



Bio4Eco - Sustainable regional bioenergy policies: a game changer

REGIONAL ACTION PLAN NORTH KARELIA, FINLAND



REGIONAL COUNCIL OF
North Karelia





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Part I – General information

Project: Bio4Eco

Partner organisation: Regional Council of North Karelia

Other partner organisations involved (if relevant): -

Country: Finland

NUTS2 region: North and East Finland

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Part II – Policy context

The Action Plan aims to impact:

- Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument

Name of the policy instrument addressed :

Regional Climate and Energy Programme “Towards oil free and carbon neutral North Karelia”
& RIS 3 foci Forest Bioeconomy



Part III – Details of the actions envisaged

1. The background

1.1 North Karelia's bioeconomy is based on forests

North Karelia is the easternmost region of continental Europe and shares an almost 300 km common border with Russia. The total population of North Karelia is approximately 164 000, and the total area of the region is 21 585 km², of which approximately 89% is covered by forests.

North Karelia is considered the bioeconomy capital of the Europe. The competence-based growth industries of the future, such as the forest bioeconomy, and new technologies and materials are the key elements in North Karelia's development due to the active research being carried out at the University of Eastern Finland, Natural Resources Institute (Joensuu office) and the Karelia University of Applied Sciences. In addition to the research cluster, North Karelia has comprehensive education possibilities at every educational level ranging from the doctoral level at the university to harvester and timber truck driver education provided by the North Karelia Municipal Education and Training Consortium RIVERIA. The above-mentioned organisations and public authorities, together with regional development organisations like Joensuu Science Park, Regional business development agencies from three sub-regions of North Karelia (Josek Ltd, Pikes Ltd, LieKe Ltd and KETI Ltd), the Finnish Forest Centre, the Finnish Environment Institute and the European Forest Institute, form a regional bioeconomy cluster.

The region's undisputable strength is the forest bioeconomy. More than 500 companies with operations involving the forest bioeconomy can be found in the region: the turnover of these companies is nearly €2 billion, and they employ more than 6000 people. In addition, the bioeconomy employs more than 600 experts in the region: researchers, developers, trainers and administrative employees. The region includes strong leading companies as well as promising growth companies that focus on global export markets. The forest bioeconomy sector is strongly collaborative in nature. The experts in the field also have strong networks both at home and abroad.



Figure 1. North Karelia locates in the easternmost part of the Europe next to the Russian border.

The strengths of North Karelia are our natural resources and diverse expertise in the bioenergy and forestry sectors. In terms of energy self-sufficiency and the share of renewable energy, North Karelia already exceeds EU and national climate targets. Climate change and its challenges are seen as a possibility for the region to develop innovations and new business opportunities. The programme covers the sectors of energy production and consumption, transport, community structure and land use planning, construction, waste management, agriculture and forestry. In this action plan, we focus on securing and strengthening the forest bioeconomy in the region.

1.2 Forest bioeconomy in regional development

The Regional Council of North Karelia is a regional, politically guided, municipal coalition for developing and overseeing interests in the region. It is responsible for regional planning and general coordination of regional development programmes related to national and EU structural funds. The Regional Council of North Karelia oversees the interests of the people, municipalities, organisations and enterprises and speaks on their behalf regarding both national and international questions.

The work of the Regional Council of North Karelia is intersectoral in nature; it cooperates with different administrative sectors, organisations, business life and local inhabitants. It outlines regional development targets and key projects and measures through the regional planning



system, which consists of the regional development plan, the regional strategic programme and the regional land use plan. The Regional Council of North Karelia is also in charge of international activities of the region in its fields of activities.

The highest decision-making body of the regional administration is the Regional Council Assembly, which is elected by a meeting of delegates consisting of the members of each municipality. Executive functions are carried out by the Administrative Board, which is elected by the Assembly. This system of elected representatives ensures that the inhabitants and local authorities have their own say in regional issues and decision-making. Currently, the region is undergoing a regional reform and the final form and tasks of the regional bodies are under development.

