

Pilot study of UNESCO Biosphere Reserves within the Barents Region and the possibilities for collaboration



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Foreword

Barents Euro-Arctic Council (BEAC) is a forum for intergovernmental cooperation on issues concerning the Barents region. The objective of Barents cooperation is to strengthen peace, stability and sustainable development by improving opportunities for cooperation across the region's borders. The chairmanship rotates every second year between Norway, Finland, Russia and Sweden.

The aim of the Working Group on Barents Forest Sector (WGBFS) is to promote 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 Climate Agreement.

The forest sector is an important part of the economic, social and environmental development in the Barents region and the forest plays a central role in the transition to a bio-based circular society.

Priorities for the Norwegian chairmanship of the Working Group on Barents Forest Sector are to focus on the forest-based bioeconomy and the transition to a low-carbon society. Norway has given priority to knowledge creation by involving research organizations present in the region and strive to strengthen regional cooperation in the Barents region. Searching for new platforms for regional cooperation is a part of this effort.

The pilot study was initiated in order to analyze the possibilities to use the Barents Cooperation as a potential platform to establish collaboration between Biosphere Reserve areas within the Barents region. UNESCO Biosphere Reserves are model areas for sustainable development, where new methods are tested and developed. Furthermore, we were interested in investigating how to use Biosphere Reserves as platforms to implement Barents Cooperation's activities, strengthen cooperation between the different Barents Cooperation working groups and highlight forest and forestry in the natural resource sector.

The pilot project would not been possible without support from the Swedish Forest Agency. We are very grateful for their contribution and input. We would also like to thank Anders Esselin, Man & Nature, and Johanna MacTaggart, national coordinator for the Swedish MAB program, for developing this pilot study.

Anne Gjerlaugsen Delphin, Chair of the Working Group on Barents Forest Sector

Table of Contents

Foreword	2
Summary.....	4
Introduction	5
<i>Aim of study.....</i>	<i>5</i>
The Man and Biosphere (MAB) programme.....	7
<i>The World Network of Biosphere Reserves.....</i>	<i>7</i>
<i>Country specific models</i>	<i>8</i>
Biosphere Reserves in the Barents Region	11
<i>Vindelälven-Juhttátahkka Biosphere Reserve (Sweden).....</i>	<i>11</i>
<i>North Karelia Biosphere Reserve (Finland)</i>	<i>16</i>
<i>Laplandskiy Biosphere Reserve (Russia)</i>	<i>21</i>
<i>Kenozersky Biosphere Reserve (Russia)</i>	<i>26</i>
<i>Vodlozersky Biosphere Reserve (Russia).....</i>	<i>31</i>
<i>Metsola Biosphere Reserve (Russia)</i>	<i>36</i>
Barents Euro-Arctic Cooperation	41
<i>Barents Euro-Arctic Council (BEAC).....</i>	<i>41</i>
<i>Barents Regional Council (BRC)</i>	<i>42</i>
<i>Thematic Working Groups.....</i>	<i>44</i>
Discussion and analysis	47
<i>International cooperation.....</i>	<i>48</i>
<i>Biosphere Reserves and the Barents Cooperation</i>	<i>49</i>
<i>Forests, forestry and bioeconomy.....</i>	<i>50</i>
<i>Funding possibilities / Financial instruments.....</i>	<i>52</i>
Conclusion.....	53
Acknowledgements.....	53
References	54

Summary

Cooperation in the Barents Euro-Arctic Region was launched in 1993 between Norway, Sweden, Finland and Russia. The Barents Euro-Arctic Cooperation is both intergovernmental (Barents Euro-Arctic Council – BEAC) and interregional (Barents Regional Council – BRC). The objective is to promote sustainable development in the region by serving as a forum for considering bilateral and multilateral cooperation.

Within the Barents Region there are six formally recognized UNESCO Biosphere Reserves: Vindelälven-Juhtátahkka in Sweden, North Karelia in Finland, and Laplandskiy, Kenozerskiy, Vodlozerskiy and Metsola in Russia. UNESCO Biosphere Reserves are model areas for sustainable development, where new methods are tested and developed. They are well suited for implementing the UN 2030 Agenda and the Sustainable Development Goals (SDGs) and promote societal transformative change.

By serving as platforms for collaboration and dialogue and by connecting stakeholders horizontally and vertically, the Biosphere Reserves bridge, connect and mediate communities towards sustainable practices for the future. To engage in local, regional, national and international cooperation, is the very essence of UNESCO's Biosphere Reserves.

Over the last 20 years there has been quite extensive cooperation between Finnish and Russian Biosphere Reserves in the Barents Region, and also between Biosphere Reserves and other actors in the border areas of Finland, Russia and Norway. This cooperation can be further developed and involve the youngest Biosphere Reserve in the Barents Region (Vindelälven-Juhtátahkka, Sweden) as well as Norwegian organizations and other actors who strive for sustainable development in the Region.

This pilot study clearly shows that many ideas, ambitions, goals and activities are congruent between the BEAC Working Group on Barents Forest Sector (WGBFS), and also other BEAC Working Groups, and the Biosphere Reserves in the Barents Region.

The Barents Euro-Arctic Cooperation can without any doubt be an important partner and a potential platform for the Biosphere Reserves in the Barents Region. And as model areas with vast experience of coordination, collaboration and dialogue, the Biosphere Reserves in the Barents Region can be core areas for implementing objectives and goals of the Barents Programme and the different BEAC Working Groups' activities, strengthen cooperation between the different BEAC Working Groups, and enhance the interregional cooperation within the Barents Region.

Introduction¹

The Barents Region covers 1,75 million km² and encompasses the northernmost regions of Norway, Sweden, Finland and north-west Russia. This includes the land along the coast of the Barents Sea, from Nordland in Norway to the Kola Peninsula in Russia. It reaches all the way to the Ural Mountains and Novaya Zemlya in the East, and South to the Gulf of Bothnia of the Baltic Sea and the great lakes Ladoga and Onega.

In total, there are approximately 5.3 million inhabitants in the Barents Region. The two largest cities are Arkhangelsk and Murmansk in Russia, with 349,000 and 307,000 inhabitants respectively. The largest Nordic city in the region is Oulu, Finland, with 197,000 inhabitants, followed by Umeå, Sweden, with a population of 121,000. The Barents region is also home to indigenous peoples. There are around 85,000 Sami inhabitants in Sápmi², around 7,000 Nenets in the Nenets Autonomous Okrug, Russia, and approximately 6,000 Vepsians in the Republic of Karelia, Russia.

The nature in the Region is globally unique, and the natural resources are vast. No other part of Europe contains as much forests, fish, minerals, oil and gas as the Barents Region. But the Region also has challenges such as remoteness, long distances within the Region as well as to the markets, climate change and sparse population. In addition, there is a demographic challenge in large parts of the region, with increasingly ageing populations and the younger population leaving for larger cities in the south.

To meet the challenges and opportunities facing the region, cooperation in the Barents Euro-Arctic Region was launched in 1993 between Norway, Sweden, Finland and Russia. The Barents Euro-Arctic Cooperation is both intergovernmental (Barents Euro-Arctic Council – BEAC) and interregional (Barents Regional Council – BRC). The objective of this cooperation is to promote sustainable development in the region by serving as a forum for considering bilateral and multilateral cooperation in the fields of economy, trade, science and technology, tourism, the environment, infrastructure, educational and cultural exchange, as well as projects particularly aimed at improving the situation of indigenous peoples in the North. The main tools for implementing policies of both BEAC and BRC are Working Groups which meet on regular basis and serve all fields of the cooperation.

UNESCO Biosphere Reserves also serve to promote sustainable development based on local community efforts and sound science. Today there are six formally recognized Biosphere Reserves within the Barents Region: Vindelälven-Juhtátahkka in Sweden, North Karelia in Finland, and Laplandskiy, Kenozersky, Vodlozersky and Metsola in Russia.

Aim of study

The aim of this pilot study has been to analyze the possibilities to:

- Establish collaboration between Biosphere Reserves within the Barents Region.

¹ Information mainly gathered from: BEAC website: <https://www.barentscooperation.org/en/About/Learn-More/Barents-region>; Kirkenes Declaration: https://www.barentsinfo.fi/beac/docs/459_doc_KirkenesDeclaration.pdf; Barents Regional Council 2018. The Barents Program 2019–2023: https://www.barentsinfo.fi/beac/docs/Barents_program_2019-2023_adopied_24_May_2018.pdf

² The traditional area of the Sami people that comprises parts of Norway, Sweden, Finland and Russia

- Strengthen the regional cooperation within the Barents Cooperation.
- Use Biosphere Reserves as platforms to implement BEAC Working Groups activities, strengthen cooperation between the different BEAC Working Groups, and highlight forest and forestry in the natural resource sector.

The views expressed in this publication are those of the authors. Implementation of any recommendations emerging from the study should be decided later in a normal procedure within BEAC, WGBFS and the Biosphere Reserves respectively after consideration of the final outcome of the study.

The Man and Biosphere (MAB) programme³

The Man and Biosphere Programme was launched by the UN agency UNESCO⁴ in the early 1970s. It is an intergovernmental scientific program that aims to establish a scientific basis for enhancing the relationship between people and their environments. It combines the natural and social sciences with a view to improving human livelihoods and safeguarding natural and managed ecosystems, thus promoting innovative approaches to economic development that are socially and culturally appropriate and environmentally sustainable.

The vision of the MAB programme is a world where people are conscious of their common future and their interactions with the planet, and act collectively and responsibly to build thriving societies in harmony within the biosphere. The MAB Programme and its World Network of Biosphere Reserves serve this vision within and outside Biosphere Reserves.

The mission for the period 2015–2025 is to:

- Develop and strengthen models of sustainable development through the World Network of Biosphere Reserves
- Communicate experiences and lessons learned, and facilitate the global diffusion and application of these models
- Support evaluation and high-quality management of Biosphere Reserves, strategies and policies for sustainable development and planning, and accountable and resilient institutions
- Help member states and stakeholders to achieve the Sustainable Development Goals (SDGs) by sharing experiences and lessons learned related to exploring and testing policies, technologies and innovations for the sustainable management of biodiversity and natural resources and mitigation and adaptation to climate change.

The World Network of Biosphere Reserves

Biosphere Reserves are internationally recognized sites established by countries and designated under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science. A Biosphere Reserve can be regarded as a bridge builder connecting strategic actors (owners, users etc.) in a specific area. In Biosphere Reserves new methods are tested and new knowledge is sought with the aim that Biosphere Reserves should demonstrate ways to ensure good conditions for thriving biodiversity in a natural area at the same time as local economies and communities are developing in a sustainable manner. The generated learning processes contributes to a better understanding of biosphere resources.

Biosphere Reserves are ideal to test and demonstrate innovative approaches to sustainable development from local to international scales and unique tools for international cooperation. The World Network of Biosphere Reserves currently counts 714 Biosphere Reserves in 129 countries, including 21 transboundary Biosphere Reserves, all over the world.

³ UNESCO website. Man and the Biosphere (MAB) Programme: <https://en.unesco.org/mab>; MAB Programme 2016. Lima Action Plan: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Lima_Action_Plan_en_final.pdf

⁴ United Nations Educational, Scientific and Cultural Organization

To provide local solutions to global challenges, Biosphere Reserves involve local communities and all interested stakeholders in planning and management. They integrate three main "functions":

- Conservation of biodiversity and cultural diversity
- Economic development that is socio-culturally and environmentally sustainable
- Logistic support, underpinning development through research, monitoring, education and training

These three main functions are pursued through the Biosphere Reserves' three zones:

- Core Areas: Strictly protected areas that contribute to the conservation of landscapes, ecosystems, species and genetic variation.
- Buffer Zones: Surround or adjoin the core areas that are used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education.
- Transition Areas: The areas where communities foster socio-culturally and ecologically sustainable economic and human activities.

A study from 2017⁵ showed that the design of the Biosphere Reserves and how they work is well suited for implementing the UN 2030 Agenda and the Sustainable Development Goals (SDGs). The 2030 Agenda show the direction of the development of a sustainable future on a planetary scale and the Biosphere Reserves show how to achieve the goals in a local context. By serving as platforms for collaboration and dialogue and by connecting stakeholders horizontally and vertically, the Biosphere Reserves bridge, connect and mediate communities towards sustainable practices for the future.

Country specific models

Biosphere Reserves are nominated by national governments and designated under the intergovernmental MAB Programme by the Director-General of UNESCO following the decisions of the MAB International Coordinating Council (MAB ICC). They remain under the sovereign jurisdiction of the states where they are located. Although there are common and general features for all Biosphere Reserves, organization and management of Biosphere Reserves and national MAB Programmes are to some extent country specific.

Sweden⁶

The Swedish MAB Programme consists of a national Program Committee, a national MAB Coordinator, a Biosphere Council and seven Biosphere Reserves. Vindelälven-Juhtttáhka is the only Swedish Biosphere Reserve in the Barents Region. The Program Committee is the quality assurance entity between Sweden and the MAB Secretariat in UNESCO and it plays an important role as a node and contact mediator in the national and international MAB network by facilitating cooperation. The Swedish Environmental Protection Agency hosts the

⁵ Heinrup, M. and Schultz, L. 2017. Swedish Biosphere Reserves as Arenas for Implementing the 2030 Agenda. Swedish Environmental Protection Agency, Report 6742: <http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6742-7.pdf?pid=19696>

⁶ Swedish MAB Programme: <https://biosfarprogrammet.se>

Program Committee upon request of the National Commission for UNESCO. The Program Committee consists of the Environmental Protection Agency (chair), the Swedish Forest Agency and Stockholm Resilience Centre. The National MAB Coordinator is co-opted in the committee.

The Biosphere Council is constituted by the seven Biosphere Reserve coordinators and the national MAB coordinator, who is also its chair. The Council is the operational implementing body and has the task of contributing to the long-term perspectives and stability of the program's development. This is achieved by initiating, supporting and facilitating projects in Biosphere Reserves and Biosphere Candidate areas. Communication, networking and exchange of experience are central to the Swedish MAB Programme. Meetings, conferences and workshops are organized annually, preferably as a co-arrangement and linked to a Biosphere Reserve or a Biosphere Candidate area.

Finland⁷

Previously there has been a national MAB committee in Finland, but not today due to lack of resources. Thus, the two existing Finnish Biosphere Reserves – North Karelia and Archipelago Sea – work very independently with their own programs. Only North Karelia is situated within the Barents Region.

Russia⁸

The Soviet Committee for the UNESCO Man and the Biosphere (MAB) Program was established in 1976 by a joint decision of the Academy of Sciences, the State Committee for Science and Technology and the USSR Ministry of Foreign Affairs (since 1992, the Russian MAB Committee became its successor). It was tasked to ensure the inclusion of Russian environmental specialists into 14 international MAB projects and in the World Network of Biosphere Reserves. Over the past years 47 biosphere reserves have been created in Russia. Of the existing Russian Biosphere Reserves the following four is situated within the Barents Region: Laplandskiy, Kenozersky, Vodlozersky and Metsola.

The Russian MAB Committee is governed by the Russian Academy of Sciences. After splitting of the Soviet Union (USSR) the Russian MAB Committee has no funding and no strategy for further development. Activities depend on initiatives of directors of individual Russian Biosphere Reserves.

Norway⁹

Norway joined the UNESCO MAB Programme in 1975. The activities were organized as a national research program with a governing board, and the research was largely concentrated to Svalbard. This continued until 1984 when the activities ceased. In 2013 a

⁷ Personal comment by Jukka-Pekka Flander, Ministry of Environment, Finland

⁸ Russian Academy of Sciences website. Russian committee for UNESCO program "The Man and the Biosphere" (MAB): <http://sev-in.ru/en/russian-committee-unesco-program-man-and-biosphere-mab>

⁹ Nordhordland UNESCO Biosphere: <http://www.nordhordlandbiosphere.no/biosfaeresatsinga-i-norge.390923.nn.html?cat=368814>

process started to make a Biosphere Reserve in Nordhordland, and in 2019 Norhordland was appointed Norway's very first Biosphere Reserve by UNESCO. In 2015, the Ministry of Climate and the Environment appointed a national committee to assist in the implementation of the UNESCO program "Man and the Biosphere" (MAB) in Norway. The Norwegian Environment Agency is the secretariat for the MAB committee. Currently there are no Norwegian Biosphere Reserves or Biosphere Reserve candidates in the Barents Region.

