



**Northern
Periphery
Programme**
2007–2013

Innovatively investing
in Europe's Northern
Periphery for a sustainable
and prosperous future

Northern Periphery Programme 2007–2013

ACHIEVEMENTS



**“There is no point in just
exchanging knowledge
unless you do something with it.”**



European Union
European Regional Development Fund

David Heaney, Centre for Rural Health, Scotland

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EXECUTIVE SUMMARY

The coming programme period 2014–2020 will bring some fundamental new requirements for the future Northern Periphery and Arctic Programme. The programme will be expected to demonstrate that its projects have a direct, positive and measurable impact on the programme area. In light of these new requirements, the Northern Periphery Programme (NPP) aimed to take stock of what has been achieved in this programme period in terms of project outputs and impacts, what mechanisms can be identified that led to successful projects and what lessons can be drawn from these findings for the next programme period. Based on a sample of 27 projects, this study systematically mapped project outcomes of the programme period 2007–2013 and their impacts on the communities in the programme area as well as factors that contributed to a successful project implementation and challenges faced by projects that hampered the achievement of the planned project outcomes, drawing on project progress and final reports. In addition, 5 case studies were conducted by means of interviews with project coordinators, one project partner and a user of a project product or service.

The study found that there is no one-fits-all formula to success, but identified several factors that facilitate project implementation: an active involvement of target groups and other stakeholders in the preparation as well as implementation phase and response to actual target group needs, good preparation, especially of pilot projects, strong project leadership, a high degree of commitment from all partners, complementary skills and expertise, but also good interpersonal relations between partners, etc. External factors such as technical, legal or financial barriers or the loss of a key actor can significantly impair the outcome of a project. Furthermore, many projects were ‘pioneering’ in their character, which comes with an inherent risk of failure, but also bears the potential for these projects to become important forerunners that kick-start a new development and have a true multiplier effect.

Findings showed that the NPP has pursued a highly results-oriented approach, focusing on the delivery of concrete products and services, which had a real effect on peoples’ daily lives and on the competitiveness of businesses in the programme area. The projects analysed delivered 215 products and services and provided plenty of (anecdotal) evidence of immediate and potential future positive impacts on the programme area. Intangible impacts were found to be just as numerous and important as tangible impacts.

Identified tangible impacts range from cost and time savings, increased renewable energy generation, reduced energy consumption and CO₂ emissions, reduced environmental impact and increased sustainability of human activities to reduced (man-made or natural) risks. Most importantly, NPP projects improved access to services in a part of Europe which is disadvantaged in terms of service provision, due to its low population

density, scattered settlements, long distances to urban centres and harsh climate. Projects contributed also to business development and, hence, job creation, by helping to overcome structural disadvantages (e.g., long distance to key markets across large parts of the programme area, few large urban centres in the programme area, outmigration of young, high-skilled workers, high cost of transport and infrastructural shortcomings, etc.), and they unlocked potentials of the area (e.g., in the knowledge-based and creative industries, in nature tourism, by better exploiting the abundant natural resources of the area, etc.).

The main benefit of transnational cooperation for project partners was the exchange of knowledge and transfer of good practice, increasing knowledge and capacities in the project partner organisations, which often led to subsequent intangible impacts like changes in organisational cultures and institutional practices or even influence on policy. In cooperating with transnational partners, projects also utilised the synergies of complementary expertise and achieved greater publicity, bringing socially relevant themes to the public’s and politicians’ awareness. In turn, this fostered a change in attitudes and behaviour and influenced policy-making by building political support and momentum. Furthermore, NPP projects resulted in new contacts and (informal or formal) networks, which often resulted in follow-up activities and collaborations, and opened doors to opportunities.

Findings have also shown that projects exhibit very different degrees of transnationality. For some projects, transnational cooperation was conditional on the implementation of the project, e.g., projects that transfer good practices between regions, while for others it was an added value of the project, e.g., projects that work on local, tailor-made model solutions to common challenges of the participating regions. Case studies revealed that transferred good practices require considerable adaptation to accommodate local conditions. It was also local pilot projects rather than transnational products and services that achieved the biggest impacts. Nevertheless, most projects reported on significant spill-over effects to other communities and regions (within and outside the partnership) as the model solutions piloted by the project partners gained recognition as good practices.

In spite of the strong track record of NPP projects with respect to project impacts, it is important to bear in mind that these impacts must always be seen against the backdrop of wider developments in the area, which can make it difficult to link cause and effect. This study has also demonstrated that just measuring the success of a project in terms of indicators is too short-sighted and that it needs an additional qualitative assessment to capture the essence of a cooperation project.

1 Introduction

The coming programme period 2014–2020 will bring some fundamental new requirements for the future Northern Periphery and Arctic Programme. The programme will be expected to demonstrate that its projects have a direct, positive and measurable impact on the programme area. Both hard evidence and more anecdotal evidence suggest that project activities and outcomes made a positive change to the lives of citizens and the competitiveness of businesses in the Northern Periphery.

1.1 Objective

In light of the new results-orientation required for the 2014–2020 Programme, it is vital for the Northern Periphery Programme to take stock of what has been achieved in the 2007–2013 programme period in terms of project outputs and impacts, what mechanisms can be identified that led to successful projects, and what lessons can be drawn from these findings for the next programme period. This publication, therefore, aims to answer the following questions:

- What are decisive factors that make up successful projects?
- What are challenges faced by projects that hamper the achievement of the planned project outcomes?
- What can be realistically achieved within the scope of a cooperation project, not only in terms of concrete products & services, but also beyond the delivery of outputs, in terms of concrete impacts?

The objective of the publication is to assess and demonstrate evidence of the benefit of transnational cooperation for the communities in the Northern Periphery Programme area by:

- identifying and capturing tangible and intangible, intended and unintended project outcomes from the viewpoint of different stakeholders;
- identifying and analysing critical factors that determine the successful or unsuccessful uptake of project products and services;
- following-up on what has happened to the projects' products and services after project ends; and
- identifying lessons learned that can be taken forward to the new programme period.

The publication will provide both a retrospective view by documenting and evaluating the legacy of the NPP 2007–2013, and a forward-looking view, by drawing lessons that can be taken into the next programme period.

1.2 Scope of analysis

In order to make the benefits of territorial cooperation in the Northern Periphery visible, this study sets about systematically mapping project outcomes of the programme period 2007–2013 and their impacts on the communities in the programme area.

1.2.1 DEFINITION OF PRODUCTS AND SERVICES

The Northern Periphery Programme requires all projects to develop at least one tangible product or service, as the added value of the project. The product or service should be concrete and novel, also covering:

- the transfer and adaptation of an existing product or service from one region to other regions in the NPP, or
- the update of an existing product or service with additional features and its adaptation into a transnational or trans-regional solution.

Furthermore, the product or service must have a clear transnational or transregional character, meaning that it should be used widely within the programme area and, if possible, beyond. In addition, the product or service should not be a 'one-off' and projects must ensure that its future is secured post-funding.

Products and services are two closely aligned concepts, and, in fact, most products have an element of service in them and vice versa. While a product refers to a more tangible and discernible item, thus, to something that can be measured and counted, a service is generally less concrete and the result of the application of skills and expertise towards an identified need¹.

Examples of products developed by NPP projects are

- a prototype Scots pine post and beam construction to showcase the use of Scots pine timber;
- touch screen information points for providing traffic information;
- a signposted geo-cultural trail in a National Park;
- a calculation tool for assessing cost savings linked to the introduction of electronic invoices;
- a software package for assessing the impacts of changes in forest wood chains on sustainability.

Examples of services developed by NPP projects are:

- an energy advisory service on suitable energy storage or renewable energy solutions for home owners;
- a consultancy service giving advice and assistance on the design and management of rural low-volume roads;
- a local service for the rapid analysis of biotoxins in shellfish;
- a teledialysis service for haemodialysis patients;
- an improved bus service to the regional hospital.

However, with many project outputs, a distinction between products and services is not a straight forward matter. Providing training is a typical service, aimed at imparting information and/or instructions to improve the recipient's level of knowledge or skills. The associated development of a course curriculum and training material, as integral parts of the training, have the character of a product rather than a service, which blurs the boundaries between the two concepts.

¹<http://www.archives.gov/preservation/products/definitions/products-services.html> [last visited on 09.05.2014]

1.2.2 DEFINITION OF IMPACT

In the 2007–2013 programme period, projects were not explicitly required to report on project outcomes other than project products and services. Yet there is considerable evidence that NPP projects had a direct, positive and measurable impact on the communities in the programme area.

An impact can be defined as a marked positive effect on the targeted individuals or organisations who are the intended beneficiaries of the project’s activities or recipients, resp. users, of the project’s outputs. These effects can be tangible, e.g., new jobs, CO₂ savings, cost savings, etc., or of a more intangible nature, e.g., influence on policy making, institutional capacity building, change in attitudes or behaviour, etc.

Examples of tangible impacts found in NPP projects:

- The improved access to health care services in remote rural areas;
- Cost savings in public transportation through vehicle sharing between different community transport providers;
- Reduced environmental impact of salmon aquacultures by replacing conventional treatments of sea lice infestations with biological means, using cleaner fish for delousing;
- Increased share of renewable energy generation through the installation of a biomass heating system; and
- Jobs created in traditional crafts by combining craftsmanship with tourism and turning workshops into ‘Economuseums’.

Examples of intangible impacts of NPP projects:

- Change in institutional practices due to the exchange of good practices between regions;
- Change in attitudes towards elderly people;
- Influence on policy-making;
- Capacity building through peer learning; and
- Realisation of synergies.

1.3 Method

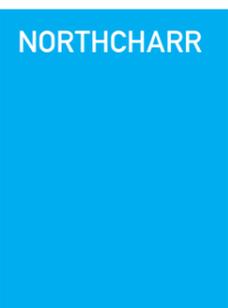
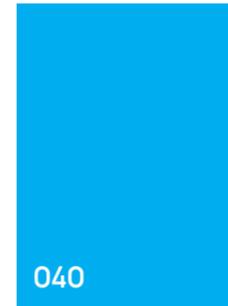
The Northern Periphery Programme has a comprehensive reporting system. Project lead partners report at regular intervals on project activities and progress towards indicators and expected project outcomes. The final project report requires a detailed description of the products and services produced. The extensive information provided in the programme reporting forms formed the basis of the analysis undertaken in this study.

Out of the 47 main projects co-funded by the NPP between 2007–2013, 27 projects were included in the analysis, repre-

senting a comprehensive sample of finalised projects which had submitted their final reports by the time of the analysis. A typology of products and services and target groups was developed from the sample. Based on information provided in the reporting forms, project products and services were inventoried and classified, using the defined typology. Textual material was also analysed with a view to examining evidence of concrete impacts that project activities had, potential impacts in the mid or long-term, and reported factors influencing successes and challenges (c.f. chapter 2).

These standard reports, which focus on tangible project outputs, are often not able to capture intangible project outcomes or benefits for the partners outside the scope of the project. To get an in-depth understanding of intangible project outcomes and the mechanisms that contribute to successful projects, 5 case studies were conducted. Case study projects were chosen from completed NPP projects and aim to represent a balanced choice of themes representative for the NPP, a balanced selection of NPP partner countries, and a choice of ‘strong’ projects with a potentially wider impact on the programme area and target groups. Semi-structured in-depth interviews were conducted with project coordinators, one project partner and a user of a project product or service. Interview transcripts and project reports were evaluated in a qualitative analysis (c.f. chapter 3). All findings are summarised in chapter 4 and conclusions drawn from the findings, using a comparative approach.

Photo: University of the Highlands and Islands, Centre for Rural Health Research



2 Results of the 2007–2013 period

The Northern Periphery Programme

2007–2013 co-funded 47 main projects aimed at promoting innovation and competitiveness in remote and peripheral areas and on sustainable development of natural and community resources. The 27 projects included in this analysis have reported 215 products and services, of which 45 are deliverables rather than products or services, and on a host of immediate and mid- or long-term impacts on communities in the Northern Periphery ranging from improved access to services to changed attitudes.

2.1 Products and Services

The 27 analysed projects reported 215 products and services, of which 45 are considered as deliverables (guidance, reports, web-sites, etc.) rather than products or services. Each project product or service was classified into one of 14 output categories; deliverables were assigned to one of 5 categories. Table 1 gives an overview of the products and services produced per project theme. Most importantly, these are:

- **Advisory/consultancy services:** Examples include an energy advisory service on suitable energy storage and renewable energy solutions for home owners (OCTES) or a consultancy service on the design and management of rural low-volume roads for road administrations (ROADEX IV).
- **Assessment/decision support tools:** Examples include the calculation tool for assessing cost savings linked to the introduction of electronic invoices for SMEs (DARRA) or the cost calculation tool for estimating the costs of biomass fuel supply to the end user facility (PELLETime).
- **Business support services:** Examples include the support provided to traditional craft businesses in converting into Economuseums (ENE) or the local service for the rapid analysis of biotoxins in shellfish (WATER).
- **Contingency plans** such as the revised disaster preparedness plan for Icelandic hospitals (Co-Safe).
- **Health care services:** Examples include the teledialysis service for haemodialysis patients or the remote speech therapy (Competitive Health).
- **Mobile/web applications:** Examples include the mobile application enabling citizens to report and request information or subscribe to electronic council services (CMC@NP) or the web application facilitating contingency planning and providing rapid access to resources during major accidents (Co-Safe).
- **New technologies/methods:** Examples include the environmentally friendly method for rearing ballan wrasse for the biological treatment of sea lice infestations in salmon aquacultures (Ecofish).
- **Prototypes/demonstrators:** Examples include the prototype Scots pine post and beam construction to showcase the use of Scots pine timber (DSP) or the new bus shelters in Fjarðabyggð/Iceland designed and manufactured by locals (RTS).

- **Social enterprises or social services:** Examples include the delivery service for elderly people or the Community Care Centre run by volunteers (O4O).
- **Touristic products/infrastructure:** Examples include the multimedia guide for the Örnsköldsviks museum in Sweden (CMC@NP) or the sustainable hunting tourism packages (NPPHunt).
- **Training and training material:** Examples include environmental educational modules (NEED) or a transnational university programme for students in creative fields on how to start a creative enterprise (No-Cry I).
- **Transport services:** Examples include a village bus service, using one of the passengers as driver (RTS), or a car pooling service for locals and tourists (TransTourism).

2.1.1 TARGET GROUPS

Target groups were classified into one of 13 target group categories, based on the information provided per product or service in the final report and allowing multiple entries. By far the most important target groups were found to be citizens and businesses, partly because of the undifferentiated use of the term ‘target group’ for ‘immediate target groups’ (benefiting from and using the project’s outputs) and ‘indirect target groups’ (benefitting from the positive mid- and long-term impact of the project), followed by training centres and schools. The strong representation of schools as target group is a result of the large number of environmental educational modules produced for schools in the ‘NEED’ project.

(Local, regional or national) public authorities are also important target group, as are business support organisations and higher education and research institutions. Other target groups are policy-makers, infrastructure and (public) service providers, healthcare providers, emergency response organisations and nongovernmental organisations.

Table 1: Products & services matrix. Deliverables were excluded.

	Advisory / consultancy service	Assessment / Decision support tool	Business support service	Communication material / channel	Contingency plan	Health care service	Mobile / web application	Network	New technology / method	Online platform	Prototype / demonstrator	Social enterprise	Social service	Touristic product / infrastructure	Training	Training material	Transport service	TOTAL
Aquaculture			4						2						2			8
Business development, trade, marketing			5							1				1	5	2		14
Creative industries, visual and performing arts, design, media			2							2					1			5
Demographics (youth, senior, women, indigenous), social inclusion				1								6	11		2			20
Emergency, natural disasters, risk prevention, health		1			1	9	4						1		1			17
Environmental protection, climate change, pollution (soil, water, air), waste management														4	12	14		30
ICT, connectivity		2	2				5							3				12
Innovation, R&TD			4												1			5
Natural resources (forestry, hunting, mining), raw materials		3									3							6
Renewable energy, eco products	6	6	1				3	1			1				3			15
Tourism, recreation, cultural heritage, languages			2											8		1		11
Transport, logistics, infrastructure	3						4	1			2			1		1	9	21
TOTAL	9	12	20	1	1	9	16	2	2	3	6	6	12	17	27	18	9	170

2.2 Impacts

NPP projects have reported a host of immediate and mid- or long-term impacts on communities in the Northern Periphery. Table 2 summarises the most commonly identified project impacts. This matrix of impacts is the result of a mapping exercise drawing on information provided in project reporting forms and based on qualitative assessments. The matrix gives an overview of the aspects that were positively affected by NPP projects, but does not allow for conclusions to be drawn on how wide-reaching the impact is.

It is also worth noting that several of the identified impacts are 'different sides of the same coin'. For example, the implementation of eHealth services in remote rural regions not only improves access to health care services, but also saves travel time, costs associated with travelling, transport fuel and, hence, reduces the CO₂ footprint of patients and health care staff.

2.2.1 IMPROVED ACCESS TO SERVICES

The emphasis of NPP projects on improving the access to services in the peripheral and sparsely populated regions of northern Europe reflects the strategic focus of the NPP on the creation of new services as main project outputs. NPP projects respond to the challenges of accessibility, outmigration and low population density, combined with ever-tightening public budgets, each of which are common to all countries represented in the NPP.

Better service delivery benefits different groups of society. A number of services are aimed at improving the access to services of the local population:

The use of information and communication technologies to counter the disadvantage of peripherality, and eventurn it into a development strength is a common feature in many projects.

CMC@NP has developed 4 mobile applications that enable rural communities to engage with their public authorities directly without the need to travel to central locations, to receive information on local events or real-time information on the bus service. For example, the Municipality of Skellefteå/Sweden launched 'Sol-Mobile', a new mobile communication service providing information about ongoing events or other important public information for citizens, visitors and tourists. The biggest local festival became the litmus test for 'SolMobile', resulting in a record turnout at the festival that year. Also other community events have since then been able to multiply their number of visitors.

Providing universal health and elderly care is a particularly pressing challenge in the northernmost parts of Europe, which are characterised by an ageing population and low population density and are faced with the difficulty of recruiting and retaining health care staff. Several projects successfully established new services:

The project **O40**, older people-for-older people, has developed several social enterprises that provide basic services to the elderly, using a 'bottom-up' approach. Services range from a volunteer car scheme and lift sharing, involving older citizens as volunteers, IT courses for the elderly to enable them to use the internet to perform tasks like paying bills, etc., meeting places offering meals and an opportunity for social encounters, a delivery service to visits to housebound older people in Greenland. While O40 aimed mainly at creating living conditions for elderly people that allows them to remain in their own home as long as possible, **OLE II** focuses on improving the quality of care of the elderly, making care professions more attractive and providing opportunities for intergenerational meetings.

Developing viable public transport options for sparsely populated areas is at the core of projects like RTS and TransTourism.

RTS tried out new ways to organise rural transport services. For example, by opening to all an existing regional hospital bus service, the Hospital line 190 to the regional hospital in Sundsvall/Sweden, formerly reserved for people with disabilities and special needs, the utilisation of the available transport capacity was significantly improved, which increased the service's cost-efficiency, secured its continuation, and provided five additional connections to and from Sundsvall.

TransTourism's transport services are primarily targeted at tourists and visitors as an environmentally beneficial and economically viable alternative to travelling by car. As a spin-off of the project, a new bus service for transporting tourists now also runs as a school bus service on weekdays, and is used for social transport services.

Several projects have developed new services for the private sector, most notably, new consultancy services for small and medium-sized businesses:

No-Cry I catered to the need of creative businesses to get access to tailored coaching, training and advice to transform their creative skills into business opportunities. Four dedicated creative business incubators were launched during the project, all of which have been continued and further developed after the project. The project **RRR** focused on supporting rural retailers to help them improve their service quality and, hence, their profitability, viability and visibility, as the closure of rural stores can have a detrimental effect in rural area beyond the loss of jobs. Through tailor-made training, consultation and networking support, the project improved skills and competence levels of managers and staff. New permanent support organizations for rural retailing were developed in Scotland, Iceland and Faroe Islands.

Other projects provided technical consultancy.

Technological support and advice for small-scale energy solutions and renewable energy generation using by-products and

waste for micro & small rural enterprises is provided by the advisory service developed in **MicrE**, which has been continued in the form of a not-for-profit association after the project's end. **WATER** addressed the need of the shellfish industry for new methods for monitoring biotoxins in shellfish to reduce unnecessary losses to the industry. The project has developed local centres for rapid toxin analysis, which have been implemented Faroe Islands, in Iceland and in Scotland. The impact of these services is greatest on the Faroe Islands and in Iceland where shellfish production is a developing industry, which needs all the support it can get.