The Regional Council of North Karelia has long-term experience in strategic development work, clustering and quadruple-helix participatory processes. The forest bioeconomy has an essential role in the region's Regional Strategic Programme 2018–2021 (POKAT2021), Smart Specialisation Strategy, Climate and Energy Programme and Regional Forest Programme. The Roadmap towards Fossil Oil-Free and Low-Carbon Region 2040 works as an implementation plan for the Climate and Energy Programme of North Karelia 2020. In addition to energy and climate aspects, it also takes aspects of the bio and circular economy into the account. The aim of the roadmap is to define the concrete steps needed to achieve the regional climate and energy goals in which the forest bioeconomy plays an important role.

North Karelia aims to be a fossil oil-free region by 2030, and it is the first region in Finland to gain membership in the Carbon Neutral Municipalities HINKU network. Nine out of thirteen municipalities in North Karelia have committed to reduce greenhouse gas emissions by 80% until 2030 within their municipality borders. HINKU is a network for local climate actions where municipalities, business life, residents, research institutes and experts are looking for solutions for the rapid reduction of greenhouse gas emissions. Greenhouse gas emissions in North Karelia have altogether decreased by 27% during 2007-2015, and from fossil fuels they have decreased by 34%.

The Regional Council of North Karelia, together with Finnish Environment Institute, has offered tailored support for municipalities and SMEs in North Karelia regarding energy efficiency, renewable energy or low-carbon solutions through the North Karelia Towards Oil-Free and Low-Carbon Region project. The project has functioned as a coordinator for climate and energy-related projects and in energy and climate actions in North Karelia and was mainly responsible for the discovery process of the Roadmap Towards Oil-Free and Low-Carbon North Karelia.



1.3 Regional climate and energy programme of North Karelia 2020 – Locally – Renewably – Efficiently

The Climate and Energy Programme of North Karelia presents a plan of action for climate change mitigation and adaptation for the region. The programme implements the climate targets set out by the European Union and Finland. The visions and targets presented in the programme aim far beyond the target year of 2020. In terms of energy self-sufficiency and the share of renewable energy, North Karelia already exceeds the climate targets of the EU and national level. The programme focuses on the sectors of energy production and consumption, transport, community structure and land use planning, construction, waste management, agriculture and forestry. The climate and energy programme is taken into account in the ulterior regional strategies and programmes as well as in the regional smart specialisation strategy.

Based on the vision of an oil-free North Karelia, the region:

- is a carbon-neutral and over self-sufficient region in renewable energy production where fossil oil is not used in energy production;
- takes advantage of and develops the possibilities of the bioeconomy and is an international actor in the climate and energy sector;
- is known for sustainable development solutions that enhance the well-being of people and the environment; and
- is a region where municipalities, communities, companies and residents are aware of the climate change and mitigation actions and who are conscious of their responsibilities and possibilities in terms of climate issues.

According to the climate and energy programme the most significant impacts of climate change on forests are an increase in growth, changes in the tree species composition and the northward movement of southern tree species. Droughts, forest fires and the increase in storm and snow damage will possibly also result in an increase in insect damage and fungal diseases. The changes in the growth rhythm are believed to expose trees to frost damage. The forests of North Karelia are a large carbon sink, and the role of forests in the carbon balance of the region is important. Maintaining the current forest area is crucial for the reduction of greenhouse gas emissions in the region.

Climate change mitigation targets for forestry for 2020 according to the climate and energy programme:

- forests as carbon sinks – with good forest management, the growth of forests, the wood stock and options for utilising wood are enhanced;
- forests as a source of energy – the share of renewable energy from total energy production and use is growing rapidly and exports will increase; and
- the detrimental extreme events caused by climate change can be prepared for.



1.4 Forest bioeconomy is North Karelia's smart specialisation choice

Smart specialisation is part of the EU's cohesion policy and the Europe 2020 strategy, which focuses on each region's strengths and the activities supporting these strengths. At the regional level, smart specialisation can be understood as representing part of a regional innovation policy that guides and focuses resources on the themes that contain the most potential for the future of the region. The goal of smart specialisation is to facilitate the creation of products, services and solutions that will stimulate the region's growth. The smart specialisation strategy helps development organisations and other forest bioeconomy actors to prioritise resources and investments towards those sectors with the greatest potential for new innovations and business on a global scale.