Biosphere Reserves in the Barents Region

Within the Barents Region there are six formally recognized UNESCO Biosphere Reserves: Vindelälven-Juhtátahkka in Sweden, North Karelia in Finland, and Laplandskiy, Kenozersky, Vodlozersky and Metsola in Russia.

Vindelälven-Juhtátahkka Biosphere Reserve (Sweden)¹⁰

Straddling the Arctic Circle, the Vindelälven-Juhtátahkka Biosphere Reserve encompasses the Vindel River catchment area, which is one of Europe's few unregulated, free flowing river systems. The Biosphere Reserve was inaugurated in 2019 and stretches across Sweden, all the way from the Norwegian border in the west to the Bothnian Sea in the east (Figure 1). It is a big Biosphere Reserve covering approximately 1,3 million hectares (core areas 20,865 ha, buffer zones 402,707 ha, and transition areas 905,546 ha) and large parts of six municipalities: Sorsele, Arjeplog, Lycksele, Vindeln, Vännäs and Umeå.

The north-western part of Vindelälven-Juhtátahkka Biosphere Reserve is mountainous, while forests cover its central part, and the south-east is a coastal area. In total, more than half of the area is covered by forest. Vindelfjällen Nature Reserve, one of the largest Nature Reserves in Europe, is partly included. Juhtátahkka means migration route in Ume Sami language as the Vindel River and its surrounding lands have always functioned as a migration route for people, plants and animals – in both directions between the mountains and the sea.

The region is home to two distinct cultural communities, Swedish and Sami, and their rich cultural traditions. Reindeer husbandry is an exclusive right for Sami people and enjoys official protection as a traditional activity of public interest. Of approximately 110,000 inhabitants within the boundaries of the Biosphere Reserve, about 92.5% live in the coastal area.

Almost half of the forest land in the Biosphere Reserve, and all agricultural properties, are owned by private citizens. Other landowners in the area are the Swedish state (Nature Reserves and other protected areas), private forest companies, the Church of Sweden and municipalities. Land use activities practices in all zones of the Biosphere Reserve include reindeer husbandry, tourism and outdoor recreation, hunting and fishing. Forestry, farming, mining and wind power are important economic activities in the transition area. By the Right of Public Access¹¹, everyone has the right to roam freely just about anywhere in the countryside as long as they do not disturb or destroy.

Research and higher education have a high profile in the region. There are two major universities within the Biosphere Reserve, Umeå University¹² and the Swedish university for

¹⁰ Information is mainly gathered from: Vindelälven-Juhtátahkka Biosphere Reserve web site: <https://vindelalvenjuhtatdahka.se>; UNESCO website <https://en.unesco.org/biosphere/eu-na/vindelalven-juhtatdahka>; and then controlled and supplemented by Elin Bergarp and Daniela Nedelcheva, coordinators of Vindelälven Juhtátahkka Biosphere Reserve

¹¹ Under the Right of Public Access, nobody needs permission to cross private or state land. However, the right does not include any substantial economic exploitation, such as hunting or logging, or disruptive activities, such as making fires and driving off-road vehicles.

¹² <https://www.umu.se/en/>

Agricultural Sciences¹³. There are also a number of research institutes, e.g. the Institute for Subarctic Landscape Research (INSARC)¹⁴. 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.

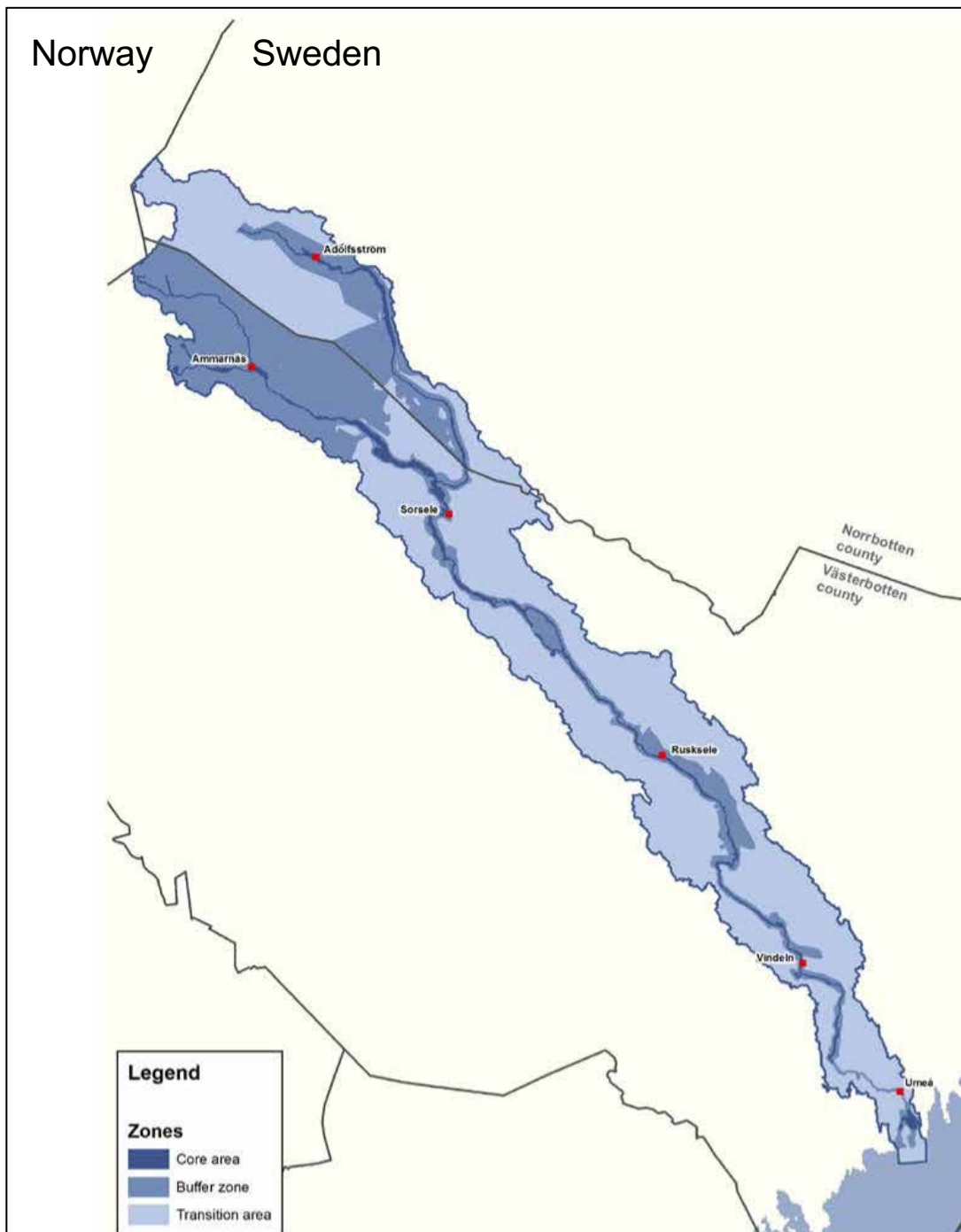


Figure 1. Vindelälven-Juhtátahkka Biosphere Reserve stretches across Sweden, all the way from the Norwegian border in the west to the Bothnian Sea in the east. It is a large Biosphere Reserve, covering approximately 1,3 million hectares.

¹³ <https://www.slu.se/en/>

¹⁴ <https://silvermuseet.se/en/research/>

Priorities and focus areas

Vindelälven-Juhtatahka Biosphere Reserve's mission is to be a model area for sustainable development – today and for future generations. To constitute an arena for implementation of United Nation's 2030 Agenda for Sustainable Development is at its core. The principal objective is to support, preserve and develop the rich and unique nature and culture in Vindelälven-Juhtatahka so that everyone can live, experience and thrive in both city and countryside, today and in the future.

The Biosphere Reserve has six focus areas, these are:

- Diversity of cultural expressions
- Tourism and outdoor recreation for everyone
- Successful reindeer husbandry
- Fishing in living/healthy lakes, streams and seas
- Living landscape
- Development of local communities

There are also five horizontal criteria: Broad collaboration, Local involvement and democracy; Gender equality; Diversity; Learning for sustainable development; and Climate change.

Organization and practice

Vindelälven-Juhtatahka Biosphere Reserve is organized as an economic association led by a board with 17 + 17 members representing different interests in the area (e.g. authorities, municipalities, villages, industry organizations, Sami villages, universities and non-governmental organizations). It is financed by the Swedish Agency for Marine and Water Management, the county administrative boards of Västerbotten and Norrbotten, the participating municipalities and WWF Sweden. Practical management is executed by a secretariat with employed staff, including a coordinator, 1–2 project managers and a communication officer. There is also a working group with representatives from the municipalities in the Biosphere Reserve and a group of "biosphere ambassadors". In addition, a lot of local people are engaged every year in projects and events associated to the Biosphere Reserve.

Local and regional collaboration is manifested by the broad representation of different organization and interests in the board of Vindelälven-Juhtatahka Biosphere Reserve. There is also cooperation on different levels and with different intensity with other actors in the area, e.g. museums, schools and local associations for culture, sports and businesses. On a national scale, there is a developed cooperation and exchange with other Swedish Biosphere Reserves within the framework of the Biosphere Reserve program of Sweden.

Vindelälven-Juhtatahka Biosphere Reserve strives to fulfil its mission and objective by being leading or associate partner in all kinds of projects, funding local projects and events, coordinating and facilitating activities and dialogues, and by collaborating with individuals, organizations, enterprises and authorities. Communication about sustainable development

and good examples, also those in which the Biosphere Reserve organization is not directly involved, is a main function and responsibility of the Biosphere Reserve.

Activities, examples

- *Local school in a Biosphere Reserve (2018– ongoing)*. A project that aims to highlight the village of Rusksele's history and future, capture the school children's interest for the area and the local community, and to let the children voice their thoughts about sustainability. Lead partner is Rusksele local heritage association. Funded through Vindelälven-Juhttáahkka Biosphere Reserve.
- *Bärkraft/Bærekraft (2019–2021)*¹⁵. The project aim is to develop a more sustainable business community with a special focus on the tourism industry. Lead partner is Visit Hemavan Tärnaby, Sweden, in close cooperation with Gold of Lapland, Sweden, and Helgeland Reiseliv, Norway. Funded through Interreg Botnia-Atlantica under the European Regional Development Fund, Region Västerbotten and Nordland Fylkeskommune.
- *Sustainable development of bicycle tourism in the southern part of Vindelälven-Juhttáahkka (2020)*¹⁶. The project's goal is to conceptualize cycling in the biosphere reserve (the Umeå region) from a sustainability perspective with regard to housing, landowners, nature and visitors. Lead partner is Visit Umeå AB. Funded through the Swedish Agency for Economic and Regional Growth, the foundation Umeå River Valley, Umeå municipality, Vindelä municipality, Vännäs municipality and Vindelälven-Juhttáahkka Biosphere Reserve.
- *Certification of sustainable fishing for trout and char in mountain lakes (2018–2020)*. A scientific project with aim to study and evaluate management and long-term sustainable extraction of mountain fish stocks and how climate change affect fish production in mountain lakes. Lead partner was Umeå university. Funded through Vindelälven-Juhttáahkka Biosphere Reserve.
- *SHAPE – Sustainable Heritage Areas: Partnerships for Ecotourism (2017–2020)*¹⁷. The aim of SHAPE was to enable authorities, businesses and communities to develop innovative approaches for ecotourism initiatives which preserve, manage and create economic value from local assets. Lead partner was the University of Highlands and Island, Scotland. Vindelälven-Juhttáahkka, North Karelia, Western Ross and Nordhordland Biosphere Reserves were associated partners. Funded through the Northern Periphery and Arctic Programme (Interreg) under the European Regional Development Fund.

¹⁵ Projekt Bärkraft/Bærekraft: <https://www.facebook.com/ProjektBarkraft/>

¹⁶ Visit Umeå får stöd för hållbart cykelprojekt: <https://www.mynewsdesk.com/se/visitumea/pressreleases/visit-umeaa-faar-stoed-foer-haallbart-cykelprojekt-2954107>

¹⁷ Shape – Sustainable heritage areas: partnerships for ecotourism: <https://shape.interreg-npa.eu>

- *Biosphere Forests for the Future (2018)*¹⁸. Biosphere Forests for the Future was a preparatory study that aimed to emphasize UNESCO Biosphere Reserves as model regions for climate adaptation in forest landscapes. Biosphere Reserves from different climate and vegetation regions participated, e.g. Vindelälven-Juhtatahka and North Karelia Biosphere Reserves. Lead partner was the Swedish MAB programme. Funded through the Swedish Forest Agency and Sweden's National Forest Programme.
- *Pilot study on reindeer fodder – collaboration between farmers and reindeer herders (2018–2019)*. A project with the aim of improving the conditions for reindeer husbandry and agriculture, and to create better relations between farmers and reindeer herders. Lead partner was the Federation of Swedish Farmers (LRF) in close cooperation with Gran and Svaipa Sami villages. Funded through Vindelälven-Juhtatahka Biosphere Reserve.
- *Pilot study of Road 363 (2017–2019)*¹⁹. A project with the aim of preparing a test of a sustainable transport and mobility solution for visitors and food in the biosphere reserve. Lead partner was Region Västerbotten. Funded through the Swedish Agency for Economic and Regional Growth, the Swedish Transport Administration and Region Västerbotten.
- *Meeting point Man and Biosphere (2017)*. The project aim was to initiate and develop a cooperation between Vindelälven-Juhtatahka and North Karelia Biosphere Reserves with a focus on partnership and research. The project included a visit by a delegation from Vindelälven-Juhtatahka Biosphere Reserve to North Karelia Biosphere Reserve. Lead partner was Destination Ammarnäs Economic Association. Funded through Vindelälven-Juhtatahka Biosphere Reserve.
- *Fauna tourism (2016)*. The aim of the project was to study large carnivore tourism on site in North Karelia, Finland (at the companies Erä-Eero and Arcticmedia) to evaluate if large carnivore tourism can be developed within Vindelälven-Juhtatahka Biosphere Reserve, and whether large carnivore tourism can serve as a conflict reducing activity between large carnivores and reindeer husbandry. The project included a visit by a delegation (a board member and four reindeer herders) from Vindelälven-Juhtatahka to North Karelia Biosphere Reserve. Lead partner was WWF Sweden. Funded through WWF Sweden.

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, Vindelälven-Juhtatahka Biosphere Reserve cooperate with other Biosphere Reserves within UNESCO's World Network of Biosphere Reserves. According to the coordinators of Vindelälven-Juhtatahka Biosphere Reserve, the limited cooperation with

¹⁸ The Swedish MAB Programme. Biosphere Forests for the Future: <https://biosfarprogrammet.se/projekt/biosphere-forest-for-the-future/>

¹⁹ <https://regionvasterbotten.se/kollektivtrafik/mobilitet-och-transporter-for-besoksnaring-efter-vag-363-vindelalven-juhtatahka-mobeji>

other Biosphere Reserves in the Barents region can perhaps be explained by the short period of time the area has been a Biosphere Reserve, limited resources, and lack of knowledge.

Despite a very active engagement in the Barents Euro-Arctic Cooperation by the County Administrative Board of Västerbotten and other regional authorities, universities and organizations, there has been very little communication or cooperation between the Vindelälven-Juhtatahka Biosphere Reserve and the Barents Euro-Arctic Cooperation. According to the coordinators the main reason is lack of knowledge.

The coordinator visions a big potential for fruitful cooperation in the future with other Biosphere Reserves in the Barents Region and different bodies within the Barents Euro-Arctic Cooperation, e.g.

- Sustainable development – the big picture
- Youth exchange – great opportunities as most youths are comfortable in the digital world and skilled using social media
- Research schools for young people
- Exchange and cooperation between indigenous people
- Climate change – including mitigation and adaptation
- Research and development – exchange and cooperation between research groups and initiatives at universities, research institutions and research infrastructures, perhaps in the fields of forests and bioeconomy.
- Multiple use of forests, including food from forests (e.g. berries, mushrooms, meat from game and reindeer, fish etc.)
- Tourism and outdoor recreation

North Karelia Biosphere Reserve (Finland)²⁰

North Karelia Biosphere Reserve was established in 1992. It is officially composed of Lieksa city, Ilomantsi municipality and Joensuu city Tuupovaara district, but Biosphere Reserve activities occur in the entire North Karelian province. After an enlargement in 2009, the Biosphere Reserve now covers an area of approximately 800,000 hectares (core areas 24,953 ha, buffer zones 22,779 ha, and transition areas 750,000 ha) (Figure 2).

