



# REVIEW OF THE FINNISH EXPERIENCE IN SPATIAL PLANNING OF REMOTE SEMI- RURAL REGIONS

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Results and Best Practices of Finnish Rural  
Development Projects

**NorTech Oulu**

Prepared by Linda Ojeiduma

Revised by Niko Hänninen, Sari Piippo,

Eva Pongrácz & Anna-Mari Kynsijärvi

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## 1. INTRODUCTION

Currently, the world as we know it is moving towards sustainability. The shift from unsustainable practices to the development of green cities and settlements will not only improve living standards in these areas but will also be beneficial to the economy and the environment. The aim of green urban and rural settlements is to create the smallest possible ecological footprint, to produce the lowest quantity of pollution possible, to efficiently use land, to recycle used material or convert waste-to-energy. As a whole the green urban and rural settlements will contribute to climate change as little as possible.

There are many definitions of sustainable development, including this landmark one, which first appeared in United Nations commission's "Brundtland Report" (63) in 1987: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Systems that support life (e.g. agriculture, transportation, energy production) need to be maintained so that life on Earth can be sustained for future generations. A "triple bottom line" (fig. 1) is based in environmental, economic, and social sustainability. (62)

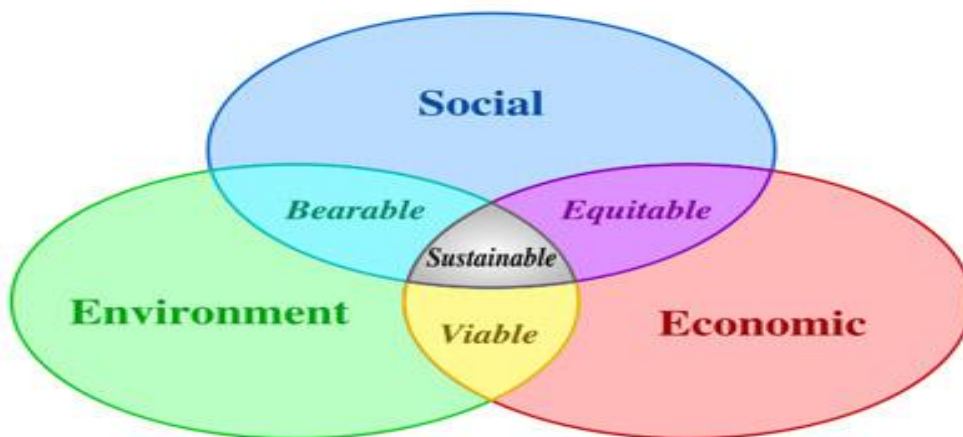


Fig 1: Facets of Sustainability [62].

The challenge of sustainability is very much a global issue and it demands attention also in the remote border areas in Northern Europe. Even though these areas might be sparsely populated, far away from the big metropolis and population hubs, they are not isolated pockets from the rest of the world. There is a need to improve the living standards of the population also in these areas and this report offers some examples on how this can be achieved. The backbone of this report comprises of short descriptions about rural development projects, which have been carried out in the past decade. In these projects the emphasis has been on the efficient utilization of local potential and use of environment friendly technologies. The created best practice approaches offer guidelines, information and advice how similar activities can be carried out in other regions. The projects, which are described in this report, are mainly rural development projects. Also, this paper covers the emergence of the Northern Dimension concept, the European Spatial Development Perspective (ESDP) and the different financing instruments.

This report has been drawn together as part of the "Green cities and settlements" (GREENSETTLE) ENPI CBC project. Green cities and settlements project, which is financed from the Karelia ENPI CBC programme, aims to encourage development of green cities and settlements in remote cross border areas of

Finland and Russia. The overall goal of green cities and settlements is to reduce environmental damage and promote a more balanced accessibility. They are generated by functionality. The project promotes economic and social requirements, which are in harmony to be met in harmony with the ecological and cultural functions of these remote border areas. The ultimate goal is to contribute to a long-term balanced spatial development.

## 2. BACKGROUND

### 2.1 NORTHERN DIMENSION



The concept of Northern Dimension dates from to the mid 1990's, when European Union was expanding to Northern Europe through the accession of Finland and Sweden to the EU. Norwegians turned down the membership in a referendum, but the EU gained two northern member states in 1995, when Finland and Sweden joined the EU. With the inclusion of these two Nordic Countries, the EU got a new northern dimension culturally, politically and geographically. As the northern border of the EU moved overnight from the southern shores of the Baltic Sea almost all the way to the Barents Sea, the new geographical dimension had to be met with an official EU policy. The official EU policy for the Northern Dimension gradually emerged in late 1990's and the first action plan of the policy was adopted in 1999.



The aim of the EU's Northern dimension initiative was to increase cooperation within the Baltic Sea and Arctic areas between EU member states and other countries in the area, such as Russia, Norway and Baltic States. The initiative was part of EU's cross border and external policies programme and addressed especially the specific challenges and opportunities, which arose from this region. The general aim was to promote stability and security in the region through increased cooperation and dialogue between the regions and countries. The specific goals were to build a safe, clean and accessible environment for people in the north by addressing the special regional development challenges of northern Europe. These include cold climatic conditions, long distances, wide disparities in standards-of-living, environmental challenges including problems with nuclear waste and waste water management, and insufficient transport and border crossing facilities. The Northern Dimension was also intended to take advantage of the rich potential of the region, for example in terms of natural resources, economic dynamism, and a rich cultural heritage.

A few key themes were recognized as very significant fields of cooperation, such as environment and public health and social wellbeing. The Second Northern Dimension Action Plan led to establishment of two Northern Dimension Partnerships to address these issues. Northern Dimension Environmental Partnership (NDEP) was established in 2001 and the Northern Dimension Partnership in Public Health and Social Wellbeing (NRPHS) was launched in 2003.

These partnerships addressed big northern challenges, which include in NDEP for instance the St Petersburg Southwest Wastewater treatment plant and nuclear safety projects. Funding for these projects was received from European Union, individual countries, international financing instruments and private sector. A specific NDEP support fund was set up, but NRPHS projects are funded separately using already existing finance instruments.

Other cooperation areas, where the Northern Dimension co-operation has not yet been institutionalized into partnerships, were identified in 2005. These include economy, external security, freedom, security and justice; research, education and culture. Regional cooperation is very active also on energy, transport and information society and Northern eDimension issues. Projects dealing with these issues were funded, like those of NRPHS, for example from existing EU programmes, which will be dealt in greater detail later. [55].



## **2.2. HISTORY OF THE EUROPEAN SPATIAL DEVELOPMENT PERSPECTIVE (ESDP)**

Spatial development in the European scale goes back to late 1990's, when the Member States of the European Union approved the European Spatial Development Perspective (ESDP). ESPD defines those objectives and general principles of spatial development, which the EU aims to meet in order to ensure sustainable balanced development throughout the whole European Union. It is not enough just to know the economic growth and economic indicators in the different regions of the EU. Concerted action is needed in order to decrease these identified economic gaps between the more and less prosperous regions. This document was born as cooperation between the Member States and the European Commission on the Committee on Spatial Development (CSD) [56, abstract].

The preparation of the ESDP had begun with the Liège Council in 1993. Several successive presidencies, assisted by the Spatial Development Committee, which was composed of representatives of the Commission and national officials, drew up a number of drafts resulting in the final adoption of the ESDP [58].

The ESPD is not a legally binding document, but it still constitutes the policy framework for cooperation between community sectoral policies, which have significant spatial impacts between member states, their regions and cities. This intergovernmental document offer guidance for spatial planning on those central areas, which are in interaction with spatial development – urban and rural development, transport and the natural and cultural heritage. ESPD is consistent with the political principles, which had been agreed in 1994. These are the following ones, as given in the official ESDP report: [64]:



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- spatial development can contribute in a decisive way to the achievement of the goal of economic and social cohesion,
- the existing competencies of the institutions responsible for Community policies remain unchanged. The ESDP may contribute to the implementation of Community policies which have a territorial impact, but without constraining the responsible institutions in exercising their responsibilities”,
- the central aim will be to achieve sustainable and balanced development,
- it will be prepared respecting existing institutions and will be non-binding on Member States,
- it will respect the principle of subsidiarity,
- each country will take it forward according to the extent (57, p11)

The background of the European Spatial Development Perspective is the main goal of the EU - achieving a balanced and sustainable development between member countries and regions by strengthening economic and social cohesion. The ESPD's view on sustainable development differs from the definition given in the United Nations Brundtland Report. In addition to the environmentally sound economic development it also includes a balanced spatial development. This aims to reconcile the economic and social claims for spatial development together with the area's ecological and cultural functions. In this way it will contribute to a sustainable, and at larger scale, balanced territorial development. (57, p10)

The purpose of the spatial development policies is to contribute to a balanced and sustainable development of the whole European Union. The three fundamental goals of European policy - economic and social cohesion, conservation and management of natural resources and cultural heritage; more balanced competitiveness of the European territory - should be achieved in all the regions of the EU.

The ESDP is policy framework which suits well for the sectoral policies of the Community. They also take the spatial impacts of member states, regional and local authorities into consideration as they aim to achieve a balanced and sustainable development of the European territory. The ESDP encourages co-operation, but at the same time it also respects the principle of subsidiarity [57p. 3, abstract].

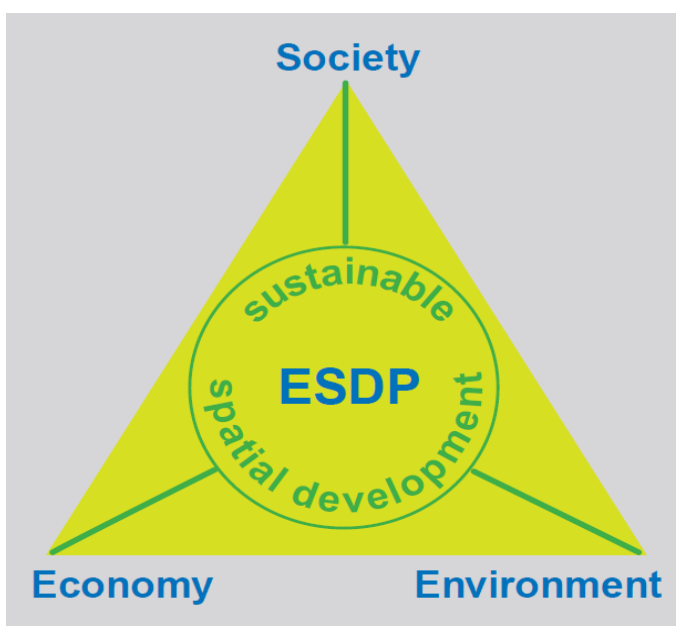


Fig 2. Triangle of Objectives: a Balanced and Sustainable Spatial Development [57].

