reserve, Russia

In 2019 the administration of the Biosphere Reserve signed a cooperation agreement with Petrozavodsk State University. There is also a long-term relation with St. Petersburg State University in terms of student research practices. Located at the border to Finland, the site comprises the Kostomukshsky reserve and contains one of the oldest intact north-taiga forests in Northwest Russia. Some 30,000 permanent inhabitants live in this biosphere reserve, with a surface area of 345,700 ha. The north-taiga forests are essential for the reproduction of many bird species. The local population lives from forestry, agriculture, fishing, hunting and gathering non-timber forest products.

Petrozavodsk State University

The university was established in 1940, trains more than 70,000 qualified specialists and offers over 100 educational programs. It is the only university in Russia that trains specialists in the area of Finno-Ugric languages and culture (Karelian, Vepsian and Finnish). The university offers research in the field of development and creation of elemental base and equipment for non-silicon micro and nanoelectronics.

Relevant research in forest management, tourism, climate change and forest, but a lot of information is only in Russian.

Collaborative centres and projects

Silviculture/climate

• Digital modelling of growth processes and phenology of forest crops using non-destructive digitization of plant changes. The study will establish reliable patterns in the dynamics of biological processes, predict the development of forest crops with changes in climatic factors, and also present the result in the form of digital three-dimensional growth models by means of computer graphics.

Tourism

Green Nature Best Solutions in Tourism to reduce negative impact on the environment. The
project aims to find ways to reduce impact from tourism and to add educational programmes
for specific customer needs. Russian partners of the project were the Tourist Information
Centre of the Republic of Karelia, Energy Efficiency Centre, Velena LLC (Segezha Hotel).
Finland's partners in the project were the Finnish Environmental Institute and the Centre for
Economic Development, Transport and the Environment of North Karelia.

St. Petersburg State University

In January 1724, a decree was signed by Peter the Great to establish the Academy with university and gymnasium. That's when the history of the university education in Russia started. Since the establishment of the university and till the present days, many research areas have arisen here which become classical and internationally renowned. Colleagues from all over the world can also use the numerous university resource centres. The university is open for cooperation and actively integrated into the global scientific and educational environment. International meetings and forums take place here regularly.

Relevant ongoing projects is difficult to find. Research at the Environmental Safety Observatory is focusing on various types of pollution (atmosphere, water, soil, etc.). The purpose of the RC

environmental safety observatory forming an integrated system of education and research in the field of environmental security and sustainable development of the regions.

Collaborative centres and projects

Wood industry

 Nordregio. The project aims at accelerating the innovative production and use of woodbased building materials through collaboration and establishing sustainable Nordic–Russian business-to-business and business-academic partnerships in the wood and construction sector. The objective is to support innovative production and use of wood-based building materials capitalising on the untapped potential for a bio-based economy in North-West Russia. The project is funded by the Nordic Council of Ministers and is led by Nordregio, a Nordic research centre for regional development in Stockholm, Sweden.

Vodlozerskiy Biosphere Reserve, Russia

There are no research institutions within the biosphere reserve, but there are several institutions connected, for example Petrozavodsk State University, Karelian Research Centre Russian Academy of Science, The Northern Arctic Federal University named after M.V. Lomonosov, and Saint Petersburg Stieglitz State Academy of Art and Design. There are also sampling units on the territory for monitoring the dynamic of forest, water and swamp ecosystems.

Forest research Institute of Karelian Research Centre

The institute was organized in 1957. It was started with the Forest Research Department of the Karelian Branch of the USSR Academy of Sciences. It is currently comprised of six laboratories (Boreal Forest Dynamics and Production; Landscape Ecology and Forest Ecosystems Protection; Forest Pedology; Physiology and Cytology of Woody Plants; Forest Biotechnology; Analytical), two research stations (Kindasovo, Sopokha) and three field laboratories (Vendery, Kizhi and Kivach). The institute performs research in for example structural and functional organization and dynamics of forest ecosystems and biodiversity conservation.

Relevant research areas are forest management, wood industry.

Wood industry

• BOFORI – described earlier in this document.

Regional research institutions

Nordregio

Nordregio is a leading Nordic research institute within the broad research fields of regional development, policy and planning. It is an official research entity of Eurostat, The Statistical Office of the European Union. They specialize in applied research that analyses and evaluates the latest development trends in policy areas central to Nordic regional economic growth, competitiveness and sustainable development. The institute has a board of directors from the five Nordic states (Denmark, Finland, Iceland, Norway and Sweden) plus one observer from each of the three autonomous territories (the Faroe Islands, Greenland and the Åland Islands).