The core of North Karelia's smart specialisation is comprised of two essential elements (Fig. 2):

1. New solutions for the forest bioeconomy; and
2. Technologies and materials as enablers of growth.

These two foci of the smart specialisation strategy, the forest bioeconomy and technology and materials, are both strong fields in the region. The foci are mainly interlinked and should not be developed separately, but in close collaboration with each other, and by using the interfaces of these elements. For example, forest technology and logging logistics are connected with metal and engineering products and harvesters use ICT applications and precision technology and can also utilise the information provided by photonics through forest resource data. New bio-based products are strongly linked with chemistry-related material expertise and extractive industry processing expertise. Networks, internationality, entrepreneurship, education, resource wisdom, innovation and digitalisation are cross-cutting themes of our smart specialisation choices (Fig. 2).



SMART SPECIALISATION IN NORTH KARELIA

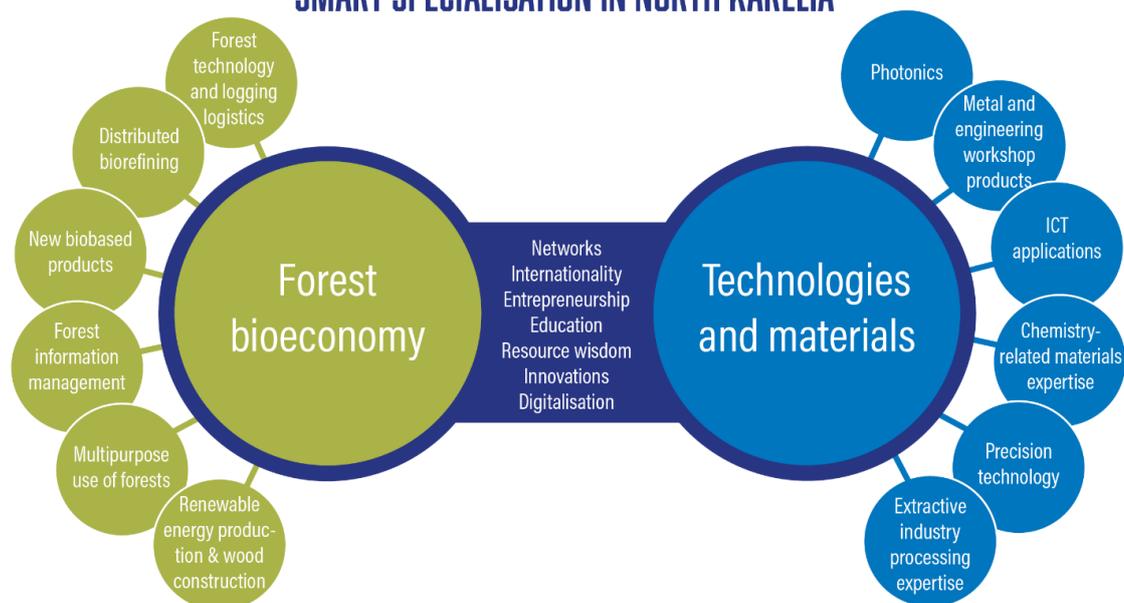


Figure 2. Smart specialisation choices of North Karelia (Smart Specialisation in North Karelia 2018).

Forest bioeconomy is divided into six thematic areas of expertise, which are presented in Figure 3. According to the smart specialisation strategy, the challenges of the forest bioeconomy sector include the transfer of expertise and research knowledge and their application for the needs of business life as well as an entrepreneurial angle in the sector's development work. The forest industry has not traditionally been a hotbed of new entrepreneurial activities, e.g. start-ups. The challenge of the forest bioeconomy sector is in creating products and services that contain an exceptionally high level of added value. The mobility and transfer of experts from research institutes and educational organisations to companies should be increased and used to create a spill-over effect for the entire industry. A more detailed description of the topic can be found in the publication Smart Specialisation in North Karelia 2018.