Figure 2 illustrates how the three fundamental goals of European policy can be joined together. In order to achieve a more spatially balanced development, these goals must be pursued simultaneously in all regions of the EU and their interactions have to be taken into account. (57, p10)

The ambitious overall aim is that the EU would gradually develop from an Economic Union, where regions and individual countries safeguard regional diversity, into an Environmental Union and Social Union. This goal is ambitious, since the ESDP can be regarded as a significant achievement in itself. ESDP is product of small band of European planners, who managed to formulate a complex Europe wide issue into an actual plan. Realization of this plan is completely another issue, as there are divergences between European planning traditions and there is not either a unified opinion about the European integration. An overall solution or roadmap for ESDP is not possible, as there is not consensus about the European integration. Even if the politicians of the member countries would be able to reach this, there are still numerous difficulties on the grass root level. Therefore it has been agreed that a strategic solution, which would lead to a cohesive union, is only possible in the long run. But in order to keep the momentum alive and to continue to strive for a future ESDP, funds have been allocated by EU to specific structural funds. These funds are used to support projects and ventures, which aim to decrease these economic and social gaps between the regions. [56 abstract].

## 2.2.1 EU FUNDS FOR SUSTAINABLE REGIONAL DEVELOPMENT

Many surveys point out that the disparities between the member states of the EU have decreased over the years, but on the regional level the development has not been as favourable. In fact, the differences within numerous member countries have increased at the same time, leading to more energetic and prosperous growth centres and to regions, which are headed to the opposite direction due to emigration, decreased industrial and economic activity, etc. Similarly, the differences between the urban powerhouses of the EU and the stagnant peripheral rural regions have increased. This presents a fundamental challenge for the goals of the whole EU, as the balanced and sustainable development of the whole EU seems to be drifting further away. A significant tool in turning this development around and closing these gaps are the structural funds of EU.

Common agricultural policy (CAP) and Structural Funds have traditionally constituted the biggest part of the EU budget, and they both have been used to bring cohesion between the regions. Whereas the CAP has been used to keep the countryside living by supporting agriculture, the Structural funds have targeted other areas as well. The structural funds have provided assistance to those areas, which are lagging behind in development or facing conversion, and there has been specific Community initiatives for rural, urban and border areas. [64].

The structural funds will be dealt in detail later on, but besides these financing instruments for regional policy, other sectorial policies of the EU can be used to further sustainable regional development. These include for instance the Framework programmes and COST, which promote research and development, and LIFE +, which is the environment and nature conservation programme of EU. An important tool for the rural development is the European Agricultural Fund for Rural Development (EAFRD). Also national financing instruments are used to support projects, which aim to increase sustainable regional development on national level. For instance the Finnish Academy and TEKES (Finnish Funding Agency for Technology and Innovation) have supported research projects on this field in Finland.

## 2.2.2 EUROPEAN REGIONAL DEVELOPMENT AND SOCIAL DEVELOPMENT FUNDS

The European Regional Development Fund (ERDF), European Social Fund (ESF) and Cohesion Fund are the specific financing instruments, with which EU aims to address the imbalances between its regions. They constitute about 36 per cent of the total EU Budget during the programme period of 2007–2013. Convergence, Regional Competitiveness and Employment; and European territorial cooperation are the specific objectives, which these structural funds and instruments have been set to deal with (Figure 3). Whereas Cohesion Fund is directed specifically for poorer member states, the ERDF and ESF are aimed at regions of member states. Both of these programmes promote Convergence as well as Regional Competitiveness and Employment objectives, but the use of these objectives differs from each other. Money for Convergence is available only for those regions, whose Gross Domestic Product (GDP) is less than 75 per cent of the EU average. Due to the expansion of the European Union in Central and Eastern Europe in the early 2000's, most of the regions receiving Convergence funding are located now in the new member states. Funding for Regional Competitiveness and Employment is directed to the other, richer regions.

Objectives	Structural Funds and instruments		
Convergence	ERDF	ESF	Cohesion Fund
Regional Competitiveness and Employment	ERDF	ESF	
European Territorial Cooperation	ERDF		

Fig. 3. Objectives, structural funds and instruments of the EU Regional Policy for 2007–2013 [60]

ERDF finances four kind of activities. It aims to create sustainable jobs by providing direct aid in the form of investments to companies (in particular SMEs). It also supports various infrastructures, which are linked to research and innovation, environment, telecommunications, energy and transport. The fund provides financial instruments (capital risk funds, local development funds, etc.), which support regional and local development and promote cooperation between cities and regions. ERDF finances also technical assistance measures.

ERDF have separate priorities for these two main objectives, which apply to different regions. The Regional Competitiveness and Employment objective, which applies to the Finnish regions, has three main sectors for funding: 1) improving innovation and knowledge based economies, 2) improvement of environment and risk prevention, and 3) access to transport and telecommunications services.

ESF on the other hand focuses more on the improvement of employment and job opportunities throughout the regions of the whole EU. ESF supports initiatives, which seek to adapt workers and enterprises to the demands of the ever changing world and initiatives promoting integration of disadvantaged people in the labour markets. Increasing of the employment opportunities of jobseekers, women and immigrants are also on the agendas, as well as support for various educational systems. [60]

## 2.2.3 EUROPEAN TERRITORIAL COOPERATION FUNDS

The third objective of the EU's structural funds and instruments for regional development is European Territorial Cooperation, which receives its funding from ERDF. This element, which constitutes only less than 5 per cent of the total funding allocated to ERDF during 2007–2013, is a key element in promoting co-operation within and beyond the borders of EU. The territorial cooperation offers an opportunity to put the ESPD into practice, to share good practices in spatial planning between the participating regions. This makes it possible to test new, potential common European objectives in smaller scale between some regions, before they might be introduced throughout the whole EU. The objective consists of almost 90 programmes, which are divided into three dimensions: Cross-Border Cooperation (CBC), Transnational cooperation and Interregional cooperation.

Funding for borders crossing cooperation is provided by 75 cross border programmes. The aim of the CBC is to transform the involved regions into strong economic and social poles. The CBC targets numerous areas, for instance entrepreneurship, management of natural resources, linking of urban and rural areas, improvement of transport and communication networks, joint use of infrastructure, etc. All programmes have been developed in response to the specific characters of the individual programme areas, but naturally the common strategies of EU have had a central role in this as well. [65]:

Interreg IVA North is one of the above mentioned CBCs of the current programme period. The programme area of this CBC covers Northern Finland and Northern Sweden, but also Northern Norway. The general goal of the programme is to increase competitiveness and cohesion in the programme area. The specific priorities of the programme are the following: 1) Industrial development, 2) Research, development and education, 3) Regional connections and identity, 4) Programme for the Sami, and 5) Technical support for the administration of the programme. [66]:

CBC programme includes also programmes specifically meant for EU's external border regions. Earlier on these funding instruments were divided into Interreg programmes, which financed EU regions on external borders, and to financing instruments supporting the external non EU regions. One of the last mentioned was Technical Assistance for the Commonwealth of Independent States (TACIS) programme, which was directed to regions of the former USSR. Similar programmes were set up, for instance, with North Africa and Middle East. These two separate financing instruments were merged into Cross Border Cooperation European Neighbourhood Programme Initiative (CBC ENPI). Finland is involved in three CBC ENPI programmes during the programme period of 2007–2013: Kolarctic, Karelia and South-East Finland Russia. [65]:

Transnational Cooperation is supported by 13 programmes, which target greater European regions, which includes regions, which are not necessarily border neighbours. One of them is Northern Periphery Programme (NPP), which includes Northern Scandinavia, Iceland, Faroe Islands, Greenland and parts of Ireland, Scotland and Northern Ireland. Despite the long geographical distances, this region shares many common features, such as harsh climate, remoteness and sparseness of population. Common challenges can be met with cooperation and sharing of best practices. The specific priorities of this programme are: 1) promoting innovation and competitiveness in remote and peripheral areas and 2) Sustainable development of natural resources. The overall goal is that the projects could result in spatial integration throughout the Community. [67]:

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The Interregional cooperation is represented only by one programme, INTERREG IV C, which aims to improve the effectiveness of regional policies and instruments by sharing solutions. The programme area covers whole of the EU and it offers a forum to exchange experiences on two priorities: Innovation and knowledge economy, and environment and risk prevention. The main activities financed by the programme involve networking activities, which deal with sharing of information of chosen policies or developing already identified good practices. The activities should boost the competitiveness of the participating regions, but decrease similarly the regional disparities. [68]:



## 3. PROJECTS

European Union and other national funding instruments have provided financial support for countless projects, which have targeted the challenges of the rural and semi rural regions in the north. The databases of the funded projects, which are kept by the programmes, formed the natural starting point for compiling a list of the best practices of these development projects. Most promising examples were selected for this report, which are presented here in detail. A general description is given for each project together with information about the funding instrument, project partners and implementation period.

The projects were divided into different categories based on their theme or topic. Some projects were quite distinctive and were grouped together without much effort. With some other projects this task was not quite as easy one. Many of the projects had common, overlapping features, which made it difficult to draw boundaries between them. Still, it made more sense to try to divide the projects into more categories and the projects were divided into seven groups. Some of the projects could be placed in several groups, but each project is now included in that category, which characterises the project in the best way. The projects are presented here by their groups, and there is a short introduction in the beginning of each subchapter, which explains what kind of projects are included in this category.







### 3.1 NATURAL RESOURCE BASED PROJECTS

The projects of this category include activities, which are based on utilization of natural resources. These natural resources consist of forests, wood, natural fibres, fishes & aquatic life etc. These projects, which are dealing with the challenges of using local natural resources, have been supported by a wide variety of different financing instruments.

#### **ANACOMPO- Application of natural fibre reinforced composites in harsh environments**

**Project description:** The main purpose of the project is to mobilize research efforts in northern communities of Sweden and Finland for exploring the potential of composites, which are made completely by bio-based constituents (fibers and polymers). This project also intends to carry out joint research activities and disseminate its results to the industries, which are looking for innovative eco-efficient materials and structures in order to reach economical as well as environmental benefits. The R&D work in this project will focus on developing eco-efficient lightweight composite materials.

**Financing instrument:** INTERREG IV A NORD

**Implementation period:** 1.1.2012–31.12.2013

**Project partners:** Teknologicentret KETEK AB, Swerea SICOMP AB, Kokkola unit of Tampere University of Technology, Luleå University of Technology [26].

