



North Sea STAR Spreading Transnational Results

Annex C:
Energy Project Case Study Reports

Targeted Analysis 2013/2/23
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EUROPEAN UNION
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1. Build with CaRe (BwC)

Mainstreaming Energy Efficiency in the Built Environment

1.1. Introduction

- Duration: 01/08/2008 - 31/03/2012 (3,5 years)
- Total eligible budget: € 3,709,877.00
- Priority: 4 - Promoting Sustainable and Competitive Communities
- Area of Intervention: 4.3 Promoting energy efficiency in settlements
- (Source: webpage North Sea Region)

1.2. Aims and Objectives

Based on available initial project descriptions – especially the project application (Interreg IVB North Sea Region Programme, 2008), activity reports and newsletters – a number of basic characteristics of and expectations about the Build with CaRe (BwC) project can be identified.

The BwC project was focused on the mainstreaming of energy efficient building design and construction. According to the project application (Application Build with CaRe 2008), the problem perception underlying the project was based on the statement in IPCC's 4th Assessment Report that 'mitigation efforts and investments over the next two or three decades will have a large impact on opportunities to achieve lower stabilizations level'. The challenge to reduce human impact on climate change is strongly prioritized by the EU. The EU has committed to a 20% reduction in Green House Gas (GHG) emissions by 2020 compared with 1990, with a possible extension to 30% reduction if other key global players also commit to GHG reductions. Additional commitments are to a minimum 20% of energy from renewables, and a minimum 20% increase in energy efficiency. Achieving this last target will primarily be through national and regional strategies with a mixture of information, targets, and legislation for each major energy consuming sector.

Buildings account for 40% of EU's energy consumption. Success in energy efficiency in this sector is key to achieving the EU's goals. In support of its efficiency goals the EU issued in 2007 a Strategic Energy Technology Plan (SET-Plan) which states 'we need to fully harness (...) public policy and market-based instruments to manage demand and create new markets', also 'Low carbon technologies in general remain expensive and face market penetration obstacles'. Accordingly the EU drafted a strategy for low or zero emission buildings and introduced new energy standards for buildings in 2009 and issued the EBPD - Energy Performance of Buildings Directive in 2010 (Directive 2010/31/EU).

Despite tested and available technologies and pricing (in general it is not more expensive to build energy efficient, due to lower operating costs), energy use in the built environment continues to be higher than necessary. This is a market failure that can be explained by the

nature of the building sector which is characterized by fragmentation within sections of the value chain and non-integration between them.

Incentives to reduce energy use are usually split between different players and not matched to those who can save the most through energy efficiency: the ones designing the building do not pay for the operational costs. Therefore the developers usually look at investments costs instead of cost-benefit from a life-cycle perspective. The innovation pace is slow within the building industry and knowledge and experience from one project to another is often lost.

There have been examples of energy-efficient design for more than two decades. Interest in and demand for low energy buildings has increased over the last couple of years. Unfortunately the building industry still regards such buildings as 'unknown quantities', with prices that reflect risk. They are not yet mainstream. Energy efficient buildings are a small share.

The North Sea Region recognizes that it has to work on reducing the environmental footprints of their companies and inhabitants. Over the last couple of years, climate issues and rise of energy prices have led to a stronger focus on energy efficient buildings in the countries within the region.

The North Sea Region is in the technological vanguard and there are many activities which specifically aim to increase energy efficiency in the built environment that have been tried, tested and proven over more than 15 years. Proven techniques have resulted in both lower energy consumption and higher comfort of living. The task of energy reduction in building is not new in NSR, but the challenge is large scale implementation. The market has to be facilitated, stimulated and strengthened in order to go from a few "good examples" to energy efficient design as mainstream.

This problem definition led to the formulation of a broad aim of the Build with CaRe (BwC) project: to mainstream energy-efficient building design. It set out to take the necessary steps, in collaboration with the building sector, to develop a transnational strategy for increasing energy efficiency in building. The core message of BwC was that energy efficiency is no longer an 'if-question', but a 'how-question'.

More narrowly defined objectives, listed in the approved project application, were the following:

- BwC aimed to change behavior in the complete building chain (from consumer to planner, from carpenter to architect). By this it was meant that it will make a significant contribution to the carbon reduction obligations in Europe.
- BwC aimed to pave the way for a sustainable integrated international market for energy efficient building. Therefore the project aspired to improve the

competitiveness of the North Sea Region and to stimulate different clusters to keep in a leading position on sustainable building techniques and technologies.

- BwC planned to engage national and regional policy makers, influencing EU, national, regional and local policy developments and help deliver regional energy-efficiency strategies. It was thought that North Sea Region could make a major contribution to emerging national and EU strategy where new policy measures are implemented, tested and evaluated.
- BwC aimed to focus on the marketing of energy efficient buildings to meet carbon reduction commitments. It planned to provide the partners the place and tools for importing and exchanging knowledge and experiences, including networks of professionals, new ideas, latest insights, best practices and critical reviews of local actions.
- BwC set out to achieve a better horizontal (different actors working together in the building chain) and vertical (actors working together within different building chains) integration, leading to further coherence in policy and planning activities.
- The partners aimed to place their local issues in a wider North Sea Region context, working together to develop and implement innovative solutions with a significant impact on the EU economy and reducing the environmental footprint of the North Sea Region.

In the definition of work packages and on web pages related to the project these broader aims were broken down into a list of sub-objectives. The BwC's sub-objectives were:

- to engage with different target groups in the building supply chain and through effective, inspiring and innovative marketing techniques, including direct experience of demonstration objects, overcome barriers to mainstreaming low energy building design;
- to ensure the additional benefits of low energy designs such as healthy indoor climate are fully incorporated into promotion and marketing;
- to facilitate the creation of a transnational market in low energy building design and techniques;
- to ensure development of the market for low energy buildings is not prejudiced through lack of skills by creating education packages in energy efficient building design and construction techniques and setting up education courses and schemes for builders, technicians, architects and other key stake holders;
- to inspire students in secondary and technical education in passive house and other techniques;
- to supply input to discussions surrounding the new EU directive on buildings and to test and implement alternative approaches to achieving the 2009 minimum energy efficiency standards for buildings;
- to facilitate drafting of regional energy efficiency strategies in support of EU targets;

- to ensure local planning policies and building regulations do not prejudice adoption of low energy building design
- to create an evidence base on low energy designs, methods & techniques and decision tools to help decision makers over fears and concerns over innovative design; and
- to establish a virtual agency using existing institutions and organizations to maintain the evidence base and continue the work of market transformation beyond the life of the project.

These objectives were met through the following Work Packages (WP):

- (1) Marketing and Publicity
- (2) Education and Training
- (3) Planning and Policy
- (4) Evidence Base including Life Cycle Analysis.
- (5) The overall project Communication Plan (WP5) supported these activities at a more strategic level.

A joint BwC strategy for publicity and communication to promote the success of BwC were developed. Since BwC was a new network the lead partner developed a detailed and outlined communication strategy, in joint discussions with the work-package leaders and the partners. The strategy was based on obstacle analyses realized in each participating region. Key messages in the BwC project were:

- Mitigation of climate change before 2015 (according to IPCC). Efficient use of energy within the built environment has the potential to save about 20% of Europe's energy usage and is therefore an import contribution in an overall mitigation strategy.
- Knowledge, techniques and experience in how to build energy efficient is available. Life cycle calculations show that it is both economic and environmentally-friendly.
- It is comfortable and healthy to live in a low energy building and it can be combined with architectonic values and varieties.
- There are great business opportunities in this area.

The communication activities were operated on regional and transnational level, and included both internal and external communications. The following key activities were planned:

- Development of a web site, for both internal and external communication
- Identification and cooperation with existing networks
- Creation of intraregional network for horizontal integration for exchange of experience, best practice and interchange (export) of skills, education packages and products.

- Lobbying towards both decision makers (regional, national and EU-level - political and in the industry).
- Build up a database for low energy buildings, connected to the project web site and channeled through regional/national sustainable buildings web sites.
- Conferences and seminars, for different target groups.

A solid communication strategy was fundamental for BwC in supporting and strengthening all project activities. The built environment comprises a wide range of people in different positions: from politicians to entrepreneurs, from teachers to the home-owners. BwC appealed to different target groups that required specific activities for each of them and a variety of communication channels were needed. Focus was on the planning and building process, and the importance to cooperate between different professions in actual projects. Everyone is needed in order to mainstream low energy buildings. Vertical and horizontal integration on both regional and transnational level was therefore an important action.

Main target groups were:

- Decision and policymakers and planning officers in authorities in different levels (local, regional, national and EU) – focus on regulations and building codes
- Builders, housing corporations, project developers and property owners – focus on the energy aspects
- Consultants and Intermediates (architects, constructors, ventilation and heating, etc) – focus on a higher competence
- Entrepreneurs and craftsmen – focus on knowledge and experience
- Universities and Vocational schools – focus on energy related education
- Banks and the insurance sector – focus on favorable financial constructions
- Tennant and home-owners (or so to say building consumers) – focus on awareness and attractiveness

When reviewing these detailed objectives on their belonging to the more general rationales that we distinguish in this case study analysis (territorial integration, technological innovation, organizational/policy innovation), we note that the BwC project was largely concerned about marketing, publicity, education, training, planning and policy and therefore had a predominantly organisational scope. Most of the objectives relate to utilising marketing, publicity, education, training, planning and policy to change behaviour and practice and to create markets.

1.3. Rationale for the project

Based on the foregoing, the following impact indicators have been identified:

Territorial impact

Referring to “Programme Level Impacts”, BwC aimed to contribute to the development of more attractive communities through enhanced mutual links and improved sustainable development practices across the North Sea Region and particularly in declining and expanding areas.

This would contribute to ensuring the improvement of the quality of life by tackling environmental pollution and promoting sustainable consumption and production.

With regard to territorial cohesion, BwC was designed to encourage the early general adoption of energy-efficient buildings across the North Sea Region, in both rural and urban areas, in dense central and in remote peripheral zones, in areas of economic decline and in areas of growth. The ambition, therefore, was for the project to have a modest positive effect on territorial cohesion as the alternative, i.e. areas outside the North Sea Region or only limited areas within it becoming market leaders in such design and construction, will undermine local industry and could result in the concentration of jobs and expertise outside the region.

The issues affecting energy-efficient building design, including the increasing importance of summertime cooling, the use of eco-friendly materials, and sustainable construction were seen to be substantially the same across the North Sea Region. It was, however, up to the industry and planners to explore the extent to which common solutions were applied, or common solutions modified to reflect local traditions in appearance and materials.

Survival of the planet as a place that can support the human race with current population levels and without exacerbating current levels of want and suffering depends on containing the current trend towards global warming as well as adapting to changes in temperature and more extreme and variable weather that are already forecast. BwC aimed to help ensure the building industry delivers the energy efficiency targets that are emerging as part of EU Action Plans over the period to 2020.

Within the region, sustainable growth is a key strategy to drive economic development. BwC should help the building and construction industry maximize its potential contribution to that strategy, growing its skills and knowledge and preserving and growing good quality jobs throughout the North Sea Region.

An integral aspect of energy-efficient and eco-friendly design is positive input ventilation systems such as PassivHaus. These contribute to enhanced indoor environments by minimizing pollutants and particles that can affect health being retained, thus making a very direct contribution to enhanced quality of life.

Technological impact

BwC addressed the Gothenburg Agenda through its prime focus on increasing energy-efficiency and consequent reduction in Green House Gas emissions. Further considerations included:

- use of eco-friendly materials to reduce environmental impact;
- sustainable construction techniques to further reduce carbon footprint;
- complementary application of renewable energy and micro-generation where appropriate; and
- promotion of design with positive input ventilation systems integral to heating and cooling that will provide healthy indoor environments.

Policy impact

BwC addressed the Lisbon Agenda because it relied on transforming the market, creating an effective and competitive North Sea Region-wide market to deliver the low energy design, eco-materials and sustainable construction techniques that will be required to meet emerging EU policy directives. BwC should help ensure the region remains at the vanguard, building on its considerable experience and expertise already acquired, and thus retaining jobs that may otherwise be lost to more advanced regions.

In recent years there have been pioneering low energy and eco-friendly buildings constructed in the North Sea Region. However these have failed to make energy-efficient design mainstream. Mainstreaming of energy efficient buildings therefore is innovative for the NSR. BwC addressed this by the following innovative approaches.

- WP1: marketing energy-efficient design to different target groups in the building industry; utilizing demonstration objects in all stages of their design and construction to raise awareness in different target groups, not the least to engage with industry actors on an emotional level through direct contact with innovative design, materials and processes; bringing different transnational actors together via creative networking; and fostering the creation of new industrial clusters of innovation.
- WP2: lifting knowledge and skill levels of all actors in the industry through a transnational approach to provision of education materials whose principal platform will be the web.
- WP3: the development of regional energy-efficiency planning policy to meet EU action plans through transnational input to debate; and trialing new software to help planners assess energy-efficiency proposals.
- WP4: ensuring detail technical questions on the impact of innovative design and materials are answered through a transnational evidence base leading to a common approach to life-cycle analysis and a common transnational basis for comparing energy-efficiency in buildings and their design.

Additional policy-related impacts:

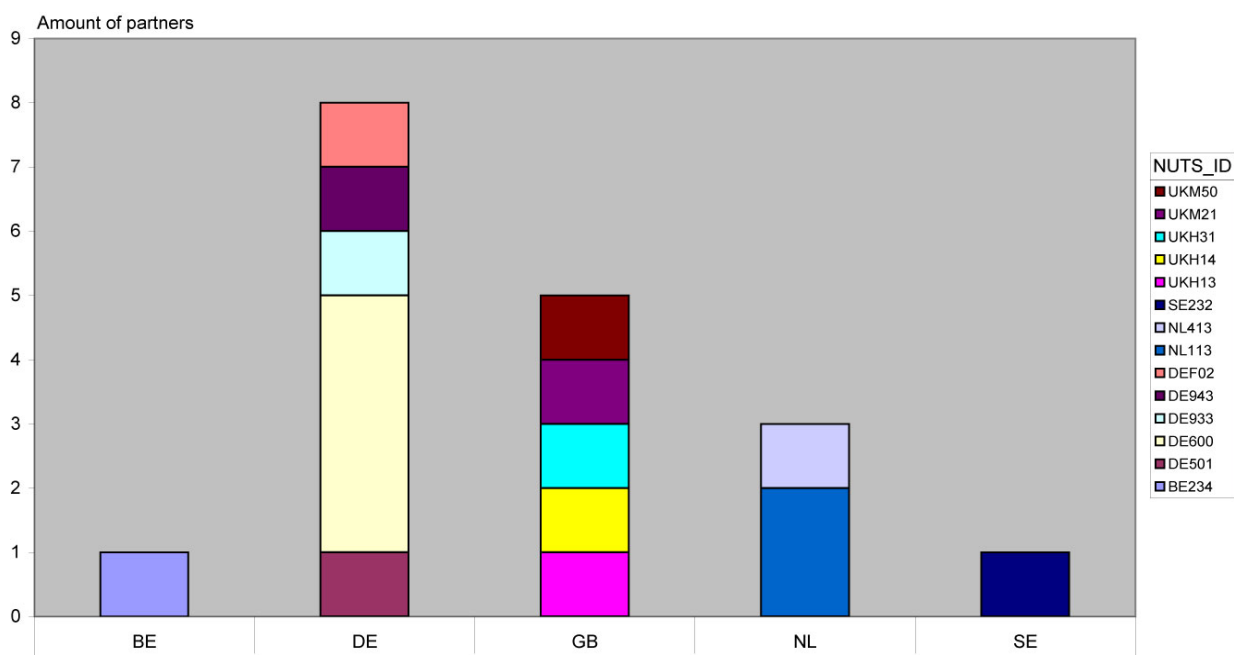
- A transnational knowledge bank and infrastructure for further knowledge transfer and exchange for all stakeholders [in the four priority areas]
- A higher profile for the North Sea Region as a global leader [in the four priority areas] and increased demand for North Sea Region business products and expertise.

1.4. The Build with CaRe Partnership

General accounts

The BwC project brought together 18 partners from eight regions and cities in five countries surrounding the North Sea: 8 partners from Germany, 5 from Great Britain, 3 from the Netherlands and 1 from respectively Belgium and Sweden. Partner organizations are located in 14 NUTS 3 regions (see Figure 1.1). The regions and cities are the following: Västra Götalandsregionen, Provincie Oost Vlaanderen, Provincie Groningen, Gemeente Groningen, Gemeente Noord-Beveland, Southend-on-Sea Bourough Council, Stadt Oldenburg and Aberdeen City Council. In addition to the eight above, there were five academic partners (Dundee College, University of East Anglia, West Suffolk College, TUHH - Technische Universität Hamburg-Harburg and Staatliche Gewerbeschule für Bautechnik (G19)). There were five other partners from the energy and building sectors (Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH (EKSH)), AZ B Ausbildungs-zentrum Bau in Hamburg GmbH, Internationale Bauausstellung IBA Hamburg GmbH, Z EBAU Zentrum für Energie, Bauen, Architektur und Umwelt and Bremer Energie-Konsens GmbH). According to the project application 13 partners fall under public law and have no interest in profit. 5 partners are NGOs.