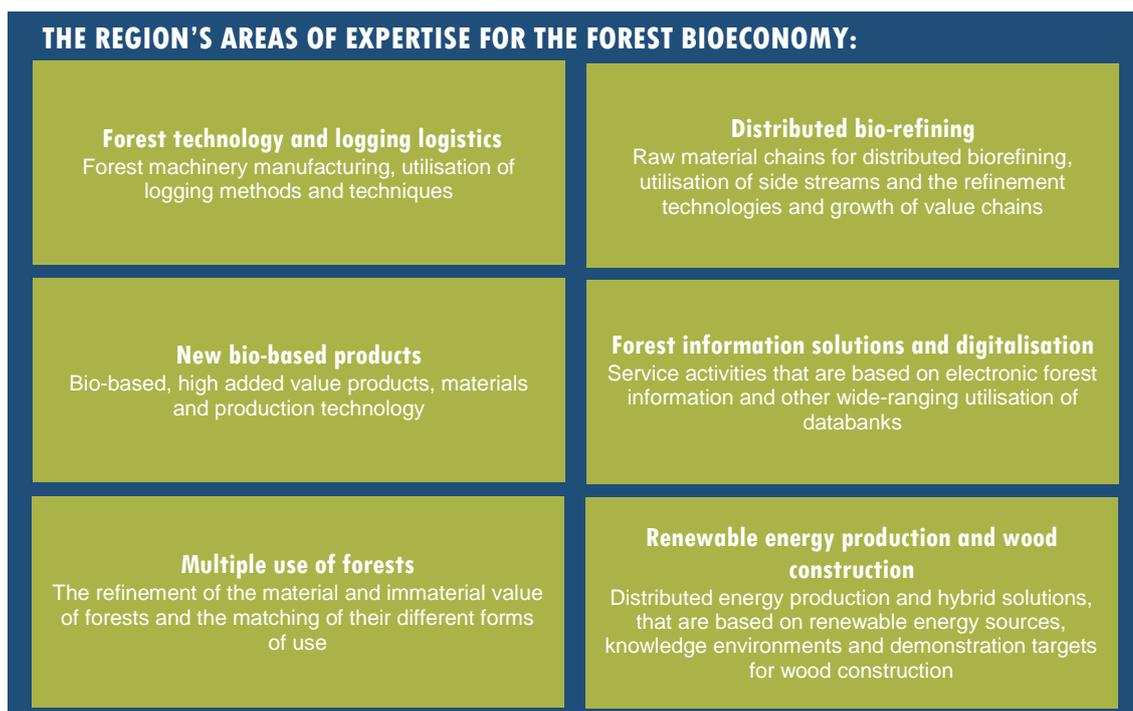


Figure 3. The region's areas of expertise for the forest bioeconomy according to the smart specialisation strategy (Smart Specialisation in North Karelia 2018).

2. Lessons learnt in Bio4Eco project

2.1. Learning from project partners

In the Latvia workshop, **climate-smart forestry** was the other focus of the meeting (action 1). The role of forests as carbon sinks and scientific knowledge as the basis of forest management were emphasized. In Latvia, selection of more resistant, less vulnerable proveniences, genotypes and species, change in management regimes and spatial planning were seen as tools to adapt to climate change. Local forest management solutions were also seen as important. In addition to the Latvian presentations about climate-smart forestry, Slovenian and French views about climate-smart forestry were introduced. In Slovenia, the key factors were to take the risk factors into account in the planning phase, to emphasize the multiple use of forests, and to increase and maintain the biodiversity of forests. In France, active forest management was the key element of climate-smart forestry. The role of forests in French climate strategies were carbon storage, fossil fuels substitution, and carbon sequestration. The role of forests as carbon stocks in North Karelia is significant. However, according to the scenario analysis implemented by the Finnish Natural Resources Institute Luke, increasing harvesting volumes planned in the region reduce the amount of carbon stored in our forests. Climate-smart forestry is in a new term in Finland and North Karelia. Its possibilities and applications should be studied further.



In Slovenia, different forms of use of forests were not competitive: ecosystem services, forest conservation and the use of wood form a well-balanced unity. Nature tourism and recreational use of forests were also well-developed, and nature conservation areas were innovatively used also for other recreational purposes, e.g. a biathlon stadium. Nature tourism (e.g. mushroom collecting) in Slovenia also draws travellers from abroad. In Slovenia, clear-cutting is not used, which has certainly positive effects on the landscape and other forms of use. In Finland, clear cuttings are currently widely used, and the forest area managed by continuous cover silviculture is still small.