#### **PELLETime - Solutions for competitive pellet production in medium size enterprises**

**Project Description:** The overall objective of the project is to produce a package of tools to facilitate establishment of enterprises in pellet production, support existing pellet production, and enhance renewable energy availability throughout the northern periphery region. The small scale production of pellets currently faces both technological limitations as well as lack of knowledge. The project addresses these challenges by offering a holistic approach for SMEs ranging from identification and estimation of available resources, raw material procurement, to the design of the entire pellet

production process to the final product. PELLETtime will encourage sustainable expansion of the raw material resource and carry out widespread awareness raising and information dissemination to facilitate market development.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2008–31.12.2010

**Project partners:** North Karelia University of Applied Sciences (LP), Finnish Forest Research Institute (Joensuu Research Unit), Joensuu Regional Development Centre JOSEK Ltd, University of Kuopio, Oulu University of Applied Sciences, Highland Birchwoods, Swedish University of Agricultural Sciences (Biofuel Technology Centre), Herads- and Austurslandskogar (HRS), Iceland Forest Service [12].

## **Northern ToSIA - Assessing Sustainability of Forest-based Activities in Rural Areas of the Northern Periphery**

**Project Description:** ToSIA stands for Tool for Sustainability Impact Assessment of the Forest Wood Chain and it analyses the sustainability of production processes in the Forest-Wood Chain in terms of social, economic and environmental sustainability indicators. This project will investigate options for improving the sustainable use of forest resources in selected regions of the NPP area using ToSIA and applying it in regional development and business from two perspectives: First, public bodies engaged in regional development strategies will employ the tool in a multi-stakeholder setting to explore better sustainable development scenarios in the region. Secondly, companies using forest resources in the NPP region will adapt the tool to their sustainability assessment routines, enabling them to improve their corporate social responsibility as a part of the whole forestry wood value chain operating in the remote conditions of the NPP region. As a result, the tool will be available for wider application in the NPP area.

The project implementation is based on close cooperation between research, public bodies and forestry businesses. In the long term, the Northern ToSIA project aims to improve sustainable forest resource use in the NPP area: the regional development dialogue between research, public administration, business sector, and other stakeholders will be improved, and in turn, this will contribute to efficient and sustainable management and utilisation of resources in the NPP region.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.6.2008–31.8.2011

**Project partners:** European Forest Institute, Forestry Centre of North Karelia, Scottish Forest Research (The Research Agency of the Forestry Commission), Swedish University of Agricultural Sciences (SLU), Department of Forest Ecology and Management, The County Governor of Nordland, Norwegian Department of Agriculture [9].

## **Decentralised Bio-refineries**

**Project Description:** The aim of the project is to create significant new knowledge about the possibilities of forest biomass in advanced fuels and in new products and materials. The project promotes value chain based business in Eastern Finland and the formation of new companies on this field. The expertise of the project benefits directly the business activities as knowledge in the action,

development of devices and products, commercialization and service research readiness for the companies etc.

The project is implemented as three subprojects, which are cooperating with each other and outside. In the first one the goal is to study and to illustrate the possibilities to expand biogas production in Finland using forest biomass. The second subproject aims to find out the possibilities of small-scale CHP's to operate in Eastern Finland. Also the role of thermal refining processes (thermal gasification, torrefaction and biocarbon) in the future energy management of Eastern Finland will be studied and new products will be searched. The last subproject addresses the production and quality issues of the raw material, taking especially the processes and the business models of the refining processes into account.

**Financing instrument:** European Social Fund

**Implementation period:** 1.8.2011–31.12.2013

**Project partners:** University of Eastern Finland, North Karelia University of Applied Sciences [33].

## Wood fuel quality management - LAAVA

**Project Description:** The aim of the LAAVA project is to establish a testing environment for moisture content of stored energy wood. The control of the moisture of the wood storages is becoming more important, as the use of energy wood keeps on increasing. So far it has been very challenging to define the impact of weather conditions and that of natural drying for stored energy wood, which this project aims to solve. Using tailor-made storage units, whose weight is constantly measured, and combining this information about moisture changes with data from a weather station, the impact of these two factors can be verified. These results will be used to make prediction models, which can be used in the development of guidance systems and quality measurements for energy wood. This will make it possible to optimize transportations of energy wood, as the moisture contents of stored energy wood can be estimated more exactly.

**Financing instrument:** Tekes (Finnish Funding Agency for Technology and Innovation)

**Implementation period:** 1.4.2011–31.12.2013

**Project partners:** Finnish Forest Research Institute, University of Eastern Finland, North Karelia University of Applied Sciences, Finnish Meteorological Institute and nine bioenergy and IT companies [34].

## Development of energy wood markets ROIHU 2

**Project Description:** The project strived to improve the energy wood's availability and appearance on the market. The aim was to develop the cooperation between forest owners in organizing the procurement of energy wood. This was achieved by improving information society skills, networking, improving service skills and developing operations of heat production enterprises.

During the project a MottiNetti -online service was created, which the wood suppliers could use as tool to inform customers about the energy wood they were selling. The buyers could use this service to compare prices by locality, wood species and sellers. During the project the service was developed further and Metsään Palstat -service was also created. With this service the forest owners, who were looking for entrepreneurs to carry out tree harvesting in their forest, or wood purchasers or other

forest service providers could find potential forest owners, who might be interested to sell wood or hire their services

**Financing instrument:** European Agricultural Fund for Rural Development

**Implementation period:** 1.1.2004–31.12.2006

**Project partners:** Finnish Forest Centre North Karelia[35].

## **RoK-FOR – Sustainable forest management providing renewable energy, sustainable construction and bio-based products**

**Project Description:** RoK-FOR (Regions of Knowledge for Forestry) coordination project connects the forestry and environment sectors of five regions in Europe. The project will create new partnerships for actors of the regions and it will link the economy and know-how of the regions in the chain of production based on environment and natural resources.

A common European action program is compiled for the five partner regions. Research, production and development projects within the sectors of bio-energy, bio-based products and wood-based construction will be started. One of the essential objectives is to organize financing for new projects.

The election of the sectors is based on the Lead Market Initiative. The activities will respond to the demands of the markets. The project aims to promote forest sector supporting sustainable use of natural resources, renewable energy, sustainable construction materials and biobased products, without jeopardizing the environment. The objective is to initiate strong co-operation between the participating forestry-based clusters, through formulating a joint strategy and action plan for development, leading to increased innovativeness and competitiveness

**Financing instrument:** EU 7<sup>th</sup> Framework Programme

**Implementation period:** 1.2.2010–31.12.2013

**Project partners:** Centre for Economic Development, Transport and the Environment of North Karelia (LP), EFIATLANTIC - Atlantic European Regional office of EFI, Centre Tecnologic Forestal de Catalunya/Solsona, Croatian Forest Research Institute/Jastrebarsko, Albert-Ludwigs-Universitaet Freiburg, European Forest Institute [36].

## **Multidimensional sustainability framework to evaluate forest and wood energy production – BioSus**

**Project Description:** BioSus-project provides new information of forest-based bioenergy systems' sustainability effects. Sustainability assessments are implemented by using an evaluation framework, which has been developed in the project. The evaluation framework will enable simultaneous examination of ecological, economic, social and cultural effects of different forest-based bioenergy production chains.

The sustainability evaluation framework will be employed in BioSus-project for recognizing the prerequisites for sustainable forest resource usage especially in the Eastern Finland. However, the structure of the evaluation framework can be also employed in other regional and national level sustainability examinations. The sustainability assessments of the BioSus-project are related on actual forest-based bioenergy production chains: small-scale district heating with forest chips, combined heat and electricity production with wood and peat combustion in a large CHP plant, wood pellet



production for domestic and international markets and biodiesel production with wood and peat. The life-cycle effects of these four production chains are assessed within the evaluation framework with multi-criteria decision analysis and life-cycle assessment.

The reconciliation of the ecological, economic, social and cultural needs related to the different options for using forests has been seen as a crucial part of sustainable natural resources management. In previous studies, the dimensions of sustainability have mostly been approached one-dimensionally. The results of the BioSus-project may be applied in bioenergy firms' business planning, in developing regional opportunities for livelihood and in framing national energy policy. The sustainability evaluation framework provides possibilities for identifying critical points in bioenergy production chains and for seeking ways of supporting sustainable use of natural resources both within individual firms as well as in regional and national economies

**Financing instrument:** Tekes (Finnish Funding Agency for Technology and Innovation)

**Implementation period:** 2009–2011

**Project partners:** Finnish Environment Institute SYKE (LP), Finnish Forest Research Institute Metla, University of Eastern Finland (UEF), Fortum Power and Heat Oy, Karjalan Metsä ja Energia Oy, Metsäpalvelu Turunen Oy, Vapo Oy [37].

## **Robinwood Plus – Apply Participatory Forest Planning for Sustainability**

**Project Description:** The project aims at exchanging experiences between partner regions in order to stimulate and sustain economic and social regeneration of rural areas through participatory and sustainable forest management. The theme of the project is forestry as key resource for development, environmental protection and improvement of life quality. Main objective of the project is the promotion of the multifunctional role of forests as engine for economic development, environment protection and improvement of quality of life in rural areas. The aim is to stimulate the rural economy through forestry in a systematic way, by updating specific policies and improving governance to address primarily the need for competitiveness & innovation, for involving all relevant stakeholders (policy makers and institutions, citizens, companies, forest owners) and for developing a complete local wood supply chain.

Kainuu is responsible for the implementation of the Finnish subprojects. Kainuu's best practices in Robinwood Plus project are the Kainuu bioenergy programme (Kajaani University Consortium), landscaping of rural villages (ProAgria Kainuu), forest planning for private forest owners (Forestry Center of Kainuu), participatory planning in management and versatile utilization of natural resources in Kainuu Kalevala Park (Metsähallitus, Natural Heritage Services) and the production of management and development plans of state forests (Metsähallitus)

**Financing instrument:** INTERREG IVC

**Implementation period:** 2010–2013

**Project partners:** Liguria Region (LP), Regional Council of Limousin, Regional Council of Kainuu, Regional Council of Harghita, Regione Calabria [38].

## Development of eco-efficient pellet production and technology especially for decentralized pellet production

**Project Description:** EkoPelletti R & D project aims to promote diversification of renewable energy production by disseminating the best practices of the pellet production. The focus of the project is on the technical and financial solutions of farm-scale pelletization. The suitability of different local materials for the making of pellets will be studied. Besides technical issues, there will be plenty of attention on the economics, legislation and other issues. The overall aim is to increase regional energy self-sufficiency and foundation of new energy businesses on the countryside.