The Biosphere Reserve encompasses a rich blend of nature. There are approximately 2,000 lakes, including Lake Pielinen which is the fourth largest lake in Finland, within the boundaries of the Biosphere Reserve. There is also an impressive stretch of forest land covering 89% of the terrestrial area. Magnificent landscapes, such as Koli National Park, is found within the Biosphere Reserve. Besides nature, the distinctive rich Karelian culture can be solely experienced within the region.

²⁰ Information is mainly gathered from: North Karelia Biosphere Reserve Website: <https://www.kareliabiosphere.fi>; UNESCO website: <https://en.unesco.org/biosphere/eu-na/north-karelian>; and then controlled and supplemented by Vilma Lehtovaara and Timo J. Hokkanen, coordinators of North Karelia Biosphere Reserve

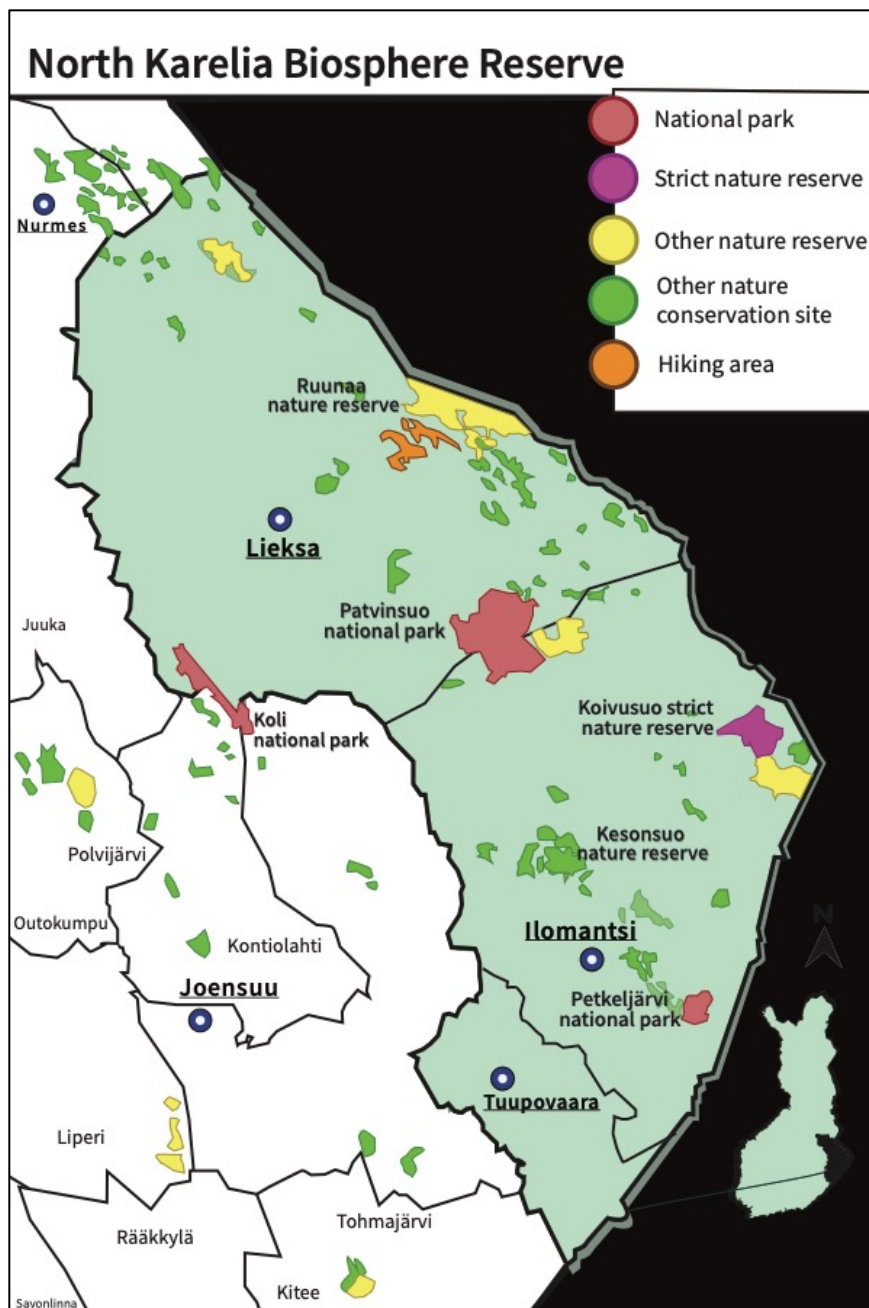


Figure 2. The map shows the protected areas of North Karelia biosphere reserve. The named areas represent the core areas of the biosphere reserve. Some of the other protected areas close to the core areas create the buffer zones. The rest of the biosphere reserve forms the transition zone (light green).

North Karelia Biosphere Reserve has approximately 18,000 inhabitants and the natural resources is of key importance for the people in the region. By the Right of Public Access, everyone has the right to roam freely just about anywhere in the countryside as long as they do not disturb or destroy. Tourism, outdoor recreation, hunting, fishing, and the collection of non-timber forest products such as berries and mushrooms, are common practices in all zones of the Biosphere Reserve. In the transition zones, forestry and peat industry are important activities. 52% of the forest land is owned by private people, 20% state, 23% forest companies and 5% others. Regardless of the structural change of modern forestry, it still has a substantial effect on employment and regional economy in North Karelia.

In terms of energy self-sufficiency and the share of renewable energy, North Karelia already exceeds the EU and national climate targets. The regional economy is supported by decentralized energy production based on renewable energy sources. North Karelia Biosphere Reserve shares a common vision with its partner network to make North Karelia a carbon neutral and oil-free region.

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)²¹, Karelia University of Applied Sciences²², Natural Resources Institute Finland (Luke)²³, Finnish Environment Institute (Syke)²⁴, Joensuu Science Park²⁵, and the European Forest Institute (EFI)²⁶.

Priorities and focus areas

Core themes are

- Nature conservation with people in mind
- Sustainable development by local capacity building
- Vitality for the region from sustainable tourism
- Visibility for the region through suitability

Objectives are

- Spreading good practices of sustainable development
- Supporting biodiversity protection and sustainable use of nature resources
- Improving the relationship of humans and nature through positive nature experiences
- Bringing strength to the region from networking
- Capacity building of sustainable development through cooperation with local education and research institutes
- Acting as project partner and platform for brave piloting
- Bringing visibility to the area and partners through sustainability
- Enhancing the sense of ownership of biosphere reserve through positive communication that brings out the local uniqueness

The Biosphere Reserve also has five cross-sectional themes: Sustainable development; locality (and its uniqueness); wellbeing; internationality; and cooperation.

Organization and practice

North Karelia Biosphere Reserve is governed by a steering committee with 17 persons representing different organizations and interests, e.g. universities, municipalities, cities,

²¹ <https://www.uef.fi/en/unit/school-of-forest-sciences>

²² <http://www.karelia.fi>

²³ <https://www.luke.fi/en/research/boreal-green-bioeconomy/>

²⁴ <https://www.syke.fi/en-US>

²⁵ <https://www.tiedepuisto.fi>

²⁶ <https://efi.int/joensuu>, <https://www.businessjoensuu.fi/en/operational-environment/spearheads-of-expertise/european-forest-institute-efi/>

ministries, state-owned enterprises and tourism organizations. The Biosphere Reserve secretariat is housed by the regional office of the Ministry of Environment, the Ministry of agriculture and forestry, and the Ministry of Economic Affairs and Employment. As the Biosphere Reserve is not a legal body, its projects and other operations are financed by the Centre for Economic Development, Transport and the Environment. During the last ten years there has been between 3 and 11 employees of which 1–2 permanently employed. In addition to employed staff, a lot of local people are engaged every year in projects and events associated to the Biosphere Reserve.

Local and regional collaboration is manifested by the Biosphere Reserve's Partnership Cooperation Network, which consists of various private and government institutions, companies, local and international collaborations. This network is designed to support sustainable development activities in addition to strengthening already existing cooperation networks. Information and joint marketing are developed, hence allowing partners to achieve visibility regionally, nationally and internationally. Proper care and conservation of nature, as well as sustainable development strategies are the approaches by the network. On a national scale, there is cooperation and exchange with the Finnish Biosphere Reserve Archipelago Sea.

The Biosphere Reserve's sustainable development model combines regional projects, interdisciplinary research and extensive local-oriented cooperation. The Biosphere Reserve's role is often to facilitate exchange of ideas and knowledge, coordinate cooperation between involved organization, practical involvement in projects, and production and dissemination of sustainability information.

Activities, examples

- *SciFest*²⁷. An annual international science and technology festival in Joensuu, Finland. The festival brings together thousands of schoolkids, high school students, and teachers from around the world to discover new experiences and learn about science, technology and the environment. Lead organizer is Joensuu Science Society and University of Eastern Finland. North Karelia Biosphere Reserve is an associated partner.
- *BIOKARELIA (2019–2022)*^{28 29}. The aim of the project is to develop practical tools for biodiversity hotspots preservation via mapping biodiversity values, monitoring and forecasting occurrence of forest fires and wood harvesting along the Russian-Finnish border. The project is coordinated by the Natural Resources Institute Finland, Luke. North Karelia and Metsola Biosphere Reserves are associated partners. Funded by Karelia CBC³⁰.

²⁷ SciFest website: http://www.scifest.fi/about_scifest_en.php

²⁸ BOKARELIA – KA5051: <https://kareliacbc.fi/en/projects/biokarelia-ka5051#home>

²⁹ Biokarelia project contributes to the protection of biodiversity in the Finnish-Russian border region:

<https://www.luke.fi/en/news/biokarelia-project-contributes-to-the-protection-of-biodiversity-in-the-finnish-russian-border-region/>

³⁰ Karelia CBC is a cross-border cooperation programme creating an attractive region for people and business. The programme is financed by the European Union, the Russian Federation and the Republic of Finland.

- SUPER – Sustainability Under Pressure: Environmental Resilience in natural and cultural heritage areas with intensive recreation (2019–2021)³¹. The aim of the project is to deal with weak or uncertain environmental resilience of four unique UNESCO natural and cultural heritage sites in the Republic of Karelia and Finland with high recreational load. Lead partner is the non-profit partnership Centre for Problems of the North, Arctic and Cross-border Cooperation – North-Centre. North Karelia and Vodlozerskiy Biosphere Reserves are associated partners. Funded by Karelia CBC.
- *NatureBeST – Green Nature Based Solutions in Tourism to reduce negative impact on the environment (2018–2021)*³². This project aims at reducing negative environmental impacts of tourism enterprises in Russia and Finland by providing practical technological and soft solutions. Lead partner is Karelian Regional Institute of Continuing Professional Education of Petrozavodsk State University. North Karelia Biosphere Reserve is an associated partner. Funded by Karelia CBC.
- *SHAPE – Sustainable Heritage Areas: Partnerships for Ecotourism (2017–2020)*³³. North Karelia and Vindelälven-Juhtátahkka Biosphere Reserves were associated partners (previously described under Vindelälven-Juhtátahkka Biosphere Reserve).
- *Biosphere Forests for the Future (2018)*. North Karelia and Vindelälven-Juhtátahkka Biosphere Reserves were associated partners (previously described under Vindelälven-Juhtátahkka Biosphere Reserve).
- *Eco-efficient tourism (2012–2014)*³⁴: This project aimed at improving eco-efficiency and visibility of tourism services in Russia (Republic of Karelia, Lake Ladoga and Syamozero areas) and Finland (North Karelia province, Ruunaa and Ilomantsi areas). Lead partner was the non-profit partnership Centre for Problems of the North, Arctic and Cross-border Cooperation – North-Centre. North Karelia Biosphere Reserve was an associated partner. Funded by Karelia CBC.
- *RoK-FOR – Sustainable Forest Management Providing Renewable Energy, Sustainable Construction and Bio-based Products (2010–2013)*³⁵: RoK-FOR was a Coordination Action of five regional research-driven clusters from six European countries: Germany (Baden-Württemberg); Finland (North Karelia); Spain (Catalonia), and the cross-border clusters from Croatia-Serbia and France-Spain (Aquitaine-Basque). The objective of RoK-FOR was to determine and start strong cooperation between research-driven, forestry-based clusters operating on trans-national and inter-regional levels. Coordinator was the Centre of Economic Development, Transport and the Environment/North Karelia Biosphere Reserve.

³¹ SUPER KA5022: <https://kareliacbc.fi/en/projects/supersustainability-under-pressure-environmental-resilience-natural-and-cultural-heritage>

³² NatureBeST KA5041: <https://kareliacbc.fi/en/projects/ka5041-green-nature-based-solutions-tourism-reduce-negative-impact-environment-naturebest#home>

³³ Shape – Sustainable heritage areas: partnerships for ecotourism: <https://shape.interreg-npa.eu>

³⁴ Eco-efficient tourism KA358: <https://www.cbcpojects.eu/hankeportaali/eco-efficient-tourism-ka358/>

³⁵ European Forest Institute, EFI, website. RoK-FOR: <https://efi.int/projects/rok-sustainable-forest-management-providing-renewable-energy-sustainable-construction-and>

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, North Karelia Biosphere Reserve cooperate with other Biosphere Reserves within UNESCO's World Network of Biosphere Reserves. There are also a lot of cooperation with different areas and different actors in Norway and Russia within the framework of Green Belt of Fennoscandia³⁶. Over the years, North Karelia Biosphere Reserve has been deeply involved in cross-border cooperation between the Finnish and Russian Karelia, and the Biosphere Reserve has developed an extensive collaboration with the Russian Biosphere Reserves Metsola and Vodlozersky.

North Karelia is a member of the Barents Euro-Arctic Cooperation since 2019, and the coordinator of North Karelia Biosphere Reserve is a delegate in the Working Group for Environment and the subgroup Nature and Water. The activities are only starting to take shape. One example of a cooperation project that might be is an initiative by the Finnish Environment Institute, SYKE. The institute has made an application for continuing the BPAN³⁷ project, and North Karelia Biosphere Reserve has promised to be a partner if the new project gets funding.

The coordinators of North Karelia Biosphere Reserve see a lot of possible and desirable future cooperation with other Biosphere Reserves in the Barents region and the Barents Euro-Arctic Cooperation, e.g.:

- Sustainable development – the big picture
- Youth exchange
- Climate change
- Research and development
- Multiple use of forests, including food from forests (e.g. berries, mushrooms, meat from game and reindeer, fish etc)
- Tourism and outdoor recreation

Laplandskiy Biosphere Reserve (Russia)³⁸

Laplandskiy Biosphere Reserve is located in the central part of the Kola Peninsula about 120 km south of the city of Murmansk. It was designated in 1985 and cover an area of approximately 330,000 hectares (core areas 278,500 ha, buffer zones 13,800 ha, and transition areas 37,200 ha) (Figure 3). The core area is constituted by Laplandskiy Nature Reserve which is a "strict Nature Reserve" since 1930, abolished in 1951, and then reestablished in 1957.

³⁶ The Green Belt of Fennoscandia is a strip of land stretching 1,350 kilometres along the borders of Norway, Russia and Finland from the Barents to the Baltic Sea. The core of the area is a network of protected areas along the borders. In 2010 a Memorandum of Understanding for cooperation in developing the Green Belt of Fennoscandia was signed by the ministers of environment of the three countries. This memorandum facilitates ecologically, economically and socially sustainable transboundary cooperation. Read more: <https://www.europeangreenbelt.org/european-green-belt/fennoscandia/>

³⁷ Barents Protected Area Network, BPAN: www.bpan.fi/en/

³⁸ The information is mainly gathered from UNESCO's website (<https://en.unesco.org/biosphere/eu-na/laplandskiy>); Laplandskiy Biosphere Reserve website (<http://www.laplandzap.ru/pages/68/>); Wikipedia (https://en.wikipedia.org/wiki/Lapland_Biosphere_Reserve); and then controlled and supplemented by Yulia Fisher, Laplandskiy State Nature Biosphere Reserve.