Relevant research areas are wood industry, sustainable forest managements.

Collaborative centres and projects

Wood industry

• Accelerating wood construction across Nordics and Russia (2021–2022). The project aims at supporting sustainable and innovative production and use of wood-based building materials across Northwest Russia and the Nordics. Using wood in construction provides multiple benefits to nature and economies.¹²

Wood industry/SMEs?/climate?

A just Green Transition in rural areas: local benefits from value creation (2021–2022). This • project analyses the effects on rural communities and rural populations by exploring the local value creation opportunities and challenges, from job creation (or preservation) and economic and demographic growth to social innovation, learning, community well-being and attractiveness. And how will policy support or prevent local rural benefits and local development? This project will add Nordic value through knowledge sharing – good cases and identified actions will be spread through the Nordics.¹³

Sustainable forest management

BioBaltic – Nordic-Baltic cooperation within bio-circular economy. The project aims at • deepening Nordic-Baltic cooperation around bio-circular-economy. Both – Nordic and Baltic countries are rich in biological and renewable resources and have a long tradition in utilizing these resources for generating economic growth through the traditional sectors, such as forestry, agriculture, and fisheries, as well as related sectors.¹⁴

¹² Accelerating wood construction across Nordics and Russia: <u>https://nordregio.org/research/accelerating-wood-construction-</u> cross-nordics-and-russia/

across-nordics-and-russia/ ¹³ A just Green Transition in rural areas: local benefits from value creation: <u>https://nordregio.org/research/a-just-green-transition-</u> in-rural-areas-local-benefits-from-value-creation/ ¹⁴ BioBaltic: https://nordregio.org/research/biobaltic-nordic-baltic-cooperation-within-bio-circular-economy/

Discussion

This report shows that there are close to twenty (or more) universities, research institutes and collaboration platforms/networks operating within the studied landscapes (Appendix). In more detail there are seven universities, seven research institutes, one project platform and one research centre, but also collaboration/small scale projects in science parks and the studied Leader-area (Tornedalen).

Of the relevant research areas mapped in this study, 21 projects/collaborations focus wood, 21 focus non-wood, and 25 focus environmental issues. Topics including wood industry, and climate change and forests are most common. This is in line with the over-all increasing awareness of the consequences of a warmer climate and need for a circular biobased economy. Almost every project includes more than one aspect, so the distinction between topics is difficult to do. Many of the projects related to wood also includes consequences for other matters (i.e. non-wood, environment).

All seven landscapes have ongoing research and/or collaboration within wood, non-wood or environmental topics. Both regional and international research collaboration is common. Sweden and Finland have several actors performing relevant research in the studied landscapes, whereas the presence of actors in studied landscapes in Norway and Russia is less. Sør-varanger municipality has no University nearby, but NIBIO research institute performs many interesting projects in the area. The Tornedalen Leader-area might be the one with least contacts with university/research institutions, but can nevertheless be an interesting partner, adding experience from a local level.

This study clearly shows that there are a wide range of projects generating awareness of different bioeconomy aspects through research, learning and building networks across the Barents region. A developed collaboration between the studied landscapes, enables knowledge and exchange on different aspects of bioeconomy transition, multiple use of forests and symbiosis between countries.

Suggestion of cross-border collaborative activities and organisation/partners in full-scale project should take in consideration established contacts. It is vital to explore and develop good bioeconomy practises and local experience in the search for added value, innovation, job opportunities and the wellbeing of people in the local communities.



Appendix I: Summary of universities and research institutes

University/	Sustainable forest	able forest Wood Wood fiber Food from Nature Outdoor Reindeer Climate cha	d Wood fiber Food from Nature Outdoor	n Nature Outdo	Outdoor	Outdoor	Climate change	Heritage		nge Heritage	
institute	management	industry	industry	forests	tourism	recreation	herding	and forests	Nat	Cult	
SLU	1			1	1	1	1	1	1		
UmU				1	1	1	1	1	1	1	
Skogforsk	1	1						1			
INSARC							1			1	
RISE		1	1	1							
Univ of eastern Finland	1	1	1	1	1			1	1	1	
LUKE	1	1			1			1			
SYKE						1		1	1		
Karelia UAS	1	1								1	
Karelian Research Center	1										
Joensuu Science park		1									
Green hub								1			
EFI		1			1			1	1		
Petrozavodsk	1	1			1			1	1		
St Petersburg University		1							1		
NIBIO		1		1	1				1	1	
Tornedalen		1		1						1	
Rokua geopark				1	1						
Oulu university							1	1			
Nordregio	1	1						1			