Figure 1.1: Geographic distribution of BwC partners by countries and NUTS3 regions



Geography of the Partnership

The partners comprise both public entities and commercial/private entities. Many of the partners are local and regional level entities while others are national level entities. The objectives of the project management are to create a network promoting and mainstreaming energy efficient building design.

Most project partners in BwC have either territorial or knowledge interests. 8 partners have a territorial interest. They are single public authorities with well-defined planning competences. The scales about which these authorities are concerned differ. Västra Götalandsregionen, Provincie Oost Vlaanderen and Provincie Groningen are single organisations with broad territorial interests related to general regional development. Gemeente Groningen, Gemeente Noord-Beveland, Southend-on-Sea Bourough Council, Stadt Oldenburg and Aberdeen City Council are single organisations with broad territorial interests related to general urban and municipal development.

Among the 18 partners in the BwC project are 10 organisations with a dominant knowledge interest. Five of the organizations with a knowledge interest are primarily concerned about research and education. All are public organisations and have a broad focus: Dundee College, University of East Anglia, West Suffolk College, TUHH - Technische Universität Hamburg-Harburg and Staatliche Gewerbeschule für Bautechnik (G19). Five of the organizations with a knowledge interest have a specific interest in the development and dissemination of knowledge concerning energy and buildings. All these partners are NGOs: (Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH (EKSH)), AZ B Ausbildungs-zentrum Bau in Hamburg GmbH, Internationale Bauausstellung IBA Hamburg GmbH, Z EBAU Zentrum für Energie, Bauen, Architektur und Umwelt and Bremer Energie-Konsens GmbH).

None of the project partners has a primary economic interest in the project.

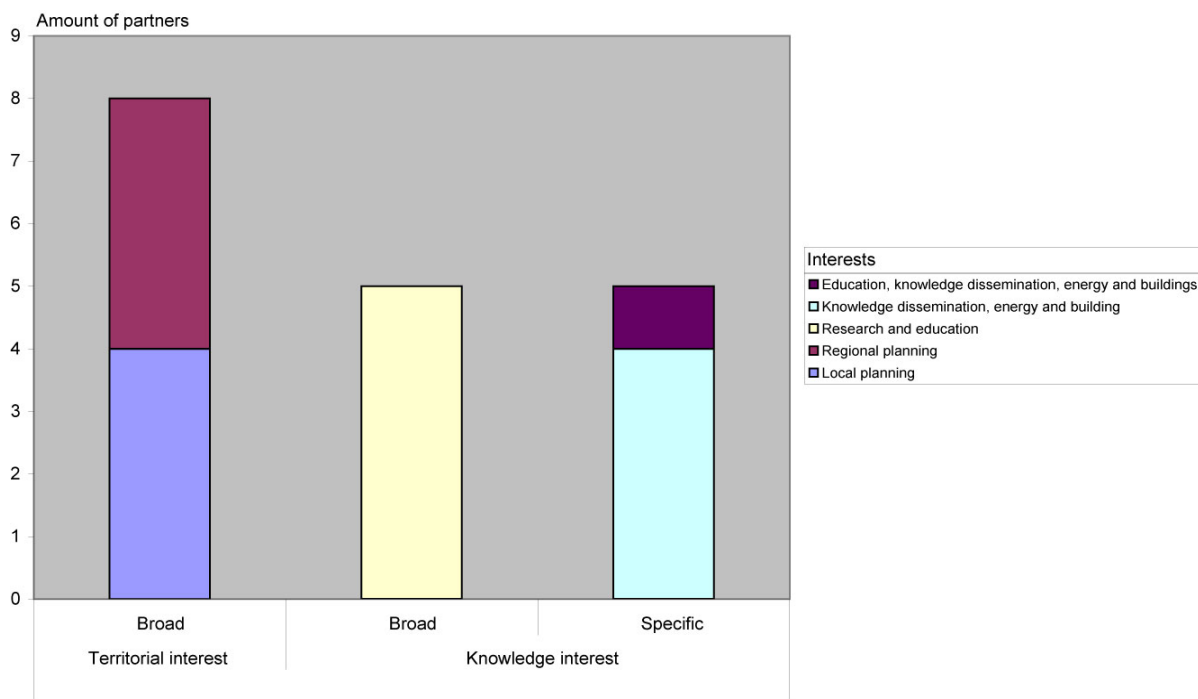
Conclusions

Seeing the interests of all partners in the BwC project in conjunction it can be concluded that knowledge interests is the main driver within the partnership. Based on the preliminary outcomes of analysis that we present here there is a nearly equal spread of territorial and knowledge interests within the overall partnership. Knowledge interests are sub-divided in a broad interest in research and education and a specific interest in knowledge dissemination. Territorial interests concern broad interests in urban, local and regional planning. Outcomes are summarized in Table 1.1 and Figure 1.2.

Table 1.1: Rationale and intra-organisational structure of BwC partners

		Intra-organisational structure	
Rationale for cooperation		Single	Composed
Territorial interest	Broad	Västra Götalandsregionen, Miljösekretariatet - Regional planning Southend-on-Sea Bourough Council - Regional planning Provincie Oost Vlaanderen - Regional planning Provincie Groningen - Regional planning Gemeente Groningen - Local planning Gemeente Noord-Beveland - Local planning Stadt Oldenburg - Local planning Aberdeen City Council - Local planning	None
	Specific	None	None
Knowledge interest	Broad	Dundee College - Research and education University of East Anglia - Research and education West Suffolk College - Research and education TUHH - Technische Universität Hamburg-Harburg - Research and education Staatliche Gewerbeschule für Bautechnik (G19) - Research and education	None
	Specific	None	Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH (EKSH) - Knowledge dissemination - Energy and buildings AZ B Ausbildungszentrum Bau in Hamburg GmbH - Education - Knowledge dissemination - Energy and buildings Internationale Bauausstellung IBA Hamburg GmbH - Knowledge dissemination - Energy and buildings Z EBAU Zentrum für Energie, Bauen, Architektur und Umwelt Knowledge dissemination - Energy and buildings Bremer Energie-Konsens GmbH - Knowledge dissemination - Energy and buildings
Economic interest	Broad	None	None
	Specific	None	None

Figure 1.2: Rationale of BwC partner organizations



1.5. Project Impacts in Relation to Expected Outcomes

For the evaluation of impact through a document analysis, we mostly used publicly available documents that are defined in the project application as concrete products. These include the policy recommendations formulated (BwC 2011), the yearly status reports (web page BwC) and the guidelines formulated for improved practices of designing and building energy efficient buildings (web page BwC). Next to this written material, we have analysed the website that has been launched. In addition, information from interviews and written answers to interview questions have been used to complement the written material with assessments from stakeholders participating in the project (Chris Ashe, Dundee College, Hanna Katarina Nyroos, Vestra Gøtaland, Tom Vermin, municipality of Noord-Beveland, Mia Versijpt, Provincie Oost-Vlaanderen, Amy Smith, Aberdeen City Council).

Territorial Impact

The project has had a territorial impact within the participating areas as well as realized benefits stemming from cooperation and spatial integration. However, the territorial impacts materialise over a long time span and towards the end of the project only a few notable examples are reported. These relate to efforts to develop more attractive communities, particularly in declining and expanding areas of the participating urban areas and regions. A particular focus in the project has been improvement of the quality of life in these communities. In order to have a significant territorial impact, it was critical to the project to stimulate the early general adoption of energy-efficient buildings across the North Sea Region. This aimed at both rural and urban areas, dense central and remote peripheral zones as well as areas of economic decline and areas of growth. Some of the

potential territorial impacts of the project were also connected to the economic success of the building and construction industry, as the project aimed to help maximize the industry's potential contribution to a sustainable growth strategy. Central to this was also efforts to develop skills and knowledge and preserve and growing good quality jobs throughout the North Sea Region.

Among the notable examples of territorial impacts reported from the project is Aberdeen where the City Council developed an alternative energy strategy for Council owned public buildings. This strategy was applied to the first mainstream social housing to be built in Aberdeen in over 30 years, creating 85 new homes. In Hamburg, the Renewable Wilhelmsburg climate protection concept aimed at setting new standards, attempting to realize the climate change goal quickly, radically and innovatively. One vital feature was that this pilot concept was firmly anchored in the local economic and social situation on the Elbe islands. In Region Västra Götaland it was a priority to support the local municipalities. Within the regional initiative Smart Energi a number of municipalities worked together to find common regulations on energy efficiency in the planning process, signing an agreement by which they promised to build and renovate with a standard 50% below national regulations.

The project Northern Energy norm in Groningen aimed to decrease the Energy Performance Coefficient for houses faster than the national legislation for the Northern part of the Netherlands. The strategy developed, focused on quality and low energy consumption of new buildings as well as on cooperation with the relevant stakeholders such as builders, owners and users. The city of Oldenburg was engaged in developing a policy for new building sites with a compulsory minimum standard on energy efficiency below the German Energy Savings Ordinance and promoting a subsidy program for clients who apply higher energy standards. In Southend-on-Sea, the Borough Council developed and delivered a Local Development Framework (LDF) that after adoption in autumn 2012 provided the Council with a suite of policies with which they can support sustainable and energy efficient building design. Among the policies in the framework, the Low Carbon Development and Efficient Use of Resources, provides the means for ensuring development in the Borough incorporates energy and water conservation measures, meeting the highest possible environmental standards.

Technological Impact

The project has realized objectives with regard to both technological innovation and sharing of technical knowledge. These are:

1. E-learning tool:

- Learning material and software tools have been developed.
- An interactive house was developed as a learning tool.

2. Educational workshops and transnational study visits have been arranged
3. Transnational energy efficiency campaigns have been arranged
4. Demonstration projects:
 - Five demonstration projects have been conducted: Aberdeen (Marischal College), East Flanders (Puyenbroeck visitors centre), Southend (Prittlewell Priory), Bremen (Bauraum Bremen) and West Suffolk (West Suffolk College, Low Carbon Construction Centre)

Policy Impact

The following are benefits stemming from organisational innovation:

1. Policy recommendations:
 - Evaluation, review, development and publication of policy instruments and energy strategies have been conducted.
2. Web site:
 - A website was established; www.buildwithcare.eu. Presentations, meetings and project information have been made available, according to report on progress, but the website was not available at the time of conducting the current study.
3. Publications:
 - Publications of academic reports through cooperative partners have been produced.
 - Roll ups and brochure/flyers has been produced. These are at the disposal for all regions.
4. Newsletters:
 - Five newsletters currently available at North Sea Region Programme website have been published. The main focus is on project activities.
5. Conferences:
 - A series of annual conferences, exhibitions and workshops has been arranged.

1.6. Project Evaluation

Composition and Strengths of the Partnership: Main findings

Strengths:

- The open mind among partners to help one another. The wide range of involved partners made it one big learning tool for participants. They learned to view the different aspect of the means and paths to the same goal.

- Overall, the project has produced many good examples of low energy buildings demonstration projects and effort at mainstreaming the building principles and process.
- Many of the participating regions/organisations are embedded within Interreg and the broader family of investment programmes – ERDF, ESF etc. so already have good relationships with other organisations in the same field.

Weakness:

- The project had too many partners that were too diverse and too little committed: “there can be...some partners who do not pull their weight”.

Project Impacts: Main findings

- In the Netherlands, they could not show many physical results because of the building crisis. Currently one house is built, instead of the 59 planned.
- With regard to policy impacts, because of the building crisis the project could not develop what was aimed for in terms of user experience.
- Perceived benefits have only partly materialised yet. Because of the building crisis just a low amount of houses were built during the BwC-project.
- Lessons from projects can take a long time to have an impact – short terms of government might not be enough time to implement real change.
- Political changes can also have impacts on projects and the intentions of project partners – the value of individual partners can be diminished or increase in such cases.
- Exchange of information is key to achieving learning impacts.
- Learning about other projects, political systems – can absorb information informally through general engagement. Provides continuing professional development.
- Greater learning aspects than the core objectives of project – many concepts for new applications are born through engagement and dialogue.
- Focus moved from new build at start of project, then after a few partner meetings realised they should focus on refurbishment – so whole project shifted. This is a result of the network coming together.
- With regard to learning, taking elected members to meetings - helps to spread the message. They can then go back and promote what projects are doing. This opens their eyes to what other countries are doing and how far advanced they are. Demonstrations from EU projects/other partners are good news stories, and prove that ideas will work.

1.7. Participation in Cluster Projects

BwC was a partner in the cluster projects Low Carbon Regions in the North Sea (LOWCAP) and Energy Vision North Sea Region (EVNSR).

The LOWCAP cluster aimed to develop a process for the exchange of knowledge and experiences in carbon reduction and energy efficiency projects in the NSR. This process should bring together key results and identify the synergies between the partner projects and related NSRP projects. The findings were to be consolidated and discussed with other stakeholders in the NSR drawn from decision makers and implementers in the public sector and end users from business and communities. In combination with a review of EU programs and the most recent literature, LOWCAP aimed to produce and disseminate policy advice.

The EVNSR Project was clustering the INTERREG IVB renewable energy projects. EVNSR was drawing on the value and strengths identified in the individual projects in order to increase the deployment rate of renewable energy in the NSR. EVNSR aimed to interconnect the different individual results and to amplify the successes in order to build a Renewable Energy Strategy. The project consisted of three parts:

1. The creation of a stake holder platform in the field of renewable energy;
2. The identification of impact factors by analyzing projects;
3. The definition of an interregional renewable energy NSR strategy.

Added Value of Clusters:

- Provides self-evaluation across projects – peer to peer observations is perhaps not intended but allows reflection on what is being done.
- Shorter project length has been good for existing projects – allows them to extend their life. The LOWCAP project has made a recommendation on shorter projects to this effect.
- Clusters do not have added value unless they are designed to support thinking for the Lead Partner. Which makes the cluster more of an extended dissemination exercise that does not produce added value. Originally, clusters were intended to feed ideas up, not down.
- Have to question the value of the cluster (as extending dissemination) because many of the individual projects already had extensions.

Future Cluster Development:

- LOWCAP project – recognised the need for flexibility and shifts in project content.
- Clusters could take on a mentoring role, this would give the ability to disseminate results more effectively.
- Cluster participants could become subject experts or ambassadors, helping dissemination of results and project development in and outside the North Sea Region, or advising the JTS on project applications.

- According to the Aberdeen partner, they focus on policy and strategy development rather than actual implementation – the money is not there but it is what they need: “You get to a certain stage and then you have to go onto another project to deliver what you’ve learned”. The approach in the LOWCAP recommendations was that each would provide a starting point – what you need to deliver.

1.8. Summary

The BwC project addressed the mainstreaming of energy efficient building design and construction. With regard to an overall assessment of results, the project has delivered on a range of impact indicators and seems to be regarded as a success among participants. However, there territorial aspects to the realisation of benefits as, e.g. the building crisis in the Netherlands prevented the building of the amount of houses needed to get a significant learning experience.

Barriers to Implementation and Moving Forward: Main findings

- The German name “Passive” did not sound nice in the ears of builders and house owners, e.g. in Dutch region. This was a big physiological barrier that the builders had to deal with.
- Passive houses are more expensive to build. Many builders find it difficult to persuade potential buyers to spend more to reach a better quality. On the other hand, the project looked at cost implications of passive house building, proving this is not as expensive as expected helps to overcome barriers for developers.
- Building Laws differs a lot in the EU. Each country still has their own standards and conditions for materials to use when building a house For instance, it is difficult to use a superior window frame from Germany in a Dutch or English house.
- More good examples of buildings with low entrance barriers are needed. Use public buildings like schools, public halls, libraries, etc. to make them energy neutral and let the users see and feel the results.
- Participants hoped the private sector should try harder to get involved in the building houses. They hoped the private sector understood the main goals and saw the benefits. However, “as soon we reached their wallet they pulled back”.
- Extend the program support of low energy buildings or the goal to reach 0-energy buildings. Because of the crisis, very few houses are built. We need to get good messages from the end users to persuade the followers.
- There was some crossover between the clusters. It could be more efficient with only one energy cluster rather than two. However, if they are clearly separate approaches they can be useful. As pointed out “Some partners with their focus on the building site, techniques, material use or design are not interested on the approach how to deal with laws and politicians.”
- Dundee College, being the link between two clusters, made sure that both avoided duplication.