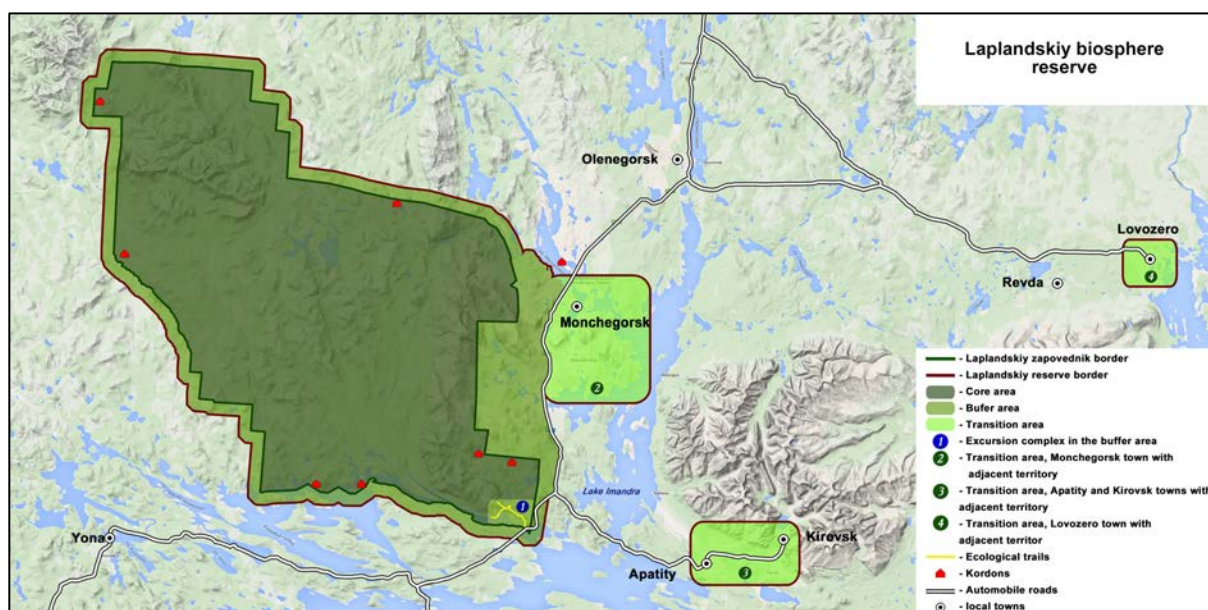


Figure 3. Laplandskiy Biosphere Reserve with the different zones.

Old-growth forests of pine, spruce and birch cover 55 % of the area. Another 28% is covered with mountain tundra. In between, there is a well-marked transition zone of birch woodland. Mires, rivers and lakes cover the rest of the Biosphere Reserve. There are permafrost patches in the mountains, but the climate is moderated by the influence of the Gulf Stream. As the Laplandskiy Nature Reserve is located 120–180 km north of the Arctic Circle, polar nights last 25 days and the 'white nights' season 100 days.

The main purpose of establishing Laplandskiy Nature Reserve was to preserve the northern taiga, the mountain tundra and the wild deer population. The history of the organization and formation of the Nature Reserve is inextricably linked with the life of the Sami, and the name "Laplandskiy" accurately defines the essence of the reserve – the keeper of not only nature, but also the history of the region. In the Biosphere Reserve the Sami names of mountains, lakes, rivers and other landscape characteristics are associated with oral legends and traditions of the Sami people. Some Sami monuments have also survived, in particular seids, which are sacred stones that in the past functioned as patrons of hunting and fishing.

No people live in Laplandskiy Nature Reserve. However, the town of Monchegorsk, with approximately 40,000 inhabitants, is located in one of the Biosphere Reserve's transition areas. The use of natural resources in the buffer zone is limited. There are some industrial activities within the Biosphere Reserve's transition areas, such as geological prospecting, stone mining and hydroelectric power production, but no forestry. The land in the core and buffer zones belong to the State. The land in the transition areas is owned by several parties: 90 % belongs to municipalities (Monchegorsk, Lovozero, Apatity-Kirovsk), 5 % belongs to industrial enterprises, 3 % belongs to State, and 2 % are owned by private citizens.

As a strict Nature Reserve, Laplandskiy Nature Reserve is mostly closed to the general public, although scientists and those with environmental education purposes can make arrangements with the park administration for visits. There are also a number of ecotourist

routes that are open to the public. Excursions are arranged for groups through application for permits to be obtained in advance. Ecotourism has grown and today more than 5,000 people visit Laplandskiy Nature Reserve every year. In Russia, there is no right of common access, but in practice it is allowed for both inhabitants and visitors to roam freely and do things like berry-picking in the nature – except in strict Nature Reserves and National Parks where you need a permit.

The Biosphere Reserve has been cooperating for many years with Kola scientific center (Apatity)³⁹, Polar-Alpine botanical garden (Kirovsk)⁴⁰, Murmansk state university⁴¹ and Stieglitz Art Academy⁴². Scientists carry out research as well as designing infrastructure projects.

Priorities and focus areas

In accordance with the Seville Strategy⁴³ adopted in 1995, the main functions of the Biosphere Reserve are the following:

- Conservation of natural heritage, i.e. preservation of genetic resources, species, and ecosystems
- Development, i.e. fostering of sustainable economic and human development
- Logistic support

It is recognized that there is an insufficient level of knowledge among people about the indigenous Sami population, history and culture of the Kola Peninsula. In addition, school-age children have been found to have poor knowledge about Northern nature and its importance for human life, as well as environmental issues.

Organization and practice

The Biosphere Reserve has a Coordination Council, which includes the Director of Laplandskiy Nature Reserve, Deputy Governor of the Murmansk Region, representatives of environmental and research organizations, representatives of government bodies, heads of municipalities and heads of industrial enterprises. Laplandskiy Biosphere Reserve is managed by the Federal state budget organization “Laplandskiy nature reserve”, which has executive authority in the core areas and the buffer zones of the Biosphere Reserve. The heads of the municipalities are responsible for activities in the cooperation zone. The administration of Laplandskiy Nature Reserve / Biosphere Reserve is divided into six departments: conservation (40 employees), science (6), ecological education (4), tourism (6), accounting (6), and logistic support (10). In total there are approximately 80 employees in the Nature Reserve / Biosphere Reserve administration.

At local and regional level, the coordinating council ensure collaboration. The administration of Laplandskiy Nature Reserve / Biosphere Reserve also cooperates with the Kola Mining

³⁹ <https://www.uarctic.org/member-profiles/russia/8541/federal-research-center-kola-science-center-of-the-russian-academy-of-sciences>

⁴⁰ <https://visitmurmansk.info/en/places/polar-alpine-botanical-garden-institute/>

⁴¹ <https://www.uarctic.org/member-profiles/russia/8600/murmansk-arctic-state-university>

⁴² <https://www.ghpa.ru/international>

⁴³ MAB Strategy 2015–2025, page 5: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/MAB_Strategy_2015-2025_final_text.pdf

Metallurgical Company, the Kola science center of the Russian Academic Society (RAS), the Barents branch of WWF, the Ministry of Ecology of Murmansk region, and authorities of the towns located nearby. On a national scale, there is cooperation and exchange with other Russian Biosphere Reserves. An example of this is mutual training of tour guides together with Kenozersky Biosphere Reserve.

Today Laplandskiy Biosphere Reserve is a model of sustainable development which fulfills all functions of a Biosphere Reserve. And the presence of the words "Biosphere Reserve" in the name significantly increases the image of the territory, including in the eyes of regional and municipal authorities. This is a kind of distinctive feature or even a "quality mark".

Activities, examples

- *Protection regime.* In order to preserve biological diversity and maintain the natural state of protected natural complexes and objects, a special protection regime has been established that prohibits any activity that contradicts the objectives of the Nature Reserve. The main functions of the administration of Laplandskiy Nature Reserve / Biosphere Reserve are protection of the reserve from violators of the reserve regime; protection of reserved forests from fires; control of the state of the natural environment and supervision of the observance of the reserve regime when performing work on the territory of the reserve.
- *Monitoring and inventories.* The administration of Laplandskiy Nature Reserve / Biosphere Reserve has monitored the environment in Monchegorsk surroundings since 1998 and recommended actions for nature recovery. As an example, restoration work for the flora around Monchegorsk has been ongoing the last decade. Every year researchers also do inventories of the flora and fauna in the Nature Reserve which has given unique results and new discoveries. The administration of Laplandskiy Nature Reserve / Biosphere Reserve take part in animal registrations and helping researchers to perform high-quality environmental monitoring.
- *Eco-educational projects and activities.* Environmental education is one of the main activities of the Biosphere Reserve. It includes environmental education in secondary schools, for local people as well as visitors, and cooperation with educational institutions, government and local authorities, the media and other organizations involved in environmental education. Today the administration of Laplandskiy Nature Reserve / Biosphere Reserve organizes nature festivals and ecological quests that sometimes gather more than 400 people. Local, national and international volunteers are involved in building new trails, education and communication. Excursions and ecological tourism are a traditional and highly effective form of environmental education implemented.
- *Joint projects with industrial enterprises.* The administration of Laplandskiy Nature Reserve / Biosphere Reserve has been involved in many projects together with industrial enterprises located nearby to make people's life better. The Kola Mining Metallurgical Company has for example reduced air pollution significantly, and

environment conservation and nature restoration has become one of the company's main priorities. The administration of Laplandskiy Nature Reserve / Biosphere Reserve has also been engaged in social projects aimed at development of infrastructure and ecological events with financial support from Nor Nickel Company. In 2018–2019, a children's educational trail "Forest Pochemuchka" and a Sami open-air exposition "In the edge of a flying stone" were equipped. As Laplandskiy Biosphere Reserve is located in the central part of the Kola Peninsula and surrounded by industrial enterprises, the administration of Laplandskiy Nature Reserve / Biosphere Reserve has put pressure on the enterprises to include the Reserve in the planning of activities. If the Nature Reserve / Biosphere Reserve had not been, the nature would probably have been in a poor shape due to air pollution and poisoning by heavy metals.

- *Joint project to save north-western wild reindeer population.* In 2020 a new project on conservation of western wild reindeer started. It is a joint project between the administration of Laplandskiy Nature Reserve / Biosphere Reserve, WWF and volunteers who will patrol the Reserve's territory to catch and report poachers who are killing migrating reindeer. This is a very important project since Laplandskiy Nature Reserve is home to the last 1,000 north-western wild reindeer in the world.
- *Nature tourism.* A long-time and systematic work has been carried out to create objects that are attractive to tourists. Today, an ecological and excursion facility with an information center and a museum is located at the Chunozero estate and there are ecological paths of various lengths.
- *ABCG heritage – Arctic Biological, Cultural and Geological heritage (2012–2015)⁴⁴.* The aim of the project was to create synergy between environmental education and nature tourism in the Green Belt of Fennoscandia. Outputs of the project included several exhibitions, educational materials for schools, maps, brochures, websites, demonstrative sites, nature trails, and innovative solutions like mobile interpretation and guidance using the latest technology. The project was a trilateral cooperation between Finland, Norway and Russia. Lead partner was Metsähallitus Natural Heritage Services, Finland. Laplandskiy and North Karelia Biosphere Reserves were two of the partners. Funded by Kolarctic ENPI CBC programme.

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, Laplandskiy Biosphere Reserve cooperate with other Biosphere Reserves within UNESCO's World Network of Biosphere Reserves. There are also a lot of cooperation with different areas and different actors in Norway and Finland within the framework of Green Belt of Fennoscandia (more information page 22, footnote 37). Examples of this is a cooperation agreement between Laplandskiy Nature Reserve / Biosphere Reserve and Møisalen National Park (Norway) to be "twin parks"; a cross-border cooperation with Salla

⁴⁴ ABCG heritage KO369: <https://www.ymparisto.fi/download/noname/%7bFA267463-E567-49C1-8B85-F6250514BE7C%7d/124808>

municipality in Finland which are establishing a new National Park; and a cooperation agreement with Metsähallitus in Finland.

The administration is very positive about future cooperation with other Biosphere Reserves in the Barents region and / or different bodies within the Barents Euro-Arctic Cooperation. Examples of interesting issues for cooperation could be

- Education
- Science
- Infrastructure

Kenozersky Biosphere Reserve (Russia)⁴⁵

Kenozersky Biosphere Reserve is located in the south-western part of the Arkhangelsk region of Russia. Its western flank runs along the border with the Republic of Karelia. In total, it covers an area of approximately 140,000 hectares (core areas 18,688 hectares, buffer zones 71,951, and transition areas 49,024) (Figure 4). The territory has three statuses: Kenozero National Park, Kenozersky Biosphere Reserve and UNESCO World Heritage Site Testament of Kenozero Lake. The National Park was established 1991, the Biosphere Reserve in 2004 and the World Heritage Site in 2014.

The territory has a long and unique historical-cultural heritage with monuments of wooden architecture under federal protection, e.g. Porzhensky grave yard of the 17th–19th centuries. Within the National Park there are also sacred groves, seids (sacred stones), and sacred trees on sites where pagan burials took place in pre-Christian time. The cultural landscapes have over the centuries been conserved by careful and traditional management.

The unique cultural heritage in combination with the natural-geographical features in the region have created conditions for the existence of a vast variety of plant and animal species. The territory is a globally important migratory bird habitat and contains unique swamp and forest ecosystems, including virgin taiga forest and mixed pine-spruce forest ecosystems. Forests cover 77% of the Biosphere Reserve's total area.

In 1950s—1980s, as everywhere in the Russian North, the area suffered severely from depopulation. In particular, all villages between Lake Lyokshmozero and Lake Kenozero were deserted. The decrease in forest harvesting and agricultural production has led to lower levels of personal income. To achieve better cost optimization, rural municipalities are being amalgamated, their rural health stations and post offices closed and schools experienced difficulties. Most of the powers of rural administrations have been transferred to the jurisdiction of district administrations. Restructuring covered also social interactions: while earlier most of the social issues would be dealt with by large industries (state farms, timber industry enterprises), today their social purpose is much less clear. Local development is

⁴⁵ Information is mainly gathered from: Management plan Kenozero National Park / Kenozersky Biosphere Reserve; Kenozero National Park website: <http://www.kenozero.ru/en/>; UNESCO website; and then controlled and supplemented by Alexandra Yakovleva, head of the Development Service of the FSBI Kenozersky National Park

increasingly dependent on local communities themselves and their cooperation with the National Park.

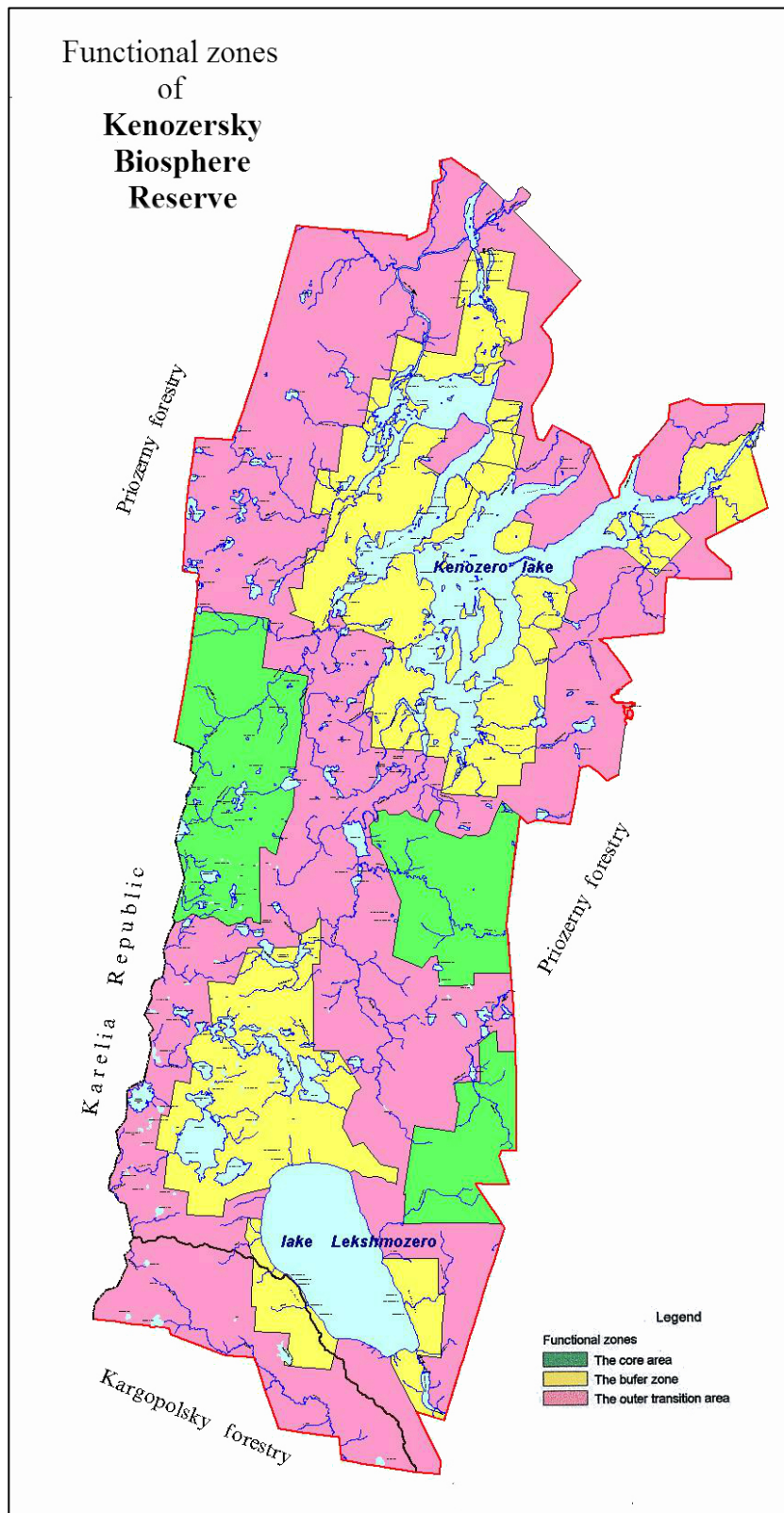


Figure 4. Kenozersky Biosphere Reserve. The territory has three statuses: Kenozero National Park, Kenozersky Biosphere Reserve and UNESCO World Heritage Site Testament of Kenozero Lake.