2.2.2 COST SAVINGS AND TIME SAVINGS

The unique living and economic conditions in the northern fringes of Europe require innovative and fresh ideas on how to make more of less: better products and services for less money by increasing efficiency, avoiding duplication and making use of new technologies. Several projects had an immediate, direct effect on reducing costs.

Administrative efficiency was tackled in **CMC@NP**. The 'Connected Mobile Communities Service' developed by the project has enabled the Higher Education Grants Office of Donegal County Council/Ireland to now process electronically ~2,000 applications annually and to contact students more efficiently, reducing administration costs and time.

Two projects dealt with cost reduction in aquaculture.

Creating the conditions for the large-scale use of farmed ballan wrasse for de-lousing aquaculture salmon was the focus of the **Ecofish** project. This solution offers considerable potential of providing a cost-effective and sustainable method for controlling sea lice infestations in salmon farms. Successful tests on water treatment to reduce water use in Arctic charr aquacultures, carried out by **Northcharr**, is not only beneficial from an environmental, but also from an economic point of view.

Other projects looked to more long-term impact on costs.

OLE II aimed at healthier and more active senior citizens, which will delay their need for care and reduce the pressure on nursing homes and staff. **ROADEX** technologies for rural road construction and maintenance offer the potential to significantly increase the lifespan of roads, lowering the need for maintenance and, hence, saving money.

2.2.3 INCREASED RENEWABLE ENERGY GENERATION, REDUCED ENERGY CONSUMPTION AND CO₂ EMISSIONS

NPP projects are requested to estimate their impact on CO₂ emissions on an ordinal scale. The programme area of the NPP is characterised by a heavy reliance on private transportation, due to sparse population and dispersed settlements. A positive impact on CO₂ savings is therefore achieved by projects that reduce the need for travel or make it viable to shift from private motorised transport to public means of transportation, which

have a potentially lower per passenger fuel consumption.

For example, the teledialysis service introduced in Scotland in the scope of **Competitive Health** has resulted in estimated carbon emission savings of 2,445 kg CO₂-equivalent for 2010. Similarly, **TransTourism** estimated the cumulative potential CO₂ emissions reduction resulting from TransTourism products and services at 8,496 tonnes CO₂.

Other projects had a comparable positive effect on carbon emissions, yet did not attempt to quantify their contributions to CO₂ saving:

- **RTS** through the provision of public transport options;
- **OCTES** through the introduction of smart meters, which allowed consumers to directly control and manage their individual consumption patterns, providing incentives for more efficient energy use if combined with time-dependent electricity prices;
- **Developing Scots Pine** by encouraging greater use of locally grown timber in construction;
- **My Health** by avoiding patient travels to healthcare centres by providing them with home diagnoses measurement tools.

Another strand of projects targeted at CO₂ reductions through an increase in production of energy from renewable sources, tapping the large potential of renewable energy sources in the programme area.

MicrE aided a local SME with the construction of the first regional biogas plant in Kitee/Eastern Finland by providing consultancy and training during the planning phase and the plant's start-up phase. The plant now produces biogas from industrial and separated household biowaste, manure and wastewater sludge. **RASLRES** worked with 11 pilot projects to build sustainable local wood fuel supply chains, which led, e.g., to the installation of a biomass heating system in Ireland which is being supplied by wood fuel sourced from local suppliers.

2.2.4 REDUCED ENVIRONMENTAL IMPACT AND INCREASED SUSTAINABILITY

Reducing the environmental impact of human activities refers to mitigating adverse effects on the natural environment caused by human intervention, e.g., the destruction of natural environments or the release of harmful substances in the environment. Pristine environments, both terrestrial and aquatic ecosystems, are a common feature across the programme area. They are not only assets for tourism, but also important recreational areas for the local population, which is why their protection is a particularly important concern for the NPP.

Reducing the adverse effects of aquaculture activities is the objective of the projects **Ecofish** and **Northcharr**:

Ecofish brought a number of significant benefits for the sustainability of salmon aquaculture both in terms of farming technologies, by replacing conventional treatments of sea lice infestations with biological means using ballan wrasse as cleaner fish, and, indirectly, through the minimization of impacts on wild fish populations.

Northcharr had several positive effects on the environmental footprint of Arctic charr farming: the project demonstrated the feasibility of replacing conventional feed such as fish oil and fish with more sustainable products such as plant ingredients and waste products not suitable for human consumption, optimizing the feed formula and, hence, reducing the nutritional load in the effluent water, and reducing water use through water recirculation.

The concept of sustainability originates from forestry. Sustainable forest management ensures that the goods and services derived from forests meet present-day needs, while at the same time secures their continued availability and contribution to long-term development.

Northern ToSIA aimed to improve the sustainable exploitation of forest resources in the NPP area through the use of the decision support tool 'ToSIA 2.0' for assessing ex-ante the impacts of changes in Forest Wood Chains on environmental, social and economic sustainability.

Developing Scots Pine promoted the use of Scots pine, a widespread but currently underutilized species in the NPP area, by developing prototype applications of Scot pine timber constructions, glulam (glued laminated timber) and cladding all made from Scots pine. Furthermore, the project encouraged ecologically sustainable management and use of this resource by developing forest management guidance and a Decision Support System.

2.2.5 REDUCTION OF (MAN-MADE, NATURAL) RISKS

(Man-made or natural) risks are defined by the probability of a harmful event to happen and the potential loss or damage that the harmful event may cause. Many parts of the NPP area are particularly susceptible to increased natural risks due to climate change. Risk reduction can be achieved by either increasing safety, i.e. reducing the likelihood of the event to happen, or reducing society's vulnerability to the hazard and improving its capacity to respond. Since the actual impact of measures targeted at risk reduction can only be verified in the event of a disaster, all impacts were classified as 'potential'.

Co-Safe addressed the difficult conditions for emergency response organisations in the Northern Periphery due to long transport distances and adverse weather conditions, which affect the chance for casualties to get optimal treatment following a major accident or disaster. The project tackled these joint challenges by improving disaster preparedness, e.g., through a

web application which allows users to optimize the location and number of resources and discover gaps in contingency planning, and provides easy and rapid access to resources during major accidents, and by improving pre-hospital care, e.g., through training material and checklists for disaster exercises.

Clim-ATIC dealt with the adverse effects of climate change in the NPP area and aimed to minimise them by building adaptation capacity. Available knowledge on climate change adaptation was collected, collated and made available as a set of open source training modules. The training resource compiles good practice on vulnerability assessment, scenario development, communication techniques, decision making, adaptation strategy development and implementation.

2.2.6 IMPROVED COMPETITIVENESS, BUSINESS DEVELOPMENT AND JOB CREATION

Businesses in the Northern Periphery are to an extent disadvantaged compared to their counterparts in more central, urbanised regions of Europe, due to long distance to key markets across large parts of the programme area, few large urban centres in the programme area, outmigration of young, high-skilled workers, high cost of transport and infrastructural shortcomings, etc. However, the Northern Periphery has strong 'clusters' of dynamic, innovative and knowledge-based industries and R&D centres. Improving competitiveness by increasing and developing the capacity for innovation and networking in rural and peripheral areas is one of the strategic goals of the NPP.

Business development, job creation and increased competitiveness are strongly interlinked. Several NPP projects addressed the need for business development and job creation through the development of new products or the improvement of existing products:

The production of glulam and external timber cladding from Scots pine were two of the results of **Developing Scots Pine**. Glulam is now being produced on a small scale and pre-painted cladding on a commercial basis in the Highlands/Scotland.

The environmental qualities of the Northern Periphery offer unique opportunities for outdoor recreation and tourism. New sustainable tourism products in the area of eco- or culture-based tourism are means of promoting sustainable economic development.

NPP Hunt developed 8 sustainable hunting tourism products in Finland, Sweden and Iceland which resulted in increased business activities and the creation of 2 new companies and 8 new jobs. Another set of new tourism products was developed by **ENE**. The project contributed to the creation of 17 Economuseum artisan businesses, which took on 35 new employees, based on the successful Canadian model of transforming traditional craft businesses into Economuseums by opening up workshops to visitors. Canadian experience further suggests an increase in

turnover after three years, providing artisan businesses with a livelihood and employment into the future.

Fishery is an important industrial sector in the Northern Periphery. Ways how to develop and expand fish farming in an environmentally sustainable way were investigated by Ecofish, Northcharr and WATER.

Ecofish developed techniques for the rearing of the cleaner fish ‘ballan wrasse’ as biological control of sea lice in salmon aquacultures, establishing the starting point to take the expansion of wrasse growing facilities forward and attract further investment into this important production process. Threatened with the development of resistance of sea lice against chemical treatments, the large scale production of cleaner fish will enable the salmon industry to prosper and develop further. The project resulted in the establishment of several ballan wrasse hatcheries in Norway, Scotland and Ireland. The technologies for monitoring biotoxins in shellfish production

developed in WATER and the facilitated technology transfer had an immediate benefit to the shellfish industry, which is now developing at speed on the Faroe Islands and in Iceland.

Creating new business opportunities in the field of renewable energy was pursued by the projects MicrE, OCTES and PELLETime:

MicrE helped SMEs to explore possibilities in the field of bioenergy and resource efficiency and provided support to several enterprises with developing their business, e.g., by helping with cost calculations, reports on processes, technologies, insurance and legislation matters. This led to the construction of the first regional biogas plant in Kitee/ Eastern Finland by a Finnish SME and to the creation of another Finnish SME specialized in bioenergy solutions.

PELLETime led to new business development and to the foundation of the first forest-energy company in Iceland as a direct spin-off the NPP projects NWH and PELLETime.

Business support organisations, such as regional development agencies or business incubators, advised businesses on how to make workflows more efficient, e.g., through the use of ICT, or on how to reach new markets, e.g., by organising networking events.

Darra aimed to improve the competitiveness of SMEs through increased ICT uptake. The project supported SMEs and micro-companies through the installation of a Help Desk giving individual and impartial guidance on ICT solutions and on how to set up larger-scale websites and webshops. RIBS supported Finnish SMEs with developing and implementing internationalisation strategies, which are enjoying their first successes: several SMEs were able to secure funding or venture capital and 3 SMEs are now on the export market. As a spin-off, contacts between Irish and Finnish SMEs have been established in the scope of the project.

2.3 Intangible impacts

Besides tangible impacts, NPP projects have also brought a number of benefits to the project partners and had intangible impacts on the people and businesses in the Northern Periphery. Table 3 summarises the most commonly found intangible project impacts.

2.3.1 BUILDING CAPACITY

One of the recognised benefits of transnational cooperation is knowledge and capacity building in the project partner organisations and among target groups.

Capacity building involves a learning process on the level of individuals or organisations by increasing knowledge and skills and the ability to apply them to problem solving. If this transfer of knowledge and skills takes place between different actors and organisations peer learning takes place. For the purposes of this report peer learning is defined as a process where practitioners and actors from one country or organisation learn, through direct contact and practical cooperation, from the experiences of their counterparts elsewhere in Europe in areas of shared interest and concern². Peer learning in NPP can take on many forms: in virtually all projects it took place in the form of knowledge exchange during partner workshops and site visits. In addition, some projects adopted more interactive peer learning techniques.

Staff exchange was an integral part of RIBS. Each project partner hosted transnational knowledge exchange and networking visits and received delegations from a partner region. Each transnational visit featured a unique theme, depending on the hosting region’s strength: internationalisation support, triple helix cooperation, microclusters, etc.

The transnational investor’s tours organised by RASLRES is a study tour targeted at private and public actors outside the partnership, e.g., potential energy users and fuel suppliers. A regional workshop in Ireland also brought together delegates from the private

and public sector in Ireland to meet with the Biofuels Region from Sweden to share learnings across borders.

While (nearly) all projects undertake exchange on good practice, fewer projects focus on the transfer and implementation of good practices, i.e. their successful adaptation to local/regional conditions. Even though the term ‘good practice’ is used abundantly in ETC (European Territorial Cooperation), there is no clear-cut definition of what makes a practice a ‘good’ or even ‘best’ practice. In a general sense, the term implies that it is ‘good’ when compared to any alternative course of action. However, no practice is best for everyone or in every situation, and no best practice remains best for very long as good solutions are constantly improved and new ones developed.

Co-safe aimed at widening specialist knowledge on accident and disaster management in rural areas through cooperation between professionals working in civil protection. The transfer of good practices, in particular on disaster exercises, led to a change in organisational practices. For example, the GUIDE, a web-based tool to facilitate contingency planning and for decision support during major accidents and disasters, was developed in Västerbotten County/Sweden and, thanks to the project, implemented throughout the partner organisations.

RTS is an example of a project with a potentially wide-reaching impact as its own rural transport solutions have now gained recognition as good practices. Several communities and regions, which have not been part of the piloting or project, have shown interest in adapting the transport models developed in the project. For example, the integration of municipal transport lines in the national trip search engine, which was piloted in North Karelia, will now be implemented in all Finnish municipalities by the Finnish Transport Agency, which has also declared interest in the rural transport solutions on shared management and utilisation of public and voluntary sector vehicles developed by the Scottish partner. Another successful Finnish model, which has been copied by other Finnish sub-regions, is the appointment of a public transport coordinator in the Cities of Lieksa and Nurmes and the municipalities of Juuka and Valtimo to improve the coordination between the responsible authorities for a more integrated public transportation.

Networking and knowledge exchange does not only happen transnationally, but also nationally between organisations within the same region.

In bringing together actors from different fields and disciplines such as geology, education, tourism and local administration, NEED established new regional cooperations on environmental education and eco-tourism.

In several projects exchanges on how things are done in other regions had a lasting influence on organisational cultures and practices.

Table 2: Matrix of tangible impacts.

		Clim-ATIC	CMCaNP	Competitive Health	Co-safe	DARRA	Developing Pinus	EcoFish	ENE	MicrE	My Health	NEED	No-Cry	Northcharr	Northern ToSIA	NPP Hunt	O4O	OCTES	OLE	PELLETime	RASLRES	RIBS	ROADEX	RRR	RTS	TRANSTOURISM	WATER
Improved access to services	Reported evidence		X	X						X			X	X		X	X	X	X			X	X	X	X	X	X
	Reported impact				X	X					X																
Cost savings	Reported evidence		X	X										X									X		X		
	Reported impact						X									X	X										X
Time savings	Reported evidence		X	X																							
	Reported impact				X																						X
CO ₂ savings	Reported evidence			X						X										X	X				X		
	Reported impact	X					X			X				X	X		X									X	
Reduced energy consumption/increased RES generation	Reported evidence			X					X					X					X	X				X			
	Reported impact	X					X			X				X	X		X								X		X
Reduced environmental impact	Reported evidence						X	X	X					X													X
	Reported impact													X													
(man-made, natural) risk reduction	Reported evidence																					X					
	Reported impact	X			X																						
Business development	Reported evidence		X				X	X	X	X				X	X	X	X			X	X						X
	Reported impact										X	X										X		X			
Job creation	Reported evidence		X				X	X		X			X	X		X	X			X	X						
	Reported impact						X			X	X											X		X			X
Improved competitiveness	Reported evidence		X				X	X	X					X						X				X			
	Reported impact			X		X	X				X	X				X				X		X					X



CINERGY



COMPETITIVE HEALTH



ROADEX

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For example, **PELLETime** reported on changing practices in forestry in Iceland as a result of the project participation. **ROADEX** has altered the way roads are built and maintained in the partner road administrations and the Irish partner has even reprioritised its expenditure by shifting money from reconstruction to maintenance.

A common way to build capacities is through training.

The practical training for rural retailers developed and implemented by **RRR** has upskilled rural retailers and their staff in key areas such as customer service, stock control, selling skills, e-business, retail marketing and business planning, etc. **Clim-ATIC** built capacities in climate change adaptation through training delivered through an informal collaboration of national adaptation organisations.

2.3.2 RAISING AWARENESS

Cooperation projects provide an excellent platform for bringing a topic to the attention of a wider public. Since communication and dissemination activities are integral parts of project implementation, and since awareness-raising is for the most part a communication exercise, it can be said that all projects contribute to some extent to awareness-raising. Several projects provided concrete evidence that the project brought a socially relevant theme to the public's and politicians' awareness.

For example, **OLE II** brought highlighted the challenges faced by the elderly in the remote and rural areas of the participating regions. Subsequent discussions about nursing care had effects on the design of new nursing homes in Iceland. Increased environmental awareness is one of the merits of the **NEED** project, which developed new concepts and material for environmental education and educational tourism. A Conservation Ranger of Burren National Park/Ireland reported that the different educational initiatives in the local communities raised awareness about the uniqueness of the geology of the Burren, which raised understanding of the importance of protecting these unique habitats.

2.3.3 CHANGING ATTITUDES AND BEHAVIOUR

Changing attitudes is about challenging the way people think about something, whereas changing behaviour aims to influence how people behave and what decisions they make.

The Irish **TransTourism** partner put effort into affecting a positive change in the perception of public transport with visitors and tourism operators by integrating sustainable travel promotion in all Burren and Cliffs of Moher Geopark promotional media and training in sustainable practice with local tourism businesses.

Modifying energy consumer behaviour was the main objective of **OCES**. The project developed and tested smart meters which allow consumers to directly control and manage their individual consumption patterns.

2.3.4 IMPROVING SOCIAL COHESION

Social cohesion is an important aspect of the quality of life in any community. In the remote communities of the Northern Periphery Programme area, social cohesion is sometimes threatened by outmigration and an age structure of the population with an increased proportion of elderly persons. Several projects aimed to mitigate these challenges through community development.

The products and services delivered by **OLE II** aimed at activating seniors for the benefit of physically and mentally healthier senior citizens that will delay their need for care and reduce the pressure on nursing homes. The project implemented meeting places which are self-organised by the seniors, organised cross-generation and senior-to-senior activities, preventive home visits to older people, etc.

RTS reported on new local collaborations and an improved sense of community. Most notably, the Village Bus in Kölsillre/Sweden increased the level of interaction in the village. One resident of Kölsillre stated that people had grown closer to one another and were spending time with people who they wouldn't otherwise see.

2.3.5 INFLUENCING POLICIES

Cooperating with international partners can influence policy-making by building political support and momentum, either by adding weight to policy recommendations or by increasing the visibility of the project and the project's objectives. The importance of engaging policy makers was recognised by many projects and will be discussed in further detail in section 2.4.

RASLRES serves as one example of a project that was highly committed to policy engagement which, according to the project, has been enacted in Scotland, Northern Ireland and the Republic of Ireland. The project presented findings to public agencies and policy makers and prepared policy proposals for policy makers at EU, national, regional and local level.

Several projects had an influence on policy decisions:

Ecofish managed to establish the idea of using farmed ballan wrasse for de-lousing salmon both at government level, with regulatory and development agencies, and in the industry, i.e. the salmon producers. This led to the establishment of new fish hatcheries in Norway, Scotland and Ireland, and further entrants were evaluating their options, also outside the programme area. The sharing of several batches of ballan wrasse eggs and batches of rotifers with the Dutch allowed them to carry out first trials in hatching of ballan wrasse larvae.

Partially based on **MicrE's** recommendations, the Northern Irish department of Enterprise Trade and Investment drafted a white paper, which recommends the formation of a private-public advisory body to advise the government on its renewable energy policy.

Other projects gave valuable input to and shaped political debates:

From a policy and public expenditure perspective, **O40** engaged national level stakeholders and further advanced the need for social services in rural areas. According to the Scottish lead partner, the engagement of national actors in the project is likely to have had an influence on the policy debate in Highland in favour of the integration of health and social care system based on the Scandinavian model.

In Iceland, the participation in **OLE II** had an impact on the discussions about quality in nursing homes, which, again, had an effect on the design of the new nursing homes.

2.3.6 LEVERAGING SYNERGIES

Numerous examples provided by NPP projects testify that, by working together, project partners can produce an effect greater than the sum of their individual efforts. Project partners bring in different expertise and competences.

One example is the **RIBS** partnership, which built strongly on the different areas of expertise of the partners, e.g., on internationalisation support, triple helix cooperation, microclusters, etc.

Especially projects with a strong research component take advantage of the fact that each partner contributes with its own expertise, but also with its equipment and facilities.

One example is **Ecofish**, which sped up the development of a new, environmentally friendly method for rearing ballan wrasse by splitting up the development steps among the research partners, taking advantage of the complementary expertise and different facilities available to the partner organisations.

The innovation kick-started by an NPP project can sometimes find its way into mainstream practice.