In Bulgaria, the aim is to increase the use of woody biomass sustainably by using wood e.g. from thinnings. In Solsona, Catalonia, some problems in strategic work were discussed (e.g. the lack of indicators; ecological sustainability is often subordinate to economical sustainability). From Solsona, one good practice to also apply here in North Karelia were social innovations of bioeconomy.

At several project meetings, the **acceptability of bioenergy and bioeconomy** (actions 1 and 3) was discussed (e.g. in Abruzzo/Italy, Brasov/Romania, Solsona/Catalonia) and other project partners had various problems concerning the acceptability of biomass combustion, mainly due to the lack of information and small particles from wood combustion. In Finland and in North Karelia the risk concerning the acceptability of bioeconomy, bioenergy and wood combustion is mainly related to the conflicting interests of the wood industry, wood combustion and the ecological side of wood consumption; and the planned increases in harvesting volumes in the region cause a risk to the acceptability of bioeconomy if the non-economical aspects of sustainability are also not taken care of. The University of Eastern Finland has recently invested in social-scientific bioeconomy research, and the acceptability of bioeconomy is one of their research topics. In addition, the social acceptance is studied at the Finnish Environment Institute, Joensuu unit; and a presentation about approaches to social sustainability from the perspective of forest bioeconomy was given in the Romania Thematic workshop by an LSG member from the Finnish Environment Institute. Solutions to improve acceptability of bioeconomy discussed in the international project meetings were to improve the acceptability of bioeconomy, no matter what the original cause of low acceptability, **open information delivery, raising public awareness and inclusion of people**. In the kick-off meeting in Solsona, the role of media was also discussed.

The round table debate during the kick-off meeting in Solsona concluded that bioenergy production should not be the main goal of bioeconomy, but rather the value-added products from biomass. The **communication to society and media was also emphasized** (action 3). In North Karelia, forests and the bioeconomy have a major role in the work of the Regional Council of North Karelia and its strategies. In addition, regional bioeconomy actors present the bioeconomy of the region in many regional, national and international meetings and events. However, the role of forests and bioeconomy in the presentations and other public appearances needs some investments in order to keep the status of European forest capital.



2.2. The need for regional development

As a result of the experiences and lessons learnt from the international project meetings (actions 1 and 3), local stakeholder meetings (action 2) and analysis of the current situation in North Karelia (actions 1-3), the following three topics resulted as the actions:

- 1) *Climate-smart forestry in North Karelia***
- 2) *Securing the availability of skilled labour is essential for forest bioeconomy***
- 3) *Enhanced regional bioeconomy brand***

3. Action 1: Climate-smart forestry in North Karelia

An analysis of the current regional policy instruments concerning forest bioeconomy in the region indicated that the biggest challenge towards increasing wood harvesting volumes in order to supply the raw material for forest-based bioeconomy and achieve the goals for renewable energy had to do with combining the increasing harvesting volumes, ecological sustainability and biodiversity. In order to maintain the acceptability of wood procurement and the smart and positive image of the forest bioeconomy, a scenario analysis on how the increasing harvesting volumes affect biodiversity and the carbon stocks of the forests was made. The Natural Resources Institute Luke was selected to implement the scenario study.

The increase in the logging volumes (+1 million cubic metres/ year) used in the scenario analysis was based on the previous regional forest programme, which was also used on the basis of the Bio4Eco project plan. However, the current regional forest programme (2016–2020) aims to increase the harvesting volumes even more (+1.6 million cubic metres/ year), and the impacts on forests will thus be even greater than the scenario analysis suggests. Increased amounts of wood are needed to secure material for the forest bioeconomy's current and upcoming needs. According to the calculations, increased harvesting volumes will not threaten the sustainability of the wood supply in the region (regional forest programme of North Karelia, Luke Statistical Services).

Many indicators used in the scenario analysis produced by Luke pointed out that increased harvesting volumes do decrease biodiversity and the carbon stocks (Fig. 4) of the forests compared to a situation where the harvesting volumes would remain at the same level as in recent years, at least for the next few decades. By careful planning and selection of harvesting areas, the negative effects of increasing harvesting volumes on biodiversity can be minimised.