**Financing instrument:** European Agricultural Fund for Rural Development

**Implementation period:** 1.1.2010–30.6.2012

**Project partners:** Oulu University of Applied Sciences/Natural Resources and Technology Unit, University of Oulu/Department of Chemistry and Department of Process and Environmental Engineering [39].

## Developing a biogas network in North Karelia

**Project Description:** This project creates conditions for production and delivery of renewable biogas for North Karelian traffic. The long-term goal of this project is to create a network (cluster) for biogas technology, companies, producers and distributors and ultimately to produce 100 % renewable traffic biogas from region's own raw material sources. The project aims to support the development of a production structure which produces 100 % renewable fuels from region's own raw material sources, including the side products of farming, waste disposal and landfill gases. This will be achieved by developing an economically viable model for biogas production, including a risk analysis outlining the technological aspects, economic risks and a plan of how the actions will reduce CO<sub>2</sub> emissions. Preliminary business plans will also be made available to individuals and companies, who are interested in producing and delivering biogas.

Biogas benefits the region in general on two levels: From an environmental point of view, using biogas in the transport sector reduces oil dependency and greenhouse gas emissions. Meanwhile, from an economic point of view, opting to use and produce a local and renewable fuel source creates opportunities for new and local businesses and boosts the local economy

**Financing instrument:** European Regional Development Fund

**Implementation period:** 1.2.2010–31.12.2012

**Project partners:** Joensuu Region Waste Management Ltd (LP), JOSEK Ltd, City of Joensuu, Kitee and Kontiolahti municipalities, Biokymppi Ltd, Doranova Ltd and Jätekuukko Ltd [43].

## Northcharr - Sustainable Aquaculture of Arctic Charr

**Project Description:** Arctic charr is a highly valued fish species in the Northern territory. The Arctic charr farming is still a small industry, but it has potential to grow and to develop into a unique high quality product from the north. Farming this species requires access to cold fresh or brackish water. For this reason the possibility to farm this species in Europe is largely restricted to rural areas in the northern periphery. This project aims to increase the production of farmed Arctic charr in the Northern periphery area.

This will be achieved by identifying production potential and bottle-necks in different regions and with different technologies. Also problems in the farming, which have already been identified, will be addressed. Sustainability, for farming and the environment, and welfare issues are aspects involved in these targets. A triple-helix structure will be set up in order to provide charr farmers and other stakeholders with tools and contact network that will facilitate development. Northern periphery fish farms have the opportunity to provide EU markets with a unique, high quality product while creating important job opportunities in rural areas.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.6.2008–30.9.2011

**Project partners:** Swedish University of Agricultural Sciences (LP), Holar University College, Nofima Akvaforsk Fiskeriforskning AS [8].

### **EcoFish - Environment friendly fish farming and use of cleaner fish**

**Project Description:** The project intends to develop the methods and technology required to rear cleaner fish for use by the cod and salmon farming industry in the partner countries. The physical outcome of the project will be a substantial number of wrasse for field application for farm testing the technique on cod and salmon farms in partner countries. Dedicated marine hatchery areas to rear wrasse will be established in Ireland, Norway and in Scotland with the focus on developing successful rearing techniques and production through close collaboration and exchange of information. One part of the project will examine the management of wrasse in salmon and cod cages, which will focus on the welfare of the wrasse.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2008–31.12.2010

**Project partners:** Bodø University College/AFN, Bioforsk/Arctic Agriculture and Land Use Division, Viking Fish Farms Ltd, Ardtoe Marine Laboratory, Martin Ryan Institute (MRI) [4].

### **Forest energy -project portfolio**

**Project description:** Forest energy project was a collaboration project aimed at increasing coordinated cooperation in bioenergy in Eastern Finland among the local research and educational institutions. The project was divided to 5 subprojects, which each had different aims to support bioenergy utilization and business opportunities in Eastern Finland.

#### **Subproject A: Production of biodiesel from wood and peat**

The aim was to study wood biomass cultivation, processing into pellets and thermal gasification to raw material of biodiesel. Firstly the aim was to bring the know-how of short rotation forestry of wood biomass into practice in order to offer biomass for the biodiesel production. The second part of the project was to organize gasification tests of biodiesel production using different biomasses and to build a pellet line and gasification unit of pellets.

#### **Subproject B: Production of forest biomaterials and management of its environmental impacts**

Integration of forestry of the forest energy and the production of merchantable wood and its effects to the carbon sink and carbon source dynamics of the forest ecosystem were studied in the second subproject. On this basis, a life cycle assessment tool was made for the forest energy production. With the tool it is possible to study the effects of different forestry chains to the emissions formed in harvest and transportation of forest energy in relation to the ability of forests to bind carbon.

## **Subproject C: Technology and economics of forest biomass procurement for energy production**

The aim was to develop a service product for the supply of raw materials of biomass plants and to evaluate the maintenance support performance of the plants. A study was made about the actors of the forest biomaterials' supply chain in the target area and about the procurement solutions and harvesting technology of forest biomass in use. The process descriptions of the operating environment of the forest bioenergy's supply chain were made. In addition a calculation of the production alternatives of pulpwood and energy wood was made.

## **Subproject D: Raw material properties and measurement of forest-based biomaterials**

Drying models of small-scale whole wood and stem and pulpwood in parcel/plot pile and forest depots was made in subtask D1, which gives an idea about the pulp wood's drying models for the measuring instruction of merchantable and energy wood. A method for forecasting the accumulations of crown mass and stubs was prepared in subtask D2. Basic information of the stand marked for cutting and the collected data of the chopping machine's measuring devices forms the basis for this method. The subtask D3 provides information about the raw material properties of energy woodchips cultivated by short rotation. Subtask D4 studied how good the moisture of energy wood can be measured by a portable moisture meter in a terrain.

## **Subproject E: Business models and commercialization of the production of forest biomaterials**

A detailed calculation model about the production and costs of a CHP plant and a pellet plant was compiled. This included the entire value chain so that the examination of the different production options could be made as thoroughly as possible. In the second part of the project the consumers' preference and willingness to pay for energy produced by bioenergy - both in electricity and heat production - was examined.

**Financing instrument:** European Social Fund

**Implementation period:** 1.11.2008 – 31.12.2010

**Project partners:** University of Eastern Finland (LP), Finnish Forest Research Institute (METLA), North Karelia University of Applied Sciences [41].

## **NEED - Northern Environmental Education Development**

**Project Description:** NEED project was designed to develop an innovative, operational model to improve the educational use of geo-scientific knowledge in sites of natural value. The project focuses on both environmental education and educational tourism in Nature sites; to increase skills, and raise environmental awareness amongst the local inhabitants. Through the transfer of geo-knowledge and innovations, the NEED project aims to conserve natural environments and cultural heritage, and to create more jobs and sustainable economic opportunities in previously underdeveloped remote rural areas. The project will also create a social network between the educational and tourism resources of urban and rural areas.



**Financing instrument:** Northern Periphery Programme

**Implementation period:** 7.1.2008–31.12.2010

**Project partners:** University of Eastern Finland, University of Iceland, Nordland National Park Centre, Clare County Council [6].



## 3.2 ICT BASED PROJECTS

The projects described in this chapter have been financed from the Northern Periphery Programme. The target of these projects has been to improve living conditions of the people living in the Northern periphery with the use of ICT.

### DARRA - Digital Age in Rural and Remote Areas

**Project Description:** The objective of DARRA project was to decrease the digital divide in remote and rural areas through boosting the usage of ICT by SMEs and the public sector, and improve the overall regional competitiveness. DARRA capitalises on the findings of BIRRA project. The digital divide is a handicap inter-and intra-regionally and one indicator of a region's peripherality. The project will create a vision of year 2013 regarding life styles in peripheral areas and / or sparsely populated regions. This vision will guide the development of ICT strategies in peripheral regions. The e-Ladder model, which was developed in BIRRA, will be used for this purpose by the partner regions, taking one step forward in selected domains of the e-Ladder. This means very concrete steps in regional ICT



development. The actions in this project will lead to raised awareness and ICT uptake among SMEs and the public sector.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2008–31.12.2010

**Project partners:** Kemi-Tornio University of Applied Sciences, Joint Authority of Kainuu Region, Kainuun Etu Oy, The Association of Local Authorities in Västernorrland, Mid Sweden University, Federation of Private Enterprises Västernorrland, European Regions Network for the Application of Communications Technology ERNACT, Shannon Development, Sogn og Fjordane County Governor, Western Norway Research Institute, Rovaniemi Regional Development Agency, University of Limerick [3].

### SuLA - Sustainable Living Assistant

**Project Description:** The SuLA project is the vision of a home supervising service, which will enable house-owners and social housing providers to provide a service that will allow householders to reduce energy use in their homes and decrease energy costs of heating. This is particularly important in the Northern Periphery region where many of the inhabitants are in a position of fuel poverty because of the harsh climate and high energy costs. The service will be customisable for various heating sources, as well as ventilation and air conditioning equipment, and will take into account local climatic variations.

The concept includes knowledge based decision making software that will make a comparison with expected equipment performance for the recorded climate conditions. This will advise on good operating practice, expected performance and will also alarm the service centre, if the system has malfunctioned and the service centre has to take over.

The project will create a basis for a service, which can be taken up by device manufacturers, automation, Heating, Ventilation and Air Conditioning (HVAC) professionals and other experts with advanced knowhow in energy efficiency issues. The project will demonstrate how the triple helix model works in practice: academic institutions will develop the service, a social housing partnership will host the service and an SME (an associate partner) is going to monitor the system and respond to the service calls.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.2.2012–30.6.2014

**Project partners:** Oulu University of Applied Sciences, Lews Castle College/UHI Engineering Department, University of Ulster/Newtownabbey [22].

## 3.3 HEALTH & SAFETY BASED PROJECTS

This chapter includes projects, which have been financed from the Northern Periphery Programme. Health & safety based projects are designed to improve health and safety of the population while safe guarding the environment.

## Competitive Health - Competitive Health Services in Sparsely Populated Areas - e-Health Applications across the Urban-Rural Dimension

**Project Description:** The aim of the "Competitive Health Services" project was to find out ways to enhance the provision and accessibility of health services in the sparsely populated regions of Europe by developing and implementing innovative e-Health solutions and promoting transfer of the best e-Health practices.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2008–31.3.2011

**Project partners:** Northern Ostrobothnia Hospital District, The University Court of the University of Aberdeen, The Norwegian Centre for Telemedicine (NST), University Hospital of North Norway HF, County Council of Västerbotten, The National University of Ireland [1].