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2. Carbon Responsible Transport Strategies for the North Sea Region (CARE-North)

2.1. Introduction

The Carbon Responsible Transport Strategies for the North Sea Area (Care-North) project focuses on the development of comprehensive, strategic and practical approaches to urban and regional transport and accessibility in the North Sea Region. This aim has been developed in the context of increasing CO₂ emissions from transport and declining fossil fuel supplies. The project, which ran from April 2009 to July 2012, consisted of nine partners from Germany, Sweden, the Netherlands and the UK and had a total budget of €4,802,835. Care-North's main outputs have been focused on the development of electric mobility, low carbon fuels, carbon budgeting and compensation and encouraging a low-carbon mobility culture. The results of these activities have been used to raise awareness about low carbon mobility and develop a set of policy recommendations which will help to make the North Sea Region a leader in low-carbon carbon-efficient accessibility.

2.2. Aims and Objectives

The Care-North project was developed with the overall aim to develop a comprehensive, strategic and practical approach to urban and regional transport/accessibility in the North Sea Region in the context of climate change and declining oil supplies. This aim is based on two significant trends that threaten the economic, social and environmental sustainability of the North Sea Region, namely:

- the continued use of fossil fuels for transport and increasing CO₂ emissions, which undermines other efforts at climate protection, and
- finite supplies of fossil fuels.

These trends demonstrate the need for new and innovative approaches to transport - described by Care-North partnership as a shift from building more roads and infrastructure to a broader notion of "accessibility" that enables citizens to meet their needs safely, comfortably and conveniently.

The Care-North project recognises that the North Sea Region has the potential to lead the way in meeting the challenge of adapting to a post-fossil fuel economy, and by making the transition to low-carbon accessibility there are great benefits in terms of increasing social and economic resilience in the face of rising fuel costs, and boosting economic performance in relation to new, low-carbon growth sectors. By working in collaboration with transnational partners, CaRe-North will build political support and momentum for both shorter term project actions and longer term carbon reduction strategies.

Project Objectives

Care-North has a series of objectives and activities supporting its aim:

- *Reducing transport-related CO₂ emissions* - through identifying and supporting relevant policies and decision makers at local, regional and EU levels,
- *Reducing oil dependence* - by increasing energy efficiency and supporting the production/use of alternative fuels and changing driver behaviour,
- *The zero emission/low carbon mobility culture* – developing strategies for car sharing, mobility management, development on public transport corridors and others,
- *Improving quality of life*, by reducing negative impacts caused by CO₂ in local areas,
- *Making the NSR attractive to business* – by ensuring accessibility whilst internalising transport costs,
- *Impact assessment* – measuring carbon reduction and carbon use to support political recommendations and the “scaling up” of initiatives,
- *Regional and renewable fuels for “E-mobility”* – preparing vehicles, and infrastructure for electric transport, linking this to renewable energy sources
- *Financial instruments for low carbon transport* – raising awareness of costs and financial incentives, influencing citizens and businesses transport decisions
- *Awareness raising* – promoting low carbon transport to the public, business and decision makers at all levels, dissemination of project results, and
- *Strengthening the North Sea Region profile* – demonstrating low carbon transport options and exposing North Sea Region services and technologies to broader markets.

The work of the Care-North project to support its overall aim and objectives is structured in a series of work packages and “lighthouse” activities. These include, in the first phase of the project, identifying the key political objectives and decision makers that contribute to the development of carbon reduction strategies. A “Joint political memorandum” of Care-North partner sites will be used to build support for key messages that will be communicated to the Copenhagen Climate Summit.

Further activities include studies to calculate carbon budgets and compensation, potential CO₂ reductions in relation to integrated transport strategies, testing electric vehicles, with charging stations installed and tested to understand the behaviours of different user groups, efforts to stimulate the use of sustainable fuels and electric propulsion through investigating biofuel procurement, activities to influence behaviour that encourages low carbon mobility, e.g. information campaigns, eco-driving lessons and personalised travel plans.

In the final phase of activities the lessons from Care-North activities will be drawn together and translated into political recommendations aimed at local, national and European level. These recommendations will be presented at the Care-North Final Conference.

2.3. Rationale for the Project

The expected impacts of the Care-North project in territorial, innovation and policy dimensions are broadly outlined as follows:

In the territorial dimension: the project addresses the Gothenburg Strategy by attempting to address post-fossil and low carbon mobility. By increasing the knowledge economy of the North Sea Region in relation to innovative transport solutions (particularly in the fields of E-mobility and biofuels), this provides more sustainable economic opportunities and reduces vulnerability to increasing oil prices. In terms of the Lisbon Agenda, these impacts will also contribute to guaranteeing a secure and sustainable energy supply. At a more practical level, the project will contribute to a reduction of transport-related carbon emissions, improving air quality and health for all. In addition, measures to improve accessibility through smarter use of existing infrastructures and encouraging alternative methods of transport will reduce the amount of street space needed for transport infrastructure, freeing up areas for social and ecological functions.

In the innovation dimension, the project application notes that despite public debate, sustainable models of propulsion (electric and plug-in hybrid vehicles) are not widely available on European markets. E-mobility also requires the right infrastructure to be in place, and so the project will try to overcome barriers to wider use of E-mobility through specific project actions. These include preparing for emissions trading for land transport through CO₂ monitoring and accounting, and linking financial measures, building on conventional transport models to assess air quality, strategies for reducing car use and investigating models of procurement for biofuels.

With regards to the policy dimension, the project seeks to advance the implementation of key international, European and national policies in the fields of climate protection, energy supply and sustainable transport, including the Kyoto Protocol, the EU White Paper on Transport 2010, the *Klimaschutzinitiative* (Germany) and the *Schoon en Zuinig (clean and efficient)* programme (Netherlands). The project recommendations, which will be developed throughout the project, are intended to promote greater coherence between transport, energy and environmental policies. "Lighthouse actions" and the dissemination of project messages and results individual partners will promote this at local and regional levels, whilst at higher political levels, the project will cooperate with the North Sea Commission and the European Commission to raise awareness of low carbon accessibility to decision makers, in particular through the Copenhagen Climate Change Conference (2009) and a final event running in parallel to the Rio 20+ activities.

2.4. The CaRe-North Partnership

The CaRe-North project partnership was largely assembled by its lead partners, the city of Bremen, who recognised that globally, all sectors are able to reduce CO₂ emissions, but they

are still increasing in the transport sector, which has seen carbon emissions rise by 130% from 1970 to 1996.

This demonstrated an imminent need to deal with climate change, covering consumption, transport and landscape. Spatial planning decisions are taken for 10/15 years ahead, but resilient regions need to anticipate what's ahead to provide a framework for sustainable planning.

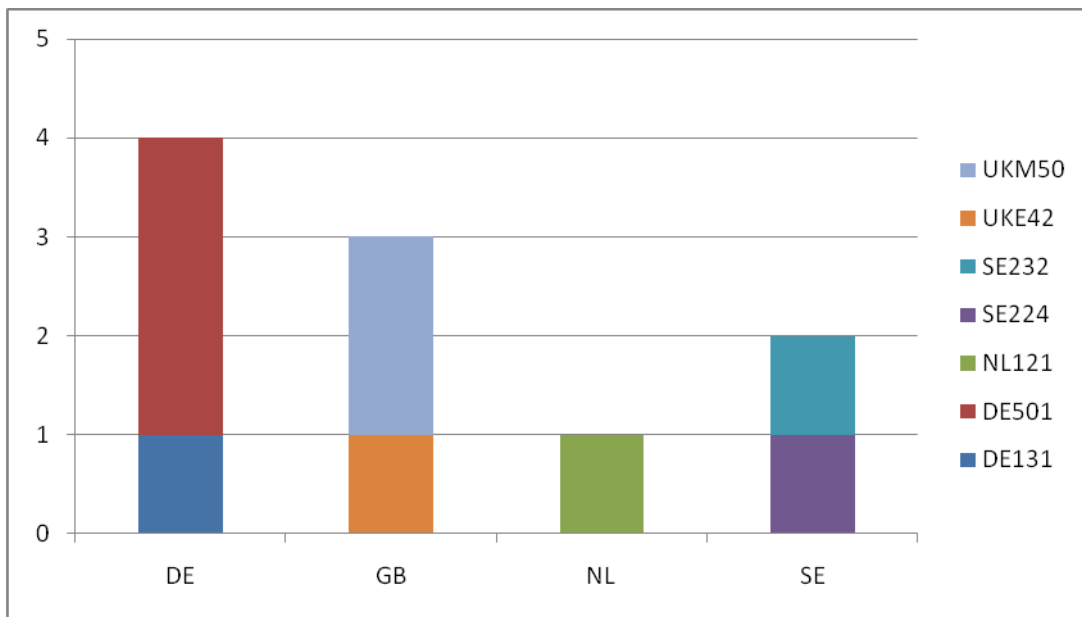
The City of Bremen spotted an opportunity for an urban/rural mobility project in the North Sea Region as this had not been well covered by other projects in the Operational Programme under the accessibility theme. Previously Bremen had been involved with projects on shipping but saw that there was a gap for a “provocative” new project, providing a North Sea Region perspective and having an input into the discussions of low carbon transport and increasing capacity in the context of rising energy prices. This prompted Bremen to undertake Care-North as a policy-based project.

The idea was developed over the course of 2008-09 and presented by the city of Bremen at the 2009 North Sea Region Annual Conference in the Netherlands. This initial presentation helped to attract partners such as Aberdeen City Council, who were looking for ideas to include in their sustainable transport plan, whilst Bremen were also able to draw on partners they knew through other programmes such as the city of Göteborg through the Civitas (green transport) initiative. Bremen approached the city of Malmö, who they wanted to work with due to their ambitious energy/carbon reduction goals. Provincie Fryslân approached Bremen to be a partner.

Geography of the Partnership

The Care-North project consortium is made up of ten main partners and one sub-partner. The consortium covers all countries except Denmark and Norway. Four partners are located in Germany, three in the UK, two in Sweden and one in the Netherlands. Overall, the partners are distributed across seven NUTS3 regions (Figure 2.1).

Figure 2.1: Geographic distribution of Care-North partners by countries, NUTS3 regions

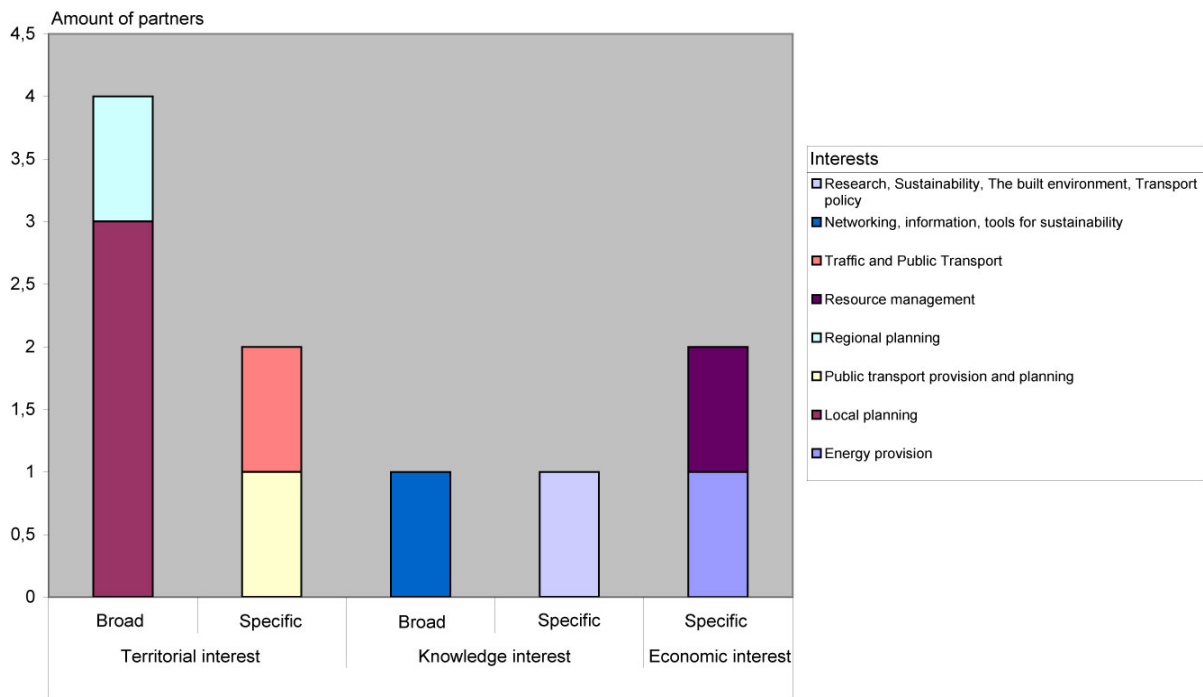


Of the project partners, seven fall under public law, representing local or regional authorities. One partner (ICLEI) is an NGO, whilst two partners, swb AG and Nehlsen GmbH fall under private law and are profit oriented.

With regards to partner interests, the majority of partners, being local or regional authorities have territorial interests (see Figure 2.2). For the cities of Malmö and Aberdeen, the State of Bremen and the Province of Fryslân their territorial interest is broad as each is responsible for a range of spatial planning, economic development, energy and transport functions. In the case of lead partner the State of Bremen, the Senator für Umwelt, Bau, Verkehr und Europa (SUBVE, or Senate Department for Environment, Construction, Transport and European Affairs) is directly responsible for energy, climate protection, transport and urban development.

Two partners, the city of Göteborg and METRO (West Yorkshire Integrated Transport Authority) have a more defined territorial interest in transport. The City of Göteborg's Traffic board is actively involved in the procurement of sustainable fuels for its public transport and garbage collection vehicles and is working to change the travel behaviour patterns of its citizens to minimise climate impacts. METRO, the public transport authority for five local authorities, also tries to promote travel behaviour change, and is working with transport operators to improve low-carbon transport links.

Figure 2.2: Rationale of Care-North Partner Organisations



Two partners, ICLEI and Robert Gordon University have a knowledge interest. ICLEI has a broad interest in developing and disseminating initiatives that support sustainable development, in addition to networking with decision makers and stakeholders to improve policy processes. It may therefore be said that ICLEI has a secondary interest in territorial impacts. The Robert Gordon University offers education in a range of subjects including engineering, architecture and the built environment. Its knowledge interest may be considered to be more defined, as two research centres within the University - one dedicated to management, governance and society (IMAGES) and innovation, design and sustainability (IDEAS) are directly involved in Care-North.

swb AG is a public limited company that provides utilities (water, electricity, gas and heating) and other technical services to the area encompassing Bremen and Bremerhaven. Although profit may be seen as swb AG’s main rationale for involvement, the company also maintains a knowledge interest in technologies that enable the delivery of services in an environmentally sustainable manner. Similarly Nehlsen GmbH, a limited company, provides waste and resource management services to for public and private partners and has an interest in technologies for producing energy and fuels from waste.

Overall, territorial interests dominate the project partnership, with particular interests in the fields of low carbon transport, travel behaviour and alternative fuels. There is a relatively low degree of organisational complexity within the partnership, with only three partners representing consortia of organisations. In the case of METRO this represents the transport interests of the five local authorities that make up the West Yorkshire Metropolitan area. Swb AG is made up of several subsidiary companies focusing on different

elements of energy production, supply networks, sales and technical support services. ICLEI represents a global network of over 1200 local authorities, though as a project partner its involvement comes through its European Secretariat. Given the geographically widespread nature of the organisations represented by ICLEI and its role in making links with policy makers and other projects, the area of influence of this partner may be much wider than the North Sea Region itself.

A summary of partner interests is shown in Table 2.1 below.

Table 2.1: Rationale and intra-organisational structure of Care-North partners

Rationale		Intra-Organisational Structure	
		Single	Composed
Territorial Interest	Broad	City of Bremen, Germany Spatial planning City of Malmö, Sweden spatial planning Province of Fryslân, Netherlands Spatial planning Aberdeen City Council Spatial planning	none
	Defined	City of Göteborg Traffic and Public Transport Authority, Sweden	West Yorkshire Integrated Transport Authority, UK Public transport provision and planning
Knowledge Interest	Broad	none	ICLEI, Germany Networking, information and tools for sustainability
	Defined	Robert Gordon University, Aberdeen, Scotland Research on sustainability in the built environment, transport policy	none
Economic Interest	Broad	none	none
	Defined	Nehlsen GmbH Resource management	swb AG Energy provision

2.5. Project Impacts in Relation to Expected Outcomes

This part of the case study makes use of both publicly available documents produced by the Care-North project consortium and evidence gathered from interviews with project partners [from the City of Bremen, Robert Gordon University and Aberdeen City Council].