While **Competitive Health** piloted 8 eHealth services, 4 of which became part of routine service delivery, the successor project **ITTS**, emulating the **Competitive Health** approach, managed to up-scale the number of pilots to 10 and implemented a total number of 25 new eHealth services. Also **RTS** reported that many of its new services have a nationwide future. For example, the successful digitalisation of municipal public transport service lines and their integrating into the national travel and trip search engine, which was piloted in North Karelia/Finland, has now been expanded to other Finnish sub-regions.

Projects also explored synergies with other national and international projects.

My Health established a dialogue with a project of the SE/FI/NO Nord Programme to develop a joint project application for a large scale European field trial on safety alarm systems for elderly people, combining the solutions from both these projects. **RRR** successfully established links with the Norwegian Merkur Programme and the EU Life Long Learning Programme, **Northcharr** exploited synergies with other national and EU-funded projects to use the limited R&D funds more effectively, and **Competitive Health** capitalised on past projects in order to make use of their lessons learned and avoid any unnecessary duplication of efforts.

Many project partners continue to cooperate after the project end in a follow-up project or by forming a network.

For example, the **ROADDEX** network is the result of over 15 years of collaboration between road administrations of Sweden, Finland, Norway, Ireland, Northern Ireland, Scotland, Iceland and Greenland.

In some case, even representatives of the project target group got together to form a network as a consequence of an NPP project.

The association “Sustainable shops in rural regions” is an initiative of the shop owners who have participated in **RRR**. **Norrform** is an association of creative businesses that work together with manufacturers to recycle materials that are currently just wastes of industrial production, an idea based on the **CINERGY** material waste workshops.

2.4 Success factors and challenges

Transnational cooperation projects are complex by nature. They often involve a large number of partners with different cultural and language backgrounds who might not know each other at the start, but who have to work together over long distances. Furthermore, the pilot character of most projects poses an inherent risk that certain plans turn out to be too ambitious and expected outcomes don't materialise during the project duration.

In spite of these challenges, NPP projects have achieved outstanding results. This section summarises findings from project reports regarding key factors in project successes, but also stumbling blocks that projects encountered during project implementation.

2.4.1 PROJECT PREPARATION

Smooth project implementation requires thorough preparation. Making changes to the project as presented in the project application not only compromises the timely implementation of the project and the achievement of targets, but might also require a lengthy change procedure. It is therefore not surprising that good preparation was often reported by projects as a ‘success’ factor and the failure to plan and make certain arrangements in advance was considered as a lost opportunity.

Extensive preparation allowed **Northcharr** to allocate more time during the project to activities such as networking and lobbying with politicians and other decision makers, which paid off greatly as the project had a big influence on the acceptance of Arctic charr farming in Norway and Sweden.

The value of conducting a thorough background analysis before or at the start of the project was highlighted by several projects. Thorough groundwork avoids that work that has already been done elsewhere is duplicated and allows projects to learn from the success stories and mistakes of other projects.

CMC@NP reported that thorough joint groundwork supported the transnational comparison and community consultation for the development of a publication on a Northern Periphery Transnational Mobile Community Model.

Clim-ATIC, in turn, drew the important lesson that more preparatory work, i.e., compiling existing work, web portals and information services in each NPP country before project start, would have been needed to identify existing climate change adaptation

services. The project admitted that it would have been more logical and beneficial to cooperate with existing web portals and information channels instead of creating yet another new service.

Careful preparation, including budgeting and timing and getting relevant actors on board, seems to be particularly important for the implementation of pilot projects.

Clim-ATIC reported that getting the plans for the demonstration projects approved in time ensured that planned activities fitted with the project objectives, time frame and resources. **ROADDEX** testified to the importance of having had budget allocated to the demonstration projects from the partners’ own funds already before the start of the project. As road works require a lot of time and involvement of different people, for instance, the road maintenance units or the road administrations’ central buyers, having had these actors involved early on was also paramount for the implementation of the demonstration projects.

Several projects underlined the importance of being focused and setting clear and realistic targets.

OLE II, **RTS** and **TransTourism** pointed to the fact that planned outcomes must be matched up with the available budget and timeframe, and roles and responsibilities must be clearly distributed in a project. They also emphasised how important it was to have a common understanding of the content and tasks at the start of the project. The lack of understanding about common objectives and joint responsibilities in the **CINERGY** partnership led to a lot of discussion and debate among the partners at the start of the project, which delayed the project implementation.

2.4.2 NEEDS ANALYSIS

The Northern Periphery Programme defines the strategic framework under which NPP projects must operate and ensures that projects address challenges and needs that are shared by all regions in the programme area. However, projects have considerable freedom regarding project outputs. One of the frequently mentioned decisive factors for a successful project implementation was the fact that project products and services responded to a real need. Projects that failed to identify the actual needs of the project target groups often reported that they found it hard to make their products and services sustainable, regardless of how good the project idea was.

Northcharr’s research partners benefited from the close cooperation with the Arctic charr farming industry to identify bottlenecks to the growth of charr production that could be addressed transnationally.

In projects where project beneficiaries and end-users of the project products and services are not identical, a proper needs analysis can prevent a mismatch between project outputs and target group needs.

Table 3: Matrix of intangible impacts.

	Clim-ATIC	CMCaNP	Competitive Health	Co-safe	DARRA	Developing Pinus	EcoFish	ENE	MicrE	My Health	NEED	No-Cry	Northcharr	Northern ToSIA	NPP Hunt	O40	OCTES	OLE	PELLETime	RASLRES	RIBS	ROADDEX	RRR	RTS	TRANSTOURISM	WATER
Building institutional capacity	x	x	x	x	x	x	x	x	x		x	x			x	x			x	x	x	x	x	x	x	x
Raising awareness		x	x		x	x			x		x		x		x	x	x									x
Changing attitudes and behaviour			x							x						x	x	x					x		x	
Influencing policies							x		x				x		x				x				x	x		x
Improving social cohesion															x		x							x		
Leveraging synergies			x				x						x	x							x	x	x	x		

For example, **CMC@NP** relied on a well defined need analysis and fieldwork to identify the needs of rural communities concerning mobile broadband services, **OLE II** interviewed pre-retirement age people about how they would like to spend their old age, and **RTS** profiled existing transport services, their utilisation rate and identified transport needs of different groups. **No-Cry I**, in spite of having carried out a stakeholder survey to adapt their planned service to the wishes of the creative scene, acknowledged that the virtual business incubation was a good idea rather than a defined need. Nevertheless, it was clear from the huge engagement and great participation of both companies and young creatives that the project was filling a gap in that it provided so far inexistent networking opportunities.

2.4.3 TARGET GROUP AND STAKEHOLDER INVOLVEMENT

Developing products and services that match the needs of the end-users requires an active participation of these end-users in the project. The importance of stakeholder involvement in the planning as well as in the implementation phase was cited by half of the 27 analysed projects as having been a key to success. Depending on the type of project and project objectives, end-users were found to be the local population and businesses, but also important stakeholders such as decision makers and experts external to the project.

“You have to be ready to work with the local people”, was the advice given by the **CMC@NP** project coordinator. The project involved rural communities for identifying needs in mobile broadband services, some of which were developed and tested in the project.

Other projects that strongly involved local stakeholders were **My Health**, **OLE II** and **O4O**.

O4O, by taking a bottom-up approach, not only asked the local (elderly) population about what services were most needed in their communities, but the local people themselves, with the help of **O4O**, realised these services. Both **OLE II** and **O4O** recognised the highly valuable learning experience of working together with elderly people.

Equally important, in a number of projects, was the involvement of external experts.

Clim-ATIC built on the collaboration of national adaptation organisations that would be the likely actors to utilise the project’s Climate Change Adaptation Resource. **Competitive Health** underlined how important it was to get the clinicians involved early on, as they had the hands-on knowledge necessary to implement a service that would become part of routine service delivery once the project has ended.

The importance of engaging the political sphere was emphasised by **TransTourism**, **Northcharr** and **O4O**.

Northcharr gave input to governmental inquiries, **O4O** gave input to and shaped political debates and **TransTourism** even initiated a legislative reform.

2.4.4 PROJECT PARTNERSHIP

Transnational partnerships have a special dynamic: Project partners come with different cultural and language backgrounds, expectations and interests. Distances between regions is a handicap for cooperation, as is the fact that partners might not know each other at the start and have to first build up trust between partners. Getting the ‘right’ partners involved is therefore crucial. That includes common interests, complementary skills and expertise, a high level of commitment of all partners, but also good interpersonal relations.

For example, **Northcharr** stressed the importance of complementing competences and resources for the successful development of the project outcomes.

If the project partnership cannot cover all competences needed for implementing certain aspects of the project, then drawing on the skills of an external expert to fill in services, which cannot be covered within the partnership, can be a success factor.

For example, **Clim-ATIC** contracted the task of developing the case studies for the Climate Change Adaptation Resource and employed a communication expert who had the dedicated time and skills to deliver a good quality result.

Also **ROADEX** stressed that the time invested in procuring the main project consultant was well spent as it brought on board a highly committed expert. Another success factor of the project was the good team spirit and chemistry between the partners. Without it, partners would not have been continuously cooperating for over 15 years.

Several projects confirmed that lacking commitment from partners can severely impair a project’s success. When all partners pull together and work towards the same goal, new partnerships can work very well from the start. In turn, long-term cooperation seems to be a warranty for smooth project implementation.

Project partners in **CINERGY** and **NEED** were critical of the lack of commitment of other partners. In contrast, **Northcharr** and **ROADEX** benefitted from the fact that partners had known each other for many years and both stressed that the mutual trust and good interaction between the partners was a key success factor.

Projects reported that different organisational cultures can be both a challenge as well as an asset.

The importance of good partnership dynamics was recognised, for example, by **RIBS**. The project reported that, at the beginning of the project, certain cultural barriers, due to the geographic

spread of the project partners, had to be overcome. These differences then turned out to be the project partnership’s strength as they accounted for the broad range of backgrounds and experience that the project partners benefited from.

NPP Hunt struggled with the fact that the way hunting was organised in the Scandinavian countries, i.e. run by small companies, was very differently from how it was organised in Ireland/Scotland, i.e. as a minor part of the income of large estates, which was largely the reason why in Ireland/Scotland no sustainable hunting product could be established.

Language differences seem to play a minor role in the Northern Periphery where English is almost universally spoken.

Only **O4O** reported that the necessary translations of documents from English into Greenlandic, which had become necessary as English is only spoken as a third foreign language in Greenland, required considerable time and money. However, **Northern TO-SIA** mentioned that the translation of the ToSIA 2.0 forestry impact assessment tool into the native languages of the users was a success factor, as it lowered the entry barrier to using the tool.

A special type of partnership is the triple helix partnership between public bodies, private companies and universities. The **NPP** encourages projects to form triple helix partnerships wherever applicable. Some projects reported that the collaboration between public, private and academia significantly contributed to the success of their undertakings.

Northcharr built on triple-helix structures between farmers, universities and public authorities to facilitate the development of new Arctic charr aquacultures.

A change in the partnership or the loss of an important actor can happen frequently, and often has a quite disruptive effect on the project, depending on how quickly the project partners manage to find a replacement. Six out of 27 projects reported on a change in the partnership or the loss of an important actor during the project. The reasons for the change were varied: financial difficulties or bankruptcy of an organisation, career change of project staff, but also illness or even death.

The bankruptcy of two partners in Ireland and in Northern Ireland forced the **ENE** partnership to find quick replacement in order to secure the continuation of the project.

OLE II was also affected by the ‘drop out’ of project members before the end of the project. The project had to deal with two changes of project leaders and was even confronted with the passing away of the transnational project leader and project initiator, but the strong partnership helped overcome these challenges.

As opposed to the loss of a partner, projects may benefit from the joining of a new participant, even though this happens less often.

WATER was approached by an Icelandic SME about its toxin methodology. Including the SME as subcontractor in the project significantly increased the outreach of the project and dissemination of project results.

2.4.5 PROJECT MANAGEMENT

Coordinating an **NPP** project means managing a partnership that consists of different organisations from different countries, supervising a large budget and mastering complex programme requirements and rules. Besides the preparation of a well-designed project plan, this requires good project leadership and a skilled project coordinator, who is able to keep a tight grip on the project budget and to watch over the workplan, reporting deadlines, and the fulfilment of the indicator targets.

The importance of having a skilful and experienced project coordinator for the successful completion of the project was emphasised by **OLE II**, **No-Cry I**, **ROADEX**, **O4O**, etc.

ROADEX called it one of the key decisions to continue with the Swedish Transport Administration as Lead Partner. Continuity, with experienced individuals in key positions committed to the project, ensured a rapid start of the project. On the other hand, a lack of experience with **NPP**-projects in the partnership caused a lot of headache to the project Lead Partner of **Northcharr**.

In spite of the fact that **NPP** projects make extensive use of telecommunication for internal communication, the importance of physical meetings was emphasised by several projects.

OLE II confirmed the value of getting to know all partners in person at the start of the project and reported on the frustrating technical problems that can sometimes arise with conference calls.

RRR reported that the combined networking, training and study visit sessions for rural retailers were a key to success as they gave shop owners the opportunity to meet people face-to-face, look round other shops and take part in group trainings as the best way to stimulate discussion and trigger new ideas.

Projects also stressed the importance of good communication. That includes communication within the partnership, but also external communication, and the effort put into dissemination activities.

OLE II mentioned the importance of a good flow of information within the project. **RTS** reported that the proper marketing of the new local transport services accounted for part of their success. Another aspect of communication is the definition of a common terminology, which was reported as a key success factor by **Co-Safe**.

Irrespective of how well a project is prepared and how well it is managed, it sometimes becomes necessary to adjust plans to changing circumstances, which requires a certain degree of flexibility in implementing the project and the possibility to deviate from the original project workplan. Several projects reported that when changes to the workplan became necessary, getting these changes approved was crucial for the effective project implementation.

ROADEX stated that the possibility to shift funds to more productive work on the demonstration projects, as a response to changing circumstances as the project developed, increased the outputs of the project. **TransTourism** responded to the fast developments in the field of mobile applications and decided to develop two apps, which were not originally planned.

Some projects reported on administrative hurdles and on the challenge of executing the formal programme requirements.

Long payment time was seen as a big challenge by **Ecofish**, especially for small companies for which the large outlay and commitment in resources and staffing ties up a lot of resources. What was also criticised by the project was the lack of transparency regarding the processing of financial claims. Delays in decision-making by the programme bodies concerning co-financing led to a delay in the recruitment of project personnel in certain areas. The City of Oulu, having been small partner in OLE II, with a modest project organization, reported on slight difficulties with executing the formal project management.

2.4.6 EXTERNAL FACTORS

In addition to the previously mentioned key 'success' factors which are, at least to a large degree, within the sphere of influence of a project, there are also certain important external factors that can significantly affect the outcome of a project, but which are entirely beyond the project's control. These can be technical, legal or financial barriers, in some cases even weather conditions or, as mentioned already in the section on project partnerships, changes in the partnership composition due to illness, etc. In this context it is important to bear in mind that one of the main benefits of ETC projects for project beneficiaries is that projects provide "laboratory conditions" for testing new, innovative ideas and approaches and that, like in every experimental setting, there is therefore no guarantee of success. Some projects struggled with technical barriers.

OCTES was faced with technical problems like bugs and functionality changes during the development of its Integrated Renewable Energy Monitoring Service. However, a far bigger problem for the project was that energy storage technology development moved more slowly than expected, which was why the planned advisory service on energy storage could not be established. The main objective of the project, to initiate behavioural change in energy consumption by providing house owners

with an energy monitoring system, had also mixed results. The project concluded that variations in energy tariffs are not yet high enough to be an incentive for savings.

Competitive Health had to overcome differences in the technical endowment between the best practice and the receiving site for the transfer of best practice eHealth services. For example, the fact that the broadband penetration was much lower in Scotland than in Norway meant that the Norwegian teledialysis service had to be adapted before it could be introduced in Scotland. The project faced also other challenges: the outbreak of the swine flu caused interruptions in the pilot implementation in Finland as the health care staff was busy dealing with the epidemic.

The legal framework within which projects operate is pre-determined and, even though NPP projects are sometimes able leave a mark on policies (c.f. section 2.3.5), legislation can pose a considerable barrier to the introduction of new products and services.

The Village Bus scheme developed in **RTS** was in conflict with Swedish legislation. The bus, which can be booked online and is driven by one of the passengers, had to be operated free of charge and, thus, could not be operated on a cost-covering basis, as for the organisers to be able to charge passengers, each driver would have needed a taxi licence.

The idea behind the CheckUp Care Bag, the Finnish and Norway **Competitive Health** pilot equipping patients with mobile instruments to monitor their own health status and transfer the data directly to the patient's GP, was in conflict with Norwegian and Finnish legislation on data protection.

In several cases projects had difficulties to develop a new product to market maturity or to introduce a new lasting service that is able to be self-sustaining.

Making the Mobile Safety Alarm for elderly people with fragile health financially viable has been recognised as a major challenge by **My Health. No-Cry I** failed to establish strategic partnerships with major actors who could have made an online business incubator service viable. The project also pointed at the difficulty of operating a new field, such as creative business incubation, where no formal structures existed to build on.

The Northern Periphery is characterised by its cold climate, which can also pose a challenge to projects.

Harsh weather conditions affected the **PELLETime** growth trials of willow, reed canary grass and other grasses in Shetland and Orkney Scotland, which delayed some of the raw material submissions to Sweden for the pelletizing trials.

3 Case studies



Photo: CINERGY

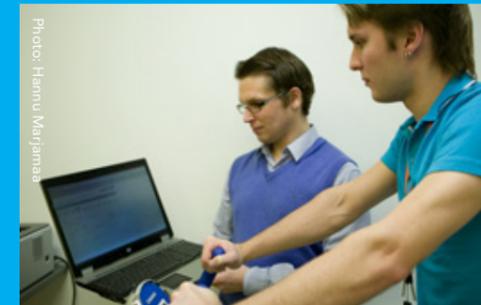


Photo: Hannu Marjamaa



Photo: Northcharr

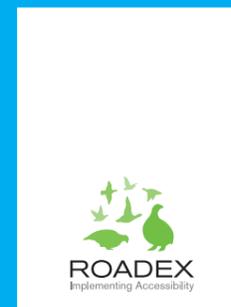


Photo: Nuutti Vuorimes



Photo: OAO

3.1 Case study 1: CINERGY – Creative Industries Network Enables Regional Growth

The growing Creative and Cultural Industries have become increasingly important to the local economies in the NPP and enhance the attractiveness of the Northern Periphery as a place to work and live, particularly for young people. Fostering the Creative Industries, realises one of the region's comparative advantages, and is in line with the EU smart specialisation strategy and the European Agenda for Culture that strongly promotes the integration of culture in regional and local development policies. To unlock the potential of the Creative and Cultural Industries in the NPP, CINERGY pursued a whole new idea by initiating cross-collaboration between the Creative and Cultural Industries and Traditional Industries for the development of new products and services.

3.1.1 PROJECT SYNOPSIS

Creative and Cultural industries (CCI), i.e., advertising, architecture, art, crafts, design, fashion, film, music, performing arts, publishing, R&D, software, TV and radio, and video games, etc., are an important national and regional growth factor in the Northern Periphery and, in spite of being strongly tied to urban centres, bear a large potential to also provide qualified jobs in rural areas of the NPP area. By developing cross-collaboration between and combining the skills and specificities of the creative and cultural sector and traditional industries (TI), CINERGY aimed to initiate the development of new products and services, attract new customers, strengthen competitiveness and, in the end, create jobs in both industries.

A special focus of the project was on intermediary organisations that act as brokers, such as public or semi-public business development organisations, business and industry associations, incubators, authorities, etc. Traditional organisations for business development and innovation support are often most skilled in supporting start-ups and the development of traditional enterprises. The project therefore tackles the need to improve business and innovation support tailored to CCIs.