Today there are 46 settlements with 1,678 people living in the Biosphere Reserve. All forests in the area belong to the State and the National Park management is managing them. Sustainable forestry is a major contributor to local and regional employment and economy in the Arkhangelsk region. In the vicinity of Kenozero Reserve, ecotourism and traditional trades and crafts are major economic activities. The territory boasts a huge potential for tourism development. Over the period from 2012 to 2019, the tourist flow increased by 82% (from 9,382 to 17,003 visitors). Thus, the territory has become Arkhangelsk Region's major tourist destination and a widely recognized symbol of the Russian North.

Over the years there has been a lot of research focused on the natural complexes and the cultural heritage in the Kenozero region. Examples of research institutions involved are: The Russian Academy of Sciences' Research Centre in Karelia (RAS KarRC)⁴⁶, the Northern (Arctic) Federal University (NArFU)⁴⁷, St Petersburg University⁴⁸, and the Arkhangelsk Institute of Forestry and Forest Chemistry (NRIF)⁴⁹.

Priorities and focus areas

The presence of one territory with three statuses allows its cultural and natural heritage to be managed in a multifaceted and effective way. That said, the management of what is home to a National Park, a Biosphere Reserve and a World Heritage Site, is guided by one key principle – priority of conservation over use. The management plan takes into consideration the necessity to conserve natural sites that are not subject to any economic activities (core area); sites without any economic activities at the moment (buffer zone); and sites with traditional economical activities (transition zone). It includes “the program of socio-economic development of the area included in the Kenozero National Park” which encompasses tourism with conservation of cultural landscapes, restoration of cultural monuments, and other activities to make the area more attractive.

Main priorities are

- Conservation of biological and landscape diversity
- Historical and cultural heritage
- Ecological education
- Socio-economic development

Organization and practice

Since 1991 when Kenozero National Park was established, the territory (today including Kenozersky Biosphere Reserve and Testament of Kenozero Lake) has been managed by a federal state financed establishment. The National Park is headed by a Director, appointed by the Ministry of Natural Resources and Environment of the Russian Federation. There is also a Coordination Council of Kenozersky Biosphere reserve. The Park's structural set-up is based on its core lines of activity and includes sections and divisions that deal with conservation, study and interpretation of natural and cultural heritage; infrastructure support, conservation and restoration of movable cultural heritage; and core activity

⁴⁶ <http://www.krc.karelia.ru/index.php?plang=e>

⁴⁷ <https://narfu.ru/en/>

⁴⁸ <https://english.spbu.ru>

⁴⁹ <http://sevniih-arh.ru/en/about/history/>

support functions. All works relating to conservation and restoration of Kenozero National Park's museum items are supervised by the internal Restoration Council (RS). The function of supporting Kenozero National Park's core activities with scientific, informational, analytical and expert guidance lies with Scientific and Technical Research Council (STRC). Kenozero National Park / Biosphere Reserve has a full-time staff of 165. Every year the National Park administration also hires more than 100 temporary employees from the local communities.

The administration of the National Park / Biosphere Reserve nurture a culture of participation and collaboration among communities of Kenozero and Lekshmozero areas. Local communities are not viewed as "objects" or "passive consumers" of the territory's activities, instead they are seen as active contributors to the ongoing social, cultural and economic processes. The management plan of the territory builds on the interests of all stakeholders in the area and defines objectives of the joint activities towards effective protection, preservation and sustainable development. All decisions taken are subject to discussion with stakeholders and a commitment to transparency forms an underlying principle of the management plan. Great attention is devoted to teaching and promoting small business initiatives to local people. On a national scale, there is cooperation and exchange with other Russian Biosphere Reserves, e.g. study trips, joint projects, and scientific cooperation.

Activities, examples

- *Safeguarding the territory.* This includes safeguarding of natural, historical and cultural sites within the Biosphere Reserve boundaries; Fire protection and firefighting measures in forests and other natural complexes, as well as for protection against forest pests and diseases; Monitoring activities of economic entities; and Controlling and regulating tourism and recreation, i.e. sustainable tourism management.
- *Environmental monitoring.* This includes atmospheric air protection; Monitoring of production and consumption waste management; Use of subsoil water; and Removal of accumulated environmental damage and reduction of environmental risks.
- *Environmental outreach and education.* This includes the comprehensive program "Park for Kenozero Children", "Children's eco-camp ELK/moose", and "Research and project activities for school children"⁵⁰.
- *Research and publishing.* This includes acquisition of items for archives and library, which is seen as a way to support scientific research and environmental outreach; publishing of monographs, thematic editions and popular science books.
- *Northern Lights – women-led initiatives in inclusive sustainable rural development (2019–2022)*⁵¹. The project's aim is to reinforce the capacity of women-led Russian civil society organizations active in social entrepreneurship and sustainable rural development in less developed, remote areas. Russia and Slovakia are participating

⁵⁰ Kenozero National Park website. Park for children: <http://www.kenozero.ru/en/detyam/>

⁵¹ <https://machaon.eu/detail-project/northern-lights/>

countries. Lead partner is Machaon International. National Park Kenozero is a partner. Co-funded by the European Union.

- Separate collection and disposal of the municipal solid and the hazardous waste in Kenozersky and Onezhskoe Pomorye National Parks in the Arkhangelsk region (2019–2020)⁵². The project objective is to prevent waste generation, to introduce separate waste collection, and to improve the municipal solid waste management system, as well as involving visitors and local residents in this activity. Funded through NEFCO (Nordic Environmental Finance Corporation).
- *Story Tagging (2014–2020)*⁵³. The project aim is to develop a digital platform that positively enhances the market reach of participating creative industry SMEs, increases awareness of business opportunities beyond local markets among creatives. The project brings together Scotland, Northern Ireland, Finland, Sweden and Russia with story tellers and other creatives working with academic institutions. Lead partner is Robert Gordon University, Scotland. Among the partners are Kenozero National Park and Region Västerbotten, Sweden. Funded through the Northern Periphery and Arctic Programme (Interreg) under the European Regional Development Fund.
- *Drifting Apart. Reuniting our common geological heritage (2015–2018)*⁵⁴. The project aim was to Support the development of new and aspiring Global Geoparks, the promotion of innovative products and services for social and economic prosperity, and to continue to build a strong network of Geoparks in the Northern Periphery and Arctic Region. The project brought together partners from Northern Ireland, Scotland, Norway, Iceland, Canada and Russia – including Kenozero National Park. Lead partner was Causeway Coast and Glens Heritage Trust, Northern Ireland. Funded through the Northern Periphery and Arctic Programme (Interreg) under the European Regional Development Fund.

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, Kenozersky Biosphere Reserve cooperate with other Biosphere Reserves within UNESCOs World Network of Biosphere Reserves. The administration recognize that the Biosphere Reserve add wide possibilities for international exchange and cooperation. Kenozero National Park / Kenozersky Biosphere Reserve have more than 20 years of experience of joint projects with EU partners focusing sustainable tourism development, involvement of local population, socio-economic development of rural areas, protection of cultural and natural heritage, etc.

⁵² <http://www.kenozero.ru/o-parke/materialy/proekty/razdelnyy-sbor-i-utilizatsiya-otkhodov-na-territoriyakh-natsionalnykh-parkov-kenozerskiy-i-onezhskoe/>

⁵³ Northern Periphery and Arctic Programme. Project: Story tagging: <https://keep.eu/projects/24661/A-digital-platform-to-enhance/>

⁵⁴ Northern Periphery and Arctic Programme. Project Drifting apart: <https://www.interreg-npa.eu/projects/funded-projects/project/138/>

The administration sees a lot of possible and desirable future cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation, e.g.:

- Sustainable ecotourism development
- Ecological education
- Climate change
- Exchange and cooperation between research groups
- Cultural landscape research, protection and management
- Preservation of wooden architecture
- Pro-biodiversity SME business development
- Linking nature, art and culture

Vodlozersky Biosphere Reserve (Russia)⁵⁵

Vodlozersky Biosphere Reserve is located in the north-west of Russia, in the Republic of Karelia and Archangel District. It was designated a Biosphere Reserve by UNESCO in 2001 and covers an area of approximately 865 000 ha (core areas 99,453 ha, buffer zones 315,657 ha, and transition areas 450,000 ha) (Figure 5). Vodlozersky National Park was established in 1991 to preserve the unique natural environment and cultural heritage of the Vodlozero area, to carry out scientific research, and to organize ecological education and tourism.

Mid-latitude and northern taiga forests constitute the largest part of the territory. Boreal conifers such as spruce and pine dominate the landscape, but there are also deciduous trees like birch and aspen. In total 47% of the territory is covered by forests. Vast bogs cover more than 40% of the park's territory, and there are a great number of rivers and lakes in the area. The National Park area includes Lake Vodlozero, the river basin of the Ileksa river, and the upper course of the Vodla river. Areas of traditional subsistence farming intersect the forested landscape.

Vodlozersky National Park is also a national heritage site. The cultural heritage dates back to Mesolithic archaeological sites and to the 15th century when Russians started to colonize Vodlozerje. There are several dozen monuments of wooden architecture (18th- to 19th-century) located in the park. The most prominent one is Ilyinsky Pogost, an ensemble of a wooden church surrounded by a wall. Apart from churches and chapels, also a very old cultural landscape and local customs have survived to date.

In the beginning of the 20th century, there were about 40 villages around Lake Vodlozero in the Biosphere Reserve, most of which are currently deserted. Today there are 17 settlements in the Biosphere Reserve where approximately 5,000 people live permanently.

The core area of Vodlozersky Biosphere Reserve is constituted of Vodlozersky National Park, which consists of three separate areas. Only short-term scientific research is allowed in this

⁵⁵ The information is gathered from UNESCO's website: <https://en.unesco.org/biosphere/eu-na/vodlozersky>; Vodlozersky National Park website: <http://vodlozero.ru/en/>; the Management plan of Vodlozersky Biosphere Reserve, Wikipedia: https://en.wikipedia.org/wiki/Vodlozersky_National_Park; Astanin, Dmitry (2019). Functional zoning of ecological tourism areas by degree of regulation of building and planning activities. E3S Web of Conferences 138, 01013 (2019): https://www.e3s-conferences.org/articles/e3sconf/pdf/2019/64/e3sconf_catpid18_01013.pdf; And then controlled and supplemented by Anna Nesterova, Vodlozersky National Park / Biosphere Reserve.

area. In the buffer zone activities such as research, tourism, recreation, traditional fishing and agriculture within the boundaries of historical lands, are permitted. Forest industry is forbidden in core areas and buffer zones, and the only forestry permitted exists as an element of a traditional land use. In the transition areas, forest industry is allowed and one of the main contributors to local employment and economy. All forests in the territory are owned by the State, but a part of the forest area is rented by forest industry enterprises. In the near future, a large deposit of chromium ores is planned to be placed in the transition area.

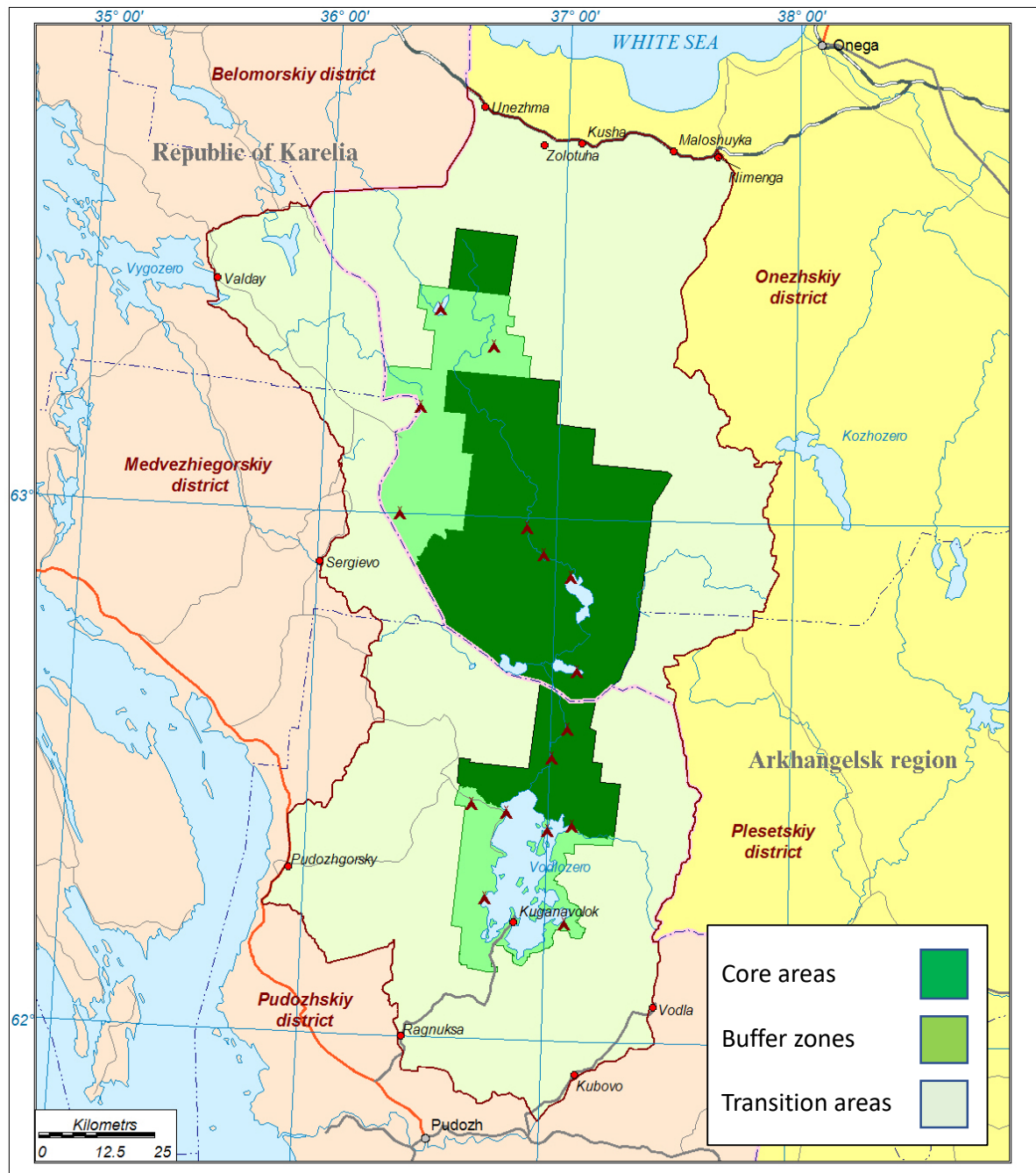


Figure 5. Map of Vodlozersky Biosphere Reserve with zoning.