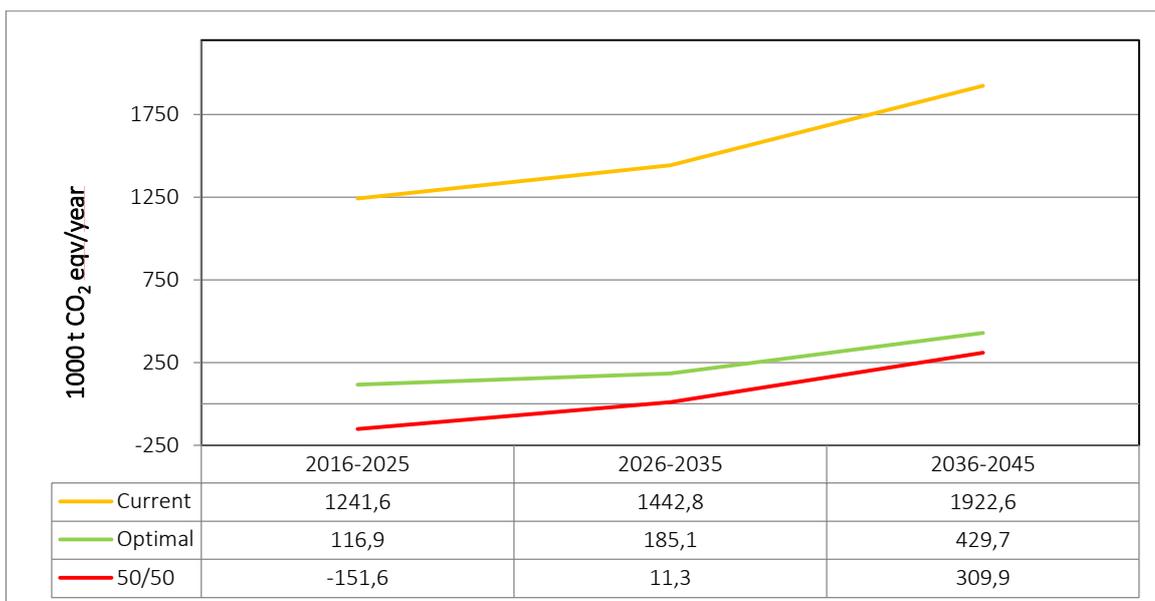


Figure 4. Carbon stocks in North Karelian forests during the next few decades. Yellow line= the current logging volumes; green line= 1 million cubic meters increase in loggings, with loggings selected optimally; and red line= 1 million cubic meters increase in loggings, of which 50% is log wood and 50% is pulp wood (Luke 2018).

Action 1 concentrates on the combination of the regional climate and energy programme and RIS3 focus forest bioeconomy's sector multiple use of forest by climate-smart forestry.

NEED FOR DEVELOPMENT

Increasing harvesting volumes causes a risk to biodiversity and carbon stocks of our forests and constrain the other forms of forest use. Climate change also causes several risks to forestry. Thus it is necessary to apply solutions for climate-smart forestry in North Karelia.

OBJECTIVE OF THE ACTION

A feasibility study on how to apply climate-smart forestry in the region and become a pioneer in climate-smart forestry.





ACTION 1: CLIMATE-SMART FORESTRY IN NORTH KARELIA

Players involved and stakeholders

Natural Resources Institute Finland - Luke is mainly responsible for the feasibility study in cooperation with **Metsähallitus** (Finnish Forest and Park Service). Other partners and stakeholders are consulted and included if necessary.

Natural Resources Institute Finland (Luke) is Finland's biggest research institute in the field of forest bioeconomy, and its North Karelia office is strongly linked to forest research. Luke has excellent international connections, long-term experience in knowledge transfer and analysing and modelling forest and climate data.

Metsähallitus is the administrator of the state-owned forests (in North Karelia, 19% of forests are state-owned) and also has some developmental tasks and research interests. Metsähallitus has comprehensive data collected from state-owned forests; also from continuous cover forests and they have developed a classification system for carbon classes of forest compartments.