## CoSafe - The cooperation for safety in sparsely populated areas

**Project Description:** The aim of CoSafe was to increase the safety for inhabitants and tourists in sparsely populated areas in case of a major accident or disaster. In these areas of the Northern periphery the resources are limited in terms of trained personnel, adequate equipment and transport capacity. These matters provide challenges during rescue operations in sparsely populated areas together with harsh weather conditions and long transport distances. The project aims to develop transboundary cooperation, not only when it comes to dealing with disaster situations, but also in terms of equipment alternatives, education methodology and organization system.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.6.2008–31.5.2011

**Project partners:** Emergency and Disaster Medical Centre (AKMC) of the County of Västerbotten (LP), Finnish Institute of Occupational Health, Northern Ostrobothnia Hospital District/ Division of Surgery and Intensive Care, Regional Rescue Services of Oulu-Koillismaa, Emergency Services College, FSA University Hospital, NHS Western Isles, Scotland [2].

## Recruit and Retain - Recruitment and Retention of Health Care Providers and Public Sector Workers in Remote Rural Areas

**Project Description:** Recruit and Retain is a project which sets out to find solutions to the persistent problem of difficulties in recruiting and retaining high quality people to work in the public sector in the remote rural areas of Northern Europe. The core project will address issues and solutions with respect to health care workers. The Recruit and Retain Strategic Management Group will identify areas within the core project work which are applicable to other public service workers. This will relate to those people working in education, the social services, the fire and emergency services and local government civil servants and will constitute the additional work of the Strategic project.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.6.2011–30.6.2014

**Project partners:** NHS Western Isles (LP), The Agency of Health and Protection of Greenland, FSA University Hospital, Helse Finnmark Health Trust, Emergency and Disaster Medical Centre (AKMC) of the County of Västerbotten, Storuman Health Care Center, The University Court of the University of Aberdeen/Centre for Rural Health, Northern Ontario School of Medicine, Cooperation and Working Together (CAWT) [14].



### 3.4 TRANSPORT & INFRASTRUCTURE BASED PROJECTS

These projects have been financed from various funding instruments. The category includes projects targeting maintenance of road infrastructures, transportation services for tourists, developing intelligent roads and utilisation of renewable transportation fuels.

#### **ROADDEX IV - ROADDEX Network Implementing Accessibility**

**Project Description:** The project aims to introduce real operational change in the construction and maintenance of rural roads across the Northern Periphery through a combination of consultancy services, demonstration projects and education. ROADDEX developed services (strategies) and products (technologies) will be used on local roads by local Partners supported by a ROADDEX consultancy service and knowledge centre". Joint research and development will also continue into the effects of climate change, road widening and health issues arising from poorly constructed roads. The ground breaking technologies developed by the Project have been shown to be cost effective and money-saving where they have been used.

The new “ROADEX consultancy service” aided by the local ROADEX Partners, will guide, empower and support the local district offices to enable them to take up the challenges in adopting the new technologies and give them the confidence to use them on their local roads networks. This will involve teaching, promoting, understanding, sharing, and implementing the new technologies. Consultancy services will include guidance on initial surveys and interpretation, assistance with design, new technology applications, monitoring systems, case studies, reporting, and sharing the feedback with others. Training and support will additionally be given through a new Knowledge Centre, an extended e-learning system and continuing joint research. The Knowledge Centre will also be open for use as a knowledge bank for related existing knowledge within organisations that can be shared with others.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.7.2009–30.6.2012

**Project partners:** Swedish Transport Administration (LP), Finnish Road Administration, Highland Council, Western Isles Council, Forestry Commission of Scotland, Department of Transport of Ireland, National Roads Authority of Ireland, Swedish Forest Agency/Luleå, Icelandic Public Road Administration, Property and Emergency Agency of Greenland, Norwegian Public Roads Administration [16].

### **TransTourism - Sustainable Transport in Rural Tourism Areas**

**Project Description:** The project develops and implements solutions for transport services adapted to rural tourism areas in the Northern Periphery. Tourism is important to the economic and social sustainability of many communities in the Northern periphery area. The services developed in the project will facilitate development of tourism in the project area whilst reducing carbon emission and local congestion from private cars at peak season. This will also serve as an example for the rest of the programme area.

The project aims to demonstrate innovative, sustainable transport and transport information services that are environmentally beneficial and economically viable for rural tourism areas. The new services will improve accessibility by public transport and encourage lower car dependency for tourism activities in the project areas leading to longer term economic and environmental benefits.

The services includes new or improved bus services, operated with a flexibility to meet local and seasonal demands on traffic as well as better information and integration of travel opportunities with options for individual travel planning to and within rural areas.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.9.2010–31.8.2013

**Project partners:** Swedish Transport Administration, Municipality of Härjedalen, Destination Lofsdalen Ltd, Destination Funäsdalen Ltd, Icelandic Tourism Research Centre, HITRANS, University of Ulster/Coleraine, Clare County Council, Action Renewables [23].

### **Intelligent Road**

**Project Description:** The aim of the project is to come up with the concept of a sustainable Intelligent Road System that would offer updated local information about the road surface conditions for those who are on the road. Such a system should also be easy to promote from a marketing point of view.



Another aim is to support the development of the traffic operating environment in the northern parts of Scandinavia, to improve the traffic safety related to climate conditions and to make the international exchange of experiences between Finland and Sweden more efficient. The objective is to support the development of business in Northern Scandinavia through testing and improving the available innovative products that aim at ameliorating traffic safety in Nordic climate conditions. The objective is to create a test-version of the Intelligent Road System that will be subject to further marketing and that would promote the development of the above-mentioned sectors as well as support and generate benefits for the other sectors (e.g. logistics, car manufacturing and car testing).

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 1.1.2010–30.6.2014

**Project partners:** Rovaniemi Municipal Federation of Education (LP), Meteorological institute of Finland, Luleå University of Technology, Centre for Commerce, Traffic and Environment of South West Finland, Vaisala Oy, Sunit Oy, Kovalainen Kuljetus Oy, Municipality of Luleå, Sten Löfving Optical Sensors [30].

### Renewables to traffic

**Project Description:** The aim of the project is to develop competence related to the renewable traffic fuels in North Karelia and to create and develop training products to promote the development of the field. The aim is also to create prerequisites for the knowledge transfer to develop the business related to the renewable traffic fuels.

Prerequisites for the business development will be created by increasing the knowledge and competence about the traffic fuels produced from biomass and by improving their production efficiency. In the project renewable energy technologies are studied widely and practical training and consultation service are started. The aim is to network nationwide and internationally, and to promote commission of traffic biofuels by removing the barriers at the national level.

**Financing instrument:** European Social Fund

**Implementation period:** 2010–2012

**Project partners:** North Karelia University of Applied Sciences[44].

## 3.5 ENERGY BASED PROJECT

The following projects focus on the utilisation of renewable energies, improving energy efficiency, etc. These projects are financed from several different EU funding instruments. Activities dealing with the utilisation of wood based energy were presented in chapter 3.1. Natural resource based projects.

### MicrE - Micro Waste to Energy Business: micro energy to rural enterprise

**Project Description:** MicrE service develops and promotes innovative small scale renewable energy solutions for rural SME's and local organisations in the Northern Periphery. These solutions will use new and existing technologies, which have not been tried in a rural environment before. Particular attention will be given to energy from waste (EfW) technologies, which will be adapted to suit NPP rural regions. This will enhance the capacity for self-sustaining business and organisation life in rural Northern Periphery regions.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2009–31.12.2011

**Project partners:** North Karelia University of Applied Sciences, Joensuu Regional Development Centre Josek Ltd., University of Oulu, International Resources and Recycling Institute, University of Ulster/Coleraine, WESTBIC – Business and Innovation Centre, West Regional Authority (WRA), Mayo County Council [5].

### **NEES - Natural Energy Efficiency and Sustainability**

**Project Description:** The NEES Project will identify and promote products and services which aim to improve energy efficiency in existing domestic buildings, which make use primarily of renewable or recycled materials and services based on natural processes originating and normally accessible in the Northern Periphery Programme region. These products and services should have the potential for being mainstreamed and commercially disseminated inside and outside the region. The NEES Project differs from other previous NPP projects dealing with sustainable energy in that it is focused on energy efficiency rather than the development of renewable energy supplies.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.3.2011–28.2.2014

**Project partners:** University College Cork (LP), Clean Technology Centre/Cork Institute of Technology, Claremorris District and Integrated Resource Development Company Ltd, Umeå University, Glasgow Caledonian University, Arctic Technology Centre, University of Ulster/Coleraine, Northside Community Enterprises Ltd, Ireland [7].

### **RASLRES - Regional Approach to Stimulating Local Renewable Energy Solutions**

**Project Description:** The main objective of the project is to increase the deployment and uptake of locally produced renewable energy solutions in the NPP area. This will be achieved through the development and implementation of targeted Market Stimulation Models (MSM's) and the initial focus will be on the bio-energy sector.

RASLRES will design, pilot and market the best support products and services for creating and sustaining local renewable bio-energy markets in rural areas. In this way, the project will help markets provide sustainable economic growth for local employment, businesses and revenue. A number of pilot projects will be used to stimulate renewable bio-energy use in rural areas.

Using the pilot projects as trial areas, RASLRES will also incorporate measurement tools that can be used for calculating greenhouse gas emissions. In this way it is intended to investigate how to support rural energy businesses in lowering emissions and also reducing business costs through realising the offset value of these efforts.

Finally, the project will establish a network for transnational exchange of knowledge, policy initiatives, technology and methodologies, which can be used later across the entire NPP area.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.9.2009 – 31.8.2012

**Project partners:** Western Development Commission, Action Renewables, Municipality of Norsjö, Environmental Research Institute/North Highland College [13].

## **SMALLEST - Solutions for Microgeneration to ALLow Energy Saving Technology**

**Project Description:** The SMALLEST project will establish an innovative service across all Northern Periphery Programme (NPP) partner regions to raise the scale and quality of training, mentoring and support for rural communities needing help to convert from traditional energy generation to renewable energy generation. The SMALLEST service will assist rural communities by increasing their awareness of the potential benefits of renewable energy generation for their community; assisting with the planning of renewable energy generation, informing about commercial feasibility of it; and improving the skills provision required to support renewable energy generation. SMALLEST will add value by integrating with existing advisory services, filling any gaps in community training and mentoring for conversion to renewable energy generation, and providing supporting business modelling solutions relating to renewable energy generation for communities. SMALLEST will deliver transnational benefit by standardising a support process for converting communities from traditional energy generation to renewable energy generation, which can draw upon pooled skills and shared knowledge across the region. The SMALLEST project builds on existing knowledge and experience available from the existing advisory services in each region. SMALLEST will integrate with existing advisory services and therefore will be customised according to local requirements as the project develops.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 15.6.2009–30.6.2012

**Project partners:** International Resources and Recycling Institute (LP), Inverness College UHI, North Karelian University of Applied Sciences, Action Renewables, University of Ulster/Coleraine, Fuglafjörður Municipality, Municipality of Norsjö, Development Center of East Iceland, Pure Energy Centre [21].