Tourism and social-culture activities are also important activities for local employment and economy. Every year about 7,000 tourists visit the territory and the number of visitors is increasing. A visitor center is located in the village of Kuganavolok. There are also some recreation facilities as well as camping sites elsewhere in the park. All visitors to the National Park need to buy a permit. The rivers Ileksa and Vodla are popular for whitewater rafting. Birdwatching and fishing are also popular activities. Transportation in the National Park in summertime is possible only by waterway, in winter – on snowmobiles.

There are no research institutions within the Biosphere Reserve, but there are several institutions connected, for example Petrozavodsk State University⁵⁶, Karelian Research Centre Russian Academy of Science⁵⁷, The Northern Arctic Federal University named after M.V. Lomonosov⁵⁸, and Saint Petersburg Stieglitz State Academy of Art and Design⁵⁹. There are also sampling units on the territory for monitoring the dynamic of forest, water and swamp ecosystems.

Priorities and focus areas

Main priorities of the Biosphere Reserve are

- To preserve the unique natural environment and cultural heritage of the area
- To carry out and support scientific research and environmental monitoring
- To organize ecological education, including training of personnel and environmental outreach to local communities and visitors
- To organize tourism, including promotion on international markets
- To improve social and economic conditions for the local population, including public health issues

Organization and practice

Vodlozersky National Biosphere Park is a Federal State-Financed Establishment and the administrative authority of the territory. The director is appointed by the Ministry of Natural Resources and Environment of the Russian Federation, and the administrative center is located in Petrozavodsk. Responsible for coordination of the Biosphere Reserve are the Ministry of Natural Resources and Environment of the Russian Federation, the directorate of Vodlozerskiy national park and Onezhskiy district and Kuganavolok settlement municipalities⁶⁰. The Biosphere Reserve National Park has a staff of trained specialists, experts, guides and rangers who works in three areas: Vodlozerskoe, Ilekskoe and Pudozhskoe. The total quantity of employees is 144 people.

All issues relating to biodiversity conservation and management of the territory are discussed in working groups of the Government of Republic of Karelia and the Governor of the Arkhangelsk Region. There are also meetings with Pudozhsky Municipality Board,

⁵⁶ <https://petrsu.ru/en>

⁵⁷ <http://www.krc.karelia.ru/index.php?plang=e>

⁵⁸ <https://narfu.ru/en/>

⁵⁹ <https://www.ghpa.ru/international>

⁶⁰ According to agreements of cooperation upon social and cultural development of the Biosphere Reserve made with administrative departments of Onega and Kuganavolok and national park Vodlozerskiy.

Onezhsky Municipality Board, and Kuganavoloksky Rural Community Board. On a national scale, there is cooperation and exchange with other Russian National Parks and Biosphere Reserves, e.g. Metsola Biosphere Reserve.

The Biosphere Reserve National Park constitutes an integral element of the region's economy and serves as a pivotal point in Vodlozero's socioeconomic development, maintaining the infrastructure within its villages and ensuring the employment and means of subsistence of the local communities. As with all protected areas, the National Park and its every activity seeks to preserve biodiversity, restore and improve ecosystem services, and ensure sustainable development.

Activities, examples

- *Preservation of natural ecosystems and ecological education.* In 1992 a scientific department was organized in the National Park. Today the research efforts not only address scientific issues and environmental monitoring, but also promote the development of ecological routes and ecological education. Vodlozersky Biosphere Reserve National Park is thus a venue for international scientific expeditions, seminars, conferences and museum exhibitions. The Park also arranges ecological camps and programs.
- *Preservation and revival of cultural heritage.* Old churches are restored and reconstructed, and chapels and holy crosses are erected in memory of deserted villages in the area. This work is mainly done by local carpenters. In cooperation with Karelian Ministry of Culture, the National Park has reestablished St. Elijah parish and its premises, a wooden architecture monument of federal importance. The spiritual and cultural legacy of the area is further nurtured and presented by revived traditional festivals. This "circle" of traditional festivals forms the basis for pilgrim trips, tours and programs. There are also programs to revive traditional land-use practices.
- *Education and outreach.* Within the educational service system of Karelia and Arkhangelsk, Vodlozersky National Park function as an 'open-air classroom'. The National Park offer school children and students from different parts of the region knowledge of the environment and culture of their homeland. The National Park's outreach programs are annually participated by more than 30,000 school children and their teachers. The environmental outreach activities include publication of popular scientific articles and reference materials on local biodiversity; guidelines on environmentally friendly resource management; publications on gathering and processing of non-timber forest resources; activities in visitor centers and exhibitions; festivals and art projects in cooperation with art schools and academic institutions; etc.
- *Tourism development and promotion.* Organization and promotion of tourism is a prioritized task. International principles of ecotourism are applied. There are different ecological routes on the territory: by foot, skies or combined tours, for bird watching and sport fishing. Rafting is possible on the rivers the Ileksa, Vodla, Vama

and on the big lakes in the National Park. At present, the territory is a model for working out a strategy for tourism development in the Inega and Pudozg regions.

- *Improved social infrastructure in populated settlements.* The management of the Biosphere Reserve National Park contributes to improvement of the social infrastructure in the region. This is done by road maintenance, promotion of quality health services etc. In addition, a number of agreements have been made with privately-run hunting establishments about commercial and recreational use of the areas within the Biosphere Reserve's transition area. Other agreements have been made with forest lease holders to ensure withdrawal from commercial operations of the forest blocks within the Biosphere Reserve's transition area. Upon the initiative of Vodlozersky National Park and the Karelian Government, investors have been attracted to launch construction of a sports and environmental tourism center for local community and visitors.

SUPER – Sustainability Under Pressure: Environmental Resilience in natural and cultural heritage areas with intensive recreation (2019–2021). Vodlozerskiy and North Karelia Biosphere Reserves are partners (previously described under North Karelia Biosphere Reserve).

- *Green Solutions for Nature Protected Areas – GreenSol (2014–2020)*⁶¹. The main objective of the project was to find, introduce and test nature-based energy supply and waste utilization solutions at the territories of National Parks and Nature Reserves. The main question was – how to improve the living and work conditions of visitors and local staff without any harm for the nature. Lead Partner was ANO Energy Efficiency Centre, Russia. Among other partners were National Park Vodlozersky, Nature Reserve Kostomukshsky (Metsola Biosphere Reserve), and Metsähallitus (Finland). Funded by Karelia ENI CBC.
- *National Parks for Public Welfare.* A project that aimed at integrating national parks in the life of target communities; strengthening of National Parks' economy; attracting local people to pursue careers in the National Parks and rural tourism business. The project has led to an increase in the number of guest houses and in a range of tourist services. Partners are: Indufor Oy / Jount Oppertunity Ltd Oy (Finland), Blue Highway Association (Sweden), Pydozhskiy and Kargopolskiy municipalities, and National Parks Vodlozerskiy and Kenozersky (Russia). Funded by the Nordic Council of Ministers.
- *School in the National Park (1993–present).* A project designed to test the training programs developed by the local teachers, including those dealing with adaptation to climate change. Lead partner from the very beginning was Environment-oriented educational institution "POCONO", USA. From 2000. Lead partner was specially protected natural areas and educational establishments of Norway and Finland. Today Vodlozerskiy National Park is lead partner. From the beginning this project was funded by partners, now it is funded by Vodlozersky National Biosphere Park itself.

⁶¹ Green Solutions for Nature Protected Areas KA5043: <https://kareliacbc.fi/en/projects/green-solutions-nature-protected-areas-ka5043>

- *Fire Brake (2018–2019)*. The project aimed to increase the biodiversity of border areas by improving knowledge and collaboration in the field of forest fire risk assessment. By improving monitoring and modelling capacities, forest land managers will have better foundation for mitigating risks. Influence on the environment, especially on the quality of air, as well as on the security in wild land-urban interface fires will benefit also the local population in the long term. Partner was Oy Arbonaut Ltd. Funded by Karelia CBC.

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, Vodlozersky Biosphere Reserve cooperate with other Biosphere Reserves within UNESCO's World Network of Biosphere Reserves. For instance, Vodlozersky Biosphere Reserve National Park has a lot of collaboration with the Finnish Biosphere Reserve North Karelia.

Desirable future cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation, e.g.:

- Forest issues
- Youth exchange
- Tourism
- Research

Metsola Biosphere Reserve (Russia)⁶²

Metsola Biosphere Reserve is located on the eastern side of the Western-Karelian Upland, at the border to Finland. It was established in 2017 and covers an area of approximately 400,000 hectares (core areas 123,613 ha, buffer zones 70,275 ha, and transition zones 210,725 ha) (Figure 7). The Biosphere Reserve comprises Kostomuksha Nature Reserve, Kalevalsky National Park and Kostomuksha urban district. Kostomukshsky Nature Reserve was established in 1983, and since 1990 it is the Russian part of the Russian-Finnish "Friendship" Nature Reserve. Kalevalsky National Park was added to the Nature Reserve in 2015.

The Biosphere Reserve displays a wide range of typical and unique north-taiga ecosystems. 86% of the area is constituted by pine forest and the Biosphere Reserve contains one of the oldest intact north-taiga forests in Northwest Russia. Lower-intensity selective cutting has only been practiced along river banks, lake shores and the nearest surroundings of old villages. The Biosphere Reserve also exhibits peat bogs and freshwater White Sea ecosystems typical of the Northern taiga. There are numerous rivers and lakes, Kamennoe

⁶² The information is gathered from UNESCO's website: <https://en.unesco.org/biosphere/eu-na/metsola>; Council of Europe website: <https://www.coe.int/en/web/bern-convention/-/kostomuksha-strict-nature-reserve>; Wikipedia Kostomuksha Nature Reserve: https://en.wikipedia.org/wiki/Kostomuksha_Nature_Reserve; Kostomuksha Nature Reserve website: <https://www.kostzap.com>; Metsola biosphere reserve action plan 2020; Karelia CBC website: <http://www.kareliacbc.fi/en>; And then controlled and supplemented by Valentina Khoteeva, Head of International Cooperation Department reserve "Kostomukshsky"

being the largest among the lakes with sinuate shores and 99 large and small islands. The Biosphere Reserve is home to over 1,200 animal species and is essential for the reproduction of many bird species. On the islands of Kamennoye Lake, small forest reindeer are born and take their first steps.

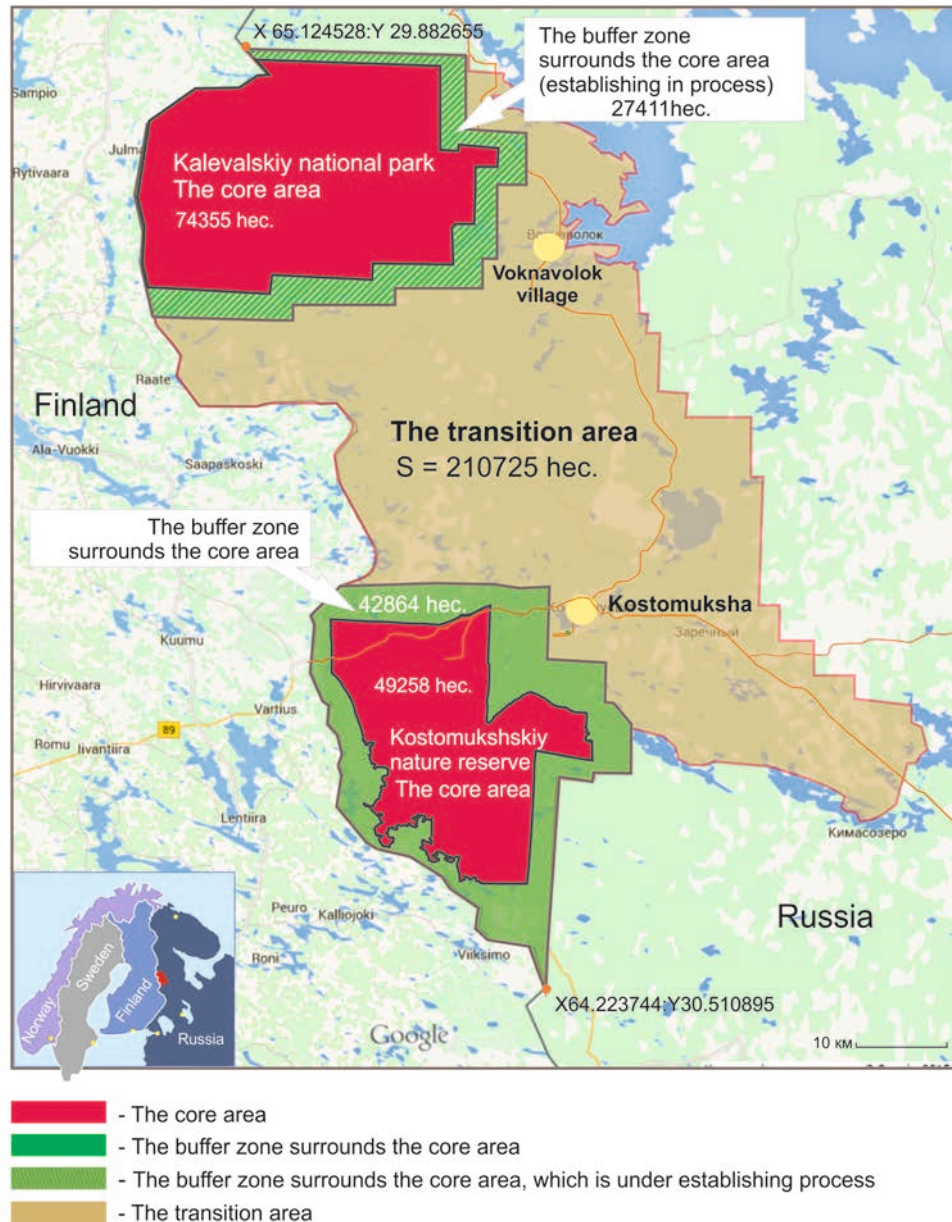


Figure 7. Three interrelated zones in Metsola Biosphere Reserve. The zones aim to fulfil three complementary and mutually reinforcing functions.

Old villages, such as Voknavolok and Voinitsa, maintain their native culture and language glorified in the Kalevala epos. Since 1993 the traditional feast "Petrupäiva" has been revived to contribute to preservation of the area's cultural heritage. Many folklore collectors, ethnographers, historians and archaeologists come to Metsola to look for national roots.

Some 30,000 permanent inhabitants live in the Biosphere Reserve. A major contributor to local economy and employment is mining and the processing plant Karelskiy okatysh. Other important socioeconomic activities are tourism, forestry, agriculture, fishing, hunting and gathering of non-timber forest products. All forests belong to State. Some forest plots are long-term leased (49 years) for forestry. As a strict nature reserve, Kostomuksha Nature Reserve is mostly closed to the general public, although scientists and those with environmental education purposes can make arrangements with park management for visits. There are however, nine ecotourist routs in the Nature Reserve and the National Park that are open to the public but require permits to be obtained in advance. The office of the Biosphere Reserve is located in the city of Kostomuksha and attracts visitors with a modern exhibition on the nature and culture of Karelia.

In 2019 administration of the Biosphere Reserve signed a cooperation agreement with Petrozavodsk State University⁶³. There is also a long-term relation with St. Petersburg State University⁶⁴ in terms of student research practices.

Priorities and focus areas

The purpose of creating a biosphere reserve is improving the efficiency of sustainable development of the region in the interests of environmental safety, protection of biological and landscape diversity, conservation and rational use of natural and cultural heritage.

Organization and practice

There is a joint management of Metsola Biosphere Reserve, Kostomuksha Nature Reserve and Kalevalsky national park. The Ministry of Natural Resources and Environment of the Russian Federation appoints the Director of Nature Reserve. In total, the staff numbers 25 employees divided in six departments: Administrative (5 employees), Science (2), Security (9), Environmental Education and Tourism (7), and International Cooperation (2).

There is local and regional cooperation between the management organization of Metsola Biosphere Reserve / Kostomuksha Nature Reserve and JSC "Karelsky Okatysh" city-forming enterprise, administration of the Kostomuksha urban district, and local entrepreneurs in tourism. The cooperation consists of joint work on preparation of eco-routes, improvement of urban areas, and treating regional visitors. Thanks to the Biosphere Reserve, the territory now has additional resources for the construction of the city public trail and an ecological route in the National Park.