By combining the research and modelling know-how of Luke with the experience and data provided by Metsähallitus, it is possible to plan the needed development activities for different possibilities of climate-smart forestry in the region. This feasibility study and the development needs it identified is the first step to achieve «Climate-Smart Forestry in North Karelia».

Beneficiaries

Forest bioeconomy actors

Implementation of the action

A feasibility study about the possibilities and threats of climate-smart forestry applications in North Karelia and a plan for needed development activities to promote the brand of North Karelia as a region of climate-smart forestry.

During the feasibility study, the following actions are carried out:

Analysis of the strengths and weaknesses of the regions forestry with respect to climate change.

Analysis of the data available and data needed to :

- study the effects of different forest management regimes to carbon stocks of forests/soil;
- applications of carbon classification to different forest compartments;
- preparation for risks caused by climate change; and
- preparing a guide for climate-smart forest management (target group, contents, etc.).

In addition, an analysis of the international networks and the possibilities of transferring knowledge is needed.

The previously mentioned actions prepare and outline the brand of Climate-Smart Forestry in North Karelia.

Project outputs/results/deliverables

Description of Climate-Smart Forestry in North Karelia: Possibilities, strengths, weaknesses, actors, roadmap and timeline for development needs that will guide development actions to promote Climate-Smart Forestry in North Karelia.

Timeframe

10/2018–04/2019 planning phase; during 2019–2020, applications for suitable calls (research, development or concrete investment projects).

Costs (if relevant) and funding sources (if relevant)

4-5 month salary/one person for the preparation phase. Funding from AIKO (regional innovation and pilots, Regional Council of North Karelia 70%), Luke 20% and Metsähallitus 10%.

Monitoring/indicators

Materialisation of a project or several projects aiming at 'Climate-Smart forestry in North Karelia'.

4. Action 2: Securing the availability of skilled and motivated labour is essential for forest bioeconomy

North Karelia has comprehensive education possibilities at each educational level, from the doctoral level at the university to harvester and timber truck driver education provided by North Karelia Municipal Education and Training Consortium RIVERIA. Nevertheless, several actors have expressed their concern about the availability of skilled and motivated labour for practical forest



work (harvester and timber truck drivers and mechanics). The plans to increase logging volumes (even an additional 1.6 million cubic metres/year) in the region also increase the need for skilled labour in the practical work, which in turn increases the need for skilled labour.

The problem has been identified in the regional strategies and programmes, and it was also widely discussed at the regional LSG meeting in spring and autumn 2018. As a consequence, securing the availability of skilled labour was seen as an important development task in North Karelia. The issues on the background of the lack of skilled labour were discussed, and some concrete actions to improve the situation were seen as vital. A more comprehensive discussion about the problem, and especially the means to improve it, were seen as important, and thus a decision was made to establish a group to find solutions to attract forest work, find skilled students and labour and to keep the educated workers in the forestry sector. At the LSG meeting, the need to develop and diversify the job description of practical forest workers was also seen important in order to keep skilled labour in the forestry sector.

NEED FOR DEVELOPMENT

Several actors have expressed their concern of availability of skilled labour for practical forest work (harvester and timber truck drivers and mechanics). The plans to increase the logging volumes increase the need for skilled labour especially in the practical work (need arose from LSG meeting and analysis of the current policies and situation). Also the needs of forest entrepreneurs should be better included in education.

OBJECTIVE OF THE ACTION

To find new possibilities and solutions to attract talents, attract and diversify the practical forest work and to secure the availability of skilled labour in forest bioeconomy sector.





ACTION 2: SECURING THE AVAILABILITY OF SKILLED AND MOTIVATED LABOUR

Players involved and stakeholders

Bioeconomy entrepreneurs, North Karelia Municipal Education and Training Consortium RIVERIA/Valtimo forest school, Regional Council of North Karelia (both forest bioeconomy and education and foresight cluster), development agencies, Karelia University of Applied Sciences, research institutes, Employment and Economic Development Offices (TE Offices), etc.

Regional Council of North Karelia is responsible for establishing and coordinating the work of the group, which will include all the relevant stakeholders. Valtimo forest school educates the practical workers, and entrepreneurs bring practical information and business life needs to the discussion.