Territorial Impacts

Overall, one of the project ambitions for Care-North was to reduce transport related carbon emissions and examples of this have been achieved at a local/municipality level through a number of its “lighthouse projects”. These include:

- *Car sharing.* The City of Bremen was already well known for its successful car sharing scheme, and during the project the number of car sharing users increased from 7,200 in March 2012 to approximately 8,100 in March 2013, replacing 2,000 privately owned cars and reducing congestion. Bremen has set a target of 20,000 car sharers by 2020.
- Following Bremen’s model, the city of Aberdeen has also established a car sharing club, which is soon to become the biggest car club in UK. Aberdeen’s Car Club has around 600 members and 17 vehicles. Average utilisation is about 27% per car and

currently 4 more vehicles plus a van are on order. The Club was also the first in the UK to have disabled access vehicles and has trialled hydrogen fuelled vehicles. Supplementary planning guidance is being developed by the City Council to support the integration of Car Club infrastructure in new developments.

- Care-North has supported the “MyBus” school bus scheme in West Yorkshire – providing dedicated school bus services to reduce the number of car journeys and associated CO₂ emissions.

It should be noted that territorial impacts are not always measurable within the timeframe of the project – it was noted that further impacts may become apparent through nationwide surveys which are undertaken at specific intervals. In Germany, a transport analysis happens on a 5-year cycle (which has missed the project activities in Bremen this time), but project results have contributed to a Swedish transport analysis.

Technological Impacts and Innovation

Whilst the Care-North project on the whole has a strong policy basis rather than being “high-tech” in its approach, the following examples demonstrate that the project has engaged with a number of tools and technologies that support more low carbon accessibility. In particular, methods for carbon modelling and accounting to illustrate the potential benefits of project activities are an important aspect of this work.

- Robert Gordon University have led studies into the potential impacts of introducing a Low Emissions Zone in the city of Aberdeen (with Aberdeen City Council) and video conferencing for reducing work-related CO₂ emissions.
- In Gothenburg, activities have included trial and evaluation of Intelligent Speed Adaptation (monitoring fuel consumption and CO₂ emissions) in cars, to be applied to the municipal vehicle fleet in Gothenburg, development of a smartphone application to aid more sustainable commuting behaviour (compared to user’s normal behaviour) and a “climate compensation” scheme, which requires carbon offsetting (payments used to fund investments in sustainable transport) for journeys made by car or plane.
- Investigation of possible CO₂ reductions through the use of e-bikes (pedelecs) has taken place in Bremen. Using survey results it was demonstrated that for 235 commuters in a working week use of pedelecs would produce 0.213 tonnes of CO₂ compared to 3.226 tonnes using other methods (car, public transport). 20 pedelecs were given to commuters to try and were well received, though it was noted that expanding use would need to concentrate on car-users (rather than those using conventional cycles) to have the greatest benefit.
- In West Yorkshire a new online planning tool has also been developed to help other local authorities make the business case for introducing school bus services. This is the only tool of its kind and can be used for services in any area in the UK and beyond.

- Further testing of electric vehicles for use as part of local government fleets and private companies has taken place in Bremen, Gothenburg and Fryslân.

With regards to innovation, the project has demonstrated several innovative approaches in showing ways to address rising CO₂ emissions in the transport sector at a local and regional level. Bremen's car sharing scheme (which began before Care-North) is in itself an innovative approach to mobility, leading it to be featured as a showcase scheme at the World EXPO event in Shanghai, 2010. The rollout of this scheme to other places through Care-North and the direct transfer of ideas provides inspiration to others.

Behavioural Impacts

A number of measures have been introduced in order to promote low carbon accessibility through changing user behaviour:

- Bus driver training for fuel efficient behaviour (West Yorkshire). All bus operators in the area participated in this scheme, with results of an estimated saving of 7%/€350 on fuel costs and 3 tonnes CO₂ per driver per year.
- Personalised Travel Plans were produced for residents of Malmö, and a campaign was launched to help people reduce the number of unnecessary car journeys ("No ridiculous car trips").
- In the Province of Fryslân, work has been undertaken to promote the use of natural gas/biogas and electric vehicles as an alternative to fossil fuels. These activities have been targeted at municipalities, fleet owners (e.g. taxi firms) and distribution companies. Providing advice on subsidies for CNG cars led to 179 applications being handed to the government, with the Province of Fryslân submitting the highest number of applications. Procurement of new cars has now started. An online guide for small businesses wishing to convert to electric vehicles has been produced.

Policy Impacts

Through the design of new strategies, instruments and actions, Care-North has aimed to build support and capacity for implementing low-carbon accessibility at a number of scales. Ultimately, the results of these activities are intended to provide the basis for further actions contributing towards post-fossil fuel mobility in the North Sea Region. The following are examples of policy impacts the project has made which contribute to the longer term adoption of low carbon accessibility concepts across the North Sea Region:

- Procurement guidelines for sustainable fuels (produced from less energy intensive sources) have been finalised in Gothenburg following tests with suppliers. This work has fed into the development of procurement criteria by the Swedish Environment Management Council to enable standards to be harmonised nationally.
- In Aberdeen, the City Council have started looking at city centre sustainable transport based on work they had seen in Malmö city centre to address transport issues. This

has gradually formed into the SUMP (Sustainable Urban Mobility Plan) – which was originally the city centre transport master plan, and is now part of the local development plan.

- The city of Bremen has participated in the National Platform Electric Mobility, organised by the Federal Ministries for Transport and the Environment. In particular this work has tried to influence the issue of electric charging infrastructure for cars on public land and requires legal changes to be made at the national level to ensure this infrastructure can be made more readily available to users.
- METRO have contributed to West Yorkshire’s Local Transport Plan 2011-2026, in particular with regards to target setting for carbon reduction.
- The city of Gothenburg has adopted an annual target of 5% energy reduction from its municipal vehicle fleet.
- Project results have fed into position papers for the ICLEI World Congress (June 2012) and been disseminated at events hosted by the North Sea Commission, CIVITAS initiative, Committee of the Regions, Intelligent Energy Europe (momo car-sharing project)
- In Aberdeen, car sharing clubs have been based on publicly owned land – policy is more supportive for this in Scotland. In Bremen the situation is very complex, but beyond the scope of the project, requiring changes at national level.
- Care-North’s Final Conference included a “Message from Care-North and the North Sea Region to Rio 20+”.

2.6. Project Evaluation

In the previous sections, the main activities of Care-North and some initial analysis of their impacts has been provided. This section provides a more qualitative evaluation of the key strengths and lessons learned from the project, based on documentary analysis and interviews.

Strengths of the Partnership

With regards to the composition of the project partnership, Bremen has been successful in other projects and this made them an attractive partner to others, as this experience gives other organisations confidence in the lead partner. In addition, many of the Care-North partners had worked together before. Some partners (who had perhaps done less work on sustainable transport) noted that at the start of the project they were unfamiliar with the achievements of other partners and that this information had not been communicated to them well, however they were able to learn more as the project progressed. A possible weakness of the project partnership was the lack of analytical capacity – Robert Gordon University was the only academic partner and it took RGU some time to persuade other partners of the value of their work. Although they were assisted by ICLEI, another academic partner might have helped to strengthen the conclusions of the studies that were undertaken.

Focus of Activities

In terms of the overall focus of the project, all partners were interested in the car sharing idea. Exploring the feasibility or impacts of E-mobility was a second common interest, although the City of Bremen was slightly more sceptical about this dimension of the work. These two concepts thus formed the main activities of the project, however there was acceptance that different countries favour different types of energy production, and that individual cities have to analyse what is most feasible for them. With this in mind, other activities of the project partners were dependent upon local circumstances, but contributed to an overall picture of how carbon responsible mobility could be achieved.

Learning

The Care-North project has provided a number of opportunities for learning, both within the partnership and more broadly. The direct transfer of ideas such as car sharing provides the most obvious example of learning between organisations. Also within the partnership, the lighthouse activities and exchanges of experience have prompted reflection on each partner organisation's own contributions to low carbon accessibility. For example in Aberdeen, where it was noted that the UK is far behind other countries in terms of eco-friendly transport – the project partners saw that other municipalities appeared to work in a completely different environment, with much more political support and leadership.

Whilst the city of Bremen, Malmö and Gothenburg are all leaders in the field of low carbon transport, all partners in the project have learned from each other. The transnational dimension to the partnership has meant that partners are able to take ideas that are new to their own locality and implement them with the benefit of others' experience to guide how it should be done. As one partner remarked, if they had been working in isolation they might not have had the confidence to see an idea through to realisation, but knowing it had worked elsewhere made implementation appear more feasible. Without Interreg, partners might be able to get funding from elsewhere to try out things such as electric cars, but would not benefit from the transnational experience.

2.7. Participation in Cluster Projects

The Care-North project is part of the LOWCAP (Low Carbon Regions in the North Sea) Cluster, with Bremen acting as the main representative of the project (the City of Bremen and ICLEI were also financial beneficiaries of the LOWCAP consortium). The City of Bremen was informed by the JTS of the call for clustered projects and were interested in becoming involved because of the need for political backing for the issues that the project would like to have raised at high level in the North Sea Region, and also because they thought that knowledge of sustainable transport at European level would help the cluster as a whole.

As part of the cluster, the City of Bremen was able to feed in information from Care-North, ensuring that the lessons learned in the project were carried through to the high-level recommendations. In LOWCAP's final Policy Recommendations brochure, three specific

recommendations under the theme of “Low Carbon Mobility” are included. Care-North’s relationship with the LOWCAP cluster has been one of “feeding up” strategic messages, with one partner describing that Care-North itself perhaps did not benefit greatly from being part of the cluster, as it already had strong political support and sufficient political will within the Care-North partnership to continue working on carbon responsible transport. LOWCAP has provided extra channels of dissemination, and whilst the cluster represents a good way for projects to be heard – and makes it easier where there are several projects rather than one alone - the work of Care-North is now being taken forward in a new “Care-North Plus” project.

2.8. Summary

Care-North has sought to highlight the importance of low carbon accessibility in the North Sea Region in the context of increasing CO₂ emissions from transport and rising fuel costs. These issues have been tackled in a proactive manner by the project partnership by demonstrating the practical ways in which carbon emissions can be reduced. Whilst the environmental benefits of alternative propulsion and changes to passenger behaviour have been clearly demonstrated and the lighthouse activities of the project have gained broad attention in the North Sea Region and internationally, intense political action is still required in order to make low carbon accessibility a priority for governments and organisations in the North Sea Region. The additional work undertaken as part of the Care-North Plus project should help to promote this agenda further.

Barriers to Implementation and Moving Forward

The project has also revealed some barriers to implementing low carbon accessibility – for example transferability of the activities that were demonstrated can be difficult due to the different policy contexts in which the partners operate. Local perspectives, modal split, and ability to influence policy can all come into play. In the Province of Fryslân the economic recession meant they had problems committing to the goals of the project – subsequently it was difficult for them to catch up with planned activities and expenditure. In addition, planning cycles and time scales mean that it is not always possible to plan far in advance – the implementation of some ideas is much more dependent on the political situation and it was noted by one of the project partners that a lack of alignment between plans, budgets and decision makers can hinder progress. Projects can actually widen this gap, because they may take a different direction to the status quo, but without Interreg (or other European) projects some local and regional authorities might not be aware of good ideas, or be able to fund the staff and activities to promote new thinking.

However Care-North partners are taking positive steps to continue project work in the field of low carbon accessibility – as previously mentioned, a new Care-North Plus partnership has been established. This is made up of largely the same partners as Care-North, but with some new additions from Belgium (Taxistop) and Norway (City of Bergen and Hordaland County Council). The project represents an extension of Care-North’s activities, allowing for

further dissemination of existing project results and some new activities. Care-North Plus, like the LOWCAP and Energy Vision Clusters, is also geared towards more high level dissemination (for example with Members of the European Parliament) and feeding into major policies such as the Europe 2020 Strategy. The Care-North Plus had its first meeting in October 2013 and will run until early 2015.

References

www.care-north.eu

Care-North Project Activity Report 5

Care-North Project Application

Care-North Fact Sheet WP4: Assessment of Economic and Ecological Impacts

3. North Sea Sustainable Energy Planning (North Sea – SEP)

3.1. Introduction

Between 1.9.2009 and 31.7.2013 14 partners of the North Sea Sustainable Energy Planning (North Sea SEP) project exchanged their experiences and best practices in order to create new tools for regional planning to increase the use of sustainable energy in the North Sea Region. This approach has been pursued to create a foundation for implementing the long term goal of generating energy self-sufficient regions in the North Sea Region.

3.2. Aims and Objectives

The North Sea SEP project set the following aims and objectives

- To develop and promote new models for regional development centred on renewable energy and efficiency activities, while meeting the needs of local and regional authorities undertaking sustainable energy planning
- To apply a holistic and integrative perspective which simultaneously addresses the themes of energy production, energy use, energy innovation and related governance to build up energy (planning) capacity
- To generate and trial new organisational models for energy initiatives, stimulating cooperation between SMEs, citizen, public authorities, planners, and the energy and construction sectors
- To develop new methods and tools for sustainable energy planning and the dissemination of knowledge on the topic

3.3. The North Sea SEP Partnership

General Accounts

The North Sea SEP project involved 14 key partners plus, in some cases, their regional stakeholder networks. It was a clustered project which participated in a cluster formation of Low Carbon Regions in the North Sea (LOWCAP). The geographic distribution of the project partners is illustrated in Figure 3.1 below.

Academic/ Science/ Educational institutions (public law, non-profit):

- Jade University of Applied Sciences is located in Oldenburg, Wilhelmshaven and Eilsfleth in Northwest Germany (the lead partner)
- University of Edinburgh, Institute for the Study of Science, Technology and Innovation, Scotland
- Dundee College, Construction and Built Environment Centre, Scotland
- Campus Varberg is a municipal education coordination centre / multi university centre in the region of Halland, Sweden

Local (governmental) authorities under public law and non-profit oriented:

- City of Osterholz-Scharmbeck, Germany. The County has 112.200 inhabitants and consists of 7 municipalities.
- Aberdeen City Council, Scotland
- Intercommunale Leiedal, Belgium: An organisation representing 13 cities and municipalities in the Kortrijk area of Flanders. It is involved in spatial planning and trying to build capacity in this area.
- Provincie Drenthe, The Netherlands: Drenthe is one of the three northern provinces of the Netherlands, located between the large centres of economic importance in the West-Netherlands, Germany and Scandinavia.

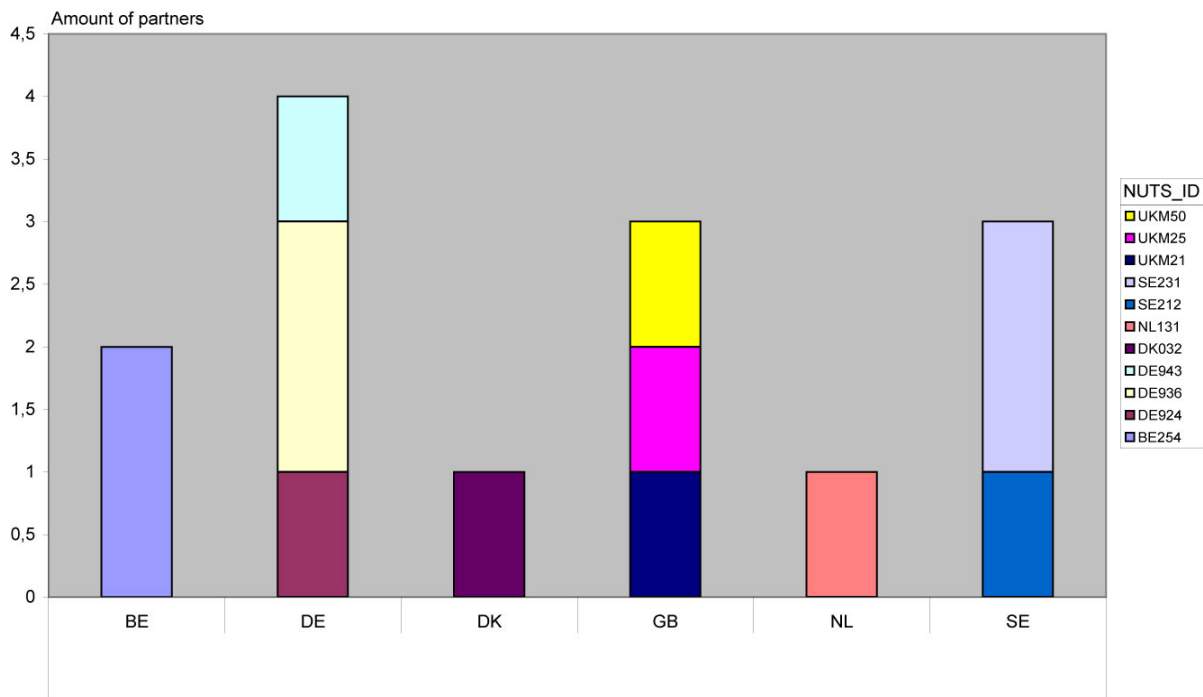
Associations and campaigns (non-profit / private law):

- U.A.N. Municipal Environmental Campaign, Germany: Founded in 1985, U.A.N. is an independent registered non-governmental association, but closely linked with the association of towns and municipalities of Lower Saxony. The objectives of the U.A.N. are to help municipalities, municipal associations and companies with finding solutions for local environmental challenges.
- Green Network, Denmark: Set up in 1994, more than 300 companies and public institutions in collaboration with the 6 local municipalities have actively worked together for greater sustainability. The Network is located in and around the municipalities Vejle and Fredericia in Jutland.
- EMC, The Coalition for Energy and Environment Varberg, Sweden

Associations and campaigns (profit, private law):

- Energikontor Sydost, Sweden: Active since 2007, the Energy Agency for South-east Sweden Ltd. is jointly owned by an association where regional councils, counties and municipalities are members. The Energy Agency has approximately 20 employees with its headquarter based in Växjö.
- REON stock corporation (REON AG): REON is a planning office, specialised on technically developing renewable energy projects in cooperation with business partners. The business location of REON is in Worpswede in the district of Osterholz.
- Municipality consortia (non-profit, public law)
- Imog, Belgium: Imog is an intermunicipal cooperation for waste management in the Kortrijk region for eleven municipalities.