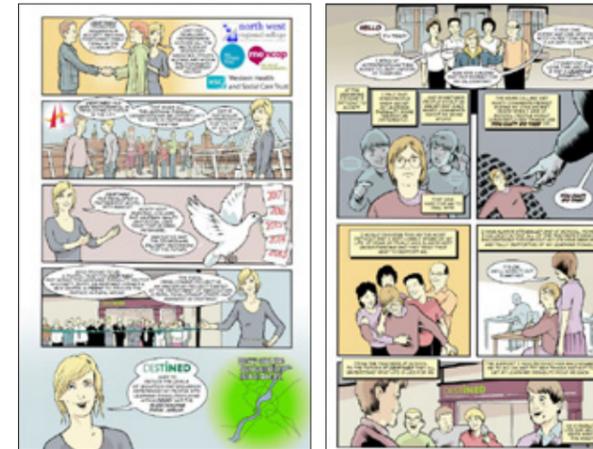
Visit at Edmo lift to discuss industrial production of designer products. (photo: Bergqvist Reklamfoto)

In a partnership of Swedish, Finnish and Northern Irish intermediary organisations, CINERGY realized these objectives by

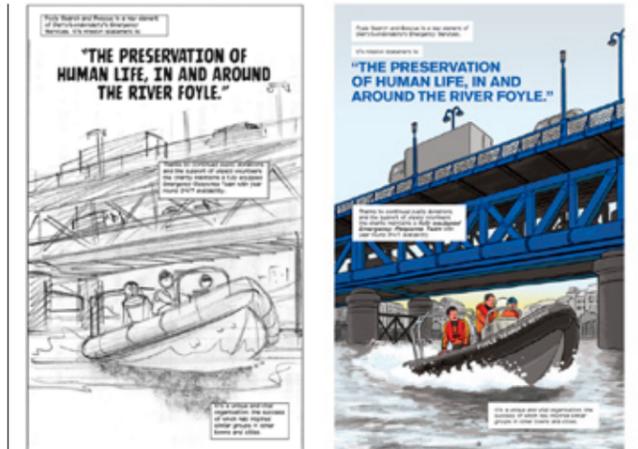
- identifying potential businesses and collecting and sharing existing best practices of cross-collaboration cases, methods, trainings, infrastructure, models and ways of working with creative industries among partners;
- piloting cross-collaboration between CCIs and TIs in each region, e.g., on the development of a joint product or service;
- developing and implementing a CINERGY toolkit as a transnational web-based platform which facilitates match-making between businesses by providing an online database of partners from the CCI and TI, and serves as an online resource library of good practice examples, etc., for brokers, CCIs, TIs and other stakeholders;
- establishing CINERGY Creative Agencies as a new permanent business support service for the creative industry or business support organisations in rural areas, integrated into existing services or newly developed.

3.1.2 SUCCESS FACTORS AND CHALLENGES

The project realised 8 different pilot projects in Sweden, Finland and Northern Ireland by implementing a large number of workshops and B2B meetings. The Region of Västernorrland/Sweden focused on product development through digital printing and product development from material waste from the regional manufacturing industries, and on the development and creative marketing of a new soft drink. The Region of Kainuu/Finland initiated the collaboration of food industry and research to develop new dishes made from pike, a local fish, and tendered a multi-skilled team for branding and marketing of the new products. Furthermore, Kainuu Vocational College, a partner to the project, started a very successful cooperative of young creative entrepreneurs which aimed to land orders from traditional industrial enterprises. Northern Ireland focused on two pilots: one on promoting the voluntary sector, i.e. a support organisation for people with learning disabilities and a search and rescue operator, by developing information material together with comic-strip artists, and another one on developing an information app for a nature park.



Cross-collaboration between voluntary organisation for people with learning disabilities and comic artist. (image: RAPID)



Cross-collaboration between voluntary organisation and comic artist. Draft and finished artwork of 'About Foyle Search and Rescue' story. (image: RAPID)

The project had a *difficult start-up phase*, as both interviewees pointed out. Part of the difficulties arose from the fact that the person who had initiated the project, and who had been principally entrusted with developing the project proposal, had left the lead partner organisation. With a key person missing, the partners found themselves somewhat at loss about what the exact outcome of the project should be and found out that they had very different visions on how to implement the project. This *lack of common understanding* about the main outcomes of the project was also caused by the fact that, in the preparation phase, the project had changed its direction several times, also because of conditions imposed by the NPP Secretariat. The final project idea of linking up the Creative and Traditional Industries evolved from discussions with the NPP Secretariat, which was viewed critically by the project lead partner.

The project also struggled a bit with the *partnership dynamics* at first, which was mainly a consequence of the conflicting and strongly held views among the partners on how to implement the project and on what to aim for. Partners found out that they had differing perceptions on what to consider a Traditional Industry and different ideas regarding the involvement of Traditional Industries in the project. Since none of the partners had cooperated before, they also needed some time to grow together as a team. The fact that the Norwegian partner had to drop out due to funding problems put pressure on the project regarding the achievement of the indicator targets.

The initial difficulties were resolved when the partners decided to let go of the idea of focusing on similar pilots in all regions and allowed for a variety of different pilots in different industries based on regional needs. In the process of mapping and

comparing the targeted pilots, the partners discovered that the circumstances for piloting were very different in each region as each region was characterised by *different business structures, traditions and attitudes*. This was seen as a challenge, but also as an opportunity to test different approaches in different areas.

“We tried very hard in the beginning to find common ground for how to run the pilots in a very transnationally-linked way, but found out that all regions and partners wanted to do different things and in different ways and in different industries. Letting go of the idea to do similar things, allowing for a variety to see how you can be successful in different ways was a key decision.”

Gudrun Lindberg, Västernorrland County Council, Sweden

Another difficulty faced by the partners concerned the *involvement of the two target groups*: the Traditional and Creative Industries. Since most of the full partners were from the public sector, representing regional authorities, education, Creative Industries or business development, not all of them had equally good contacts and direct links to both sectors. While one of the Finnish partner, a regional development agency used to working with Traditional Industries, had difficulties engaging the creative businesses, the Swedish partners and associated partners, albeit being able to draw on existing networks with both the Traditional as well as the Creative Industries, found it hard to get the people from the manufacturing industries interested in participating in the cross-collaboration workshops. This was a result of the regional economic structures in Västernorrland/Sweden which boasts mainly large companies and microenterprise and only few medium-sized enterprises who could have been more easily approached. The Irish partners, in turn, had a national organisation as associated partner and could therefore not rely on the support of smaller regional brokers with good links to the businesses or associations of businesses in the region.

As regards *project administration*, interviewees agreed that it was time-consuming, but not worse than in any regional or national project. A major challenge, however, was the long time it took for payment claims to be processed, which caused financial constraints in smaller partner organisations.

Difficulties in reaching agreements, inherent in the project partnership, also affected the CINERGY toolkit. Partners found it hard to come to terms about the maintenance, purpose and content of the toolkit. This was resolved by *taking advantage of the synergies* with another project that had started building an internet platform for creative businesses. Partners decided to adapt the existing, but unfinished platform to the needs of CINERGY and to further improve it by using the findings from both projects regarding the wants of the Creative Industries. The continuation of the platform was secured for 5 years by making the necessary financial arrangements and partners agreed to take over responsibility for it jointly.

The implementation of the Creative Agencies also faced the partners with challenges, in particular as regards the hosting of the Creative Agencies, which each one met differently. One of the Northern Irish partners succeeded in integrating the Creative Agency in its portfolio. In Sweden and Finland, the Creative Agencies were organised as a network of different intermediary organisations interested specifically in crossover collaboration of businesses. While the principal focus of the Northern Irish Creative Agency is on giving direct support to creative businesses on issues such as business planning, funding, etc., the Swedish and Finnish Creative Agencies focus on support within the network of intermediary organisations by making use of the different expertise and contacts of its members. Partners reported

that the next step will be to promote the Creative Agencies and make them more widely known.

The pilots, after initial starting difficulties due to delayed decisions, were generally very successful. Some ideas, however, had to be abandoned due to the *limited time and financial resources*. The project concluded that the piloting and, in particular, the product development had taken up much time and effort in all regions and that the issue of cross-collaboration between Creative and Traditional Industries turned out to be highly complex. Even though there are many organisations working with business development, by trying to develop intersections between the creative and industrial sector, the project had been breaking new ground.



Workshop leader and participant discussing product development from industrial metal waste. (photo: Gudrun Lindberg, Västernorrland County Council)



Cross-collaboration between Nature Park and web application designer. (image: RAPID)

3.1.3 TANGIBLE PROJECT IMPACTS AND SPIN-OFFS

The main objective of the project was to *enhance business development* by fostering the cooperation of businesses working in the creative and industrial sector. By matching the skills of both industries, this cooperation was thought to unlock innovation potential in the regions, which would lead to the development of new products, strengthen competitiveness and create jobs in both industries. CINERGY reported on several business activities as a direct result of the project.

As regards *product development*, several new products emerged from the pilots. The development of the new pike dish was a very thoroughly planned process involving commercial fisheries for the base product, a research institute for carrying out the laboratory tests, the organisation of tasting events, one of which was organised by the Swedish lead partner, a catering business for bringing the new dish to the (international) market and a graphic designer for the marketing of the product. The Finnish CINERGY partners provided hands-on and financial support in the whole process and invested in production means. Due to the success of the pilot, other food companies are now enquiring about product development support. No financial support, but assistance in linking up a soft drink company with a creative company was given by the Swedish CINERGY partners. A new soft drink was taken to the international market with the help of branding and storytelling. Also the digital printing and waste material workshops delivered in Sweden nurtured new innovative product ideas and new ideas for business cooperation.

CINERGY also led to a host of *new business collaborations*, which either happened in the scope of pilot projects or beyond the scope of the project, as a result of the contacts established

during the project activities. The Tervakanava Cooperative of young creative entrepreneurs, which was initiated and is hosted by Kainuu Vocational College, acts as a broker between young entrepreneurs and the Traditional Industries and helps them establish themselves on the regional market, in an area with a traditionally low representation of Creative Industries. This led to several business collaborations, all of which were paid entirely by the traditional businesses: web design and development for a restaurant and rehabilitation centre, design and painting of a local gym, video production for a multi-national company producing railway vehicles and for the Regional Federation of Finnish Enterprises. Meanwhile the cooperative has doubled its number of registered members and continues to sell its services. The successful model has been copied by other municipalities and regions and is now considered a best practice. In Sweden, a new association of creative businesses was founded as a direct result of the CINERGY workshop on material waste and free production capacity in the industry. Currently, the association consists of 5 creative companies, but works hard to recruit members from the manufacturing industries and has already established several promising contacts, some of them during CINERGY workshops. Five prototype products have already been developed and the association was able to raise start-up capital. In Northern Ireland, the collaboration between the voluntary organisations and artists did not only benefit the non-profit organisations, but also the creative entrepreneurs. One of the creative companies reported that it had opened a whole new market and that they have already got new work as a result of it.

“CINERGY had several impacts on business development and numerous spin-offs, but they were more ad hoc, I would say. You can’t plan these kind of things.”
Gudrun Lindberg, Västernorrland County Council, Sweden

The pilot activities reached a large number of people and resulted in a number of *spin-offs*. In Sweden, creative businesses, moving into an industrial area, were given the task to make the area more attractive and alive, with the support of one of the CINERGY partners. In Kramfors/Sweden, negotiations were started about creating a multi business hub as a creative business arena. Also in Sweden, an association of creative businesses and sales platform was supported in getting funding for product development, and one of the artists, who creates metal objects, has been linked up with a local manufacturer during the material waste workshop. The manufacturing company is now cutting out and bending metal pieces of the spare parts of large metal

sheets for the artist, who then turns them into art objects. The digital printing workshop organized in Sweden also resulted in a spin-off. One of the workshop speakers, an artist working with glass fusing, met the organizer of municipal evening classes in technologies for children at the workshop. She was asked to develop and deliver a 2-day training course in glass fusing, which she has, since then, also repeated in other parts of the country.

3.1.4 INTANGIBLE PROJECT IMPACTS

The *added value of transnational cooperation* mainly resided in the inspirations that each region received from the good practices in the other regions on how to advance the complex issue of business and innovation support for creative businesses and in the contacts that were established that led to new collaborations between businesses and public institutions.

For example, inspired by the successful cooperative of creative young entrepreneurs established in Finland, the Swedish lead partner organization is now discussing to adopt a similar approach, as a way to keep creative young entrepreneurs in the area, after they have been schooled. Some small Swedish food producers, who had been involved in CINERGY, got new ideas from the project and expressed the wish to go into international cooperation, not merely for the purpose of selling their products abroad, for their produc-

tion is too small for export, but in order to learn from international peers. The Irish partner and a Swedish municipality are now planning a follow-up cooperation project on tourism and natural heritage as a result of the contacts established in CINERGY.

Since the participating regions share similar challenges, but also similar potentials regarding the creative industries' contribution to the regional economies, the transnational exchange in CINERGY was considered very valuable by all interviewees. For some partners as well as participants these new contacts opened up a whole new avenue of work. However, partners also acknowledged that transnational cooperation was not strictly necessary for the implementation of the pilot projects.

The Northern Irish pilot *raised awareness* about the voluntary work and supported the cause of two non-for profit organisations. One of them, a community organisation in support of adults with learning disabilities, increased the number of participants as a result of the new marketing campaign. Telling the stories of people with learning disabilities growing up in a rural community through comics turned out to be very powerful. Also the search and rescue company reported that the comic about how to deal with people with suicidal intent was a really good educational resource.



Swedish food experts tasting new Finnish pike products.
(photo: Christina Matsson, Västernorrland County Council)



Peter at Starling & Grobba showing their jigsaw puzzle made with inspiration from digital printing and waste material workshops.
(photo: Håkan Nordström)

3.1.5 END USERS: ANNIKA SANDIN & PETER ERIKSSON, DESIGNERS, NORRFORM/SWEDEN

We founded Norrform about a year ago, after we had participated in the CINERGY workshop on material waste and free production capacity in the industry. Norrform is an association of innovative designers in North Sweden with the aim to work together with manufacturers to recycle materials that are currently just wastes of industrial production. We had had a similar business idea before getting involved in CINERGY, but what we then had in mind would have been much smaller and very local. With the help of the CINERGY team and the people that ran the material waste workshops, the idea began to take shape and we started to think in bigger terms.

The CINERGY workshops brought us in contact with people from the industries and were a sort of wake-up call for us, because we realised that we had big industries in our region with a lot of waste materials. At the workshops, we also met a lot of creative people with the same interests and mindset. Meeting all these likeminded people, establishing new contacts, which opened doors to new opportunities, was one of the main benefits from participating in CINERGY. The workshops were a good start for us to gain followers.

At the moment we are 5 creative companies in the association, but we aim to attract industrial companies as well. So far, we had very good feedback on this idea from manufacturers. We are in contact with the metal industry, the leather and the textile manufacturing industry. Our idea is to use various types of waste material and combine them to make furniture, tableware, kitchenware, and so on. We aim to collaboratively develop new products. Right now we are in a project with a cement producer that produces concrete floors. We could use the cement for making kitchen ware like bowls, home decor, furniture, etc. This cement producer is dumping tons of waste every year. So the possibility to extend production to other production lines also helps them to deal with the environmental issue. We have already developed 5 mock-ups of new products and now have to see whether the finished products really work and are functional. If successful, the next step will be to take them to the market and, ultimately, to go into serial production.

So far, we have created an online sales and product development platform, which can be used by our members, and a common brand. The Norrform webshop is currently used to market local design from Sweden, but we want to extend it to products made from waste materials. Our next step will be to bring all the manufacturers, innovators and designers together in a first meeting to discuss how we want to move forward with the idea so that we can start with the actual workshops. In setting up the meeting, we can still rely on the help of the CINERGY team and we can also count on the support of the people we met in the CINERGY workshops when it comes to running the workshops. Our future aim is to have a permanent workshop where we put together ma-



Annika Sandin and Peter Eriksson, founders of Norrform.
(photo: Starling & Grobba AB)

terials, ideas and creativity. Ultimately, we would like to have a special studio, where we have machines that the members can rent, and a material library.

The biggest challenge in realising such an innovative idea is to establish the contacts with the manufacturing industry. They are not used to think in smaller markets and small production volumes. As for the financial backing, we have only just been granted start-up capital from the Swedish government to proceed with the project. If everything goes well, we may apply for more funding next year, up to 2 million Swedish Kroner, which is a lot of money. We would also like to work with designers from outside Sweden and it would be fantastic to see this idea exported to other communities and countries. Right now we are working only locally, but we can see no reason why this idea shouldn't be applied across the whole of Europe.

3.2 Case study 2: Competitive Health – Competitive Health Services in Sparsely Populated Areas

Competitive Health dealt with the highly innovative, yet still underexplored field of telemedicine, using ICT to facilitate the interaction between doctors and patients or among health professionals. The enormous potential of eHealth services in providing good and affordable health care was also stressed in the Digital Agenda for Europe flagship initiatives under the Europe 2020 strategy. Unlike the predecessor NPP projects working on telemedicine, Competitive Health managed to go beyond knowledge exchange and transferred best practice eHealth services between the participating regions by picking up important lesson from past cooperation projects and making extensive use of peer learning between the best practice and the best practice receiving sites.

“In many projects, knowledge exchange is the end of it. But knowledge exchange has to be the start of it. There is no point in just exchanging knowledge unless you do something with it.”

David Heaney, Centre for Rural Health, Scotland



Swedish mobile eye screening unit piloted in Finland (photo: Competitive Health)

3.2.1 PROJECT SYNOPSIS

Health care provision is particularly challenging in the sparsely populated, remote and peripheral regions of the NPP, and is further hampered by the cold, harsh climate with occasionally severe weather conditions. To illustrate, in the northernmost Finnish municipalities, patients need to travel up to 700 km to obtain tertiary health care. This challenge is further aggravated by the fact that these regions are faced with a decreasing and ageing population due to out-migration of young people and families. This results in serious problems in the recruitment and hiring of professional staff and personnel to provide health and social care services, a situation which is likely to worsen in the future if the current trend persists.

Competitive Health addressed these challenges by developing and implementing innovative eHealth solutions, i.e. exploiting the benefits of advanced ICT technologies for providing health care services and promoting the transfer of eHealth practices across the NPP area as one way to overcome problems imposed by long distances and to improve the access to health services in the partner regions.

The project tackled this task by

- mapping existing eHealth solutions and innovations in the partner countries,
- assessing the identified eHealth practices for their suitability to be transferred across partner countries, and
- piloting eight eHealth services:
 - Teledialysis service in Scotland, a best practice from Norway
 - Remote speech therapy service in Scotland and Finland, a best practice from Sweden
 - Remote wound clinic in Finland, a best practice from Norway
 - Remote monitoring of cardiac patients in Finland, a best practice from Sweden
 - Remote monitoring of personal health data in Finland and Norway, trialling a product from Sweden
 - Mobile eye screening unit in Sweden, a best practice from Finland.

3.2.2 SUCCESS FACTORS AND CHALLENGES

4 of the 8 piloted services could be successfully transferred during the project, two of which (the teledialysis and remote speech therapy service) are now part of routine service delivery in Scotland. Key to success was in the set-up of the project: the participating regions piloted existing services, which had already been proven successful in one of the partner countries, where they were part of daily practice, and which only needed to be adapted to the conditions of the ‘importing’ region. The intense *peer exchange* between both the ‘exporters’ and the ‘importers’ of the telemedicine services was most likely the main success factor. As Beatrice Wood, Scottish speech therapist, expressed it:

“Because of my contact with the Swedish speech therapists, I started about 5 rungs up the ladder instead of starting at the bottom.”

Beatrice Wood, NHS Highland, Scotland

On closer examination, the positive outcomes of the project built on a multitude of factors:

Competitive Health was a very *need-based project*. The idea for the project came from the health professionals who knew what the practical demands for remote health care services in the partner regions were. The fact that all partner regions shared the same challenges regarding health care, and that all partners were aware of the necessity to break new ground regarding health care delivery in sparsely populated, remote and rural areas was the main driver of the project, according to the Finnish lead partner.

Strong stakeholder involvement ensured that the new services met the wishes of both patients and health care staff. Since implementation of new health care services requires input from busy professionals and since the coordination of multidisciplinary teams can be challenging, it was important for the Competitive Health team to get the clinicians involved from the start, as only they have the expertise and hands-on knowledge needed to implement a service that can normalise and become sustainable once the project has ended. During the project, project partners maintained very active communication with nurses and doctors and asked patients about their satisfaction with the service. *Active and open communication* was also important to forestall scepticism and concerns in the local population that these new services were going to replace their face-to-face consultations with a video link.

Project preparation was critical as it laid the foundation for the successful transfer of eHealth services. One decisive impulse was given by the NPP Secretariat, which prompted the project team to redesign the project and aspire to delivering concrete products and services. Careful project preparation was also instrumental for reaching a common understanding about objectives, work plan and milestones. According to the lead partner, the detailed and well-planned workplan helped with the management of the project, as it clearly specified roles, targets and deadlines, on the basis of which the project could be implemented as planned.