Beneficiaries

Harvesting, forwarding and timber transportation companies directly; other bioeconomy actors indirectly.

Implementation of Action 2

Establishing a working group to find solutions to the current and increasing need for skilled labour for practical forest work.

Project outputs/results/deliverables

Working group (ad hoc / subgroup of Regional Forest Bioeconomy group) to find solutions for:

- improved student material
- improved amount of graduates
- improved attraction of forest work
- improved business life and education connections
- develop and diversify the practical work

Timeframe

2018–2020 (establishment of the group 2018)

Costs (if relevant) and funding sources (if relevant)

-

Monitoring/indicators?

The Regional Forest Bioeconomy group coordinated by the Regional Council of North Karelia follows up the progress.

5. Action 3: Enhanced regional bioeconomy brand

North Karelia is considered as the bioeconomy capital of Europe. In addition to a knowledge-based and research cluster, we have excellent education possibilities, and the regional bioeconomy cluster is comprehensive. Forest bioeconomy is the region's undisputable strength. More than 500 companies with operations involving the forest bioeconomy can be found in the region: the turnover of these companies is nearly €2 billion, and they employ more than 6,000 people. In addition, the bioeconomy employs more than 600 experts in the region: researchers, developers, trainers and administrative employees. In addition, our energy self-sufficiency and the share of renewable energy exceeds clearly the national and EU target levels.

However, still our identity as a leading forest bioeconomy region is quite moderate. In our media appearances and in our conference presentations concerning forest bioeconomy we often aim to be the leader in the field, even though we already are. In addition, the role of forests in the daily work and information delivery of actors in the region is quite moderate, even though our livelihood is based on forests and forest bioeconomy. The importance of open information delivery was widely discussed in several Bio4Eco project meetings, and the aim of this action is also to enhance the



image of the region as a leading bioeconomy region and to gain better social acceptability by open and fact-based information delivery by emphasising the positive effects of bioeconomy and wood energy.

NEED FOR DEVELOPMENT

Image, communication and information delivery concerning forest bioeconomy is quite moderate even though we are the forest capital of the Europe.

OBJECTIVE OF THE ACTION

To enhance the image of North Karelia as the leader in forest bioeconomy field among the national and international forest bioeconomy actors, to strengthen the role of forest bioeconomy in the regional work and to gain wider social acceptability for by emphasising bioeconomy's positive effects..



ACTION 3: ENHANCED REGIONAL BIOECONOMY BRAND

Players involved and stakeholders

The Regional Council of North Karelia is mainly responsible for the action. Other regional bioeconomy actors like Karelia University of Applied Sciences, Natural Resources Institute Finland, University of Eastern Finland, Finnish Forest Centre, and regional development organisations among other regional bioeconomy actors will apply the new PR material for their own needs.

Beneficiaries

All forest bioeconomy actors in the region

Implementation of Action 3

Enhancing the image of forest bioeconomy in the region by new PR material that includes the best practices and investments from North Karelia. Regional bioeconomy actors will be engaged to utilise a new brand of the forest bioeconomy in their public appearances and presentations. The aim is to be profiled more efficiently as the leading forest bioeconomy region.

Project outputs/results/deliverables

New, more convincing and interesting PR material about the existing strengths, possibilities and best practices of forest bioeconomy in the region and increased visibility of forest bioeconomy in the region.

- ➔ enhanced image of forest bioeconomy and the region ; and
- ➔ developing regional and interregional cooperation

Timeframe

2018–2019

Costs (if relevant) and funding sources (if relevant)

Anniina Kontiokorpi and Pasi Pitkänen from the Regional Council of North Karelia are responsible for producing new material as part of their own work together with graphic designers.

Monitoring/indicators?

The Regional Forest Bioeconomy group, coordinated by the Regional Council of North Karelia, follows up the progress. Indicators:

- Has the moderate image in the appearances improved?
- Has the role of forest bioeconomy increased in public appearances?
- Is the region profiled as the leading forest bioeconomy region?



Date: 26.9.2018

Signature: _____
Eira Varis, Development Director

Stamp :

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