Figure 3.1: Geographic distribution of SEP partners by countries and NUTS3 regions



Partnership Formation

The project partner network was selected on the respective qualities of

- their expertise and competences in energy-related work and a strong commitment to regional engagement,
- their interests in engaging in the North Sea SEP partnership based on
- previous successful collaboration in the field and
- their capabilities to deliver input and output to the project

The partnership assembly was confirmed, as one interviewee explained, through previously established partnerships as well as newly acquired partners which appeared to match the project requirements.

Geography of the Partnership

Seen the interests of all North Sea SEP partners in conjunction it can be concluded that rationales within the partnership are diverse, as Table 3.1 and Figure 3.2 portray in an overview.

Public authorities and regional planning capacities such as Provincie Drenthe in the Netherlands, Aberdeen City Council, Scotland, the City of Osterholz-Scharmbeck, Germany and the Intercommunale Leiedal, Belgium were interested mainly in territorial development with regard to their individual administrative level. For example, Provincie Drenthe used the North Sea SEP project in order to proceed with an energy-efficient housing development

project in the province. The city of Osterholz-Scharmbeck, by contrast, looked to gain impetus for its strategy of energy transition 2020. The Intercommunale Leiedal pursued the development of a regional energy plan.

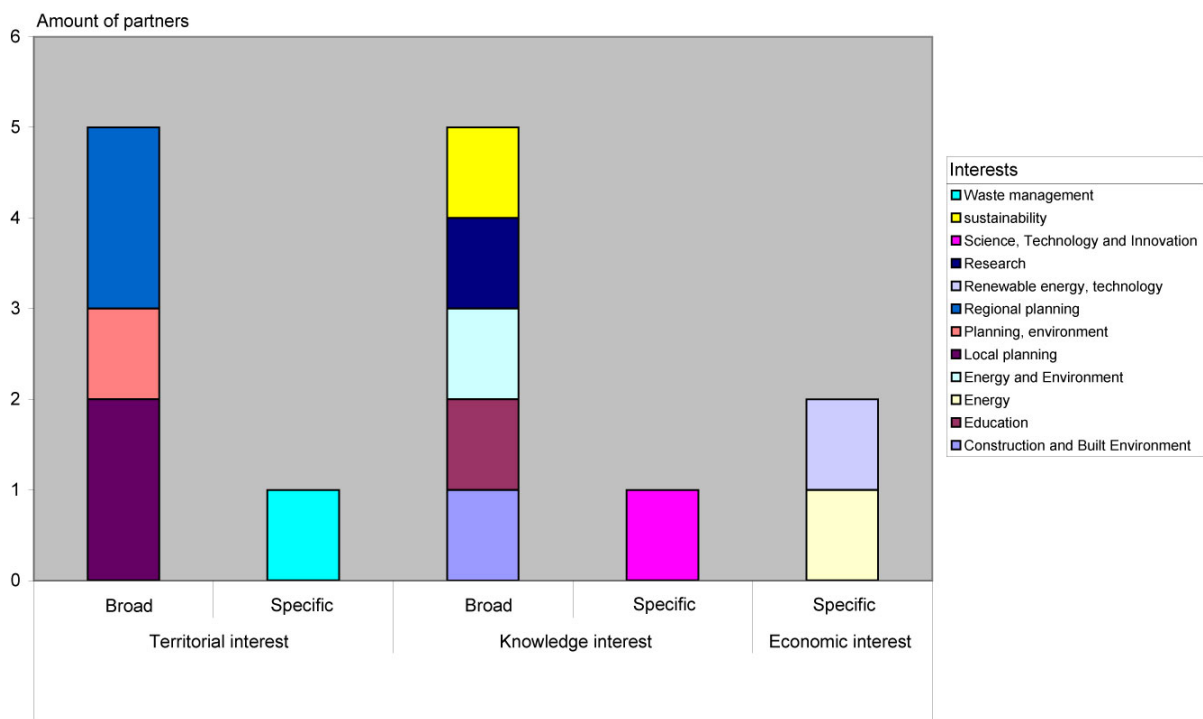
The educational and research institution of Jade University of Applied Sciences, Germany, Dundee College Scotland and Campus Varberg, Sweden (closely interlinked with the second Swedish partner, EMC, in Sweden) all naturally follow an interest in the domain of knowledge generation, knowledge exchange and knowledge transfer.

Economic, i.e. profit-oriented interests have been placed at the forefront of the engagement by interviewees in the cases of Imog, Belgium, the Energikonto Sydost, Sweden and REON stock corporation, Germany. Imog, for example, envisaged to utilise the expertise gained through North Sea SEP, for a business that equipped a waste deposit site with solar energy. REON was particularly interested in utilising expertise from North Sea SEP in their business to draft and design the Osterholz-Scharmbeck strategy of energy transition 2020.

Table 3.1: Rationale and intra-organisational structure of SEP partners

Rationale for cooperation	Intra-organisational structure		
		Single	Composed
Territorial interest	Broad	Provincie Drenthe, The Netherlands Aberdeen City Council, Scotland City of Osterholz-Scharmbeck, Germany	Intercommunale Leiedal, Belgium U.A.N. Municipal Environmental Campaign, Germany
	Specific	None	None
Knowledge interest	Broad	Jade University of Applied Sciences, Germany Dundee College, Scotland University of Edinburgh, Scotland Campus Varberg, Sweden	EMC, Sweden Green Network, Denmark
	Specific	None	None
Economic interest	Broad	Imog, Belgium	None
	Specific	REON stock corporation, Germany	Energikontor Sydost, Sweden

Figure 3.2: Rationale of SEP partner organisations



With the consultancy firm atene.kom (Agentur für Kommunikation, Organisation und Management) an external player which did not act as a partner, was assigned by the lead beneficiary to be in charge of all transnational communication and transnational project management. Basically, atene.kom served as a neutral moderator of communication and helped structure decision-making processes more straight-forward in the partnership consortium.

Conclusions

One of the main characteristics of the North Sea SEP network is the heterogeneity of its partners, stretching from academic/science to public administration and private companies (as in Table 3.1). This diversity proved both, a strength – as multiple perspectives and competencies could be linked to come up with the best possible solution and project outcomes – and a weakness, because communication and decision-making processes took considerably longer than initially anticipated. One interviewee inferred from these experiences, that, if run again, he would advise to involve fewer and less diverse partners. Alternatively, if the same number and diversity of partner institutions was to be kept on, the project management and decision-making processes should be moderated more strictly and coherently with a certain time frame and set of objectives in mind.

This heterogeneity of partners somewhat mirrored

- the heterogeneity of energy landscapes and regional planning contexts involved in North Sea SEP, and

- the multitude of interests pursued by partners when engaging in the project (Figure 3.2).

The North Sea SEP project purposely covered a wide range of diverse regions with distinct characteristics relevant for the approaches taken towards energy planning. These factors included varying existing energy systems, local energy resource potentials, organisation of energy provision, the built environment and the context of regional and national governmental powers, relationships and policies. One of the key methods North Sea SEP utilized was to a) detect and depict this diversity and b) to compare the regions in order to identify commonalities and similarities in energy infrastructure and policy design across all regions. One of the instruments used to pursue the latter included a transnational roadmap of strategies and activities in the respective regions.

The partners' motivation to engage in a transnationally operating project such as North Sea SEP was based on two main arguments, as the interviewee's responses demonstrated: Firstly and most of all, the extended possibilities of learning from others' knowledge, and best practice models (and barriers to these) beyond set national boundaries and fixed sector responsibilities have been valued. Secondly, transnational collaborations as enabled through projects like North Sea SEP are considered especially effective in their results. They have been described to add elements of planning and policy design and thus specifically benefit certain municipalities (like those participating in Belgium).

3.4. Project Impacts in Relation to Expected Outcomes

Territorial impact

The notion of territorial impact has proven to be important in the North Sea SEP context in the following ways (as named by the interviewees):

- Firstly, the design (plus piloting and gradual implementation) of local/regional master plans on renewable energy strategies by local/regional politics. These master plans elaborate significant details of the respective guidelines for continuing regional development. Such policy-related endeavour was only possible because of strong collaboration with local and regional bodies and authorities.
- Secondly (as briefly mentioned), several pilots were executed during the timespan of the project in several of the participating regions and profiled the potential for the use of renewable energies in the respective regions. The findings from these pilots were then fed back into optimising the master plans.
- Thirdly, territorial comparisons were conducted on the diverse local resource potential, energy infrastructure and related conversion potentials of the partner regions involved in the North Sea SEP project. For example, the potentials for

photovoltaic plants in the respective regions were assessed on the basis of distinct feeds into tariff systems and economic options. The findings were then compared transnationally in a second step. It was found out that the various project partners have significant differences in their potential concerning the production of renewable energy systems.

As noted, the spatial integration enabled by the transnational framework of the North Sea SEP project has been experienced as particularly fruitful in terms of mutual learning processes and touching down to municipal levels. Thereby, the transnational project platform was perceived as a key to creating new tools for regional planning to increase the use of sustainable energy in the North Sea Region.

In terms of concrete changes in land use, the North Sea SEP project introduced and accompanied the concept of 'energy neutral regions'. Through this the North Sea SEP project has practically influenced the partnering regions in their spatial landscape and – interrelated – in their political decision-making processes. North Sea SEP was thereby embedded and addressed several spatial policies of the European Commission (Spatial Development Perspectives 1999) and the North Sea Region (NorVision policy), compare section 3.3.

Technological impact

In the view of the interviewees, the North Sea SEP project has achieved technological innovation by means of its strategy to inject renewable energy strategies comprehensively into overall regional energy strategies. These regional strategy packages now represent the (comparative) basis of regional development plans in five of the participating regions. These regional strategies underwent political consultation processes and were passed by political bodies, i.e. are valid not only in terms of strategic/technological innovation approach but also as a 'real' policy impact. Moreover, the North Sea SEP project transferred the investigative instrument of their pilots to other projects, regions and contexts (e.g. potential analyses of solar power).

Mentioned barriers for technological innovation included, among other things, the lack of information. This obstacle has been met technologically by developing online information tools reaching out to all societal actors (and age groups).

Another obstacle which was noted related to the relatively high cost of implementing renewable energy structures. (Low) Income profiles of some participating regions could not finance respective necessary investments.

A third barrier noted inapplicable regulatory frameworks (including planning restrictions) and legal context. If co-existing with financial limitations, technological innovation can be seriously hampered along the way.

Last but not least, it was mentioned that applying a set of common methods and tools for all North Sea SEP partner institutions may allow for a comparative approach in the project management scheme. However, throughout the course of the project it also became apparent that the diversity of interest profiles sometimes cannot sensibly be met by a single methodological approach alone. This was described to be specifically prominent when – seemingly clear-cut – knowledge interests and economic interests clash.

Policy impact

The North Sea SEP project addresses and is embedded in the following policy strategies and reference circles at European level:

- The European Commission's Spatial Development Perspectives (1999) defines goals for spatial development policies, and as a subsequent regional policy document
- The NorVision policy which frames as the existing state of spatial development in the North Sea Region, and suggests directions for the future
- The European Strategy Sustainable Development as approved by the European Gotenburg Council in 2001
- The Directive on Electricity Production from Renewable Energy Sources of 2001

As mentioned, concrete roadmaps of policy intervention (and innovation) have been developed throughout this process. The interviewees listed some major achievements including

- Zuid-West-Vlaanderen Energieneutral 2050
- Climate and Energy Strategy for the county of Kronoberg and the region of Southern Smaland
- Energiewende Osterholz 2030
- Regional energy strategy, Intercommunale Leieidal

Moreover, and as elaborated above, some concepts including the concept of 'energy neutral regions' as proclaimed and accompanied by the North Sea SEP project has practically influenced the partnering regions in their spatial landscape and – interrelated – in their political decision-making processes.

In terms of policy-making levels (also implying a territorial component), the project documentation indicates that locally-owned energy cooperation belong to the group of key policy players. This is the case in Denmark, for example and starting to show in the Netherlands as well. The North Sea SEP projects recommends, based on its findings, to open up opportunities for stronger involvement of this newly arising level of policy-making in transnational and regional planning of energy strategies.

3.5. Participation in cluster projects

The North Sea SEP project took part in two project clusters:

- LOWCAP (Low Carbon Regions in the North Sea)
- Energy Vision

In the context of LOWCAP, the North Sea SEP project together with project partners and institutions from the United Kingdom, Germany, Belgium and Norway pursued the common goal of developing and delivering a joint approach towards carbon reduction and energy efficiency within the North Sea Region. Besides the North Sea SEP project three other carbon reduction and energy efficiency projects were involved in the cluster LOWCAP, namely BwC, Care North and Carbon Capture & Storage).

In the context of Energy Vision, the North Sea SEP project contributed to formulate and project a vision for a successful and sustainable transition to a transnational renewable energy landscape in the North Sea Region.

One of the underlying objectives of both cluster endeavours was to lift the issue of transnational solutions to a sustainable future energy supply to a higher political level as well as into societal debate at all levels (plus possibly take influence on future EU and/or INTERREG grant schemes). In the view of two interviewees this objectives has been met in the case of LOWCAP by and large through a joint LOWCAP publication on policy recommendations towards a low carbon, energy efficient North Sea Region. In the case of Energy Vision, two recommendation papers on a) Smart specialisation and cooperation in the North Sea Region and b) Renewable energy developments and integration in the North Sea Region were written and disseminated.

Part and parcel of the clustered approach, the North Sea SEP project was able to liaise very closely with other North Sea region energy projects. Barriers to successful cooperation and implementation were not mentioned.

As one interviewee described, a crucial factor for the noted success of the clustered project approach – and hence a means to render collaboration within the cluster more efficient and straight forward for the North Sea SEP project – was the familiarity among partners across projects. Not only the contents, but also the findings of the single projects and involved stakeholders were known already at the start of LOWCAP (for example). This also meant that in terms of partnership dynamics, all participating projects played equal roles and contributed actively to the work.

However, in a critical reflection an interview partner also noted that, if started all over again, they would vote to focus on engaging in one rather than two cluster consortia.

With hindsight a more concentrated approach would be regarded to be more efficient and productive. Besides, it was recommended that large cluster projects like LOWCAP should ideally be moderated and coordinated by external moderators. Such approach would help to ensure that the content-based work meets policy objectives immediately (in lieu of a focus on safeguarding future funding opportunities).

4. Innovative Foresight Planning for Business Development (IFP)

4.1. Introduction

- Duration: 01/06/2008 - 01/10/2011 (3,5 years)
- Total eligible budget: € 2,593,986.00
- Priority: 1 - Building on our Capacity for Innovation
- Area of Intervention: 1.2 Building the transnational dimension of clusters and research and innovation networks

(Source: webpage North Sea Region)

The main aim for the IFP project was to support business development through actively using knowledge and competence of universities, research institutes and the public sector, together with different businesses and companies to plan for the future in an interactive manner and thereby creating a basis for innovative solutions. The IFP project should improve the basis for decision making by developing and applying innovative foresight planning as a tool both for the private sector and public bodies related to business development. Great emphasis has been put on developing arenas for networking between businesses and regions in a transnational context. The project used foresight planning techniques for specific industrial sectors and on a transnational basis and building on interactions between the public and private sectors. It was envisaged that recommendations for strategic planning would be developed with relevance for both business clusters and regional development agencies.

4.2. Aims and Objectives

Based on available initial project descriptions – especially the project application (IFP application 2008), newsletters (IFP web page) and the final report (IFP Final report 2011) – a number of basic characteristics of and expectations about the Innovative Foresight Planning for Business Development (IFP) project can be identified. The IFP project focused on business development and innovation and this broader definition of a target group was narrowed down to businesses engaged in four different clusters - food, energy, technology and finance. The main objectives for the clusters were to improve competitiveness, stimulate knowledge and technology transfer, improve strategic technological and capital management and market expansion.