Contrary to the original plan, partners decided during the preparation phase to leave the choice of pilots open and to start with the *mapping of existing successful services* used in the partner regions and assess their suitability for being ‘transplanted’ in another context as well as the readiness of the best practice receiving sites to adopt the services, a lesson learned from a predecessor ETC project. On the one hand, the matching up of appropriate services increased the likelihood of a successful transfer; on the other hand, it meant that the project team could not take any concrete steps in planning the pilots before the mapping phase was completed. This had obvious implications, as the planned budget for the pilots was vague, which sometimes forced the project to find a workaround to implement pilots with the allocated money. For example, the Swedish partners ended up borrowing the Finnish mobile eye screening unit and had to test it under time constraints as the Finnish partners needed it for their own



Teledialysis service used in Caithness General Hospital Renal Unit. (photo: Robert MacDonald)

patients, which put pressure on them as well as they are legally bound to treat patients within a specified timeframe.

“The mapping allowed the identification of the best and most suitable pilot sites and therefore increased the likelihood of creating sustainable eHealth services.”

Pasi Parkikila, Oulu University Hospital, Finland

The project also did *important groundwork* during the preparation phase to identify and incorporate findings from other transnational eHealth project, avoid problems encountered in these projects and ensure that the project would not cover ground which had already been covered by other projects. The project capitalised extensively on past projects from the NPP (REMEDY, Sustainable Rural Health care network), but also from other ETC programmes (Baltic eHealth – Baltic Sea Region Programme, eHealth for Regions – Interreg III B).

Regarding the *project partnership*, even though project partners hadn't known each other before, all interviewees agreed that this was not a major obstacle, not least because of the strong Finnish project leadership. A far bigger challenge was that different interests coincided as some partners had more academic interests in the project, whereas partners who were directly involved in health care service provision had very practical expectations of the outcomes of the project.

In spite of careful planning, strong stakeholder involvement, well-chosen methodology and good project leadership, 4 telemedicine pilots could not be successfully piloted and 2 other pilots, albeit successful, could not be established as part of routine service delivery. Reasons are mainly to be found in external factors: *technical and legal barriers* and a *lack of cost-effectiveness of some services*.

Several pilots struggled with *technical problems*. In the case of the remote monitoring of personal health data, the Norwegian and Finnish partners, who piloted a Swedish product, were faced with several ‘teething troubles’ of the product: ‘the Bag’ was too big and heavy and didn't use the required ECG trace. The Norwegian team had severe problems establishing a stable connection and the data could not be automatically transmitted to the patient's GP since ‘the Bag’ was using a mobile net, while clinical data in Norway must be transmitted via a secure health net. In Finland, the transfer of data was equally problematic due to Finnish data protection laws, meaning that partners could not take advantage

of the main functionality of the product: the mobile transfer of data. “On hindsight”, the lead partner stated, “it became clear that the product and technology in that field were still in a too early stage of development, but have advanced at a fast pace since then.”

Technical barriers were also encountered regarding the implementation of the remote wound care in Finland and the teledialysis and remote speech therapy pilots in Scotland. The main hurdle was that the existing levels of *broadband connectivity* were inadequate for using mobile video conferencing units in patients' homes or in schools. In Scotland, this was solved by using existing networks and offering the services in local health care centres, which had already established video conference links.

The remote wound clinic in Finland and the mobile eye screening in Sweden were both successfully piloted, but would have needed more patients to become *cost-effective*. To achieve full cost coverage, the service would have had to be extended to other areas or the equipment used for additional purposes, e.g., education or training. The Scottish partner, contrary to the other partners, who borrowed or rented equipment for the duration of the pilot, ensured funds for buying the equipment already during the project. This turned out to be a key decision to ensure the durability of the services.

The Finnish lead partner successfully piloted 4 telemedicine services, but failed to establish them as routine services as a *consequence of the administrative structures* in Finland, where health care is organised decentrally. That meant that the 29 municipalities in the Oulu hospital district would have had to collectively agree to any change in health care services. A planned health care reform in Finland will alleviate the decision making process in the future and open up new possibilities for the introduction of eHealth services.

3.2.3 TANGIBLE PROJECT IMPACTS AND SPIN-OFFS

In Scotland, where two telemedicine services were successfully established, Competitive Health had a tremendous *impact on the quality and accessibility of the piloted health care services*, as both Scottish interview partners declared. The contribution of eHealth services to an *enhanced security of provision* in Scotland was demonstrated in December 2010 when heavy snowfall prevented the consultant from travelling to the monthly clinic in Wick for reviewing haemodialysis patients and consultations were simply conducted remotely.

The encouraging experience with the teledialysis pilot also led to an *expansion of the renal service* to another two sites within Scotland: a further set of mobile video conference equipment was purchased for another satellite renal unit, which started operating in January 2011, and trials with an island-based renal unit were started. Also the remote speech therapy could be sustained and expanded to more locations.

Competitive Health also has a *big potential impact on cost sav-*

ings in the health care sector, if eHealth services are to become more widespread. Interviewees, however, underlined that cost saving was never a main objective for them, especially not at the expenses of patients, nor had these services led to an increase in weekly consultations, but, on the contrary, to an improvement of the quality and accessibility of services. The positive feedback received from patients testified the *high patient satisfaction* with the new services.

The central idea of telemedicine is that it *reduces the need to travel* to see the doctor or therapist, which has a lot of positive externalities such as savings on staff and patient travel time, CO₂ savings and reduced fuel consumption. For the teledialysis service, a reduced carbon footprint of the renal service of 2,445 kg CO₂-equivalent was calculated for 2010.

“The speech therapist in Scotland was previously spending more than a third of her working life driving. With the remote speech therapy we found a solution so that she could be a speech therapist rather than a driver.”
David Heaney, Centre for Rural Health, Scotland

The *main spin-off* of Competitive Health, and perhaps the biggest benefit of the project, was that it led to the follow-up project ITTS, which managed to considerably upscale eHealth implementation. By drawing on the methodology and lesson learned from Competitive Health and keeping elements of the team to-



gether, ITTS piloted 10 services across 6 countries, attracting the Republic of Ireland and Northern Ireland to the project, and implemented a total number of 25 new eHealth services. Competitive Health, thus, had a true *multiplier effect* as it resulted in the extended use of ICT in health care, beyond the piloted services and to additional, also non-remote and non-rural sites, and also raised considerable interest outside the NPP area.

Both David Heaney, the Scottish partner and lead partner in ITTS, and Beatrice Wood, the leading Scottish speech therapist, who participated in the project, reported that the idea of using ICT for health care service provisions has become viral in Scotland since Competitive Health.

On the one hand, the project was seen as an exemplar of how to change health care service delivery, which had a big influence on the whole policy, and utilising video conferencing has become much more commonplace across Scotland. Thanks to her involvement in Competitive Health, Beatrice Wood is regularly consulted on the use of VC technology in health care and is involved in a working group that looks into the possibility to roll out VC technology over the whole of the UK.

On the other hand, as people gain experience with using telemedicine, new ideas on possible further uses emerge. For example, ITTS explored the use of mobile technologies in addition to VC, a technology which has developed rapidly over the past years. The Scottish partner asserted that “even as we speak we are on the tip of the Iceberg of what can be done with this technology. As it becomes more commonplace and as people become more used to the technology, it will be used more than we are using it today.” Competitive Health has certainly helped to kick-start this development, at least in the case of Scotland.

3.2.4 INTANGIBLE PROJECT IMPACTS

Beside important tangible impacts, Competitive Health boasted a plethora of other benefits for the people and regions participating in the project.

One of the main benefits of cooperating on eHealth service delivery was that project partners could draw on knowledge and experience available in the partner organisations, rely on their support in the implementation of the pilots and build a professional transboundary network of professionals working in the same field and having to deal with very similar problems. On the one hand, Competitive Health brought together the different competencies of partner countries and different level of experience with eHealth services in a synergistic manner. On the other hand, participants benefitted from *peer-to-peer learning*, i.e. intense collaboration between the best practice site and the receiving site during the preparation and implementation phase of the pilots, including staff exchange between Norwegian and Scottish clinicians, on-site training for Swedish nurses on how to use the Finnish mobile eye screening unit, etc. All interviewees



Remote monitoring of health data in Oulu. (photo: Hannu Marjamaa)

highlighted that it would not have been possible to achieve the same result without the involvement of transnational partners.

The project even set up *collaborative decision making structures*: detailed action plans were written for all pilots, which needed to be approved by the project consortium before pilot launch, a steering group was established for the pilots, the regional pilot sites were chosen collaboratively from a list of candidates “to match” identified the best transferable eHealth practice or service model with a potential pilot site.

The example of the Competitive Health follow-up project ITTS also shows that peer learning is a *two-way exchange*. Good practices exported from one country were often improved by the ‘importing’ country and these improvements then found their way back to the country of origin of the service.

“It was collaborative decision-making because we had to transfer the services across country borders. We really needed to agree upon things collaboratively. It was a very open process from the beginning and it was learning from each other all the time.”

Minna Mäkineniemi, Oulu University Hospital, Finland

However, making the good practice transfer work often required a *change in practices*, e.g., a change in the way the appointment systems was organised in Scotland, and the *adaptation of the service* to accommodate local conditions; e.g., to the availability of broadband access.

Competitive Health also had a big influence on individual *capacity building* and promoted *organisational learning* as well as *innovation capacity* in the participating organisations and regions. For example, nurses working in remote primary care sites benefited largely from assisting in remote consultations with university hospital doctors and were also able to take part in trainings via videolink. The services promoted their independent work, offered flexibility to patient care and a continuing professional development opportunity. Competitive Health also resulted in *new informal clinical networks* across Northern Europe between clinicians involved in the project that lasted beyond the duration of the project.

Recruiting and retaining health care staff can be very problematic in the case of remote, rural posts. A vacant speech therapist post in the small estuary town of Wick/Scotland could be filled by a therapist who was attracted by the prospect of being able to work with new technologies in speech therapy.



Remote wound consultation on a difficult scald between Pudasjärvi Health Care Center and the Oulu University Hospital. (photo: Pekka Fali)

3.2.5 END USER: BEATRICE WOOD, SPEECH THERAPIST, NHS HIGHLAND/SCOTLAND

We work in a team of 7 speech therapists and 5 assistants here in the Highlands and I manage the service in the part which is 40 miles north of Inverness. We are mostly based on the East Coast, because that’s where the majority of the population is. On the West Coast, there are very small, scattered villages with an average population of about 300 inhabitants. So, really, I have two different types of services: I have one in the more densely populated areas, which are easier to serve, and one in the very scattered and remote areas, which are accessed along single track roads. To see one patient, very often I would leave in the morning and then travelling all the way back in the afternoon, because it’s not practical to go to one village and drive up to the next village and back, because the distance between the villages is so great.

Several years ago I was seconded into a project to look at how we could provide intense therapy to stroke patients in these remote areas. One of my findings was that, perhaps, technology has a part to play in finding a solution. So when I heard of the Northern Periphery’s Competitive Health project and that they were looking at a piece of work that had been done in the north of Sweden, using video conference technology for speech and language therapy delivery, I thought, “this is just what I need”. For me it meant that the technical expertise had been worked through so that something was presented to me that was ready for me to take on board.

And I became involved in the project.

The cooperation with the Swedes and the possibility to talk to someone experienced with implementing such a service was absolutely vital for the implementation of remote speech therapy in Scotland. The Swedish therapist, who had set up the service over there, supported us greatly in trouble shooting around our service. Because the challenges we met were different from the challenges they had met due to the different geography and the infrastructure, it was more about collaboratively thinking, “this is the challenge, how can WE meet that” and using their knowledge and experience to address them. For example, unlike in Sweden, we couldn’t offer the service in patients’ homes. So we decided that by far the easiest and the best option was to have VC units in health centres in these remote communities that can be used by the health centre staff for all sorts of purposes: they can use it for meetings, for linking in with Inverness, for patients anonymously being able to feedback about services.

I have to say that having developed our confidence and competence in using video conferencing, we are using it now much more in the populated area on the East to offer a better service. For example, evidence suggests that if you deliver intense therapy for Parkinson patients, say 4 times a week for 4 weeks, the outcomes are very good. Now, since that’s such a huge commit-

ment for a single therapist, we tend to share it. And using video conferencing allows us to do that.

So what the technology does is provide patients with options that certainly weren’t there before. For example, I might go out to one of these small villages and leave here at 8:30 in the morning, be there at 10:30 and leave at about 15:30 in the afternoon to come back. But a parent who is working may not have the time between 10:30 and 15:30. So now I can see the child when the parents come back from work at the end of the day, because by that time I am back in base.

What technology hasn’t done at all is increase the number of patients that we see and you can’t judge the value of the project by that kind of productivity, because, by the very nature of it, we are talking about 1 or 2 patients that I would find it difficult providing a service to. I would say the impact of being involved in that project goes way beyond numbers of patients; it’s much more about the quality of the service that we are able to offer.

And still, the infrastructure is not used as well as it could. Health services are so tardy and slow in picking up the use of technology, but I think we have to keep plugging away at it and in 5 or 10 years time it will become commonplace for people in these remote areas to go into the health centre to see the consultant or therapist over VC. It’s a long-term change.

I honestly think that all of this wouldn’t have happened without the Competitive Health project. And I cannot say strongly enough that you cannot go on the figures, on the numbers of patients, because the problem is that the number of people is very, very small. But it’s the knock-on effect. The benefits of that project go way beyond the actual remit of the project.

3.3 Case study 3: Northcharr – Sustainable Aquaculture of Arctic Charr

Having been composed of a partnership of 3 research institutions from Sweden, Norway and Iceland, Northcharr was nonetheless a highly applied project that produced a number of outstanding results. The project has contributed to the establishment of 5 new Arctic charr farms, helped increase the production and reduce production costs in existing companies, and succeeded in securing the Arctic charr breeding programmes in Sweden and Iceland. All this was possible, because Northcharr built on excellent connections to the aquaculture industry and on the systematic establishment of triple helix networks to enhance the development of new farming sites.



Arctic charr

3.3.1 PROJECT SYNOPSIS

Arctic charr is a highly demanded exclusive fish, which is mainly farmed in Iceland, Sweden and Norway on small scale. This species requires colder water than other salmonids and can only be farmed in fresh or brackish water at high latitudes or altitudes, which provides a unique opportunity for expanding Arctic charr farming in remote places within the NPP area. There exist however bottlenecks that need to be solved in order for the Arctic charr farming industry to thrive. These are:

- the lack of knowledge regarding the optimal handling of broodstock, feeding practices and composition and temperature regime;
- the increasing importance of addressing issues like animal welfare and slaughtering, subject to new standards on EU level, but also environmental impact and product quality;
- the lack of governmental support and negative public perceptions, time-consuming and stringent licensing procedures and lack of skilled personnel.

The aim of the project was to boost the industry through national and transnational cooperation, by gathering the scarce

expertise in this field, in order to solve the existing bottlenecks by initiating meetings with relevant stakeholders and providing already existing knowledge as well as initiating applied research on farming techniques. That was achieved by:

- analyzing the present situation for charr farming in the Northern Periphery to identify production potentials and bottlenecks;
- meeting regularly with Arctic charr farmers, lobbying with decision-makers and giving input to governmental inquiries about charr farming;
- conducting field trials to suggest solutions to known problems in Arctic charr farming such as the need to improve egg quality, replace fish meal with cheaper and more sustainable feed ingredients, humane slaughter practices, etc.;
- initiating local and regionally triple-helix structures to be involved in specific industry projects, and to provide the participants with contacts to facilitate Arctic charr development.

3.3.2 SUCCESS FACTORS AND CHALLENGES

Northcharr produced a number of outstanding results: It contributed to the establishment of five new Arctic charr farms, helped to increase charr production, reduce production costs and make charr farming more environmentally sustainable, and succeeded in securing the Arctic charr breeding programmes in Sweden and Iceland.

This was possible, because Northcharr built on *excellent connections to the Arctic charr industry*. Unlike in many other industries, where researchers are mostly in contact with branch institutes or governmental boards, the partner research institutions were directly dealing with Arctic charr farmers, relevant decision makers and other key stakeholders. This direct communication had developed over many years from the strong engagement from both researchers and farmers in the development of an Arctic charr industry in Iceland, Sweden and Norway. Since Arctic charr farming is a small and scattered industry, the SMEs

in charr farming do not have the capacity to provide solutions to many of the technical and biological problems associated with commercial cultivation and therefore strongly rely on the support received from researchers. Researchers, on the other hand, benefit from the fact that they are *close to the needs of the industry*. Close contact to the industry was also maintained during the entire project. All partners organised regular national meetings with present and prospective charr farmers. In addition, farmers, which were associated partners to the project, were able to participate in the transnational project meetings and study visits to Arctic charr farms in the partner regions.

Besides focusing on known barriers, the project surveyed farmers and stakeholders to identify further actions and research needed to support a robust and sustainable growth of the Arctic charr industry. In Sweden, the complicated and very expensive permit procedures, lack of investment capital and negative public perception of fish farming were identified as major challenges. Norwegian farmers referred to the strict regulations regarding fish farming in fresh water as a main bottleneck. In both Iceland and Sweden, the uncertain financing of the breeding programmes was mentioned as a hurdle. Other issues that came up were the lack of branch organisations to support the industry and the lack of skilled personnel. These results were presented to policy-makers and local authorities with whom the project boasted good contacts. All partners had several *meetings with governmental bodies, local authorities*, and other relevant stakeholders to highlight the importance of a national long term financing of the Arctic charr breeding programmes and of applied, need-driven research as well as a harmonization and facilitation of permit procedures.

The project partners can also look back on a *longstanding cooperation* and are members of the Pan-European network of Arctic charr research institutions and businesses, founded in the project 'Charrnet' (Fifth Framework Programme). Both interviewees mentioned the mutual trust and friendship built up over the years as an important success factor.

“Key success factors were that we knew each other and knew what we wanted, we did already have the contacts with the farmers and knew what they wanted and we knew what we could do. So we could start right away.”

Eva Brännäs, SLU Department of Wildlife, Fish and Environmental Studies, Sweden

Northcharr built not only on results of predecessor projects, but partners also took advantage of *synergies with running projects* by coordinating research and development activities related to the farming of Arctic charr. By combining ongoing research activities of different projects, the partners were able to expand the objective of the already funded projects and make best use of limited research funds.

The very essence of the project was to actively initiate local and regional *triple-helix structures* by bringing together investors, representatives of local communities and scientific experts in aquaculture to discuss and evaluate suitable new charr farming sites. Ultimately, the aim of these triple helix partnerships was to identify new farming sites and/or establish new companies. While the partners from research and industry were used to working closely together, the triple helix brought the public authorities into the equation, which had several advantages for all involved parties: Policy makers benefitted from the access to up-to-date and impartial knowledge from researchers about issues arising with regard to the establishment of new farms, such as the assessment of nutritional loads from fish farms or the general status of fish farming in Europe. For the (prospective) farmers, the direct dialogue with policy makers allowed them to address and solve possible administrative hurdles more easily. They also benefitted from the support received in evaluating different farming sites, developing business plans and designing the farms. SLU in Sweden and Hólar University College in Iceland initiated and participated in 4 triple helix models and the considerable effort put into finding new sites and interested entrepreneurs resulted in the establishment of 3 new fish farms.

The main challenge encountered by the project team was complying with the *formal programme requirements*. Project partners were very critical of the heavy bureaucracy involved in managing the project and of the contradictory expectations of project and programme regarding the envisaged project results.

3.3.3 TANGIBLE PROJECT IMPACTS AND SPIN-OFFS

What distinguished Northcharr from many other projects working on promoting business development was its very proactive approach to boosting the industry. Having made all important decisions and provisions before the start of the project allowed the partners to allocate more time to activities such as lobbying with politicians and other important decision makers; activities which would normally be handled by a branch organization. Interviewees critically remarked that the time and effort put into providing hands-on support in business development to farmers was at the expenses of research activities. The Arctic charr industry, however, benefitted largely from the project results in the area of production efficiency, production costs and sustainability.

Several Northcharr research activities focused on *increasing production efficiency* and, hence, contributed to *increasing the*

Arctic charr production. The project reported that the total Arctic charr production in Iceland, Sweden and Norway increased from 3,500 tonnes/year in 2007/2008, when the project application was written, to over 6,000 tonnes/year in 2010, mainly due to the growth achieved in Iceland and Sweden.

“One of the key issues for a project of that sort to be able to make a contribution is to integrate it with existing projects. It cannot be isolated; it has to have other projects going on to create a receptive environment. You cannot expect to have something come out of nothing, however good it is.”