## **Centre of Expertise for Energy in Cold Climate**

**Project Description:** The purpose of the project was to provide tools for coordination of the competence in the field of energy within the different actors in the North Calotte area. This would result in better possibilities for concrete results in research and technical development innovation and product development, commercialisation, business development and internationalisation. This was done by mapping; networking and co-operation among present actors within the energy sector and by creating a platform of expertise within the field of developing energy in the North Calotte area.

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 1.7.2008–30.9.2009

**Project partners:** Luleå University of Technology (LP), Narvik University College [24].

## Network of expertise for energy in cold climate

**Project Description:** The goal of the project was to develop the "Network of Expertise for Energy in Cold Climate" to a competitive, strong network that ensures long-term survival. Workshops and other venues were organised, which provided opportunities for new innovative solutions to technology development based on renewable energy, which could be integrated through new partnerships between SMEs, universities/schools, corporations and public organizations. These technological ideas were to be developed into new energy-efficient and commercial products with export potential through an integrated cross-border co-operation actor.

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 11.1.2009–31.10.2011

**Project partners:** Luleå University of Technology (LP), Education and Training Consortium Lappia, VINN Narvik AS, Narvik University College, Norut Narvik AS [27].

## Pielinen Karelia bioenergy networks and flows

**Project Description:** The project is a subproject of the Research and Innovation Centre of Forest Bioenergy METTI and it is implemented in close co-operation also with the projects Valtimo bioterminal and Decentralised biorefineries (UEF). The main objective of the project is to create new bioenergy sector oriented agricultural and forest business groups to Pielinen Karelia region.

The project creates biomass production, collection, decentralized biorefinery and transport system related business models, which are based on the utilization of Pielinen Karelia biomass resources. One of the most important activities is to spread the know-how of North Karelian bio-economy actors and networks and about the objectives of the North Karelia climate and energy programme among rural enterprises in North Karelia. As a whole the project will decrease significantly the greenhouse gas emissions and biowaste amounts in Pielinen Karelia, and increase region's energy self-sufficiency.

**Financing instrument:** European Agricultural Fund for Rural Development (EAFRD)

**Implementation period:** 2011–2014

**Project partners:** Pielinen Karelia Development Center Ltd (LP), North Karelia University of Applied Sciences. [40].

## OCTES - Opportunities for Community groups Through Energy Storage

**Project Description:** The project will develop a business model that can deliver a new Integrated Renewable Energy Management Service (IREMS) that can be adapted to suit local needs in a transnational context. The developed Renewable Energy Management Service incorporates smart grid technology with existing renewable energy (RE) know-how, which will be made available to existing advisory services across the NPP region.

The components of OCTES' Integrated renewable energy management service will enable new and existing advisory services to offer solutions to community renewable energy groups involved with RE developments with particular focus on micro generation. This will permit community groups and/or individual house holders to plan and design their system to function with new smart grid technology developments that are tailored to individual needs.



Through the use of smart technology the most economic renewable energy storage mechanism will be recommended. This technology can be integrated in to existing renewable energy projects as well as projects at a planning stage, and the innovative storage solutions that evolve will create growth in enterprises from the design to use of renewable energy storage facilities.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 15.3.2011–15.3.2013

**Project partners:** University of the Highlands and Islands-Lewis Castle College, Oulu University of Applied Sciences, National Energy Authority of Iceland, University of Ulster/Newtownabbey, International Resources and Recycling Institute, University of Iceland/Reykjavík [11].

### **NPNP - New Plants for Northern Periphery Market**

**Project Description:** NPNP develops new opportunities within the green sector and provides growth to the region by introducing new hardy ornamental plants, which are suitable to the region for public spaces and private gardens. The new ornamental plants will be evaluated and presented to the public, commercial growers and outlets in different demonstration parks and gardens in Sweden, Finland, Scotland and Iceland. The NPNP will facilitate the creation of greener and more varied public areas such as city centres and private areas such as gardens in the northern periphery area.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.7.2009–30.6.2012

**Project partners:** Piteå Municipality/Department of Culture and Leisure, MTT Agrifood Research Finland/Plant Production Research, Agronomy Institute/UHI Orkney College, Agricultural University of Iceland/Department of Landscape Planning, Botanical Gardens/University of Oulu [10].

### **Potential development and demonstration of new technologies in the field of environment-friendly small-scale hydropower plants**

**Project Description:** The main objective of this pre-study project was to explore the possibilities of developing technologies for small-scale hydropower plants in the North Calotte area that would be environment-friendly. These plants would be in line with the existing legislation and would not impede natural fish migration. The technology will first and foremost be used for renovation of existing hydropower plants by bringing them in line with the existing ecological requirements, as well as for rebuilding of spillways in the existing dams that are lacking fish tunnels and do not produce energy.

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 1.5.2011–31.12.2011

**Project partners:** Centek (LP), Bedriftskompetense AS [29].



### 3.6 RURAL DEVELOPMENT BASED PROJECTS

This chapter includes activities, which are targeting rural development issues in particular. Majority of the projects are funded from the Northern Periphery Programme and focus on the specific goals set by this programme for the development of the competitiveness and growth potential of the rural and peripheral areas.

#### RIBS Rural Innovation and Business Systems

**Project Description:** The Rural Innovation and Business Systems (RIBS) project will specifically help SMEs in rural regions to address the effects of the economic downturn and strengthen their competitiveness and growth potential. Based on the needs analysis of the SMEs and the business support community in the target regions, RIBS will develop Business Growth Programmes (RIBS products) in four main areas: SME Growth, SME Internationalization, Entrepreneurship, and Rural Clustering. RIBS will facilitate rural cluster development through adopting an explicitly cross-sectoral approach.

The RIBS work programme combines leading innovation system research and knowledge and the accumulated expertise of practitioners in the field of SME support. RIBS will develop four new business support products that have been tested with 120 SMEs and refined through feedback from the SMEs and independent experts. Learning will be captured and disseminated through a new collaborative web platform.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.7.2010–31.12.2012

**Project partners.** Highlands and Islands Enterprise(LP), Luleå University of Technology, Micropolis Ltd, West Iceland Rural Development (WIRD), Shannon Development, WESTBIC - Business & Innovation Centre/Galway. [15].

### RRR - Retail in Rural Regions

**Project Description:** The overall objective is improved service quality in small communities by supporting the survival, development and growth of rural retail shops. By that the project is enhancing economic growth of the regions. The project aims to improve service quality in rural communities by keeping the cash flowing to shops. That means the project is about supporting the survival, development and growth of rural retail shops.

The project purpose is to provide and sustain tailor made support for rural shops. This support will be offered by for this purpose trained professionals on the regions, but also by utilizing the transnational network of professionals. Final product will be a “Triple R model” adapted and implemented in NPP regions. The main activities of the project are joined activities for mapping the needs of the shops, defining the main characteristics of the service, building the service, training the service providers and implement the service on pilot areas. The partnership is a combination of research, public services and private institutions.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.1.2009–31.12.2011

**Project partners:** Kemi-Tornio University of Applied Sciences, Icelandic Centre for Retail Studies, Donegal County Council, Center for Local and Regional Development of Faroe Islands, Community Retailing Network, University of Ulster/Coleraine [17].

### RTS - Rural Transport Solutions

**Project Description:** Long distances, sparse population and financial challenges are at the core of the Rural Transport Solutions project (RTS). RTS project mission is to better the means to move, live and work in rural and coastal areas of Europe. This will be achieved by finding new ways of combining tax paid or subsidized public transport with private transport, aiming at organising sustainable transport systems, meeting the transport needs of companies, schools, hospitals, health and social service organizations, employers, chambers of commerce, hotels and other tourism industries and private citizens. Public Transport services have a significant impact in rural/coastal regions when it comes to social exclusion, security, dwelling and attractiveness of sparsely populated areas. Transport services and solutions are crucial elements of community structure. If comprehensively planned, these systems will enable new possibilities for economic, social and environmental development.

The key actions of the project are:

- Profiling the existing transport services and the utilisation rate of them, and identify transport needs of different groups.

- Identifying new and existing solutions to make rural and coastal transport accessible to all people living in those areas. This includes combining normally separate transport services such as handicap transports, elderly transport service, hospital travel, school transports and commuting to work.
- Utilising the new and existing transport products and services and raise awareness by promoting them.
- Evaluating different transport product and service pilots and valorise new action models to entire sparsely populated area of the Northern Periphery.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.9.2009–31.8.2012

**Project partners:** Regional Council of North Karelia, County Council of Västernorrland, Dumfries and Galloway Council, Development Center of East Iceland, Shetland Islands Council, Pielinen Karelia Development Center Ltd/ Nurmes [18].

### **RYE Rural Youth Entrepreneurship**

**Project Description:** RYE aims to contribute to local, regional, national and transnational rural economic development by stimulating latent entrepreneurial abilities among young people in Northern Ireland, Faroe Islands, Finland and Greenland. This will be achieved through transferring and adopting a successful urban enterprise programme, the 'Young Entrepreneurs Programme' (YEP), into the rural communities of the above mentioned countries by developing a bespoke 'Rural Young Entrepreneurs' programme (RYE) using an innovative and creative online methodology. Such up-skilling and outreach will maximise the full potential of young peoples' ability in the target rural areas. In turn, this will help facilitate the development and sustainability of more vibrant indigenous micro and SME sectors in these areas.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.9.2011–31.3.2014

**Project partners:** Northern Ireland Rural Development council (LP), Qeqqata Business Council, The Research Center for Social Development of Faroe Islands, Kajaani University of Applied Sciences, The Advantage Foundation [19].

### **DESERVE – Delivering Services in Remote and Rural Areas: A Transnational Exchange of Ideas and Practices**

**Project Description:** The DESERVE project sought to establish the transferability of models of service delivery to remote and rural areas. Each participating region has implemented a project in their native region utilising a model, or elements of various models, previously tested by partners in their own regions. The emphasis has been on models of service delivery to remote and rural areas rather than on the specific services provided in these areas. The rationale for this being that sectors may be able to learn lessons from one another. The long term view has been that the models 'borrowed' from partners are mainstreamed across the Northern Periphery partnership.

The Finnish DESERVE partners targeted agencies which were involved in the development and delivery of rural services and worked closely with the LEADER groups that were active in their areas.