Next to beneficiaries and the North Sea Region Programme secretariat, other stakeholders defined for this project included regional economic development organizations and SME business associations, public authorities and politicians concerned about economic development (IFP application 2008). According to the available project application, the problem perception underlying the project was that industries and businesses have a great challenge to become more competitive in the expanding global economy. An innovative and systematic approach to assessing the present situation and the future trends has been

developed in several places in the North Sea Region. However, a need was identified to look beyond single regions, learn from and cooperate with other regions as well as combining competence and development efforts to expand industries and businesses.

The North Sea Region has acknowledged strengths in its research base and a number of key industries, and strong clusters located in the partner regions. However, to build on these strengths, to maintain and improve global competitiveness and unsustainable economic growth, the project pointed out a need to improve linkages within and between the clusters, at a regional and trans-national level. This required an integrated, transnational approach to identifying opportunities, within the region and in the global market, and the synergies which will allow the regions, research institutions and businesses to work together to exploit the opportunities. The individual regions did not possess all the components and the critical mass to develop globally competitive clusters. Working together in an approach which combines knowledge and expertise in a process of foresight planning, and applying this to the development of the selected industries, the partners aimed to design forward strategies and concrete action plans which would build this capacity.

Transnational cooperation, therefore, was crucial in this project and it was pursued by exchanging knowledge, developing and putting into practice approaches and methodologies on foresight planning, practical application in the development of transnational clusters, and facilitating business to business and business/research cooperation. It was also important that public and private sector institutions cooperated in order to enhance the outcomes at various levels in the society's efforts to enhance the economy and create more jobs.

Innovative foresight planning

Foresight planning was introduced in the application as "a new, systematic and innovative approach" specifically pointed at in the Operational Programme for the Interreg IVB North Sea Region Programme. A key aspect of this approach is that foresight should be seen as a deliberately designed process, marked by broad-scale participation, in which any of a number of available methods can be used sequentially for accumulating, transferring and transforming relevant knowledge and inputs concerning the future (WP-B Final Report 2011). Foresight planning in this project implied to actively use the knowledge and competence of universities, research institutes and the public sector, together with different businesses and companies to plan for the future in an interactive manner and creating a basis for innovative solutions.

The project was designed so that there was an active interaction between the private and public sector as well as entities on international, national and regional levels. The foresight planning method was developed and adapted to the regions and clusters involved and, it was applied in real situations, providing experiences to be channelled into best practices and recommendation. The transnational interaction through IFP aimed to generate B2B relations and region-to-region cooperation.

A common problem within the North Sea Region also addressed by this project was that the capacity and competence of the work force was not matching the needs in the regions, characterised by declining, changing or expanding industries. Other common challenges addressed were the need for innovation, technology transfer, product development, market entry, critical mass etc. The public sector was pointed out as one of the most responsible parties in this respect.

Objectives and Expectations in Outline

- This problem definition led to the formulation of a set of aims for the Innovative Foresight Planning for Business Development (IFP) project:
- To improve the basis for decision making by developing and applying innovative foresight planning as a tool both for the private sector and public bodies related to business development
- To apply the foresight planning approach in key sectors, on a transnational basis, leading to action plans for future cooperation, identification of joint projects and business collaborations
- To develop an arena for networking between businesses and regions in a transnational context
- To develop and strengthen public sector facilitation by creating transnational networks and developing a tool box

Through an iterative process between structuring the foresight planning method and applying the foresight planning in real situations, the project should have both a strategic and a concrete/tangible dimension. The strategic dimension was pursued by building on experiences and best practices detected, and by structuring the foresight planning method relevant to the needs in the regions. Based on the experience on applying the method in regional development agencies and selected business clusters, recommendations on general and strategic planning level should be provided.

The specific North Sea transnational element, as to the concrete and tangible dimension, was pursued by applying the foresight planning in the selected business clusters and regional development agencies. The transnational cooperation should bring forward new ways and tools for supporting business development as well as creating a basis for business clusters and individual businesses to develop. This should lead to an improved platform for decision making in developing products and services, also in respect to enhanced transnational cooperation.

It was also an aim to take initiatives, like preparing project descriptions and applications, to channel project activities and results into other funding programmes and instruments, for instance into FP7 and structural funds. In the definition of work packages and on web pages related to the project and project partners (IFP web page) these broader aims were broken down into a list of sub-objectives. The IFP project has the following objectives:

- Develop new tools through an innovative approach to planning and decision making
- Apply the foresight planning on specific clusters
- Apply the foresight planning method on the regional efforts to facilitate regional economic development
- Exchange experiences, establish arenas for cooperation between the regions, businesses and research institutions
- Develop action plans and identify projects for future collaboration between regions, businesses and research institutes

These objectives should be met through the following four Work Packages (WP):

- WP A Project Coordination: To tie the work of the thematic work packages and demonstration projects together, and to secure a structured dissemination of the outcome and results of the project as well as creating synergy effects with other projects.
- WP B Innovative Foresight Planning: To enhance economic development by developing and applying innovative foresight planning in defined clusters as well as in regions, and to further develop means of providing a common knowledge base for both private and public sector on regional and transnational level
- WP C Cluster Development: To provide an improved platform for expanding business opportunities and job creation through close transnational business development by utilising Innovative Foresight Planning through interaction between clusters and regional development agencies.
- WP D Public Sector Facilitation: To integrate the facilitating role of the public sector in the foresight planning frame work and cluster cooperation activities, to involve the businesses in this process, and to maximize the facilitating role of the public sector in serving economic development and dealing with discrepancies on the labour market.

Publicity and communication strategy

A joint IFP strategy for publicity and communication to promote the activities and results of IFP was devised:

Background: The project should provide knowledge and experience in developing and applying the method for Innovative Foresight Planning (IFP). A two-way communication was seen as important when developing and disseminating results from IFP, i.e. by establishing an arena for networking between businesses and regional development agencies.

Strategy: The guiding principle was to promote, facilitate and sustain innovative processes:

- By maintaining the IFP processes with the project partners beyond the project period
- By disseminating the experiences of IFP
- By seeking synergy effects with other similar projects

The dissemination was to be carried out all through the project period. The communication should all be two-ways. The key actors in the communication should be the Lead Partner together with work package and demo project coordinators.

Methods: Emphasis was put on web based communication and print on demand. With key words related to innovation and foresight, the aim was that the IFP web site should all appear as a primary page.

Measures: Conferences, workshops and meetings as part of a structured cooperation with other similar projects should be a primary approach. Making presentations in external conferences was also pointed out as relevant. A brochure and newsletters should be prepared.

Responsibilities: The Lead Partner and the WP A members should be the main responsible for implementing the CP&P activities.

Evaluation: The CP&P strategy should be monitored and evaluated as part of the half year reporting cycle. A number of the pre-set indicators for the project could be utilized in assessing the progress and impacts of the CP&P activities.

When reviewing these detailed objectives on their belonging to the more general rationales that we distinguish in this case study analysis (territorial integration, technological innovation, organizational/policy innovation), we note that the IFP project was largely concerned about business development and innovation and therefore had a predominately organisational scope. Most of the objectives relate to improving the capacity of industries and businesses to become more competitive in the expanding global economy.

4.3. Rationale for the Project

Based on the foregoing, the following impact indicators have been identified:

Territorial impact:

Referring to “Programme Level Impacts”, the IFP project aimed to contribute to the development of more attractive communities for improving regional competitiveness. This should take place through enhanced mutual links and improved sustainable development practices across the North Sea Region and particularly in declining and expanding areas.

With reference to the Gothenburg Strategy, the IFP project should contribute to making Europe and its regions a more attractive place to work and invest. IFP is also complying with this Strategy, as the project pursues three important aspects for sustainability:

- Most of the regions involved are peripheral within the national setting (distant from the metropolitan areas in the countries involved), and business development and job creation would support the cohesion objective of the EU, and contribute to stable societies.
- One of the clusters was dealing specifically with renewable energy, which has an environmental impact in the long run as well as job creation even in a short term perspective.
- Another of the clusters was dealing with food, including ecological food, and this would also have a beneficial environmental impact.

The project covered most countries in the North Sea Region, and should contribute to cohesion both through an extensive transnational cooperation and through developing and applying foresight planning method together.

The global economy drives the business developments in the regions to focus on development of products and services that are competitive, which requires an open mind to international relations, knowledge transfer and trade. The project aimed to contribute to closer ties between businesses as well as regional development agencies in the North Sea Region.

The focus on developing a relevant capacity and competence of the work force implied a cross regional approach as a mechanisms for developing a balanced work force. A close regional cooperation was seen as a pre-requisite for success in this respect

Technological impact:

No technological impacts were expected in this project.

Policy impact:

- Referring to “Programme Level Impacts”, the IFP project aimed to contribute to the following policy impacts:
- Increased innovation-based business development and supporting public and academic infrastructures across the North Sea Region.
- A transnational knowledge bank and infrastructure for further knowledge transfer and exchange for all stakeholders.
- Improved institutional structures, co-operation arrangements and skills and capacity in organisations and individuals to undertake further transnational co-operation on North Sea Region challenges
- A higher profile for the North Sea Region as a global leader and increased demand for North Sea Region business products and expertise.

The project concept was based on a positive innovative-oriented culture, supporting a transition and/or enhancement of a knowledge-based economy. The foresight concept was used within the framework of innovative foresight planning for nurturing innovative processes within the selected business cluster, within the regional development agencies as well as between the two. The active participation, utilising the experiences and knowledge of stakeholders and expert knowledge, is a core element of such innovative processes. Therefore, the project maintained a triple helix profile as the partners were coming from the public sector, the private sector and universities/research institutions.

The project was in particular complying with the Lisbon Declaration, as innovation and development of businesses were the key objectives of the project. Through transnational cooperation and networking the competitiveness should be enhanced, providing the condition for further job creation.

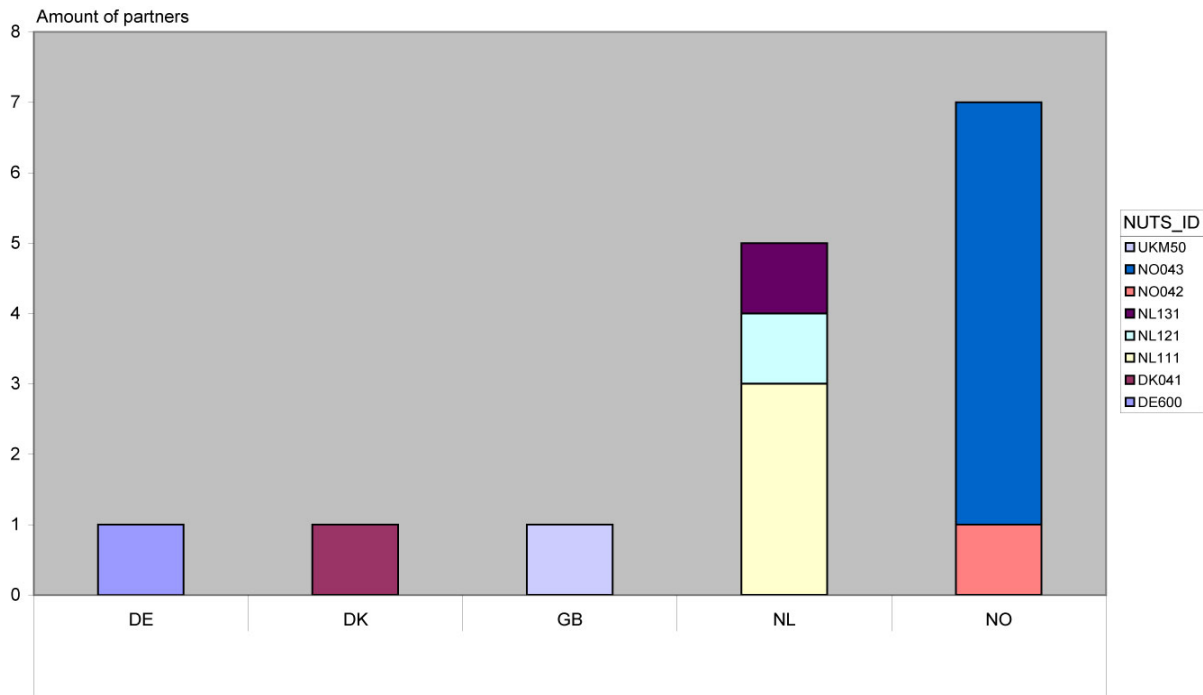
4.4. The IFP Partnership

General accounts

The Innovative Foresight Planning for Business Development (IFP) project brought together partners from six regions in five countries surrounding the North Sea: Denmark, Germany, the Netherlands, Norway and Scotland. The regions are the following: Region Central Denmark (Region Central Jutland); Northern Germany (Gesellschaft für Technologieförderung Itzehoe mbH – IZET); The Northern Netherlands (Provinces of Groningen, Friesland, Drenthe and in addition NOM (Northern Investment Agency) and Chamber of Commerce); Greater Stavanger Region (Greater Stavanger Economic Development, Sparebank 1 SR-Bank, Innovation Norway, NAV, NHO Rogaland, LO and BI, Stavanger. Greater Stavanger was lead partner for the project); The Agder Region (Vest-Agder County Council) and Scotland (Scottish Enterprise). The geographic distribution is illustrated in Figure 4.1 below.

Altogether 15 partners participated in the project. According to the project application 13 partners fall under public law and have no interest in profit. 1 partner is a private company and 1 partner is a limited company. Partners come from 5 countries, 7 from Norway, 5 from the Netherlands, 1 from Germany, 1 from Great Britain and 1 from Denmark. Partner organizations are located in 8 NUTS 3 regions (see Figure 4.1).

Figure 4.1: Geographic distribution of IFP partners by countries and NUTS3 regions



Geography of the Partnership

The partners comprise both public entities and commercial/private entities. Many of the partners are local and regional level entities while others are national level entities. The objectives of the project management are to create a network promoting and materialising innovative foresight planning as an instrument for business development in the regions as well as to co-ordinate parallel Interreg IV B projects and others, to ensure synergy effects.

Most project partners in IFP both have territorial, knowledge economic interests. Agder County Council and Region Central Jutland are single organisations with broad territorial interests related to general regional development. This goes for the composed organisations Greater Stavanger and the Northern Netherlands as well. Greater Stavanger also has defined territorial interests related to the development of specific clusters. Gesellschaft für Technologieförderung Itzehoe mbH – IZET and Scottish Enterprise also have defined territorial interests related to high-technology Cluster and global business development respectively. Vest-Agder County Council, Region Central Jutland and Northern Netherlands also have broad knowledge interests related to general education and research. Greater Stavanger Region, Gesellschaft für Technologieförderung Itzehoe mbH – IZET and Scottish Enterprise have more specific knowledge interests related to knowledge transfer directed

on innovation and improved competitiveness. It could also be argued that Greater Stavanger Region has broad economic interests related to regional economic development and, that Gesellschaft für Technologieförderung Itzehoe mbH – IZET and Scottish Enterprise have defined economic interests related to high-tech businesses and global businesses.

Territorial

Among the 15 partners in the Innovative Foresight Planning for Business Development, project seven partners have a territorial interest. They are single public authorities with well-defined planning competences. The scales about which these authorities are concerned differ.

The Province of Groningen in the Netherlands is interested in a regional territory (albeit, seen other regions in the Netherland and the North Sea Region, a small one). Region Central Jutland report that that the main reason for participating in the project was business development in the region.

Knowledge

Among the 15 partners in the Innovative Foresight Planning for Business Development project are 2 organisations with a dominant interest in knowledge. One of the organizations with a knowledge interest – i.e. Business Administration College, BI Stavanger – is concerned about research and education only. This is a private organization that has a broad focus. One of the organizations with a knowledge interest – i.e. Gesellschaft für Technologieförderung Itzehoe mhB (IZET) – has a broad interest in the development and dissemination of knowledge. IZET Innovation Centre is a public organisation that acts as the lynchpin for small and medium-sized technology enterprises locally and provides impulses for economic and technological development in the region.

Economic

Among the 15 partners in the Innovative Foresight Planning for Business Development project 6 partners have a primary economic interest. Three of the organizations with an economic interest are single public organisations with a broad focus: Innovation Norway (the economic performance of a range of economic segments; NAV Rogaland (the welfare of larger areas) and Scottish Enterprise (the economic performance of a range of economic segments). One of the organizations with an economic interest is a composed private organisation with a broad focus (the Chamber of Commerce Northern Netherlands, focusing on economic development in the region) and two are single private organisations with a more specific focus; Sparebank 1 SR Bank (banking) and iPAX AS (consultancy).