Helgi Thorarensen, Hólar University College, Iceland

At the same time, Northcharr achieved a *reduction in production costs*. In Sweden, where the survival rate of eggs was low, research into the effects of temperature on growth in different strains of Arctic charr led to an optimisation of the temperature regime throughout the production cycle of Arctic charr and lowered energy costs. As a result of the findings, funding was successfully raised to install new water tubes at the Swedish breeding station, Aquaculture Centre North Ltd, to maintain a constant temperature below 15 °C, which increased the survival rate of eggs from 30% to 70%. Spurred by the Icelandic rearing results, research into optimizing egg production in Sweden was continued in a national project. Past success in breeding domesticated strains of Arctic charr, which grow three times faster than their wild ancestors, had already decreased the production cost by 40%. Northcharr succeeded in securing the continued financing of breeding programmes in Iceland and Sweden, which is likely to increase growth further and, hence, cut costs. In Iceland, results of the research into the possibility of replacing the more expensive animal protein with vegetable-based protein, while at the same time maintaining high levels of omega-3 fatty acids in fish that have been on a plant-based diet, contributed to the development of a new feed formula. It was shown that substituting fish meal with less expensive raw material from plant origin can reduce the price of feed by 25-30%, compared to the present price of feed for Arctic charr, and, as a result, could reduce the cost of production by 15%.

Northcharr also contributed to the *development of new national*

and transnational Arctic charr farms. In Sweden, two new farms have started operating during the project, each with plans for a production of 2,000 tonnes per year. One of the new farms was established as a result of a Northcharr triple helix cooperation and has a *transnational ownership of Norwegian and Swedish farmers*. The farm started operating in September 2009 with 5 employees and a slaughter house with additional 5 employees. Another Norwegian-Swedish cooperation started in 2011 with the process of finding suitable sites for an Arctic charr farm in Jämtland/Sweden. In Iceland, three new Arctic charr farms have been established, two of which were direct offshoots of triple helix partnerships. With the support of Hólar University College and the local geothermal company, two farmers were able to build up a small-scale Arctic charr production as a sideline to dairy or livestock farming, producing around 10-20 tonnes per year. Moreover, prospective farmers received support from an existing farm which provides the start-ups with fingerlings of suitable size and takes care of the harvesting, processing and marketing of the charr. In Norway, the first permission was given out to start an Arctic charr farm in a regulated lake based on the Swedish model. In total, these new farms have resulted in at least *35 new jobs on fish farms*. New fish farms also require higher local and regional processing capacity and, hence, lead to additional local employment in the fish processing industry. In addition to the new farms, three new processing plants were established, one slaughter facility and one processing plant in Sweden and one slaughter facility in Iceland, and at least *35 jobs were created in the processing industry*.

In spite of the success of Northcharr in the field of business development, interviewees did not relent in stressing that the project did only to some extent contribute to this development and that external factors were much more important. In the case of Iceland, for example, the Icelandic economy is very favourable for the establishment of new companies and the sudden devaluation of the Icelandic Crown at the start of the project boosted export and favoured the establishment of new farms. Even though the general trend is very positive, the post-project development of the Arctic charr industry in the Northern Periphery is rather inhomogeneous. While in Iceland demand is still higher than what can be produced, in Sweden, the development has fallen short of expectations, mainly due to the negative public perception of aquaculture in fresh waters.



This picture represents the “added value”. In this case a Charr farm (Landösjön), you can see the net pen on the left and the sporfishing club buys and releases charr from the farm into the lake (reservoir) and sells fishing permits for ice fishing. They make 100 000 Euro a year and people come from all over Europe! It was minus 30 when the picture was taken.

“Yes, there were new fish farms established in Iceland and production increased, but WE did not establish these farms. They were established by companies. We would like to think that our work has contributed, and it definitely has. But there are other, more important factors that come into play. As it happens, on the first day of our first project meeting in 2008, the Icelandic economy collapsed and the value of the Icelandic Crown sank by, maybe, 50%, which was good for export.”
Helgi Thorarensen, Hólar University College, Iceland

Furthermore, Northcharr also considerably contributed to *reducing the environmental impact* of aquaculture operations. The project successfully demonstrated that it was possible to *replace fish meal* imported from overseas with domestically produced fish meal from fish offal and cuttings or from (shell) fish not used for human consumption, e.g., mussels grown only for the purpose of catching nutrients in eutrophic waters. Another strand of research conducted in Iceland assessed the optimal proportion of protein in Arctic charr feed and the possibility to replace fish with vegetable-based protein and oil from regionally grown rapeseed. Tests in Sweden and Iceland were very successful and showed that the proportion of fish meal in feed could be reduced by 2/3 without compromising the growth rate of the fish. Findings have been included in the new feed formula in Iceland, bringing the Arctic charr industry one step closer to becoming a net producer of fish meat. This work also resulted in several national, Nordic and Baltic Sea follow-up projects for full scale testing and for testing new ingredients to replace fish meal and fish oil. By optimising the amount of feed and avoiding excessive feeding, the project also contributed to *reducing organic pollution and eutrophication of recipient waters*.

Research was also conducted into *minimising water requirements* by developing practical methods for the reuse of water for egg rearing. Based on the Norwegian practice, the Icelandic partners tested ways to reduce water requirements in Arctic charr farming. Through simple reuse of water, the plan was to reduce water requirements fourfold compared with standard

reference values in Arctic charr fish farms in Iceland. This goal was achieved in the test setting and in the end the achieved re-use was sevenfold. Findings will become important in the future, once water becomes a more limiting factor due to a strong increase in production.

Furthermore, Northcharr tested *alternative and more humane slaughter methods* for Arctic charr which ensure high product quality and compliance with European welfare standards for aquaculture fish. Test results with stunning by electric shock led to a follow-up project on the effect of different slaughter methods on fish welfare, which shall result in recommended humane slaughter methods for Arctic charr, and to the funding of a slaughter machine for full scale tests.

Northcharr not only resulted in several successful applications for *follow-up research projects*, but also has another important *spin-off* and example of successful triple helix cooperation: the Aquaculture Centre North Ltd., formerly a research station owned by the Swedish Board of Fisheries and under the threat of being closed down, was taken over by SLU, representing research, the Arctic charr farmers association and a local and regional authority, who became owners of the centre and now employ 6 persons. The centre is being developed into a national competence centre for Northern Aquaculture where farmers can get support with administrative as well as biological issues, continuing the work started in Northcharr. It also houses the Swedish Arctic charr breeding programme.

In general, all partners are continuing to support Arctic charr farmers, mainly through personal meetings and through branch organisations.

3.3.4 INTANGIBLE PROJECT IMPACTS

Northcharr project partners strongly underlined the *added value of transnational cooperation*: Each partner had long experience in issues related to charr farming and close connections to the regional industry, but also unique expertise in a field where expertise is scarce. For example, the Swedish partner benefitted from the Icelandic experience in rearing, the Icelandic partner learned from the Norwegian experience with water recirculation technology and the Norwegian partner learned about the Swedish practice of farming in net pens. But exchange also took place among farmers, who started a process of increased cooperation. Sharing research results and carrying out complementary research also meant cost savings for each partner research institution. Project partners carefully selected those obstacles that were of a transnational nature, since the three participating countries are characterised by differences in farming techniques, markets and export strategies. The project not only benefitted from complementary knowledge, but also from the different equipment brought in by the partners. For example, the Norwegian partner provided the necessary equipment for testing automated ways of slaughtering in line with new EU animal

welfare standards that demand that animals must be anaesthetized immediately and rendered unconscious until dead.

“Having had the opportunity to collaborate in the project meant having access to all the results of research that had already been performed, avoided duplicating research and saved money.”

Helgi Thorarensen, Hólar University College, Iceland

Northcharr also significantly contributed to *removing non-technological barriers* to a growing Arctic charr industry. All partners provided recommendations to policy-makers and authorities on how to improve and facilitate the establishment of new fish farms.

In Sweden, where freshwater aquaculture is regarded as an environmental problem and competitor to fishery, Northcharr helped improve the image of the Arctic charr industry. The Swedish partner gave input to a governmental inquiry on aquaculture and succeeded in securing the funding for the Swedish Arctic charr breeding programme for several years from the Ministry of Agriculture. They were also involved in a legal matter concerning a requested restriction of a permit for a new Arctic charr farm by the local authorities and achieved that the restriction was lifted, by bringing in arguments based on the knowledge on environmental loads from fish farms. Both the Swedish and Icelandic partners gave input to e-learning resources to address the lack of qualification of staff working on a fish farmer, who cannot be expected to spend several months away on courses. The Swedish partner participated in the planning of a one year distance learning course for fish farmers and contributed with lectures. These were very forward looking activities, given that a documented education for all staff handling live animals will probably become a general EU requirement.

In Iceland, national funding for the Arctic charr breeding programme, whose financing situation used to be short-termed and unsecure, could be obtained. A new collaboration was established between Hólar University College and the Icelandic Agricultural University to push ahead with the breeding programme.

In Norway, where environmental regulations concerning inland aquacultures are strict, the first permit to start a fish farm in a water reservoir was granted as a result of the contribution of the Norwegian partners to a national report on the potential of inland fish farming in Norway. Swedish examples of using water reservoirs to farm charr in net-pens were quoted as good practice.

3.3.5 END USER: HLÍFAR KARLSSON, MANAGER AT ARCTIC CHARR FARM, RIFÓS LTD./ICELAND

Rifós Ltd was involved in the Northcharr Project as an associated partner, as one of three Arctic charr farms in Iceland. When we were invited to join, we saw this as a great opportunity to visit Arctic charr farms outside Iceland, exchange information with them and witness how they operate, but also to receive visitors from abroad and show them how things are done over here. There is always something that you can learn from others and, maybe, they from you! During the project, I also participated in some of the transnational meetings and got to know the Swedish and Norwegian partners. We have also been taking part in the fish feed trials that were run by Hólar University College, the Icelandic partner. They tested different fish feed compositions, replacing fish protein and fish oil with vegetable-based ingredients. That, however, was not my responsibility, as my task is to run the fish farm.

Prior to working for Rifós, I was with Hólar University College for one year where I learned about Arctic charr. So when I came to Rifós, I wanted to try raising Arctic charr in the lagoon. We have only begun farming Arctic charr in 2004 with about 1,000 fish, but since it was very successful, we started building up an Arctic charr production beside the salmon. However, as there are so many salmon farms now in Iceland, we quickly decided to abandon salmon completely and focus only on Arctic charr. We are now producing about 300 tons of Arctic charr per year, 95 – 97% of which is exported, mostly to USA, to the New York and Boston area. We are still expanding our plant and livestock, because the salmon is now out and we have space to increase the Arctic charr production. Our target is 500-600 tons per year in 2016/17, so a doubling of the production. In addition, we also aim to build a land-based plant, because we have plenty of water which we can pump up from natural sources.

Right now, we farm in cages in the lagoon. We buy all our eggs from Hólar University College and keep the fish in the hatchery until they have over 100 grams and then, with the spring water, we take them to the lagoon. There the temperature is around 5 or 6 degrees in the winter, but goes up in the summer, because the lagoon is very shallow and the sun warms it up. We keep the fish there from spring until they have 300 grams and then we move them to the cages where they grow to about 2 kilos. Our cages have to be very small, about 1,500 m³ for the big fish, and about 800 m³ for the small fish, because the water depth in the lagoon is only around 30 m and only the upper layer is fresh water. There the salinity is just 0-3%. However, if you go down to 6 meters it has increased to 15%, and at the bottom it's about 25%. So the fish is kept in brackish water, but the advantage of being in a lagoon is that we do not have to pump any water, which is very expensive.

Another big cost factor is the feed. The feed supplier companies are now producing feed especially for Arctic charr from a recipe

developed by Northcharr, which has cut down costs significantly by using more vegetable-based and fewer fish proteins. And we are also working on reducing the need for electricity and have introduced an environmental management system together with the Environmental Institute of Iceland. They take measurements regularly and look at parameters like temperature, salinity, pH, in the hatchery and also in the lagoon, and at algae as an indicator for how much nutrients are in the water.

Our business is doing better every year as we improve in technique and gain in experience, even though we still have a lot of challenges. In the lagoon the problem is always the same: in winter we lose a lot of fish due to low temperatures. The fish farm we visited in Northern Sweden has similar problems, but they can sink the cages as they grow the fish in a hydroelectric dam, something which we cannot do, unfortunately.

Still, I think that working together, being in contact and exchanging experience all the time is very important. If you think you are the best and you can do it your own way, it will hit you very badly one day. Relationships are very important too. For example, I work very closely with Hólar University College and do everything to help them and, in return, I can always call them and ask them all sorts of things and they are very helpful. So if they come up with another cooperation project in the future, I would be most happy to join!

3.4 Case study 4: 040 – Older People for Older People

040 was in many ways a ground-breaking project. It addressed one of the most pressing issues of our time: How to care for an ageing population in view of strained public finances? The project responded to this challenge by suggesting that (senior) citizens can take a more active role in providing their own basic services and that this will have important additional benefits for communities and individuals such as the development of social capital and capacity, increased social interaction and benefits on wellbeing and health. So rather than developing services for the project target group, 040 adopted a bottom-up approach and empowered people to develop their own services.

3.4.1 PROJECT SYNOPSIS

Increasing proportions of older people in the Northern Periphery, way above EU average, put a considerable strain on social spending and on the organisation of elderly care services, especially in the remote and rural areas of the programme territory. Faced with strong youth out-migration, regions and municipalities of the North find it increasingly difficult to provide services in sparsely populated, peripheral areas due to high costs and difficulties in recruiting and retaining staff. Dispersed settlements and long distances, typical of the area, also result in severe constraints and deficiencies in the provision of public transportation, which can lead to the social exclusion of certain parts of society with reduced mobility, such as older people.

O4O responded to these shared challenges by looking at how communities could support older individuals to maintain an independent living and by exploring different ways in which communities could provide their own basic services, by initiating ‘older people-for-older people’ social enterprises (‘O4Os’) and involving older people as volunteers, and by analysing what effects these have on communities and individuals.

The project approached this task by

- Investigating the social, cultural, legal, financial and policy context for establishing O4O social enterprises;
- Initiating the development of O4Os and supporting the pilot communities in the process;
- Compiling a ‘toolkit’ of methods and examples to help other communities involve older people in service provision and develop their own social enterprises;
- Evaluating the impact of involving older people in service provision on individuals, institutions and communities;
- Providing recommendations for policy-makers on how to improve innovation in older people’s service provision.

3.4.2 SUCCESS FACTORS AND CHALLENGES

O4O successfully implemented a wide range of activities and piloted 14 new ‘older people-for-older people’ services, from home visiting services to communal meeting places for elderly people

offering pastime activities and warm meals, some of which have developed into permanent, self-sustained social enterprises. The project also gathered important lessons from the pilots on how to develop volunteering and establish social enterprises, which were incorporated into an O4O toolkit, giving guidance to other communities and groups of older people on how to start O4O-type of services and products.

The high relevance of the topic in the regions of the partner organisation was the main motivation and driver for participants and largely contributed to the success of the project. Spurred by these *common challenges*, O4O was also building on findings from the predecessor NPP co-funded project OLE I, which identified a need to address how older people can be maintained healthily at home with minimal input from service providers and found that older people were critical of resources being channelled into projects that were just accessible to older people as they wanted sustainable and lively rural communities for all age groups.

Because of the previous history of the project team, who, in part, had already been collaborating in the project OLE I, the project leader had an in-depth understanding of the situation concerning elderly care and the different welfare systems in the partner regions. Interviewees pointed out that O4O was a very *thoroughly planned, well-designed and topical project*, initiated and led by an experienced and dedicated lead partner who knew how to skilfully combine the different starting conditions of the project partners regarding volunteer work, by assigning each partner a different role, and how to derive benefit from the different perspectives brought in by the partners. The *positive experience with previous cooperation* in NPP projects and mutual understanding between the partners also contributed to a smooth implementation. Other success factors were the *effort put into disseminating the project idea* to different stakeholder groups and *liaising with local politicians* before the start of the project, and the time spent in the beginning on defining a common terminology.

In spite of the strong project leadership, the project encountered several *difficulties with executing the formal programme*

requirements on financial management. On the one hand, this was related to the complexity of programme rules, further complicated by the fact that rules differ across EU-funded programmes, and bureaucratic nature of cooperation projects. On the other hand, confusion rooted in the fact that some financial framework conditions had not yet been settled at the time of the project start, which led to delays in payments. This was a major hurdle for the smaller organisations and companies participating in the project and, from the lead partner’s point of view, caused some tensions and mistrust in the partnership.

The main challenge, however, was to establish successful O4Os and ensure that they would become permanent services once the project had finalised. The project started from the premise that it aimed to *create sustainable services*, driven by local people who would be capable of and committed to continuing the O4Os after the end of the project. The project team knew that a project of this type, placed in a rural community, was very visible and could give a short-term boost to the community, but, unless the established services could be maintained, could also have a negative effect on community moral and waste rather than build social capacity. In order to avoid this happening, project partners assisted communities with the transition to the post-project period. Some partners produced costed action plans, established partnerships with organisations that could take over a pilot, the Northern Irish partners successfully applied for funding, the Scottish and Greenlandic partners successfully networked with decision-makers in the political sphere and raised funds, and the Karelian partners carried out campaigns to recruit volunteers, etc.

“One of the key things that the O4O team said to the local communities when presenting the project: O4O is here to support, but the project is about you.”

Kate Stephen, University of the Highlands and Islands, Scotland

Largely due to these efforts, over a dozen of O4Os were successfully piloted, several of which are still in place, have grown and even led to follow-up activities and spin-offs. Additional benefits of the project were the lessons learned and experience gathered on the *barriers and promoters to social enterprise development* and the potential impacts it has on different stakeholder groups. One insight was that the process of developing community social enterprises and voluntary organisations is organic, complex and susceptible to breaking down at numerous stages. It is time-consuming and also requires high commitment from project man-

agers. The single most important success factor, however, was the identification of *key people in the communities* who had the ability and dedication to lead the development and continue it once the project support ended. Since the whole approach was very much bottom-up, the project partners concluded that they were important ‘credible outsiders’, who could act as catalysts to social enterprise creation by building confidence, enhancing motivation and providing finance and expertise, but, all in all, had only some control over the success or failure of the attempt to establish O4Os.

“You have to allow for the risk of failure in a pioneer project of this sort. Only just measuring the success of the project in terms of number of products & services created doesn’t do the project justice and was also not the essence of the project.”

Kate Stephen, University of the Highlands and Islands, Scotland



Discussions in Scottish Highlands about services for older people. (photo: O4O)

Another finding was the significant *influence of culture and policy* on community social enterprise development. The chances of success increased when there was a culture of ‘formal’ volunteering already in place in a community. In communities and regions with a well-developed (formal) voluntary sector, as was the case in Scotland, people were ‘readier’ to embrace the O4O idea than in societies in which volunteering traditionally played a smaller role, e.g., in Finland, where the welfare state so far has had the prevailing role in caring for the elderly. According to the Finnish interviewee, a ‘culture of volunteering’ still has to be developed in Finland, which was the main reason why no O4O could be established in the Region of North Karelia during the project. However, with the declining role of the state as public service provider due to the economic recession, the project was very valuable in that it prepared the Finnish project team for a general societal trend which has also spread over to Finland.

“In hindsight, the ideas of the project were somehow too early for us. That was an obstacle during the project. But when I look at the same issue today, now I see that that was also a good outcome, because the project prepared us for what we have achieved today: the change in attitudes and the change in the Finnish welfare system during this economic recession.”

Arja Jämsén, ISO – The East Finland Social and Welfare Centre of Expertise, Finland

Also previous experience with failed projects, antagonisms with the public sector and existing conflicts within the community can hamper a community’s willingness to get involved. Communities were often suspicious of motivations for developing community-led services and a common perception was that formal volunteering is associated with loss of state entitlements. Motivations for coproduction must therefore be transparent and the public sector must plausibly demonstrate that the objective is service improvement, not just cost savings.



Older volunteers in old people’s home in Kyrölä during O4O activity. (photo: Merja Lukkari)

3.4.3 TANGIBLE PROJECT IMPACTS AND SPIN-OFFS

The main impact of O4O was its contribution to *improving service provision for elderly people* living in remote and rural areas. The project succeeded in establishing several social services and social enterprises: a volunteer car scheme and lift sharing, a delivery service, several communal meeting places for elderly people offering pastime activities, a lunch club, information services and classes, home visiting services, inter-generational meetings and activities and hobby groups.