Academic staff from the Oulu and Joensuu universities arranged joint workshops attended by officials from administrative level and local associations at which improvements for local strategies through the transfer of models from the DESERVE partners were discussed.

The second target groups were the inhabitants in the villages in the rural regions of Kainuu and North Karelia who would be able to benefit from ITC points and alternative delivery methods of health and social services in their villages. Six mini pilots were developed in Kainuu, which contributed to the improvement of access to services at a local level. A number of these mini projects have been mainstreamed and rural communities continue to receive the benefits of innovative manners of delivery of services developed from the NPP DESERVE models. Kainuu and North Karelia LEADER programmes both financed new examples of service delivery, which used features from DESERVE models.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 8.3.2004–31.12.2007

**Project partners:** Scottish Council for Voluntary Organisations (LP), Argyll And Bute Council, Scottish Executive, Environment and Rural Affairs Department, County Administrative Board of Västerbotten, The Icelandic Regional Institute, Kajaani University Consortium/University of Oulu, ProAgria Rural Advisory Centre of Kainuu, Karelian Institute/University of Joensuu [49].

## SolidarCity

**Project description:** Main objective of the SolidarCity project is to improve the effectiveness of regional development policies by enhancing the role and involvement of local & regional authorities and civil society in employment rate increase through exploring the parameters which burden the active participation into the local labor market and finding ways to create more and better jobs at local level.

**Financing instrument:** Main funder (75% / 85%): INTERREG 4 C

**Implementation period:** 1.1.2010 – 31.12.2012

**Project partners:** Finland (University of Oulu, Kajaani University Consortium, AIKOPA Adult and Continuing Education, Regional Research Group), Great Britain (Association of Town Centre Management and UNIVERSITY OF BRIGHTON), Greece (coordinator, EGTC EFXINI POLI - Network of European Cities for Sustainable Development), Italy (SICILY REGION Regional Department for Employment, Training and Migration and So.Sv.I. s.r.l. Ibleo Development Company), Bulgaria (Municipality of Razgrad and Regional Agribusiness Centre-Vidin /RABC/), Romania (Politehnica" University of Timisoara and Horezu Mayoralty and VULCAN LOCAL COUNCIL) [69].

## InnoCraiova

**Project description:** The main purpose of the InnoCraiova project is to adjusting the offer of higher education system to labor market needs and a knowledgebased society through developing, expanding and improving new academic programs in accordance with the qualifying system and real needs on the labor market defined by relevant key stakeholders (students, actors, educational institutions).

**Financing instrument:** ESF Romania

**Implementation period:** 1.1.2011 – 31.1.2014

**Project partners:** University of Craiova (coordinator), University of Bucharest, Faculty of Sociology and Social Assistance, Finland (University of Oulu, Jyväskylä University Consortium, AIKOPA) [70].

## **I-Dealis -Inclusion and economic Development in Alpine regions (mountain and near by hills) in Romania through social entrepreneurship**

**Project description:** The main purpose of the project is to develop the structures of social economy as a flexible and sustainable tool for economic development, jobs creation and social inclusion in the mountain and near mountain areas of Romania.

**Financing instrument:** ESF Romania

**Implementation period:** 1.7.2010 – 30.6.2013

**Project partners:** Romania (Cultural Training Center, Center for Protected Areas and Sustainable Development Bihor, Local Action Group Association from Sambata Vale, Horezu Local Council), Finland (University of Oulu, Jyväskylä University Consortium, AIKOPA) [71].

## **Sustainable Rural Development and Social Innovations, 9th European Summer Academy**

**Project description:** Euracademy Association is a pan-European, non-profit membership organisation devoted to capacity-building of rural communities in Europe. The Association brings together planners, researchers and practitioners of rural development from a host of European countries. A Summer Academy on a theme pertinent to sustainable rural development is organised every year in a different location. These activities aim to provide lifelong learning opportunities amongst members of rural communities, by using a variety of educational means.

**Financing instrument:** Rural Policy Committee of Finland (YTR)

**Implementation period:** 27.6.2010 – 4.7.2010

**Project partners:** Euracademy Association in co-operation with Lönnrot Institute of Jyväskylä University Consortium, LAG Living Kainuu Leader and the municipality of Suomussalmi [72].

## **PALMA II**

**Project description:** The objective of this research is to provide information on the role and situation of youth and young people in the remote and rural areas, in general and especially with respect to their involvement in rural and regional development processes. Kainuu region will be the main case study area, but references will be made to other regions in Finland, as well as to solutions found to similar problems in other countries with strong remote and rural areas, such as Norway, Russia or Romania.

**Implementation period:** 1.3.2008 – 31.12.2012

**Financing instrument:** Ministry of Agriculture and Forestry, Rural Policy Committee

**Areas of cooperation:** Russia, Romania and Norway [73].

## **Semigra - Selective Migration and Unbalanced Sex Ratio in Rural Regions**

**Project description:** The project replies to the call based on user demand addresses peripheral rural regions within the European Union that are characterized by demographic shrinkage, selective out-migration and a deficit of young women in the age-group 18 to 35. These demographic features are supposed to be an indicator for as well as a consequence of socioeconomic fragility. Hence, a deficit of

young women is detrimental to territorial cohesion which is an important objective of the EU spatial development policy. A general objective of the project is the provision of knowledge concerning the interrelations between imbalanced sex ratios in early adulthood and socioeconomic development of certain regions.

**Implementation period:** 1.10.2010 – 31.5.2012

**Financing instrument:** EPSON 2013 European Union Programme

**Project partners:** Germany (Leibniz Institute for Regional Geography), Sweden (Royal Institute of Technology), Hungary (University of Miskolc, Faculty of Economics), Hungary (Centre for Regional Studies of Hungarian Academy of Sciences), Finland (University of Oulu, Kajaani University Consortium, AIKOPA) [74].

### **COST A12 Rural Innovation**

The main objective of the Rural innovation project was to assemble and analyse rural policy, its implementation and evaluation together with increasing public awareness of it throughout Europe. The Aim of the project was in particular to examine the institutional reforms that will contribute to the grass-roots processes (the so-called bottom-up approach), in which associations voluntarily constituted by citizens has crucial importance.

The overall objective of the project can be broken down into four sub-objectives:

- theory and methods of rural development,
- empirical level, to analyze a variety of institutional features that may be aided by voluntary organizations and civil society activities in rural development programs,
- policy level, combined with economies of, sociological, and political viewpoints to find common tools for rural development as researchers, field workers, as well as decision-makers and
- practical level, the project may be the results of all rural development policies and programs, working with data.

**Financing instrument:** COST programme (European Cooperation in Science and Technology)

**Project publication:** <http://www.cost.eu/library/publications/03-22-Innovations-Institutions-and-Rural-Change> [50].

### **Business services for rural bioenergy entrepreneurship in Finland: a network analysis approach**

**Project Description:** The aim of this project was to create new business opportunities to the Finnish countryside. The number of farm enterprises is decreasing and this depopulation of rural areas weakens the well-being, why new business opportunities are important in keeping up agricultural enterprises in business. High hopes have been put on the production and use of domestic bioenergy as one means of strengthening agricultural sector. Governmental and other business services have an important role in supporting this development, but the Finnish business services are scattered in numerous organisations.

This project has analysed the business services in bioenergy investments and innovations on farms in the North Ostrobothnia region. The research emphasis was on local/regional (human) actors, who make final energy decisions. These decisions are understood as a result of interactions in complex socio-techno-economic networks, for which also comprehensive material and energy flow modelling

was performed. Networking of bioenergy forerunners were compared to those of average farms. The results will help to develop future business services, increase bioenergy use, and produce information about the factors and causalities behind bioenergy decisions.

**Financing instrument:** Academy of Finland

**Implementation period:** 2008–2010

**Project partners:** University of Oulu/Department of Geography, Oulu University of Applied Sciences [53].



### 3.7 BUSINESS AND ENTERPRISES BASED PROJECTS

Projects of this category aim to improve the operating circumstances of businesses and entrepreneurs in northern areas. Funding is provided by several different financing instruments.

#### SECRE - Social Enterprises in Community Renewable Energy

**Project Description:** Social enterprises play a pivotal role in the rural and urban regeneration of the NPP regions. As such it is essential that they are in a position to maximise the opportunities and challenges afforded by renewable energy. SECRE, building on the existing NPP renewable energy cluster, will develop and implement a sustainable service for renewable energy activities in social enterprises. The work of the NPP renewable energy cluster has shown that social enterprises suffer from lack of knowledge transfer and they are not developing realistic business models. They have also major funding issues and are short of long term technical support. The strategic SECRE service “NPP Renewable Energy Inc.”, utilising existing best practice and knowledge gained from other NPP projects



(e.g. MicrE, PELLETtime, Northern ToSIA, RASLRES, SMALLEST), will, during the project phase, provide appropriate support for social enterprises through the triple helix model. Because of its strategic nature, SECRE will in the long term be a major hub that pulls together knowledge and services developed from the NPP energy cluster and other sources.

**Financing instrument:** Northern Periphery Programme

**Implementation period:** 1.9.2011–28.2.2014

**Project partners:** North Karelia University of Applied Sciences (LP), Finnish Forest Research Institute/ Joensuu Research Unit, Savonia University of Applied Sciences, Action Renewables, University of Ulster/Coleraine, West Regional Authority (WRA), Community Energy Scotland, Lews Castle College /UHI Engineering Department, Biofuel Region Sweden, Sogn og Fjordane University College, Sogn og Fjordane Science Park, Innovation Center Iceland, Arctic Technology Centre [20].

### **Nordic Business Link/Nordic Business Link 2.0**

**Project Description:** The objective of Nordic Business Link and Nordic Business link 2.0 projects is to increase the export capacity of regional small and medium sized companies and their stake in commodity circulation. This will lead to increased trade between the north of Norway, north of Finland and north of Sweden. Nordic Business Link 2.0 aims at establishing a structure that would provide support to companies with a view to increase trade in the region. The said structure should be sustainable and functional and would provide support to companies on a permanent basis as to increase their export capacity and their stake in commodity circulation..

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 15.6.2008–31.12.2010/1.4.2011–31.12.2013

**Project partners:** Norrbotten Chamber of Commerce (LP), Business Oulu, Naeringsforeningen i Tromsöregionen, Handelskammare Service AC län AB, Bedriftskompetanse AS, Hammerfest Naeringsforening, Narvik Naeringsforum [28].

### **Border crossing entrepreneurship**

**Project Description:** The purpose of the project is to teach youngsters of small societies in rural areas of Nordland and Norrbotten entrepreneurship. By developing entrepreneurial skills of the students they will be more likely to stay in their home municipalities as entrepreneurs than emigrate to bigger cities in hope of better prospects. Central element here is to see cross the border as an opportunity. This will be achieved through a well functioned cooperation and involvement between trade and industry and the school. The project aims to strengthen the border crossing approach where schools and trade can complete each other. Through the entrepreneur way of looking in school the project will be a basis for a wealthy cross border trade and industry in the future.