Conclusions

Based on the preliminary outcomes of analysis that we present here there is a nearly equal spread of territorial and knowledge interests within the overall partnership. Knowledge interests are sub-divided in a broad interest in research and education and a specific

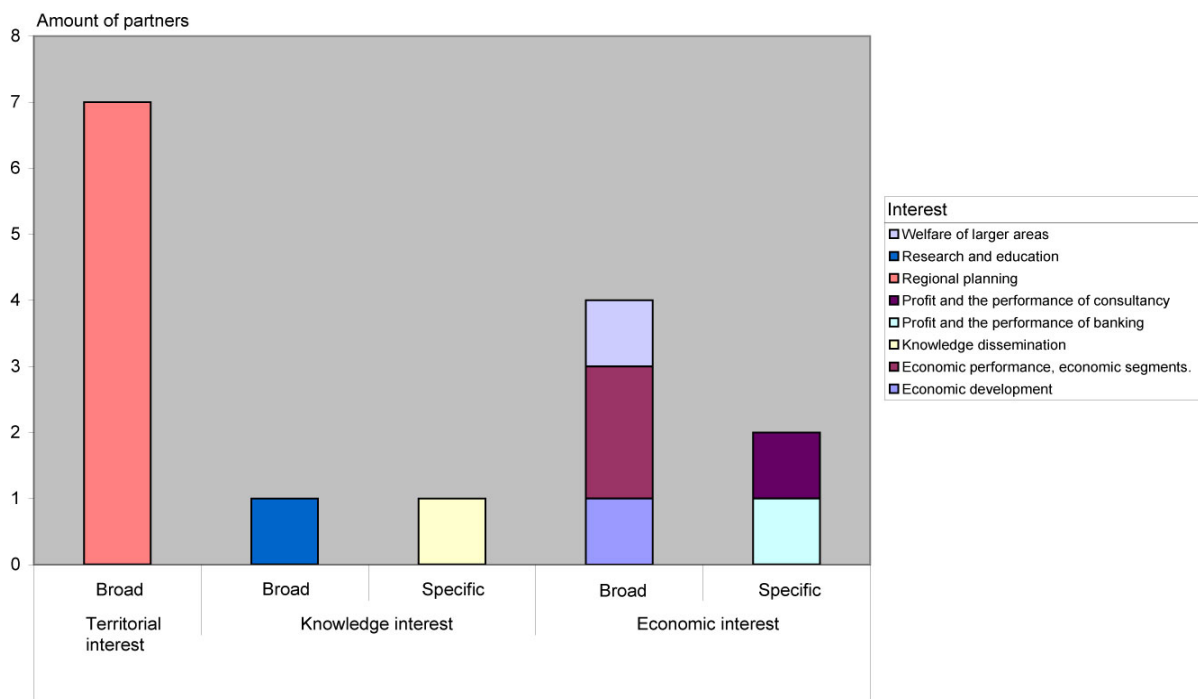
interest in knowledge dissemination. Territorial interests concern broad interests in local and regional planning. Specific economic interests concern business development and innovation.

Region Central Jutland report that there were differences in focus with regard to which energy issue should be developed in the project. They think that the focus on offshore wind energy which was decided by the energy group was not optimal considering the partners involved as the different national offshore wind energy key actors were not in the partnership. Rather, a first step should be to choose the energy issue and then form the partnership in order to secure participating of key actors (Laursen, questionnaire). Seen the interests and organizational structure of all partners in conjunction it can be concluded that project partners in IFP have diverse and over-lapping interests, summarised in Table 4.1 and Figure 4.2 below.

Table 4.1: Rationale and intra-organisational structure of IFP partners

Rationale for cooperation	Intra-organisational structure		
	Single	Composed	
Territorial interest	Broad	Vest-Agder County Council - Regional planning, Agder region (NUTS 3 NO043) Region Central Denmark - Regional planning, Region Midtjylland (NUTS 0 DK04) Province of Drente - Regional planning Province of Groningen - Regional planning Province of Friesland - Regional planning	Greater Stavanger - Regional planning, Rogaland County (NUTS 3 NO043) Northern Netherlands Region (NOM) - Regional planning, Northern Netherlands (NUTS 1 NL1)
	Defined	none	none
Knowledge interest	Broad	Business Administration College, BI Stavanger - Research and education	Gesellschaft für Technologieförderung Itzehoe mHB (IZ ET) - Knowledge dissemination
	Defined	none	none
Economic interest	Broad	Innovation Norway - The economic performance of a range of economic segments. NAV Rogaland - The welfare of larger areas Scottish Enterprise - The economic performance of a range of economic segments.	Chamber of Commerce Northern Netherlands - Economic development
	Defined	Sparebank 1 SR Bank - Profit and the performance of banking iPAX AS - Profit and the performance of consultancy	none

Figure 4.2: Rationale of IFP partner organisations



4.5. Project Impacts in Relation to Expected Outcomes

For the evaluation of impact through a document analysis, we mostly used publicly available documents that are defined in the project application as concrete products. These include the cluster policy recommendations formulated (IFP Final report 2011) and the yearly status reports (IFP web page). Next to this written material we have analysed the website that has been launched. In addition, information from interviews and written answers to interview questions have been used to complement the written material with assessments from stakeholders participating in the project (Manuel Birnbrich, Vest-Agder County Council, Coby Hoogkamp, province of Friesland, Henning Laursen, Region Midtjylland and Ulrik Thomassen, Region Midtjylland).

Territorial Impact

The project has realized geographical renewable energy potential within the participating areas as well as realized benefits stemming from cooperation and spatial integration:

- Harmonised compilation of key statistical indicators from the participating regions which are important for regional development, innovation and economic performance (e.g. population, employment, education, economy)
- Business to business meetings leading to new contacts between businesses at a transnational level (WPC Cluster Development)
- Development of new business networks like the Northern Netherland Offshore Wind network, the EVA network in Germany and the tender network in Agder. All oriented at creating new business opportunities and markets for their associates.

According to Region Central Jutland the prime territorial impacts of the project and its sub-projects was to bring together businesses and other players to develop transnational co-operation in order to develop the supply chain in the area of offshore wind to a strong offshore wind cluster in the North Sea Region. Offshore wind clusters in the participating local regions have also been developed. These impacts were dealt with using the foresight methods to map the value chain in the offshore wind industry in the North Sea Region.

Technological Impact

Technological innovation has not been the main focus in this project. However, in the view of Region Central Jutland there is a realized technological innovation potential related to the offshore wind part of the project. Around 200 companies have been involved in the conferences and workshops arranged as part of the project. With regard to the main barriers for technological innovation in offshore wind, this project partner reported the following:

- Development of the production train.
- Learn best practice.
- Suitable and affordable vessels able to withstand current, wind, waves.
- Minimum physical requirements for ports to be a natural hub for logistic chain.
- Construction of specialised vessels to dock with the turbines.
- Industry planning for specialised maintenance vessels.
- Accommodation platforms for maintenance personnel.
- Identification of technology transfer opportunities from other industries, e.g. onshore wind, oil and gas, automotive.
- Accelerate development/test facilities to validate design optimisation and invest ability.
- Develop light and cheap jack-up for maintenance.
- Develop condition monitoring systems (prevent is better than cure).
- Improved planning of operation and maintenance activities.

Policy Impact

The following are benefits stemming from organisational innovation in the project:

Policy recommendations:

- A review of the policy instruments that public authorities have for clusters of businesses and institutions and an analysis of the application of policy in the North Sea Region.

Web site:

- A website was established; www.foresightplanning.eu. Presentations, meetings and project information are available.
- An Online Tool Box was established; www.netvibes.com. Contains information on methods used and practices used, for Innovative Foresight Planning.

Publications:

- Publications of academic reports through cooperative partners (NIBR, IRIS, Helmut Schmidt University Hamburg)
- WP-B developed the IFP generic model, a “five step generic model for foresight planning”, introduced by NIBR (Norwegian Institute of Urban and Regional Research).
- Roll ups and brochure/flyers has been produced. These are at the disposal for all regions.

Newsletters:

Only one newsletter is currently available at the website (the first). This has a focus on project start-up issues.

Conferences:

- A series of annual conferences and workshops have been arranged.
- One conference with main focus on cluster policy, cluster development and foresight planning was arranged.

With regard to policy impact of the offshore wind part of the project and learning related to this, Region Central Jutland point out the following:

- Coordinated planning of grid networks – master plan to include states, regions and companies.
- Easy installation of EU super grid for easy accessibility for companies.
- Aim to connect the areas with the greatest renewable resources to the major conurbations covering wind, wave, tidal and hydro.

This partner confirms that besides having an impact on spatial development and technical innovation, it also reached policy innovation. Moreover, they confirms that what they have reached in terms of innovation (both territorial, technical and at the level of policy) has moved beyond the group of actual participants in the project.

Region Central Jutland think that current policies or policy frameworks (including legislation at federal/national or European level) need to change and with regard to the North Sea Region INTERREG 2014-2020 programme they suggests the following changes based on the experiences in the offshore wind part of the project:

- Establish European standards of training.
- Establish the capacity for training.
- Establish a common trained labour pool – move between projects.
- Develop FPAL/Achilles beyond oil and gas for international visibility of supply chain capability.
- Communication opportunities to the market, e.g. oil and gas share fairs.
- Collaborative networks for independent suppliers promoting innovation etc.
- Joint industry incubator such as Demo2000/ITF.
- Creation of HSE guidelines/standards at EU level.
- Definition of a “Basic offshore training package” recognised by industry as level 1 and certified training providers in each country.
- Company specific training recognised as level 2/3. Training providers accepted/specified by manufactures.

4.6. Project Evaluation

Composition and Strengths of the Partnership: Main findings

Strengths:

- The project involved 16 partner organisations that means that a lot of different expertise was brought in to the project and a large new network was created.
- Common interests in energy issues, especially renewable energy, but different focus of the partners regarding how energy issue should be developed in the project was pointed out as a strength.

Weakness:

- Different national policies and different public administration made it difficult to agree on issues that are more common and to develop tools that are more concrete.
- Personal changes within some of the partner organisations resulted in delays in some processes, e.g. within the governmental organisations in the Northern Netherlands contact persons came in and left the project, which made the group change too often.

Project Impacts: Main findings

- Succeeded in bringing together businesses and other players to develop transnational co-operation in order to develop the supply chain in the area of offshore wind to a strong offshore wind cluster in the North Sea Region.
- The project inspired more future-oriented thinking about regional energy policy, not only in the public sector.
- The project increased the awareness about new business possibilities within important industries in the regions.

- The network established expanded and improved both regionally and as well as internationally, e.g. leading entrepreneurs/companies were more intensively involved.
- Several positive results in the offshore wind sector were reached.

4.7. Participation in Cluster projects

IFP was a partner in the cluster project Energy Vision North Sea Region (EVNSR). The EVNSR Project was clustering the INTERREG IVB renewable energy projects. EVNSR was drawing on the value and strengths identified in the individual projects in order to increase the deployment rate of renewable energy in the NSR. EVNSR aimed to interconnect the different individual results and to amplify the successes in order to build a Renewable Energy Strategy. The project consisted of three parts:

- The creation of a stake holder platform in the field of renewable energy;
- The identification of impact factors by analysing projects;
- The definition of an interregional renewable energy NSR strategy.

According to Region Central Jutland's informants, the lead partner in Energy Vision NSR in cooperation with the North Sea Region secretariat most likely chose the energy projects contained in EVNSR. They knew the other projects because he was taking part in the cluster project EVNSR. The focus of this cluster project was on energy transition to renewable energy and business development on this area. Political, economic, social, technological, environmental and legal issues were included in the project. The partners in the cluster project played a leading role. The role of the included projects was to present the projects and to fill in questionnaires made by a WP leader of the EVNSR project.

Barriers to Implementation and Moving Forward: Main findings

- With regard to doing anything differently if possible, it has been points out that it could have been an advantage to have only one energy cluster project though the 2 cluster projects have been effective working together.
- The benefit of the cluster project has been that recommendations of energy related North Sea Region projects are collected and should be transformed to recommendations to the North Sea Region Programme 2014-2020.
- It is too early to see the other potential benefits from participating in the cluster. However, The EVNSR recommendations have been sent to the preparation group of the new North Sea Region Programme 2014-2020.
- Concerning barriers to implementation, there are several recommendations as output from the EVNSR project.

4.8. Summary

The IFP project addressed the development and application of innovative foresight planning as a tool for decision making for both the private sector and public bodies related to

business development. The tool should support business development through actively using knowledge and competence of universities, research institutes and the public sector, together with different businesses and companies to plan in an interactive manner and thereby creating a basis for innovative solutions.

With regard to an overall assessment of results, the following points could be made. Several regions reported that the IFP process led to formal establishment of networks and clusters, such as the North Netherlands offshore Wind Cluster and the Southern Norway offshore Wind Network, the Danish Security Industry (advanced technology cluster and the Stavanger Triple Helix (finance cluster). Another reported output was knowledge generation and dissemination. The overall conclusion in the final report is also overwhelmingly positive (Final report, 2011) stating that:

“The Innovative Foresight Planning project has proved highly successful in both developing a pragmatic and effective approach to Innovative Foresight Planning for business development and implementing it to provide tangible results for critical industry clusters. By harnessing focussed transnational cooperation and collaboration business to business networks have been developed and strengthened and the business development objectives of the project met.”

The conclusion of the WP-B Final Report, however, gives a somewhat more critical review with regard to how well the IFP method worked in the project. The standardisation of the working method and process – the IFP – which was a main aim in the project is said to be achieved to a limited extent. Several partners seem to have been affected by the common framework only to a limited extent, if at all. According to the report:

“A number of processes apparently have been included in the project only nominally, in the sense that they have been run fairly independently of the IFP project. The organizers and the participants of these processes seems to have lacked awareness of the IFP method and the common framework, they have not participated in project events and in some cases few attempts have been made by the partners in WP-C and D to make amends to this situation. This of course has caused impediments for WP-B’s efforts to guide these processes and not least to compare the experiences. In future project proposals, the partners should be encouraged to ensure that the processes included in the project design are actually conducted in a more integrated manner. This would strengthen the justification for organizing a cross-national project because the added value would then be higher” (Final Report 2011: 71).

This could indicate lack of motivation or of common interests among partners or inadequate organising and conducting of project activities. It could, however, also indicate that the IFP process was not the appropriate approach for the project. Foresight processes are demanding and time-consuming and at same time they often cover activities which goes into the regular mode of operations in many organisations, such as enhancing networks,

develop knowledge and capacity-building. Then the question of what is the added value of IFP processes comes to fore. An important lesson from the IFP project is perhaps that this process approach increases the awareness of the challenges related to knowledge transmission.

References

IFP (2008) Application to The Interreg IVB North Sea Region Programme.

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IFP (2011b) Innovative Foresight Planning for Business Development, WP-B Final report – 11-2011.

5. North Sea Supply Connect (NSSC)

5.1. Introduction

The NSSC project was focused on the economic performance and innovation potential of small and medium enterprises (SMEs) in supply chains in the North Sea Region. Its main aim was to increase the involvement of such businesses in transnational business networks through assisting their applications to tenders set out by large procuring companies. The project started in October 2009 and finished three and a half years later, in March 2013. Its total eligible budget was €2,766,714.00. It referred to broader frameworks, most importantly the Small Business Act (EC, 2008a) and the European Code of Best Practice Facilitating Access by SMEs to Public Procurement Contracts (EC, 2008b) of the European Commission. Within the North Sea Region Interreg IVB program the project related to Priority: 1 - Building on our Capacity for Innovation. Area of Intervention was 1.3 Building societies and the institutional capacity for innovation.

5.2. Aims and Objectives

Main objectives

Based on available initial project descriptions – especially the project applications (NSSC, 2009, 2010a), the draft communication plan (SNN/Nordconnect & NSSC) and the initial brochure to promote the project among an interested audience (NSSC, 2010b) – a number of basic characteristics of and expectations about the North Sea Supply Connect (NSSC) project can be identified. The NSSC project was focused on the economic performance of small and medium enterprises (SMEs) in supply chains in the North Sea Region. The broad definition of a target group was narrowed down to businesses that are engaged in economic segments that are concentrated in the North Sea Region, notably maritime, food and health, energy and public infrastructure industries.

The problem perception underlying the project was that the small and medium businesses in the North Sea region, when compared to SMEs in ‘large regions’ (NSSC, 2010a, p. 3), suffer from competitive disadvantages since they have difficulties to access supply chains of large procuring companies. Barriers to access were perceived to be organizational ones and emerge through foreign languages spoken, differing standards applied on international markets, impermeable business networks in place around large supply chains, difficulties that small enterprises have in finding the right contacts in these networks and a general lack of trust and confidence of single small businesses. In the project application it was noted that these barriers result in a limited access that small companies have to tenders set out by large contracting companies. The main aim of the project was to assist businesses in overcoming these barriers through providing a company register and training measures.