The main tasks of Metsola Biosphere Reserve are

- Protection of the territory
- Scientific research
- Environmental education
- Organization of educational tourism

⁶³ <https://petrsu.ru/en>

⁶⁴ <https://english.spbu.ru>

Activities, examples

- *Preservation of natural and cultural values of Karelia.* Annual joint events, for example Day of Peter and Paul in the village of Akonlakhi, Day of the village of Voknavolok, Day of the village of Sudnozero. Participants: Kostomuksha Nature Reserve, administration of the Kostomuksha urban district, local cultural communities, NGOs, and local entrepreneurs.
- *Science.* The science department of the reserve do winter animal counts, environmental monitoring, international research and expeditions, summer and winter student practices and much more.
- *Environmental education.* The Department of Environmental Education of the Kostomukshsky Reserve has been operating since 1994 and covers all kindergartens, schools and out-of-school organizations in the city. More than 3,000 children participate in the activities of the reserve every year. The department's arsenal includes lessons, games, excursions, videos about nature and animals, master classes, holding holidays, contests, quizzes.
- *Trails of Metsola.* The administration of Kostomuksha Nature Reserve publishes the quarterly newspaper called Trails of Mesola. The newspaper is about the work of protected areas and contains cross-sectoral news of tourism, economy, culture, environmental education.
- *Ski festival Trails of Metsola.* Arranged every year in cooperation with JSC "Karelsky Okatysh".

BIOKARELIA (2019–2022). Metsola and North Karelia Biosphere Reserves are associated partners (previously described under North Karelia Biosphere Reserve).

Green Solutions for Nature Protected Areas – GreenSol (2014–2020). Metsola Biosphere Reserve/Nature Reserve Kostomukshsky and Vodlozerskiy Biosphere Reserves were partners (previously described under Vodlodersky Biosphere Reserve).

- *Urban Parks & Benefits in Kajaani & Kostamus (2019–2020)*⁶⁵. The project aim is to make urban park areas in Kajaani and Kostomuksha recognized sources of personal health, community well-being, and socioeconomic growth – for the local residents and tourists. Lead partner is Metsähallitus, Parks & Wildlife Finland. Kostomuksha State Nature Reserve / Metsola Biosphere Reserve is one of the partners. Funded by Karelia CBC.
- *Karelian Art-Residency Network and Art Tourism (2018–2020)*⁶⁶. This project aimed at improving the system of production of contemporary culture services and products in

⁶⁵ URBAN PARKS – Urban Parks and Benefits in Kajaani and Kostamus (KA5000):

<https://www.cbcprojects.eu/hankeportaali/urban-parks-urban-parks-benefits-in-kajaani-kostamus-ka5000/>

⁶⁶ Karelian Art-Residency Network and Art Tourism (KA3002): <https://kareliacbc.fi/en/projects/karelian-art-residency-network-and-art-tourism-ka3002>

cross-border region through the resources of art-residency network and cross-sectoral approach. Lead partner was the Tourist Information Centre of the Republic of Karelia. Kostomukshsky State Nature Reserve / Metsola Biosphere Reserve was one of the partners. Funded by Karelia CBC.

Cooperation with other Biosphere Reserves in the Barents region and with the Barents Euro-Arctic Cooperation

Internationally, Metsola Biosphere Reserve cooperate with other Biosphere Reserves within UNESCO's World Network of Biosphere Reserves. In particular, Metsola Biosphere Reserve has an extensive collaboration with the Russian Biosphere Reserve Vodlozersky and with the Finnish Biosphere Reserve North Karelia.

The coordinator of Metsola Biosphere Reserve sees a lot of possible and desirable future cooperation with other Biosphere Reserves in the Barents region and the Barents Euro-Arctic Cooperation, e.g.:

- Educational programs (for teachers and colleagues)
- Exchange of specialists
- Joint projects (including green technologies, wellbeing, art tourism)
- Joint scientific articles
- Cross-border meetings, reaching the level of executive power, district administration
- Exchange of experience in the field of ecotourism development and interaction with local residents
- Programs for schoolchildren and youth
- Cultural programs

Barents Euro-Arctic Cooperation⁶⁷

Cooperation in the Barents Euro-Arctic Region was launched in 1993 between Norway, Sweden, Finland and Russia. Barents Euro-Arctic Cooperation is both intergovernmental (Barents Euro-Arctic Council – BEAC) and interregional (Barents Regional Council – BRC). Where appropriate, there is also coordination with the relevant activities of the Nordic Council of Ministers, the Council of the Baltic Sea States, the Arctic Council and the Northern Dimension. Cross-border people-to-people cooperation is the foundation of the Barents cooperation and the overall objective is sustainable development.

The main tools for implementing policies of both BEAC and BRC are Working Groups which meet on regular basis and serve all fields of the cooperation. The Working Groups constitute a cross-border platform for exchange for the civil servants and professionals of the respective field. Over the past years, the Working Groups have also implemented several projects.

Representatives of the three indigenous peoples in the Barents Region (the Sámi, the Nenets and the Vepsians) cooperate in the Working Group of Indigenous Peoples (WGIP). It has an advisory role in both the BEAC and the BRC which means that their participation is welcome in all Barents Working Groups, that the WGIP Chair is a member of the Committee of Senior Officials (CSO) and the Barents Regional Committee, and that they are always represented at the BEAC Ministerial Sessions and the Barents Regional Council meetings. All three indigenous peoples of the Barents Region can participate individually in the CSO meetings, without a formal invitation.

In 2008, the International Barents Secretariat (IBS) was established in Kirkenes, Norway. The mission of IBS is to provide technical and practical support, increase and secure coherence and efficiency, raise general awareness on Barents Region, and improve the communication among the actors in the cooperation. IBS also serves as an archive and as the coordinator between the national and regional level and all the working groups.

Barents Euro-Arctic Council (BEAC)

The Barents Euro-Arctic Council (BEAC) is the forum for intergovernmental cooperation on issues concerning the Barents region. The BEAC meets at Foreign Ministers' level in the chairmanship country at the end of each BEAC chairmanship term. Over the past years also the Prime Ministers, Ministers of Environment, Transport, Culture and Competitiveness have gathered to discuss topical issues in the Barents region.

Today there are six member countries in the Barents Euro-Arctic Council: Norway, Sweden, Finland, Russia, Iceland and Denmark, plus the European Commission. There are also nine observer countries: Canada, France, Germany, Italy, Japan, Netherlands, Poland, United Kingdom and the USA. The chairmanship of the Barents Euro-Arctic Council rotates every

⁶⁷ Information mainly gathered from: BEAC webpage: <https://www.barentscooperation.org/en>; Barents Regional Council 2018. The Barents Program 2019–2023: https://www.barentsinfo.fi/beac/docs/Barents_program_2019-2023_adopted_24_May_2018.pdf; Västerbotten's chairmanship 2019–2021: https://www.barentsinfo.fi/beac/docs/Barents_Regional_Council_Vasterbotten_Chairmanship_Program_2019-2021.pdf; BEAC 2019. Mandate for the Barents Forest Sector Network: https://www.barentsinfo.fi/beac/docs/BFSN_mandate_2019-4-10.pdf;

second year between Finland, Norway, Russia and Sweden. Norway holds the chairmanship for the period 2019–2021. The next chair of the BEAC (2021–2023) will be Finland.

The Norwegian BEAC Chairmanship has the following priorities for 2019-2021:

- *Health*. The First Ministerial Meeting on Health was held in November 2019, which will be followed up by Expert Group Meeting on eHealth in Autumn 2020.
- *People-to-people contact*. The emphasis is given to youth engagement in all sectors of Barents cooperation.
- *Knowledge*. Norway will seek to develop research cooperation by engaging with relevant organizations and with the forestry sector at the regional level.

Between the ministerial meetings, the Committee of Senior Officials (CSO) organizes the work of BEAC. The CSO consists of civil servants representing the governments of the six member-countries and the European Union. Representatives of the nine observer states are also often given the possibility to participate. The CSO meets on a regular basis 4–5 times per year.

Barents Regional Council (BRC)

At the same time as the BEAC was established in 1993, regional representatives together with the indigenous peoples signed a co-operation protocol that established the Regional Council for the Barents Euro-Arctic Region with the same objectives as the BEAC. BRC unites (after the merger between Troms and Finnmark) 13 member counties and a representative of the indigenous peoples in the northernmost parts of Finland, Norway and Sweden and North-West Russia.

The Barents Region includes the following counties or their equivalents:

- in Finland: Lapland, Oulu Region, Kainuu and North Karelia
- in Norway: Nordland and Troms og Finnmark
- in Russia: Arkhangelsk Region, Murmansk Region, Karelia, Komi and Nenets
- in Sweden: Norrbotten and Västerbotten
- members of the Barents Regional Council

Indigenous Peoples in the Barents Region:

- Sami (in Norway, Sweden, Finland and Russia)
- Nenets (in Russia)
- Veps (in Russia)

There are also two observing members, which are the Council of Christian Churches in the Barents Region and the Parliamentary Association of North West Russia.

The Barents Regional Committee (BRC) is a forum for civil servants from the member counties and a representative of the indigenous peoples. The Committee is responsible for preparing the meetings of, and implementing the decisions taken by, the Regional Council. The Chairmanship of the Regional Committee is held by the same county as that of the Regional Council, and consequently alternates every second year. The current BRC Chair for the period 2019–2021 is Västerbotten, Sweden.

The Barents Program

The Barents program is the framework for the inter-regional Barents cooperation. The overall objective of the Barents Program 2019–2023 is to generate social and economic growth through a knowledge driven economy and the sustainable development of the region's natural and human resources. To meet the overall objective, the following specific goals have been jointly identified to be supported within the frames of the Barents cooperation:

- To continue to create and promote the positive and attractive “Barents identity” within and outside the region taking into account our diversity.
- To promote youth cooperation as a key element of the future development of the Barents cooperation.
- To promote further strengthening of the cooperation by legally formalizing the cooperation as an international organization through establishment of a treaty.
- To consolidate and further develop the cultural ties between the peoples of the region.
- To encourage the establishment of new, and expansion of existing bilateral and multilateral relations in the region, including cross-border mobility.
- To improve geographical and digital connectivity and accessibility.
- To lay the foundation for an environmentally sustainable economic and social development in the region with emphasis on an active and goal-oriented management of natural resources.
- To contribute to development that takes into consideration the interests of the indigenous peoples including their participation.
- To encourage cultural creativity and innovation for the wellbeing of people and economic development.
- To improve public health and social well-being of the people in the Barents Region.
- To use the political influence of the Barents Regional Council to advocate better our common needs and interests on national, European and international arenas.

Prioritized areas for 2019–2023

1. International competitiveness and business development
2. Climate and environment
3. Cultural, people-to-people and youth-related co-operation
4. Infrastructure, transport and communication

Information and promotion of the Barents cooperation, gender equality, indigenous aspect and traditional knowledge will be mainstreamed as cross-cutting elements in all prioritized areas.

Västerbotten's chairmanship 2019–2021

Cross-border people-to-people cooperation is the foundation of the Barents cooperation and during its chairmanship Västerbotten will enhance people-to-people contacts, especially among the younger generation. Västerbotten will focus on five horizontal perspectives that are crucial for a successful Barents cooperation. The priorities stretch horizontally through all working groups and other Barents entities.

- *Environment and climate:* The environment and climate know no boundaries or borders. Challenges in these areas concern everyone in the Barents region and affect all fields of cooperation. The environmental cooperation has a significant role in the Barents region and Västerbotten will support the work in this sphere.
- *Youth:* Young people are the most valuable resource and have a beneficial interest in the future development of the Barents Region. They are crucial for the cooperation, the development and the sustainability of the region. An active Youth Policy in the Barents Region is required in order to secure a sustainable population in the region. Västerbotten will continue to increase youth participation in all Barents processes.
- *Gender equality:* The Barents region faces a demographic challenge, where the population is increasingly ageing and the younger population, especially young women, are leaving the region to live and work in larger cities in the south. There is thus a need to create an attractive living environment in order to get people to move to, stay in or return to the region. We believe that gender equality is a prerequisite for regional prosperity and development. Often it is women that move first and in order to make our region attractive we must make it attractive for women to live and work here, then men will follow. Västerbotten will focus on gender equality as a means for regional growth.
- *Indigenous Peoples:* All Barents countries are enriched with indigenous peoples. They possess a unique door to the past as well as an important modern voice. Experiences and knowledge from the indigenous peoples enrich the cooperation. The active participation of indigenous peoples in the Barents Cooperation is natural, necessary and has been a part of Barents cooperation since the beginning. Västerbotten will continue to ensure the involvement of the indigenous peoples in all aspects of the Barents cooperation.
- *Visibility:* The Barents cooperation is unique in its structure and geography with its opportunities and challenges, and it is a role model for successful regional cooperation. What is being done here is something to be proud of and something we should communicate. Västerbotten will continue the work of the previous chairs to increase the visibility of the Barents Cooperation and the Barents region for key target audiences.

Thematic Working Groups

Working Groups and Task Forces have been established in priority areas of work by the Barents Euro-Arctic Council, Committee of Senior Officials, the Barents Regional Council and Barents Regional Committee (Figure 7). The Working Groups constitute a cross-border platform for exchange for the civil servants and professionals of the respective field. Over the past years, the Working Groups have also implemented several projects. The aim of the Working Groups is to deepen and concretize cooperation on issues relevant to the Barents Region.

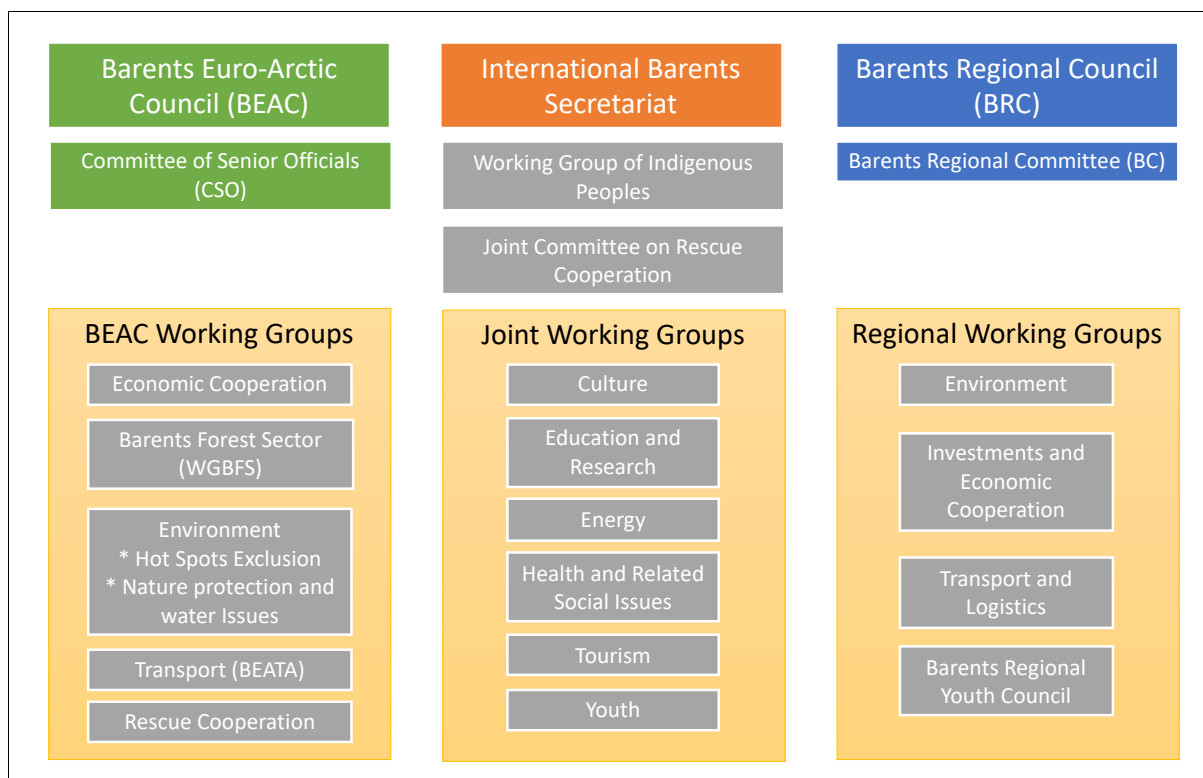


Figure 7. Barents Euro-Arctic Cooperation – with working groups.

Working Group on Barents Forest Sector – WGBFS

The forest sector is an important part of the economic, social and environmental development in the Barents region. The Working Group on Barents Forest Sector (WGBFS) is a BEAC Working Group and a cooperation platform for stakeholders in the forest sector situated in the Barents region.