These new services also had a host of positive side-effects and potential additional benefits on individuals, institutions and communities:

For public service providers, *costs for service provision may decrease* because older people will be able to stay longer and independently in their homes. If services can be provided locally, also costs of time and travel for public sector professionals can be reduced. Local services in care of older people will also relieve the situation for families, carers and their employers, because supporters of older people will avoid having to take time off work and travel to deal with crisis situations. However, it is important to highlight that cost saving was never the main objective of the project and that citizens are, rightfully, resistant to the formalisation of altruistic activities within a business model if they see a shift in focus from helping to revenue generation.

Also communities will benefit from O4Os, because older people will be maintained locally, thereby spending locally. Service level agreements, grants and other funding obtained by O4Os can *boost community economies* and also benefit other age groups. *New jobs and businesses* might emerge from the new services

and bring in new resources. From the outset, the project aimed at including people of all age groups and bringing benefits to the entire community. For example, the T4T community transport services in Tongue/Scotland, although primarily intended for older people, also include a minibus hire service, which is used by groups of all ages and particularly benefits youth groups in the community.

3.4.4 INTANGIBLE PROJECT IMPACTS

Above all, the project demonstrated that O4O initiatives generate positive community impacts and benefits for older people. Anecdotal evidence suggests that being involved in setting up and running an O4O service:

- has health and wellbeing benefits for older people due to the mental stimulation and increased sense of worth;
- leads to a general increase in the quality of life of senior citizens, who are able to make new social contacts and achieve greater independence;
- creates a feeling of being valued and supported within one’s own community;
- helps preserve traditional knowledge and skills and builds social capital;
- increases confidence and optimism in a community which enhances resilience and instils a sense of community.

These impacts are, however, difficult to quantify and proof due to their intangible nature and, even more so, because they relate to preventive measures and the difficulty associated with linking cause (‘the O4O service’) and effect (‘older people needing less formal care’).

However, some long-term effects on the *resilience of communities* could be observed in several of the O4O participant communities. The example of Ardersier/Scotland provides evidence that a small cultural project can increase confidence and optimism in a village and that success breeds success. The Ardersier Heritage Project, an oral history DVD and guidance booklet produced with input from interviews being conducted with older people by a group of older volunteers, kick-started several new community development activities such as boat building, the development of a play park, the documentation of the local history, etc. In Tongue and Assynt/Scotland both O4Os have been carried on, the services were further expanded and in Tongue even a new community facility was established.

Another main impact of the project was that it produced a *change of mindset and in the way of thinking*. It made communities, politicians and citizens reflect on the role of individuals and communities in accepting responsibility for their own care and support and on the changing role of public services from top-down delivery to co-production based on actual needs. This paradigm shift suggested and tested by the O4O project fuelled a public, highly political debate in Scotland about statutory rights

to services versus participation and self-empowerment of older people. According to the Scottish lead partner, Scotland has since then seen a growing development in the direction of supporting the establishment of social enterprises and encouraging the participation of senior citizens, even though it is hard to tell how much of it can be attributed to the O4O project. The North Karelian interviewee reported on a similar transition taking place in Finland, away from a predominately public-oriented system towards a greater reliance on bottom-up, voluntary initiatives, a development that was mainly triggered by the economic slowdown which is putting the Nordic welfare model under some pressure. The most important project outcome for North Karelia was, in her opinion, in the way the project influenced mindsets and attitudes by bringing in new ideas and enabling first-hand experience with different elderly care approaches in other countries, which induced participants to think out of the box. She was confident that if the project was to take place today, trials to establish O4Os in North Karelia would have a much higher chance of succeeding.

The project also helped *change attitudes towards older people* and to view them as a positive force and as valuable assets for lively communities rather than a ‘helpless’ burdens or victims. The project challenged stereotypes by demonstrating that older people can make important contributions to the development of remote and rural communities. Inter-generational project activities like the Ardersier Heritage Project also encouraged a respectful attitude towards the elderly. Through the large effort put into public relations, the project was able to *raise awareness* about the accomplishments and value of older people and the great contributions that older volunteers make to society. It also helped make informal volunteering more visible and drew attention to the unpaid work that elderly people have always been doing without getting much recognition for it. For the participant



Village in Greenland. (photo: O4O)

communities being part of the O4O study visits and meetings, and being able to present their work and services, also meant receiving recognition from peers. For local politicians, who participated in meetings, hearing some of the messages from ‘outsiders’ added more weight to these messages.

For project partners, the exchange with like-minded people also increased awareness about their own actions, strengths and challenges. It enabled partners to *put their own situation into perspective* and proportionate the challenges in service provision they faced by, for example, comparing them with those in Greenland, where the notion of ‘remoteness’ takes on a whole new meaning. Greenland has communities which, in winter-time, are completely cut off from the rest of the world apart from a weekly helicopter drop if the weather permits. The Scottish lead partner reported that she was still quoting examples from O4O partner regions when working with communities in Scotland in her capacity as local politician. She said that

“Since life in remote rural communities can be quite insular, hearing about how life of older people was like in other parts of the Northern Periphery gives them a sense of perspective and makes them feel less disadvantaged.”

Kate Stephen, University of the Highlands and Islands, Scotland



O4Os in Greenland. (photo: O4O)

While partners acknowledged that the successful development of O4Os in the partner regions did only to some extent depend on international cooperation, they stressed that the *main benefit of transnational cooperation* resided in peer learning. Swedish and Finnish partners learned from Scotland’s well-developed voluntary sector and burgeoning social enterprise sector and Scotland from Finland’s rural commercial service sector. Greenland, where the voluntary sector had still been in an infant stage at the start of the project, adapted ideas they got from partners to their own situation and successfully established several O4O services. The Region of Kainuu, inspired by the study visit to Dumfries/Scotland, decided to carry out a survey among the 400 associations and organisations in the region to get a clearer picture of their activities and roles within social and health care.

Both interviewees emphasised that the O4O project was, in many ways, ahead of its time and anticipated some of the developments that are taking place now, also on the political front, giving rise to assumptions that O4O might have had some *influence on policy*. For example, the current effort in Scotland to reshape elderly care and decision to integrate health and social care might have been inspired by the Finnish example, where health and social care are integrated, and by the Swedish example, where certain services are integrated at municipal level.

The ideas that O4O propagated, and the comparison with other Nordic countries, might have also indirectly influenced a new Finnish law on elderly care services, which, for the first time, addressed issues like “ageing at home”, the perception of elderly as a societal resource and the rights of the elderly to take their own decisions.

The project also built *new partnerships and networks*, which opened new windows of opportunities for collaboration, and project partners established new personal relationships. For example, the participation of the Pielinen Karelia Development Centre, a business development organization traditionally dealing with the wood, metal and IT industry, led to an expansion of its professional activities to the area of social services. And O4O also gave rise to the successor NPP-funded project ‘Rural Transport Solutions’ in which several of the O4O partners participated.



Councillor Linda Munro, Highland Council/Scotland (photo: Linda Munro)

3.4.5 END USER: LINDA MUNRO, COUNCILLOR, HIGHLAND COUNCIL/SCOTLAND

I am a Member of the Highland Council, a politician. I work at ward level and have a very rural and sparsely populated ward that I represent, the North, West & Central Sutherland ward, with a very high demographic of over 65 year olds. One of the challenges we have in my ward is public transport. In some areas it just does not exist and in other areas it’s infrequent and very expensive. The other challenge we have is recruitment. When we look to attract key individuals, like head teachers or GPs, we have real problems, because, even if we have the job for them, more often than not we don’t have something suitable to offer to their life partners. Our young people leave the area and don’t tend to return as we have no work for them. So, although we have a high demographic of older people, we are more and more challenged to retain the age group that can service their needs.

Way back in 2007, it was my very first year in the Highland Council, the Council was looking to close down the Community Care Centre Assynt. At that time it was a residential respite centre, a very small 3-bedded unit, which had been there for a number of years, but wasn’t being used. And Tongue back then had no local transport, which was a huge issue. So when I read an article about Jane Farmer, who was Professor of Rural Health at the University of the Highlands and Islands, and her work, I contacted her. We had several meetings and the O4O project was one thing that I had a very strong bet on. When the project was approved, Jane ran four pilot projects and, upon my suggestion, Assynt and Tongue were among them.

After my two areas had been chosen as part of the project, Jane asked if the Highland Council would help fund the projects. I lobbied at the Council, who turned it down twice. On my third attempt I had gathered a bit more support and interest from

some Senior Officials as well as Senior Councillors and succeeded. I then helped the pilot projects by bringing them the expertise they needed to develop into social enterprises. I attended dozens of meetings over in Assynt and Tongue and also took people from the communities to the Council to meet with Senior Officials. I did a lot of promoting, I networked, and I brought people together.

The two pilots were very different. In Assynt, people were hugely resistant at first, because we were closing a residential respite unit and there was a lot of anger. But I was very hard-nosed and scrupulously honest with them, presented them with facts and figures and with the deficit we had because we had a service looking for something to do rather than a service that met an identified need. I said some pretty shocking things in interviews and papers like “statutory services exist to support, enable and facilitate nurturing care for those who are ill and elderly. We do not exist to create jobs.” Now that’s an extremely unpopular thing for a politician to say. Tongue was different, because we developed a brand new service and people could only gain. The very worst that could happen there was that nothing would happen.

But both projects were very successful and have carried on being very successful. The Community Care Centre Assynt is thriving: They have more staff, more co-funding and a much higher use of the facility. The T4T transport service in Tongue has also grown at a fast pace, they were going from having one minibus to having a real fleet, with 3 minibuses and 2 cars and a huge volunteer service. Another social enterprise has come out of that, based on the learning from the T4T project, and that is our very successful North Coast Connections, a community facility that offers a range of services to the community with its core work being with older adults. Although independent, both services are facilitating and complementing each other. So we had lots of spin-offs. The projects have gained national recognition, won national awards and are seen as best practice.

The key factor in each of these communities was that we had an absolutely dedicated board that was led by three to four very strong and able personalities. The people who came forward to form the boards and drive the projects were known, respected and already well-established in their communities. They were the naturally occurring community leaders, not elected politicians, nor were most of them members of the local community councils. Within every community there are often unrecognised natural leaders and, unless a pivotal need arises within their community, they often remain undiscovered treasures.

I also had several personal benefits from participating in O4O: It opened and widened my horizon tremendously. I didn’t feel alone anymore battling against this endless amount of cost and need and raising demand and shrinking budget. And it showed me that there were people like Jane Farmer and others, which opened doors to new possibilities.

3.5 Case study 5: ROADEX – ROADEX Network Implementing Accessibility

ROADEX IV can look back on over 15 years of cooperation between Nordic road administrations in 4 consecutive NPP-funded projects. In ROADEX IV, this long-term cooperation culminated in the establishment of a permanent, self-sustained ROADEX network and consultancy service that will maintain the ROADEX legacy and continue research in areas of common interest. Today, ROADEX is known world-wide as a network of competence in the area of construction and maintenance of low-volume, rural roads in harsh climates.

3.5.1 PROJECT SYNOPSIS

The existing rural road networks of the Northern Periphery are the arteries of local society and industry. Preserving these networks under increasing heavy traffic, maintaining and constructing them under harsh climatic conditions and maximising their capacities under the premise of cost-effectiveness, reduced environmental impact and increased safety will help sustain local economies and ensure the survival of local communities. ROADEX IV aimed to bring about an improvement in the construction and maintenance of rural roads across the Northern Periphery by encouraging the uptake of ROADEX techniques and innovations on Northern Periphery low volume roads.

In a cooperation of Swedish, Norwegian, Finnish, Icelandic, Greenlandic, Scottish and Irish road authorities, ROADEX tackled this objective through

- the establishment of the ROADEX knowledge centre as a repository of all of the ROADEX case studies, technical reports, research papers, demonstration results, contact details, etc.;
- the establishment of a permanent ROADEX consultancy service comprised of a team of ROADEX experts experienced in the technologies and methods developed by ROADEX;
- the execution of 37 local demonstration projects that used the ROADEX drainage maintenance guidelines, tested the effect of 'road friendly' timber haulage vehicles and tyre pressure control on roads, surveyed forest road conditions to validate forest road management and maintenance policies, tested a new methodology for the design of low volume roads against rutting and technologies for road construction over peat and analysed health implications of vibrations on truck drivers;
- measures aimed at increasing the qualification of the workforce, i.e. an e-learning package and a web-based training course developed to fill the knowledge gap in maintenance and construction of low volume roads;
- the continuation of research into areas of common concern such as the effects of climate change, road widening and health issues arising from poorly constructed roads.

3.5.2 SUCCESS FACTORS AND CHALLENGES

ROADEX boasts a *long history of cooperation*: the first cooperation project in 1998 was initiated by the public road administrations of the five Nordic countries Iceland, Norway, Sweden, Finland and Scotland. Since then, the cooperation was extended to Greenland and the Republic of Ireland and to many more partners, including universities, technical consultants, national forestry agencies, etc. The value of triple helix partnerships of roads administrations, private consulting companies and universities has already been recognised in the first ROADEX project. Since that time, ROADEX has actively involved academic institutions and private companies in all succeeding projects.

In a series of four projects, ROADEX went through various stages of cooperation. ROADEX I, the 'pilot project', aimed at establishing a professional network and identifying topics of common interest. ROADEX II, 'the research project', continued with carrying out joint research into cost effective ways of constructing and maintaining roads in harsh climates. ROADEX III, 'the dissemination project', focused on disseminating findings and results of the previous projects in the partner regions and on bringing them to the attention of road engineers. ROADEX IV, the most recent project, was termed the 'implementation project', as it was driven by the desire of all partners to put the accumulated knowledge to use and increase the speed of implemen-



New road construction using ROADEX technologies in the Western Isles, Scotland. (photo: Ron Munro)

tation. It culminated in a pan-regional consultancy service with a permanent secretariat and a knowledge centre, whose function is to manage the legacy of all four ROADEX projects. Even though financed by its members, both interviewees stressed that the ROADEX network will still have to rely on the acquisition of grant money for carrying out new research and development, also because not all partner organisations have equal access to research funds in their own organisations.

According to both interviewees, this long-term cooperation was based on *good personal relations* between the partners and the *shared interest in and commitment to* the objectives of the collaboration.

“What is most important: the project has to be worthwhile and enjoyable to have a chance of success. ROADEX was both.”

Krister Palo, Swedish Transport Administration, Sweden

All ROADEX projects have produced tangible results in the form of innovative, cost effective technologies that can be directly applied to the local road networks in the partner areas. The main driver for project partners to continue cooperating in ROADEX IV was to apply the outputs and validate the findings from the previous projects in local demonstration projects in the partner areas and beyond. The possibility granted by the NPP to shift funds to more productive works on the demonstration projects, as a response to changing circumstances as the project developed, increased the outputs of the project from the originally planned 23 to 37 demonstrators.

A large part of the success of the demonstration projects was owed to *good preparation*. All partners, with the *involvement of local staff*, selected the number and locations of the demonstration projects as well as the most suitable technologies for piloting long before the start of the project. Arranging the demonstration projects, which was not necessarily part of the day-to-day work, required a lot of time and the involvement of many actors as the demonstration projects had to be programmed into the annual financial budgets and maintenance schedules of each road administration. Having had all necessary actors involved early on and budget allocated before the start of the project was, according to both interviewees, paramount for the successful implementation of the demonstration projects.

Regarding the *durability of outputs*, ROADEX IV partners, already within the first half year of the project, started thinking about how to maintain the online knowledge centre beyond the



ICERA survey vehicle in Iceland equipped with laser scanner for road speed drainage surveys (photo: Seppo Tuisku)

project duration to ensure its continuous availability as a free of charge source of reference for low volume roads servicing communities in harsh climates. Upon closure of the project, hosting arrangements for the future maintenance of the knowledge centre were made. Partners also made a contractual arrangement for 3 years to warrant the continuation of the ROADEX network and consultancy, with the possibility of prolongation, and procured a consultant to run the Secretariat. Membership in the ROADEX network, by paying an annual partner fee, guarantees each partner organisation instant access to guidance both through the Secretariat and the partner organisations, one vote in the Steering Committee and the right to influence the research agenda of the network. A core working group was formed that, together with the Secretariat, was entrusted with the task of developing a work programme, which will be approved by the Steering Committee. The Secretariat is further responsible for the day-to-day management including such tasks as taking care of the website and e-learning, answering inquiries, coordinating and planning activities, integrating all international research activities and reporting to the steering committee. The Secretariat also provides support to the partner who organises and hosts a Steering Committee meeting.

Regarding *project management*, the continuation of the Swedish Transport Administration as lead partner in ROADEX IV was considered a key decision by the partners as having experienced individuals in key positions committed to the project allowed a running start of the project. Another key decision was to invest time at the start of the project in an EU-wide tendering of the

main project consultant in order to appoint the most experienced consultant, familiar with leading edge technology, methods and equipment. The *large size of the partnership*, consisting of 12 partners, was not considered a particular challenge since all partners worked well together and the lead partner could count on the administrative support of the project consultant. Only the changed first level control system was considered an *administrative hurdle*, as it deprived the lead partner of the possibility to go over each partner's reported expenditures before having them certified and reporting them to the NPP.

3.5.3 TANGIBLE PROJECT IMPACTS AND SPIN-OFFS

The direct beneficiaries of the outcomes of the project were the partner organisations as they benefitted from the increased efficiency in the use of available (financial) resources. Indirectly, however, the whole Northern Periphery area may benefit through *better quality roads and improved accessibility* as the ROADEX methods and technologies reduce the number and duration of roadworks (and improve the quality of projects in terms of time and budget compliance) and lead to better, more environmentally sustainable operational practices. Better roads also potentially reduce road traffic accidents and, as was shown in a ROADEX research project on the effect of vibration due to poor road quality on truck drivers, can reduce negative impacts on the health of professional drivers.

In setting new standards in cost-effective construction and long-term road maintenance in harsh conditions, ROADEX leads to a *more efficient use of financial means* in the partner organisations by shifting the focus from reconstruction to maintenance.



Differential frost heave between an old and a widened road section on road 934, Finland. (photo: Timo Saarenketo)

For example, the application of the ROADEX drainage maintenance guidelines in the Rovaniemi road district in Lapland/Finland showed that the expected lifetime of roads and, especially, minor rural roads, increases by 200%, resulting in potential savings in resurfacing costs of EUR 1.4 million. Estimations showed that, if applied to the entire Finnish road network, resulting savings would be in the order of EUR 30-40 million. Based on the Finnish experience, similar results, i.e. a reduction in maintenance requirements in the order of 10-12% as compared to former methods, were expected for the demonstration projects. The Icelandic partner reported that simple and inexpensive measures can often significantly prolong the lifetime of roads. He gave the example of fine dust, which accumulates on the edge of roads where it forms a barrier to water runoff, making the water seep into the road and slowly destroying the road foundation. By levelling the road edges regularly, the road bearing capacity can be preserved longer.

“Knowing what the ground was really like, where we had a cold spring or a wet ground, where we had to dig out more and put extra piping in or build extra ditches to get rid of the water, was very valuable for us. Also we saved a lot of money, perhaps 10–15 million Euros by having these investigations, because we knew what really needed to be done.”

Robert Näslund, Northland Resources, Sweden

Since the general trend goes towards heavier trucks, ROADEX methods to improving the bearing capacity of existing rural road networks also help road administrations to deal with this development. For regional industries, fewer weight restrictions on roads due to restricted bearing capacity mean lower haulage costs. ROADEX technologies were also used to optimise the reconstruction works of a 168 km long public road in Northern Sweden in order to make it fit for heavy transport of iron ore, which led to cost savings in the order of EUR 10-15 million. In choosing the best-suited, heavier type of trucks, considering different factors, the number of trucks could be reduced, fuel consumption could be decreased by around 30%, as compared to standard weight trucks, which also led to CO₂ emissions reductions and, potentially, few road accidents.



Typical 2 lane road over peat in west Ireland. (photo: Haraldur Sigursteinsson)

By collaborating with forest agencies, ROADEX has also been a pioneer in the use of ‘road friendly’ timber haulage vehicles and tyre pressure control on weak public roads across the Northern Periphery. ‘Road friendly’ vehicles did not exist in Scotland or Finland before having been introduced in ROADEX III and are now growing in numbers in response to changing economic conditions and environmental considerations. During ROADEX IV this knowledge was adopted in new partner areas.

3.5.4 INTANGIBLE PROJECT IMPACTS

Both interviewees underlined that the participating countries share, by and large, the same challenges, even though they operate under different conditions regarding administrative, budgetary and legal framework. Several examples provide evidence of the *added value of transnational cooperation* in ROADEX.