**Financing instrument:** INTERREG IVA Nord

**Implementation period:** 1.4.2008–31.12.2010

**Project partners:** Municipality of Arjeplog (LP), Municipality of Arvidsjaur, PKK Indre Salten, Municipality of Saltdal, Municipality of Beiarn, Municipality of Sörfold, Municipality of Steigen, Municipality of Fauske, Young entrepreneurship in Norrbotten, Bodö University College, Luleå University of Technology [31].



## **Puhos 2013 – New Business from the Environmental Sector**

**Project Description:** The Puhos 2013 project aims to create new business activity and new jobs in a situation of sudden structural change. The aim of the project is to develop the Puhos industrial estate into a modern, attractive industrial hub generating new business, jobs and tax revenues that benefit not only the immediate operating environment, but all municipalities in Central Karelia. The project aims to secure the development and future of companies operating in the Puhos estate and to start up new energy production facilities, recycle parks and construction industry plants for Puhos as well as other business activity associated with the afore-mentioned activities. Central elements in the activities are locating contacts, entrepreneurs and investors, preparing background reports for new business ideas and advising potential entrepreneurs. Special attention is paid to environmental and climate requirements in the planning of both the area and the operations of the companies. The project cooperates with the sub-region's and the region's economic development personnel to coordinate the available tools, measures and funding for the Puhos area and its business network.

**Financing instrument:** European Regional Development Fund

**Implementation period:** 1.8.2010–31.3.2013

**Project partners:** Central Karelia Development Company KETI Ltd [47].

## **Five European RES Heat Pilots (5EURES)**

**Project Description:** The goal of the project was to develop functional bioenergy market for the five participating areas of the project. This was achieved by providing training, feasibility studies and business development assistance in order to support the local fuel suppliers and heat producers. The first phase – training of key persons from each area - was followed by general feasibility studies for the areas. In this study both the bioenergy potential and the existing and potential actors in the market were identified. This study resulted in a few identified project sites in each area, which were subject to more detailed studies. The work was continued with detailed case studies, training and assistance of identified actors at each area and identification of possible business opportunities and preparation of business plans together with local actors.

**Financing instruments:** Intelligent Energy Europe-Programme of European Community

**Implementation period:** 2005–2007

**Project partners:** Finpro Oy, Jyväskylän Polytechnic Ltd, Jyväskylän Teknologikeskus Oy, Finnish Forest Research Institute, North Karelia University of Applied Sciences, Technical Research Centre of Finland/VTT Processes, CEBra - Centre for Energy Technology Brandenburg GmbH, University of Applied Science Eberswald, Bionovus, Forest Owners Association of Lithuania, Instituto Superior Técnico, IrRADIARE, Investigação e Desenvolvimento em Engenharia e Ambiente, Lda, Dirección General de Medi Natural [48].

## **Cradle to Cradle Network (C2CN)**

The C2C network brings together EU regions to share and capitalise on regional good practice in implementing C2C principles in relation to waste prevention and management, and do so by producing sustainable solutions, economic development opportunities and social well-being.

The aim of the project is to find out best solutions for regional planning, administration, buildings and industry, eco-and energy-efficiency and life-cycle context, i.e. the goal of reducing the use of raw materials, reduce the amount of waste and preventing pollution, promoting innovation and economic

development. Cradle to Cradle Network is a project aiming at finding best practices in the fields of eco-efficiency, waste management and increasing use of bioenergy.

The C2C network will establish the following tactical and operational goals:

- Creating a European platform for gathering and disseminating knowledge on C2C;
- Drawing up plans of action, in which we demonstrate to the EU, its member states, regions and relevant organizations how C2C can be formulated and implemented regionally and how this procedure can produce sustainable solutions, economic growth opportunities (innovation) and social well-being;
- Establishing links with regional policy objectives, specifically with regional competitiveness and employment targets and with European territorial cooperation initiatives;
- Promoting regional stakeholder involvement.

**Financing instrument:** INTERREG IVC

**Implementation period:** 2009–2011

**Project partners:** The Netherlands, Austria, Belgium, Finland (Kainuun Etu), France, Hungary, Italy, Romania, Scotland and Slovenia [51].

## KantriKoulutus

**Project Description:** The aim of the KantriKoulutus educational project is to improve the success prerequisites of entrepreneurs by developing their know-how. Project organizes short-term continued education to rural entrepreneurs and forest owners in Kainuu region. These education packages consist of administrative themes and also practical guidance related to various livelihoods and production processes. They will enhance entrepreneurship as well as management and competitiveness of the farmers and forest owners.

Forestry Centre of Kainuu is responsible for the education aimed for forest owners. Education is divided into following groups: change of generation of forest properties, management of joint ownership farms, possibilities of common forest and silvicultural education.

The education supports also the Kainuu bioenergy programme. A training about biogas plant planning directed to farmers was implemented in 2011. It led to an enterprise group project of farms, which are interested in biogas plant investment. The same educational programme can be organised again later for a new beneficiary group.

**Financing instrument:** European Agricultural Fund for Rural Development

**Implementation period:** 2009–2013

**Project partners:** Kainuu Vocational College, Forestry Centre of Kainuu [52].

## New Business Patterns of Heat Entrepreneurship

**Project Description:** The objective of this project is to develop and promote new, innovative and effective business concepts for heat and energy entrepreneurs. Heat entrepreneurship will be developed and expanded, and the goal is to connect new profitable business to the current energy business concept. The project addresses following issues:

- Profitability models of new business concepts, which are based on fields, forests and different by products
- Profitability issues in different business concepts
- The potentials and threats of short rotation cultivation in energy production
- Business models for combined biogas and bio products production in North Karelia
- Business model for energy entrepreneurship in bioethanol and biochemical production in North Karelia

**Financing instrument:** European Agricultural Fund for Rural Development

**Implementation period:** 1.9.2009–30.11.2012

**Project partners:** North Karelia University of Applied Sciences (LP) [54].

### **EcoTheque – Business development of environmental field in North Karelia**

**Project Description:** The aim of the EcoTheque project was to develop the business activities of the enterprises in the environmental field.

During the project a local business network (Carelian EcoTec) was created, which consisted of 15 metal and plastic companies of the region. In addition, the project promoted widely the cooperation between research institutes and academies. EcoTheque project highlighted also the necessity of an environmental register, which would promote the networking and awareness of the environmental field actors in North Karelia.

**Financing instrument:** European Social Fund

**Implementation period:** 1.1.2005–31.12.2007

**Project partners:** Keski-Karjalan Kehitysyhtiö Oy(LP) [46].

## 4. SUMMARY

The northern areas of Europe share many common features. Cold climate, long distances and sparseness of population set their own challenges for living in these areas, which have been targeted by the above mentioned roughly 50 projects. The local natural resources – whether it is wood or other materials – are a great asset for the regions, but their efficient utilisation has its own problems. Energy issues are quite challenging for the region as well, as plenty of thermo energy is needed to keep the houses and buildings warm during the cold and long winter months. The vast forest resources could make the region self-sufficient in energy, but there are still many obstacles. Many of these challenges have been identified and they have been targeted in several projects. Almost half of the projects presented in this report were dealing with utilisation of natural resources and energy, which truly are the significant questions in the north. Good results have been achieved in many of these projects and some of these best practices have already been transferred to other regions. Plenty of work still remains.

The northern regions are struggling with diminishing populations, which is a great challenge for health and safety, but also for the transportation and infrastructure. ICT is a tool, which can be used more and more in any field to improve effectiveness of different systems, also in healthcare and transportation. ICT features have been included in some of the projects, but more could be done in the future. Thinking outside of the box is also needed sometimes, and this is very true regarding transportation issues. Long distances in the north require good transportation infrastructures, but how these can be maintained in the future, as the population is dwindling and the road maintenance is getting more expensive? The north attracts also more and more tourists, but the rundown of the roads and transportation services can prevent tourism from emerging a lifesaver for the rural regions. Even though only a fifth of these projects have focused on ICT, health and transportation issues are significant development themes for the north.

The future of the northern rural regions is challenging because its unique circumstances. In order to keep the area living, special measures are required, and several projects have been implemented, which have targeted the rural development in particular or the business aspect of it. Increasing competitiveness and providing better circumstances for the companies and enterprises is most vital element in keeping the rural regions alive. Many success stories have emerged already from these rural development and business projects, which have constituted about a third of all the projects presented in this report.

In order to improve living conditions, promote security and stability of the people living in the region and at the same time generating income while protecting the environment, the EU, ERDF, ESDP, Governments, stakeholders, organizations, Educational Institutions and individuals have embarked upon various research projects centred on development and overall sustainability of this region with particular focus to remote rural areas.

## 5. CONCLUSION

The aim of this report has been to present the goals of European Spatial Development plan, the financial instruments set up to support their implementation and the actual projects, manifestations of this grand plan. The projects selected for this report provide best practices mainly in the utilisation of local resources by various environmental technologies. Other key themes for the development of rural and semi-rural areas have emerged as well, which have been included in this report.

# Greensettle

Some of the individual projects have had quite similar specific goals and aims, whereas some have differed greatly from each other. But the ultimate goal of each one of them has been more or less the same: to strengthen the economy and social conditions in these poorer, less energetic and stagnant regions. It is possible to close the gaps between the poor and more prosperous regions by correcting these imbalances. The northern rural areas do have great assets of their own; they do not have to be losers in the age of globalisation. But turning the various natural resources or original new ideas into regional wellbeing is more difficult in rural north than in the industrial hubs of the EU in Central Europe. There is not necessarily enough capital and knowhow to turn the local assets to serve the communities, or something else might be missing in the rural northern areas.

These bottlenecks and other obstacles for development have been targeted in these projects, which have been presented in this report. These best practices offer means how to deal with similar challenges on other regions. The funding instruments of the EU have provided financial support to most of these projects, but the results, the best practices, have not reached all corners of the Europe yet. The wheel does not have to be invented again every time. If we are to build greener cities and settlements, which take the nature and the climate better in to account, but also make it possible to sustain social and economic well-being, time is of the essence. By learning from previous experiences and employing best practices in a way, which serves local circumstance best, we can save money and time. There is no need to repeat the same mistakes in search of solutions for local problems, which have been targeted elsewhere already. Taking previous experiences into account enables us to increase the well-being of the people, and above all, to buy more time for our precious environment and slow down the climate change.



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