The objective of WGBFS is to achieve a balanced and coherent view on forests as well as on products and services they provide – to meet key challenges and contribute to the development of a sustainable society in the Barents region.

The aim of WGBFS is

- to promote 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
- to follow and timely contribute to BEAC activities
- to advocate a balanced and coherent view on forests as well as on products and services they provide

Activities of WGBFS include to facilitate knowledge transfer, share scientific results and best practices, increase and strengthen cooperation with Barents working groups as well as other organizations, and, when needed, to launch and implement activities to promote the priority areas of WGBFS. Examples of WGBFS activities are:

- Every second year the working group arranges Forest Forums – Umeå 2019, Arkhangelsk 2017, Joensuu 2015 (and 2007).
- Arranges BFSN meetings with a focus on sharing information, knowledge and experiences
- Produces recommendations and provides contribution to the BEAC work.
- Participates in the work within the Action Plan on Climate Change for the Barents Cooperation

Norway holds the chairmanship for both the BEAC and WG FS for 2019–2021. Norwegian priorities:

- To continue the long-term strategy of focusing on the forest-based bioeconomy.
- Aim to identify potential challenges relating to the transition to a low-carbon society.
- Focus on knowledge by engaging the forestry sector and research organizations located in the Barents region.
- Strengthen regional cooperation, involve other working groups and the secretariats within Barents Euro-Arctic Cooperation.
- Encourage youth participation.

Each member country is represented by a ministry or national forest authority, and a forest/bioeconomy research institute. The represented institutes are:

- Norway: Norwegian Institute of Bioeconomy Research (NIBIO)⁶⁸
- Sweden: Swedish University of Agricultural Sciences (SLU)⁶⁹
- Finland: Natural Resources Institute Finland (Luke)⁷⁰
- Russia: Northern Research Institute of Forestry (NRIF)⁷¹

⁶⁸ <https://www.nibio.no/en>

⁶⁹ <https://www.slu.se/en/>

⁷⁰ <https://www.luke.fi/en/research/boreal-green-bioeconomy/>

⁷¹ <http://sevniih-arh.ru/en/>

Discussion and analysis

There are numerous features, conditions, challenges and opportunities that are shared between the Biosphere Reserves in the Barents Region. For example, they are all

- Designated under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science.
- Model areas for sustainable development, where new methods are tested and developed.
- Devoted to coordination of activities and different actors, collaboration, communication, and they seek to inspire and engage.
- Gifted with Arctic climate, vast natural resources and recognized for their globally unique natural environments, magnificent landscapes and cultural heritage.
- Facing problems with the consequences of ongoing climate change.
- Struggling with the challenges such as remoteness, long distances, sparse population, urbanization, increasingly ageing populations and the younger population leaving for larger cities in the south.

There are also some aspects that differentiate the Biosphere Reserves in the Barents Region:

- In Sweden and Finland, the administrations of the Biosphere Reserves do not constitute an authority and they don't have any mandate or responsibility to decide on protected areas, legislation, regulations or restrictions of any kind, and they do not exercise any controlling function. In Russia, the administrations of the Biosphere Reserves are the same as for National Parks and Nature Reserves within the Biosphere Reserves, and they are Federal State Financed Establishments with formal mandates and responsibilities to exercise authority.
- The differences in mandates and responsibilities are also reflected in number of employees: while Vindelälven-Juhtátahkka and North Karelia Biosphere Reserves have 1–3 employees (in periods up to 10), the Russian Biosphere Reserves have between 25 (Metsola) and 165 (Kenozersky) employees.
- There are also significant spatial differences between the studied Biosphere Reserves in Sweden/Finland and in Russia. The core areas (i.e. strictly protected areas) and buffer zones (i.e. areas that surround or adjoin the core areas and are used for activities compatible with sound ecological practices) constitute a much larger part of the Russian Biosphere Reserves (Table 1).
- Ownership of the land is another big difference. In Vindelälven-Juhtátahkka and North Karelia Biosphere Reserve, approximately 50% of the land is owned by private

people, and the rest by the State, forest companies and others. In the Russian Biosphere Reserves most land is owned by the State.

Table 1. Core areas and buffer zones in the studied Biosphere Reserves.

Biosphere Reserve	Core area of total area (%)	Core areas + buffer zones of total area (%)
Vindelälven-Juhttáhka	1,6	33
North Karelia	3,1	6
Laplandskiy	84	89
Kenozersky	13	65
Vodlodersky	12	48
Metsola	31	48

International cooperation

To be model areas for sustainable development and engage in local, regional, national and international cooperation, is the very essence of UNESCO's Biosphere Reserves. The Biosphere Reserves in the Barents Region cooperate and exchange with each other and other Biosphere Reserves around the globe within the framework of the World Network of Biosphere Reserves in UNESCO's Man and the Biosphere Programme. All studied Biosphere Reserves are also engaged in international cross-border cooperation.

The cooperation between the Finnish and the Russian Biosphere Reserves, and other actors in the border areas of Finland, Russia and Norway, have been quite extensive over the years. This might not be surprising since Finland and Russia have a common state border of approximately 1,300 km, which also functions as the contact line in the field of environmental protection between the European Union and Russia. An agreement on cooperation in the field of environmental protection between the Soviet Union and Finland was signed already in 1985. There is also the Green Belt of Fennoscandia which is a strip of land stretching along the borders of Norway, Russia and Finland from the Barents to the Baltic Sea. The core of the Green Belt of Fennoscandia is a network of protected areas along the borders. In 2010 a Memorandum of Understanding for cooperation in developing the Green Belt of Fennoscandia was signed by the ministers of environment of the three countries. This memorandum facilitates ecologically, economically and socially sustainable transboundary cooperation⁷².

Examples of projects and agreements under those concepts are

- ABCG heritage – Arctic Biological, Cultural and Geological heritage (2012–2015). Laplandskiy and North Karelia Biosphere Reserves were two of the partners.
- In 2010 a cooperation agreement was signed between Laplandskiy Nature Reserve / Biosphere Reserve, Russia, and Møisalen National Park, Norway. Within the agreement, projects are being implemented to exchange experience between employees.

⁷² Fennoscandia – A million-hectare chain of nature reserves: <https://www.europeangreenbelt.org/european-green-belt/fennoscandia/>

Other examples of international cooperation projects were at least two of the studied Biosphere Reserves have been partners are: SHAPE – Sustainable Heritage Areas: Partnerships for Ecotourism, BLOKARELIA, SUPER – Sustainability Under Pressure: Environmental Resilience in natural and cultural heritage areas with intensive recreation, NatureBeST – Green Nature Based Solutions in Tourism to reduce negative impact on the environment, and Green Solutions for Nature Protected Areas – GreenSol.

Vindelälven-Juhtatähkka Biosphere Reserve has not yet been involved in much international cooperation or international projects, which partly can be explained by the fact that this Swedish Biosphere Reserve was inaugurated only in 2019.

In the study of the six Biosphere Reserves within the Barents Region, we have found that the Biosphere Reserves share several priorities and focus areas, and that they desire a developed cooperation about certain issues. Examples of such common interests are

- Sustainable (nature) tourism, including management of growing visitor numbers
- Climate change, including mitigation and adaptation
- Youth exchange and cooperation, including the use of digital tools and social media
- Environmental protection, including preservation of the natural environment and cultural heritage
- Environmental outreach and education, including research schools for young people
- Research and environmental monitoring, including exchange and cooperation between universities, research institutions and research infrastructures
- Research, protection and management of cultural landscapes, including preservation of wooden architecture and linking nature, art and culture
- Sustainable development of local communities, including pro-biodiversity SME business development
- Multiple use of forests, including food from forests (berries, mushrooms, meat from game and reindeer, fish etc.)
- Exchange and cooperation between indigenous people, including a developed cooperation between reindeer herding and farming

Biosphere Reserves and the Barents Cooperation

The overall objective of the Barents Euro-Arctic Cooperation is sustainable development, and the main tools for implementing policies of both the Barents Euro-Arctic Council (BEAC) and the Barents Regional Council (BRC) are Working Groups which constitute cross-border

platforms for cooperation and exchange. Thus, there are great opportunities for a developed cooperation between the Biosphere Reserves in the Barents Region and the Barents Euro-Arctic Cooperation. The Barents Euro-Arctic cooperation can without any doubt be an important partner for the Biosphere Reserves, which can enhance the chances of obtaining funding for joint projects. And the Biosphere Reserves can be model areas for implementing ideas and projects from the Barents Cooperation's Working Groups.

Several of the Biosphere Reserves priorities, focus areas and activities also align with priorities of the Norwegian BEAC Chairmanship (2019–2021), the Swedish county of Västerbotten's BRC Chairmanship (2019–2021) and the Barents Program (2019–2023).

Examples are

- Youth exchange and cooperation
- Climate change
- Sustainable development of local communities with emphasis on an active and goal-oriented management of natural resources
- Development that takes into consideration the interests of the indigenous peoples including their participation, and exchange and cooperation between indigenous people
- Research
- Cultural creativity and innovation for the wellbeing of people and economic development

Forests, forestry and bioeconomy

Forests cover more than half of the total area in all of the six studied Biosphere Reserves. Forestry is a main activity in the transition areas of all studied Biosphere Reserves, except Laplandskiy, and as such important for the local population's employment and income. Research and higher education have a high profile in the Biosphere Reserves in the Barents Region and there are also some well-established research infrastructures inside of the Biosphere Reserves. A substantial part of these research infrastructures, the research and higher education have a focus on forests and bioeconomy. The preparatory cross-border study "Biosphere Forests for the Future" (previously described under Vindelälven-Juhtatahka Biosphere Reserve), which aimed to emphasize UNESCO Biosphere Reserves as model regions for climate adaptation in forest landscapes, is an example of a Biosphere Reserve initiative addressing forests. This is but one example of the Biosphere Reserves ambition to implement the UN 2030 Agenda and the Sustainable Development Goals (SDGs) by serving as platforms for collaboration and dialogue and by connecting stakeholders horizontally and vertically.

In this there are several common interests with the Working Group on Barents Forest Sector (WGBFS):

- WGBFS aim (example): to promote 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

- WGBFS activity (example): to facilitate knowledge transfer; to share scientific results and best practices
- Norwegian priorities in the chairmanship for the Barents Euro-Arctic Council (BEAC) and WGBFS (examples): To continue the long-term strategy of focusing on the forest-based bioeconomy; to identify potential challenges relating to the transition to a low-carbon society; to focus on knowledge by engaging the forestry sector and research organizations located in the Barents region; to strengthen regional cooperation; and to encourage youth participation

Forest programs

Another natural link between WGBFS and the Biosphere Reserves in Finland and Sweden are national and regional forest programs. Among other things, multifunctionality of forests, research and development, and international cooperation are priorities in these forest programs as well as by the Biosphere Reserves. In the regional forest program of North Karelia it is stated that: “Nature tourism entrepreneurship is promoted through cross-organizational cooperation using the North Karelia Biosphere Reserve and the Green Belt”. In the regional forest program of Västerbotten, Vindelälven-Juhttááhka Biosphere Reserve is mentioned several times as a model area for implementation of all kind of activities and actions. There are also several stakeholders that have multiple engagements in different bodies of the Barents Cooperation, the Biosphere Reserves and the regional forest programs.

Of course, there are also numerous of other strategies for forests, forestry and bioeconomy developed by authorities and industries in Norway, Sweden, Finland and Russia. But within the framework of this study, we have not had the possibility to deepen the description of them.

EU Strategy for the Baltic Sea Region⁷³

The Baltic Sea region has a long tradition of cooperation, as evidenced by multiple networks and organizations in the region. Based on that tradition, in 2009 the EU member states in the region decided to start a new type of transnational cooperation. The EU Strategy for Baltic Sea Region (EUSBSR) is the eldest of the four EU macro-regional strategies. The EUSBSR provides a unique platform for cooperation and coordination between eight EU Member States (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden), involving also the neighbouring non-EU countries in the region (Belarus, Iceland, Norway and Russia). It focuses on challenges and opportunities which are more efficiently addressed when working in a coordinated manner within the region.

The work within the EUSBSR is thematically divided into 14 Policy Areas (PAs), each of which develops 2–4 Actions. The main PAs concerning WGBFS is PA Bioeconomy. Other PAs of interest are PA Nutri, PA Tourism and PA Culture.

⁷³ <https://www.balticsea-region-strategy.eu>

Funding possibilities / Financial instruments

When it comes to funding of local and regional projects and activities in the studied Biosphere Reserves, we note that the principals for the Biosphere Reserves, regional and national authorities, and NGO's are important contributors. Regarding multilateral project cooperation, funding from various EU programmes play a cardinal role.

Interreg programmes, like the Northern Periphery and Arctic Programme, and Botnia-Atlantica, have financed large multilateral projects in the region. The EU cross-border cooperation program (CBC) has obviously been a very important financing instrument of project cooperation between North Karelia Biosphere Reserve, Finland, and the Russian Biosphere Reserves. Especially Karelia CBC, Karelia ENI⁷⁴ CBC and Kolarctic ENI CBC.

Other potential financial sources for multilateral project cooperation that have not yet been used to any larger extent by the Biosphere Reserves in the Barents region are The EU LEADER programme, the Nordic Council of Ministers, the Project Support Facility of the Council of the Baltic Sea States (PSF), Arctic Council Project Support Instrument PSI (NEFCO), the Norwegian Barents secretariat, the Northern Dimension, and international Financial Institutions. A thorough screening of funding possibilities was done by a BEAC Ad Hoc Working Group in 2015⁷⁵.

In several of the instruments there is the opportunity to apply for "seed money" to develop project ideas.

⁷⁴ European Neighborhood Instrument

⁷⁵ Financing of Barents Cooperation. Report of the BEAC Ad Hoc Working Group on Financial Mechanism Study:
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Conclusion

UNESCO Biosphere Reserves are model areas for sustainable development, where new methods are tested and developed. The organizations and people who are involved and manage the Biosphere Reserves are devoted to, and have long experience of, coordination of activities and different actors, collaboration, communication, and they inspire and engage.

Over the last 20 years there has been quite extensive cooperation between Finnish and Russian Biosphere Reserves in the Barents Region, and also between Biosphere Reserves and other actors in the border areas of Finland, Russia and Norway. This cooperation can be further developed and involve the youngest Biosphere Reserve in the Barents Region (Vindelälven-Juhttátahkka, Sweden) as well as Norwegian organizations and other actors who strive for sustainable development in the Region.

This pilot study clearly shows that many ideas, ambitions, goals and activities are congruent between the BEAC Working Group on Barents Forest Sector (WGBFS), and also other BEAC Working Groups, and the Biosphere Reserves in the Barents Region. The Barents Euro-Arctic Cooperation can without any doubt be an important partner and a potential platform for the Biosphere Reserves. And the Biosphere Reserves can be core areas for implementing objectives and goals of the Barents Programme and the different BEAC Working Groups' activities, strengthen cooperation between the different BEAC Working Groups, and enhance the interregional cooperation within the Barents Region.

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The WGBFS secretariat has provided information to the members of the WGBFS on the progress of the work, and the members has had the possibility to comment and give input to the preliminary report and results before being presented the final report.

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- Petrozavodsk State University: <https://petrsu.ru/en>
- Polar-Alpine botanical garden (Kirovsk): <https://visitmurmansk.info/en/places/polar-alpine-botanical-garden-institute/>
- Russian Academy of Sciences' Research Centre in Karelia (RAS KarRC): <http://www.krc.karelia.ru/index.php?plang=e>
- Stieglitz Art Academy: <https://www.ghpa.ru/international>
- St Petersburg University: <https://english.spbu.ru>

Sweden

- Institute for Subarctic Landscape Research (INSARC): <https://silvermuseet.se/en/research/>
- Swedish University of Agricultural Sciences (SLU): <https://www.slu.se/en/>
- Umeå University (UmU): <https://www.umu.se/en/>

Forest Programs

Länsstyrelsen Norrbotten, Skogsstyrelsen, region Norrbotten 2020. Regionalt Skogsprogram Norrbotten. Remissutgåva: https://www.lansstyrelsen.se/download/18_ea555c8170f392a3a03adc/1584977843975/Remissutgåva%20Regionalt%20Skogsprogram%20Norrbotten%202020.pdf

Skogscentralen. De regionala skogsprogrammen: <https://www.metsakeskus.fi/sv/de-regionala-skogsprogrammen>

Västerbotten's regional forest program: <https://www.skogsprogramvasterbotten.se>