On the one hand, for the partner organisations, ROADEX has significantly improved the access to information and latest technologies. For example, in bringing together public and forest road managers in ROADEX IV, partners were able to share best practices and exchange experience. The result of this collaboration was that forest road survey techniques from Scotland are now being used on Swedish forest roads, the use of stress measuring equipment developed in Finland is being used in measurements on forest roads in Scotland, drainage assessments developed in Finland are being used on Northern Periphery road networks, and vibration technologies developed in Sweden are used in Norway. The cross-fertilisation of ideas from public roads to forest roads, and vice versa, has been a major success of the project that has brought significant benefits to both sides.

On the other hand, interviewees highlighted that each organisation alone would have never had the financial means for the extensive work done, and we would also not have had access to all the existing knowledge, new methods and technologies. According to the Swedish lead partner, “the project was very good value for money.”

“We have been involved in a number of international projects in recent years of which the ROADEX projects have been outstanding when it comes to continuity, results and usability. The project and network has clearly shown that it is only through cooperation with others that we will get more knowledge and value for money. Partners could never have developed the methods and policies for low-volume roads on their own.”

Krister Palo, Swedish Transport Administration, Sweden

Even though demonstration projects to showcase ROADEX technologies were implemented locally and set up by the partner organisation, together with local companies and local contractors, partners received professional guidance and support from the ROADEX consultants, and, in some cases, also from partners during the piloting.

Another important result of the demonstration projects was that they created a *step-change in organisational cultures* by scrutinizing current road design and construction times, rehabilitation budgets, quality standards, and health and safety performance. Both interviewees underlined the value of the ROADEX investigation technologies as impartial methods to demonstrate the effects of (lacking) maintenance measures on roads and the weight that these findings added to even know issues like the importance of maintenance of drainage. The thorough and impartial investigations carried out by ROADEX in the scope of the reconstruction of the public road from the Pajala mining area to Kiruna, and the organisation of the iron ore transport earned the mining company a *high level of acceptance* from politicians and authorities. Also, as a direct result of the demonstration



ROADEX demonstration project for an eroding embankment and ditch on Road 16583 Ehikki-Juokslahti, Finland. (photo: Iikka Hyvönen)

projects in ROADEX IV, two partners, Ireland and the Western Isles, have allocated specific funding for maintenance measures. Project outputs like the e-learning material will lead to a more informed and motivated work force and a greater awareness about the importance of maintenance, which further contributes to a culture change in road rehabilitation.

The success of the ROADEX projects attracted several new partners to the ROADEX network such as the National Transport Agency for Scotland or the Irish Forestry Service. It also raised interest outside the NPP area, e.g., in Estonia and Spain, and even outside Europe: e.g., several Russian regions showed interest, a presentation of ROADEX in New Zealand had a great reception, and the project boasts an existing cooperation with Canada. The steering committee of the ROADEX network has already discussed possible *follow-up projects* and is currently developing a new project proposal for the EU Research and Innovation Programme Horizon 2020. Furthermore, ROADEX is planning to invest more time and effort in disseminating the ROADEX products and services to users other than the project partners, e.g., universities, road engineers, road maintenance workers, etc., possibly by developing target-group specific versions of the e-learning tool.

“When you spend money on a project you also have to market its outcomes. A supermarket is also not just advertising once a month! You hear the same advertisements every day on the radio and on TV. Implementation and marketing is something that should be incorporated in every project.”
Haraldur Sigursteinsson, Icelandic Road Administration, Iceland

3.5.5 END USER: ROBERT NÄSLUND, MINING ENGINEER, NORTHLAND RESOURCES/SWEDEN

I work as a mining engineer for Northland Resources, an international mining company, for one of its principal projects, the Kaunisvaara project, which comprises the two iron ore deposits Sahavaara and Tapuli, located approximately 100 km north of the Arctic Circle in Norrbotten County, Sweden, within the so-called Pajala Shear Zone. The mineral deposits there have been known for quite a while, but could not be exploited because of the difficult logistics. In the past, iron ore was mined in lumps, but, today, we are able to produce an iron ore concentrate by grinding the ore down to 40 microns and cleaning it with magnets up to 70 % iron so that, instead of shipping a lot of slag and rock, we are able to transport 70% iron ore concentrate.

We transport about 4.5 million tons of iron ore per year over 168 km of existing roads to a place 45 km south of Kiruna, where it is loaded onto trains and then transported to the Port of Narvik in Norway. Transporting such a huge amount of ore on trucks over such a distance has never been done before in Europe. I am frequently asked: “If you could choose, what would be the best transport option?” And I normally say: “A channel dug from the Atlantic straight to the mining area, because it’s 10 times cheaper to go on ship than on rail and 10 times cheaper to go on train than on truck.” But, of course, that’s not possible and we have to work with what we got. In the mid term, we would like to build a railroad connection between Finland and the Atlantic Ocean, and we are right now in a project to investigate this option. But to build the rail will at least take 4-5 years of planning and then 4-6 years of building. So, it will be there the earliest in 2023 or 2024; that is if it will be approved by the Norwegian and Finnish government. But we didn’t have that time; we had only 2 years to put everything in place.

I must add that the mines only just started their production in December 2012 and it was about 2 years earlier that I got involved in ROADEX, at the time when we were planning the transport of the ore. We had a lot of discussions back then with Trafikverket, the Swedish Road Administration, about who was going to pay how much for the necessary roadworks, because these public roads were not built for heavy truck traffic and therefore required a complete reconstruction. But once this was settled, we started to think about how this could best be done and after thinking back and forth, we finally came to the solution that we needed to make a project out of this and that we needed to use best practice on how to investigate and rebuild the roads. And the only way we could access best practice in road investigations was through ROADEX.

We used all possible types of analysis to investigate the existing roads and bridges. ROADEX said that they had never done such an extensive investigation before, using so much time and doing it so thoroughly. They used ground radar and made 3D scans to examine the entire 168 km of that road; they drilled in the

road and they measured the road in summer and in winter to see the different conditions. Together we also looked at what type of trucks would be best suited considering 20 different variables, from socio-economic to cost factors. We ended up with the 136 ton trucks with a length of 32.5 meters as the best solution, with the weight of the trucks mainly limited by the bearing capacity of the bridges. Changing all the bridges will take about 2-3 years, but as soon as the bridges have been rebuilt, we can start driving the bigger trucks. We had a special bridge working group involving technicians and universities who did a lot of drilling and used ultra-sound to check the rebars. It took them nearly 4 months to calculate the rebars, the concrete, etc., and doing the scenario calculations. The roadworks, in total, will take about 3 years.

It was an expensive undertaking, but it turned out to be the best way of doing it. When you don’t know the substructure on which you are building a new road you are, perhaps, in some areas doing too much and in some areas too little. But we know exactly where we have a cold spring or a wet ground, where we had to dig out more and put extra piping in or build extra ditches to get rid of the water... So, in the end, it saved us a lot of money, perhaps EUR 10-15 million, by having these investigations, because we knew what really needs to be done. And also, I think, by doing this we had a MUCH bigger acceptance from politicians and authorities, because they knew that we had done a very serious job. It gives us a greater legitimacy and that’s very good for us as there are no discussions about that we don’t care about the road and about the population. It has all been done in a very, very thorough study and nobody can dispute that. If anyone wants to dispute it they have to have very, very good arguments.

4 Discussion and conclusions

The current Northern Periphery Programme has pursued a very result-oriented approach, focusing on the delivery of concrete products and services, which, as this study has shown, had a real effect on peoples' daily lives and on the competitiveness of businesses in the programme area. NPP projects of the current period were also very well aligned with the programme strategy and had a strong transnational component. Projects were geared to address shared challenges of the programme territory like its peripherality, or the demographic development and job shortage in the area. Projects also focused on developing joint resources and unlocking common potentials, such as the development and innovation potential in the creative industries, aquaculture industries, nature and cultural tourism, renewable energies or in the use of ICT in the health or public sector.

This study set out to take stock of the achievements of NPP projects in the 2007–2013 programme period regarding project outputs and impacts and investigated the benefits of transnational cooperation for the project partners as well as project target groups. Coming back to the research questions posed in the beginning of this report, what conclusions can be drawn regarding:

- Decisive factors that make up successful projects;
- Challenges faced by projects that hamper the achievement of planned project outcomes; and
- Tangible and intangible impacts of NPP projects?

4.1 SUCCESS FACTORS AND CHALLENGES

In brief, the study found that there is no one-fits-all formula to success, but several factors crucial to a successful project implementation came up repeatedly in reports and interviews.

Quite universally acknowledged was the importance of a project to be *need-driven*. 'Need-driven' in this context does not so much refer to the project addressing common challenges of the programme area, something that is taken care of by the project selection procedure, which ensures that all approved projects are aligned with the programme strategy. Rather it implies that project products and services must respond to a true need of the prospective or intended users. Projects that failed to identify and respond to the actual needs of the project target groups often reported that they found it hard to make their products and services sustainable, let alone to mainstream them. In projects where project beneficiaries and end-users of the products and services are not identical, e.g., in business development projects implemented by intermediary organisations like development agencies, a *thorough needs analysis*, ideally carried out during the project preparation phase, and an *active involvement of target groups* are useful instruments to ensure that the project stays close to target group needs.

Good preparation was also often reported as a success factor and the failure to plan and make certain arrangements in advance was considered as a lost opportunity. A thorough background analysis before or at the start of the project can avoid the duplication of work that has already been done elsewhere and allows projects to learn from the success stories and mistakes of other projects. Competitive Health, for example, modified the original work plan after having participated in a mapping exercise undertaken in another ETC project working on telemedicine. The partners then decided to start the project by mapping existing eHealth solutions in the partner regions and assessing their suitability for being 'transplanted' in another context, which was a key decision to increase the success rate of eHealth service uptake. Clim-ATIC, in turn, acknowledged that more preparatory work would have been needed to identify existing climate change adaptation services and that it would have been more logical and beneficial to cooperate with existing web portals and information channels instead of creating yet another new service.

Careful and timely preparation was found to be particularly important for the implementation of pilot projects. ROADEX IV testified that having had all necessary actors involved early on and budget allocated before the start of the project was paramount for the successful implementation of the demonstration projects. Competitive Health, on the other hand, could rely on little practical preparation of the pilots before the start of the project, because pilots were selected by means of a mapping exercise during the first half year of the project. Nevertheless, the project managed to pilot 8 eHealth solutions, even though it was challenging, as the planned budget for the pilots was vague, which sometimes forced the project to find a workaround to implement the pilots within the given timeframe and budget.

A well-planned project and detailed workplan, which specifies roles, targets and deadlines, also contributes considerably to smooth project implementation. A detailed and specific project application can be considered as a written target agreement to which all partners have agreed to abide, which helps the project coordinator to orchestrate the work.

Several project coordinators expressed that they found managing a large, international partnership, supervising a large budget and mastering complex programme requirements and rules challenging. However, only few projects reported on major difficulties with fulfilling programme rules. In general, perceptions regarding the *bureaucratic burden of running an NPP co-funded project* were very mixed. While some coordinators testified that they considered programme requirements excessive, other coordinators assured that programme requirements were not any more demanding than that of national projects. What was criticised the most was the long time needed for processing payment claims, which posed a big challenge for smaller companies, for which the large outlay and commitment in resources and staffing tied up a lot of resources. In general, it seems that projects from the first call (e.g., Northcarr, O4O) faced more administrative hurdles than projects from later calls, due to fact that, at the start of the programme, some financial framework conditions had not yet been settled. Also projects with previous NPP experience seem to have handled the formal requirements better.

The same is true for project coordinators: the study showed that project management caused inexperienced coordinators more headaches than NPP 'veterans'. The importance of having a *skilful and experienced project coordinator* was emphasised by several projects. What makes a good project coordinator, according to projects, is not only the ability to keep a tight grip on the project budget and to watch over the workplan, reporting deadlines and indicator targets, but also good communication skills and a good understanding of the (legal, financial, societal, etc.) situation in the partner regions.

Besides good project leadership, *partnership dynamics* have often proven decisive for the success of a project. Aspects like

shared interests, strong commitment from all partners, complementary skills and expertise, but also good interpersonal relations and mutual trust were rated as highly important. Projects like ROADEX and Northcharr highlighted the value of long-term cooperation. Project partners, who have been working together for several years, benefitted from a good team spirit and understanding, which ensured a running start of the project. However, building on existing collaboration is not imperative for success. Competitive Health, for example, had remarkable results even though the project partners hadn't known each other at the start. Other factors like long distances between regions and different languages and cultures were not considered as barriers, since people in the Northern Periphery are used to using ICT as means of communication, English is almost universally spoken, and different cultures were seen as an asset rather than a challenge. However, reports from projects suggest that weak commitment from partners can severely impair a project's success.

The NPP strongly encouraged projects to form a *triple helix partnership* wherever applicable. Some projects reported that the collaboration between public, private and academia significantly contributed to the success of its undertakings as the different partners contributed with complementary knowledge and skills. For Northcharr, initiating triple helix cooperations was the main focus of the project. Other projects, like Competitive Health, felt that the academic sector had been overrepresented in the project.

Also programme bodies, notably the NPP Secretariat, have an important role to play in steering projects to success by *giving hands-on assistance* in project preparation and implementation. Competitive Health highly appreciated the input given by the NPP Secretariat, which prompted the project team to redesign the project and aspire to delivering more concrete products and services. Northcharr, on the other hand, was critical of the meddling of the Secretariat and saw itself confronted with unrealistic expectations. Having had some degree of flexibility granted by the NPP in implementing the project, such as the possibility to make budget changes or deviate from the original project workplan, was reported as crucial by several projects. In the case of ROADEX, it also significantly increased the project output.

Apart from key success factors which are, at least to a large degree, within the sphere of influence of projects, there are also important *external factors* that can significantly affect the outcome of a project, but which are entirely beyond projects' control, for example, technical, legal or financial barriers. But also changes in the partnership or the loss of an important actor, which happened on a number of occasions, might have a quite disruptive effect on a project.

In this context, it is important to bear in mind that many transnational cooperation projects are 'pioneering' in their character, which comes with an inherent risk of failure. In fact, one of the

main benefits of cooperation projects for project beneficiaries is that they provide 'laboratory conditions' for testing new, innovative ideas and approaches. Like in every experimental setting, there is no guarantee of success – something that was emphasized by several interviewees. Indeed, projects with a guaranteed short-term return on investment don't necessarily need public funding. If projects were merely chosen based on their likelihood to succeed and deliver results, then highly innovative projects like O4O or CINERGY, which are riskier than projects working in a well established field, might not get approved. Encouraged by the numerous outstanding project results of the current period, the future Northern Periphery and Arctic Programme should feel reassured to continue providing a testing ground for the development and piloting of new model solutions.

4.2 TANGIBLE AND INTANGIBLE IMPACTS

The current Northern Periphery Programme has pursued a very results-oriented approach, focusing on the delivery of concrete products and services. However, project outcomes other than project products and services were not systematically monitored. Nevertheless, this study has shown that there is plenty of (anecdotal) evidence that NPP projects had immediate (and potential future) positive effects on peoples' daily lives and on the competitiveness of businesses in the programme area. Additionally, intangible impacts were found to be just as numerous and important as tangible impacts.

Tangible impacts range from improved access to services, cost and time savings, increased renewable energy generation, reduced energy consumption and CO₂ emissions, reduced the environmental impact and increased sustainability of human activities, reduced (man-made or natural) risks to improved competitiveness, business development and job creation.

Most importantly, NPP projects *improved the access to services* in a part of Europe which is largely disadvantaged in terms of service provision due to its low population density, scattered settlements, long distances to urban centres and harsh climate. And projects *contributed to business development* and, hence, *job creation* by helping to overcome structural disadvantages (e.g., long distance to key markets across large parts of the programme area, few large urban centres in the programme area, outmigration of young, high-skilled workers, high cost of transport and infrastructural shortcomings, etc.), but also by unlocking potentials of the area (e.g., in the knowledge-based and creative industries, in nature tourism, by better exploiting the abundant natural resources of the area, etc.).

The main benefit of transnational cooperation for project partners lies in the collective experience, knowledge sharing and transfer of good practices, increasing knowledge and capacity in the project partner organisations, which often leads to subsequent *intangible impacts* like changes in organisational cultures and institutional practices or even influence on political decisions.

The value of peer-to-peer learning cannot be overstated. Even though projects exhibited very different degrees of *transnationality*, i.e., for some projects transnational cooperation was conditional on the implementation of the project (e.g., Competitive Health, ROADEX, Northcharr), while for others (e.g., O4O, CINERGY) it was an added value of the project, all projects stressed the important benefits they gained from cooperation. In most cases, transnational cooperation had positive after-effects and spin-offs, which go beyond the remit of the project, and which were neither planned nor intended. Since they often happened after project closure, they would usually remain 'beneath the radar' of the NPP.

However, this important finding should not mask the fact that the biggest impacts were mostly achieved by the local pilot projects and that three of the five case study projects acknowledged that the pilots were or could have been implemented without the involvement of the transnational partners. Several projects had to recognize that, while challenges were nearly the same in the participating regions, needed solutions were not. For example, the need for rural transport solutions (RTS), the need to support the creative industries (CINERGY), or the need to foster the internationalisation of SMEs (RIBS) were recognised as common challenges by all project partners, but solutions were local and tailor-made. Nevertheless, all three projects reported on significant spill-over effects to other communities and regions (within and outside the partnership) as the model solutions developed by the project partners gained recognition as good practices. But there were also projects like Competitive Health that successfully demonstrated that the transfer of good practices was possible, even though all transferred good practices required adaptation to accommodate local conditions. The example of the Competitive Health follow-up project ITTS also showed that peer learning was a two-way exchange as good practices exported from one country were often improved by the 'importing' country and these improvements then found their way back to the country of origin of the good practice. Competitive Health could also lead by example when it comes to better exploiting the potential of peer learning by adopting more interactive peer learning techniques such as staff exchange, coaching, mentoring, etc.

Furthermore, numerous examples provided by NPP projects testified that, by working together, project partners can produce an effect greater than the sum of their individual efforts. Projects exploited the *synergies* of complementary expertise and achieved greater publicity in bringing socially relevant themes to the public's and politicians' awareness, which fostered a *change in attitudes and behaviour* and *influenced policy-making* by building political support and momentum. Regarding awareness raising, both ROADEX and O4O reported that the importance of a message increased substantially when communicated by an 'outsider'. As Krister Palo, the ROADEX IV lead partner, put it: "A prophet has no honour in his own country." NPP projects also resulted in *new contacts and (informal or formal)*

networks, which often led to follow-up activities and collaborations, and opened doors to opportunities. Projects with a strong networking component, like CINERGY, boasted a remarkable number of spin-offs.

In spite of the strong track record of NPP projects with respect to project impacts, it is important to bear in mind that these impacts must always be seen against the backdrop of a wider development. As the Icelandic Northcharr project partner expressed it: "Projects need a receptive environment to have a chance of success." While Northcharr unarguably had a share in the successful establishment of three new Arctic charr farms in Iceland, the favourable conditions in Iceland for the establishment of new companies and, especially, the sudden devaluation of the Icelandic Crown at the start of the project, which boosted export-oriented industries like the Arctic charr industry, had an even greater share in the establishment of the new farms. The Scottish and Finnish O4O partners also emphasised that, while it is fair to assume that the project shaped opinions, influenced mindsets, and fuelled public-political debates, it is impossible to know how much the project has contributed to, e.g., the decision to integrate health and social care system in Scotland or the transition taking place in Finland, away from a predominately public-oriented system towards a greater reliance on bottom-up, voluntary initiatives, because projects are embedded in a wider societal context and due to the difficulty associated with linking cause and effect. Nevertheless, O4O was clearly ahead of its time and anticipated a general trend in elderly care provision. Findings from the O4O and Competitive Health case studies revealed that projects may become important forerunners that kick-start a new development. The example of Competitive Health and its successor project ITTS shows this quite clearly: While the former piloted 8 eHealth services in 4 countries, ITTS, by drawing on the methodology and lesson learned from the predecessor project, managed to considerably upscale the number of pilots to 10 and implemented a total number of 25 new eHealth services across 6 countries.

The future Northern Periphery and Arctic Programme is expected to concentrate funding on a limited number of programme-specific objectives and demonstrate that its projects have a direct, positive and measurable impact on the programme area. Findings from this study suggest that the current NPP was well on the way to achieving results-orientation and thematic concentration. However, to use the words of Kate Stephen, O4O project coordinator: "*Only just measuring the success of a project in terms of number of products and services created doesn't do the project justice and is also not the essence of a cooperation project.*"



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