Expected project results

More narrowly defined project results, listed in the project application (NSSC, 2010a), were

To extend knowledge for better SME performance on NE Europe and SME supply markets:

- To analyze important SME supply markets in NE Europe
- To elaborate *guidelines for successful SME performance* on NE European supply markets.
- To establish electronic/print *company registers* (SME, OEM).
- To establish electronic tender virtual environments.

To enhance competitiveness of North Sea Region SMEs on NE European Supply Markets:

- *To develop, test and pilot implement SME training and innovation programmes.*
- To establish electronic SME innovation partnership exchanges.
- To promote business opportunities on NE European supply markets to North SME.
- To improve awareness and offer policy recommendations to promote innovative initiatives for improving SME market access.
- To establishment standards that help develop the Single European Market/European Economic Area in the North Sea Region/Baltic Sea Region for goods and services within maritime, energy and welfare technology sectors removing barriers to trade, creating new markets and cutting compliance costs.

To increase impact of regional economic innovation policy on SME involvement in NE European Supply markets:

- To establish 3 interregional cluster management organisations;
- To design interregional SME Supply Clusters as models for North Sea Region-wide multiplication;
- To build up infrastructure and services facilitating SME innovation partnerships and training;
- To organise workshops and knowledge exchange networks for SMEs and OEM procurement managers;
- To generate political support for SMEs through involvement of politicians;
- To plan the creation of a special network structure in the Energy and Public Infrastructure cluster.

To promote Northeast European integration:

- To create SME tender opportunities for North Sea Region SMEs in the Baltic Sea Region and vice versa through synergy management between the 2 parallel projects planned under the NSR and the BSR Interreg programme;

- To exchange or share cluster-specific infrastructure and services as well as training and innovation programmes between the North Sea and Baltic Sea Regions; To promote the “Northeast Corridor” as an overarching brand for the NE European supply cluster concept;
- To analyse policy aspects like the evolution of difficulties and time needed for making businesses in the North Sea Region area by supply market/sector or country.
- Offer policy recommendations for unlocking SME Business potentials and northeast market integration complementary to the already included in the Small Business Act (SBA), as a first step towards a comprehensive SME policy framework for the EU and its Member States.

5.3. Rationale for the Project

Analyzing these detailed project results on their belonging to the more general rationales that are distinguished in this case study (territorial integration, technological innovation, organizational/policy innovation), shows that the NSSC project had a predominately *organizational/policy innovation* scope. Most of the objectives related to the improvement of enabling conditions for practices and policies. Defined products were managerial tools (performance guidelines, company register, electronic tender virtual environments and training programmes), organisational structures (cluster management organisations, partnerships providing services) and, more general, policy recommendations for improved regional economic innovation policy and a comprehensive SME policy framework for the EU and its Member States.

Few of the objectives listed in initial documentations related to a territorial rationale or *territorial integration*. This notion is confirmed by the classification of localities to which the project applied. In the application form it was noted that the project is ‘not geographically delimited’ (NSSC, 2010a, p. 3). However, the project scope was deduced from a distinction of regions in the North Sea and Baltic Sea Region and large regions elsewhere (such as South East England and the Rhine Ruhr region). Another territorial aspect of the project was related to the cooperation among the NSSC project and the Baltic Supply project. The cooperation was constituted by a perception of similarities among spatial conditions in the North Sea and the Baltic Sea Region. Among (few) mentioned similarities was the high participation of SMEs in the gross domestic product of these areas. Notions on geographic patterns led to the formulation of a spatial concept. Both regions in conjunction were described as a “Northeast Corridor”. To strengthen this ‘brand’ through interregional and transnational co-operation was one of the objectives of the project. Another notion that referred to specific geographies was the notion of economic clusters in North Sea Regions and a consequent selection of economic segments under attention.

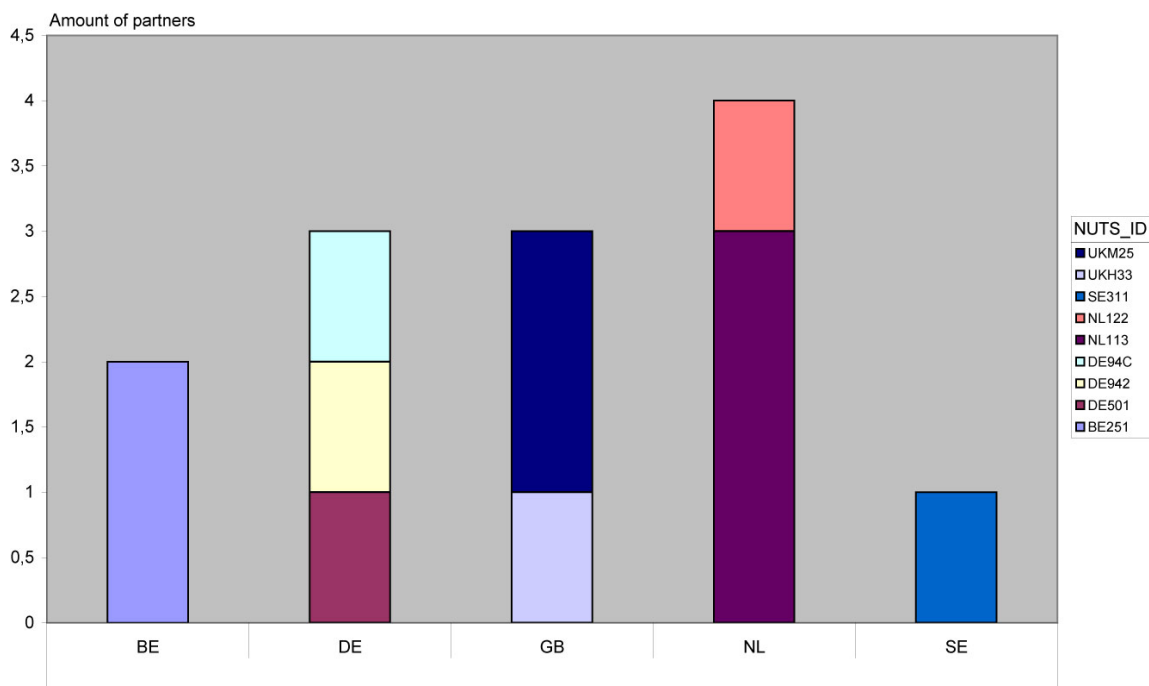
No explicit attention was given to *technological innovation*. Innovation was a central key word in project descriptions but is throughout documents associated with policy innovation.

5.4. The NSSC Partnership

General Accounts

In the North Sea Supply Connect project 13 partner organizations were involved. Ten of these fall under public law, three under private law. These three are not profit-oriented. Partners came from five countries, four from the Netherlands, three from respectively Germany and Great Britain, two from Belgium and one from Sweden. Partner organizations are located in 9 NUTS 3 regions (see Figure 5.1).

Figure 5.1: Geographic distribution of NSSC partners by countries and NUTS3 regions



Geography of the Partnership

Among the 13 partners were five organisations with a dominant interest in knowledge. Two of these have a broad interest in as well the development and dissemination of knowledge: the Edinburg Napier University and the *Hochschule Emden/Leer* (Emden/Leer College). One of the partners with a knowledge interest, the *Hamburgische WeltWirtschaftsInstitut* (HWWI, Hamburg Institute of Global Economy) is a private organization that engages in research and consultancy on economic development. Associates of the institute are the University of Hamburg and the Hamburg Chamber of Commerce. Several of their research projects are focused on the economic development of this city region. Most research refers to economic development more broadly though. Two of the organizations with a knowledge interest are concerned about knowledge dissemination mainly. Both are public organisations and both focus on the dissemination of knowledge among small and medium sized businesses. SYNTRA WEST is part of a larger educational system in Belgium and manages several schools in province of West-Flanders. Offered education relates to a very

broad range of sectors in which small and medium sized businesses are generally active. *Arvika Näringslivscenter* (Arvika Business Centre) is a co-operation among several business partners and aims to stimulate growth and entrepreneurship within region of Western Värmland, mostly by means of education.

Two partners in the North Sea Supply Connect project have a territorial interest. They are public authorities with well-defined planning competences. The scales about which these authorities are concerned differ. The Province of Groningen in the Netherlands is interested in a regional territory (albeit, seen other regions in the Netherlands and the North Sea Region, a small one). The Basildon Council is responsible for local spatial development within the Basildon borough in the UK.

The largest interest group within the project, consisting of six partners, was composed by an interest in economic development. All six partners resemble business development organisations (BDOs) and assist businesses in regions in administration, representation and knowledge exchange. Their activities in specific areas deliver a focus on specific economic segments, although segments are defined to a greater or lesser degree. The *Investerings- en Ontwikkelingsmaatschappij voor Noord-Nederland* (North Netherlands Investment and Development Cooperation) is a business-network in which approximately 100 businesses from sectors located in the North of the Netherlands participate. Their participation delivers a focus on energy, chemical industries, water technology and agrifood. The *Samenwerkingsverband Noord-Nederland* (SNN, Northern Netherlands Provinces Alliance), an alliance of the provinces of Groningen, Drenthe and Friesland, is interested in the performance of five economic segments that cluster within their territories: energy, sensor technology, water technology, agribusiness and health services for elderly people. The *MARIKO Maritimes Kompetenzzentrum* (MARIKO Maritime Competence Centre) is a network organisation with members from local authorities, private businesses and public knowledge institutes. The private limited liability company has an interest in the development of the maritime sector within the Ems-Dollart Region in Germany. The *Provinciale Ontwikkelings Maatschappij West-Vlaanderen* (West Flanders Provincial Development Cooperation) is a publicly funded business network with an interest in economic development in the province of West Flanders. Sectors under attention are energy, transport and logistics, agriculture and health services.

There were two chambers of commerce involved in the project. Also these express an interest in sectors that concentrate in the areas they are responsible for. Since chambers of commerce have broader objectives, these sectors are, compared to the ones at attention of other partners, less well specified. The *Kamer van Koophandel Noord-Nederland* (North Netherlands Chamber of Commerce) is a department of the Dutch Chamber of Commerce and consists itself of a set of sub-commissions. The Edinburgh Chamber of Commerce is part of the British Chambers of Commerce.

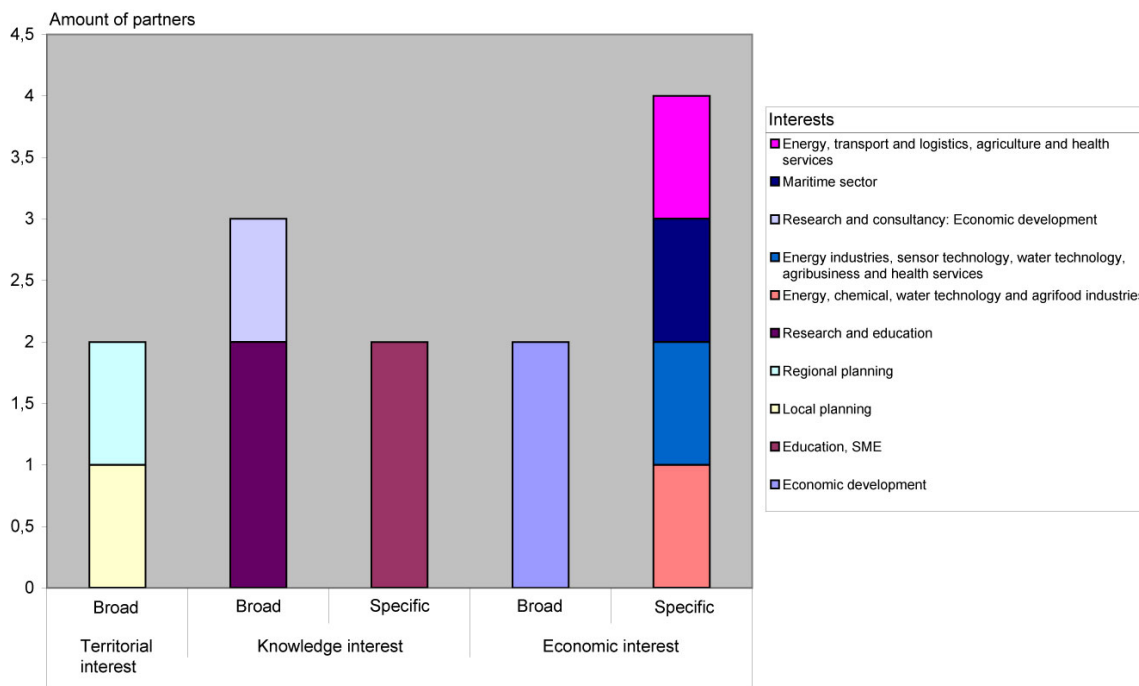
Seen the interests of all partners in the North Sea Supply Connect project in conjunction it can be concluded that the partnership was built up upon an interest in economic development. More detailed rationales within the partnership were divers tough. Based on the outcomes of the analysis that we present here there was a nearly equal spread of territorial, knowledge and economic interests within the overall partnership. Knowledge interests are sub-divided in a broad interest in research and education and an interest in education only. Territorial interests are subdivided in an interest in local and regional planning. Specific economic interests are frequently deducted from the specificity of geographies ('localized clusters of enterprises'). We note that the region of North Holland is overrepresented in the partnership. For a summary of findings, see Table 5.1 and Figure 5.2 below.

The NSSC project was initially set up as a part of the Baltic Supply project, under the 20% rule. At a later stage the two projects entered in a financial joint venture.

Table 5.1: Rationale and intra-organisational structure of NSSC partners

Rationale for cooperation	Intra-organisational structure		
	Single	Composed	
Territorial interest	Broad	Provincie Groningen - Regional planning Basildon Council - Local planning	none
	Defined	none	none
Knowledge interest	Broad	Edinburg Napier University - Research and education. Hochschule Emden/Leer - Research and education.	Hamburgisches WeltWirtschaftsInstitut gemeinnützige GmbH (HWWI) - Research and consultancy: Economic development
	Defined	SYNTRA WEST - Education, Small and medium sized businesses. Arvika Näringslivscenter Ek.För - Education, Small and medium sized businesses.	
Economic interest	Broad	none	Kamer van Koophandel Noord-Nederland - Economic development, Northern Netherlands. Edinburgh Chamber of Commerce - Economic development, Edinburgh.
	Defined	none	MARIKO Maritimes Kompetenzzentrum - Maritime economic sector. Investerings- en Ontwikkelingsmaatschappij voor Noord-Nederland - Energy, chemical, water technology and agrifood industries, Northern Dutch provinces. Samenwerkingsverband Noord-Nederland - Energy, sensor technology, water technology, agribusiness and health services for elderly people, Northern Dutch provinces. Provinciale Ontwikkelings Maatschappij West- Vlaanderen - Energy, transport and logistics, agriculture and health services, West Flanders.

Figure 5.2: Rationale of NSSC partner organizations



Partnership formation and quality of the partnership

- The initiative for the NSSC project was taken around 2007 by a single organization. This organization was earlier involved in a project carried out within the framework of the Baltic Sea Region Operational Programme and being concerned about engaging small and medium sized enterprises (SMEs) in supply chains of large suppliers. Members of the organization were impressed by the approach and took the initiative for setting up a similar project within the North Sea Region.
- Other organizations joined the initiative for several reasons. They found the approach generally appealing, were interested in the unique setup of the project as a partner project of the Baltic Sea Region or participated since the NSSC project provided a funding opportunity.
- The early partnership formed through one person addressing people in its network. Early agreements on participation were made at a conference.
- In the later stage of the formation the project steering group decided on potentially interesting partners and addressed these. The already existing partnership applied a set of principles in its search: they strived for a maximum territorial distribution, a shared interest in a set of clusters as well as a shared interest in the development and transnational innovation potential of SMEs. Respondents in interviews note that the search for suitable partners was a complicated process and took one and a half year the time. One partner thinks that it was approached because of a required geographical coverage. This partner was convinced to participate through including economic sectors at its interest in the scope of the project.

- The lead partner, a public authority, took the lead for practical reasons. The majority of partners in the project were business development organisations. These said to not have the financial means to become lead partner, which requires substantial pre-financing. One partner noted that the lead partner should have been more dedicated to the project.
- Different strength and weaknesses of the partnership were mentioned during interviews. Perceived strength included the strong and already existing personal relationships specifically of the early partnership. The familiarity among partners made fast communication and decisions possible. It was mentioned that the familiarity among the founding partners also was one of the weaknesses of the partnership. The moment that new partners joined the project more time was needed for decisions but some decisions were taken too fast for the new partners in the project.
- A perceived weakness related to the motivation of the partnership. One respondent stated that the partnership was put together because of the need for funding and not necessarily because partners fitted well together and that there was a lack of agreement on sectors and activities. Another partner noted that it is unsure if all partners understand the focus of and expectations about the project sufficiently and from the outset onward.
- A weakness mentioned was a restricted understanding of the context of a project when the application was submitted (the partnership took for example notice of the existence of a European company register at a late stage of the project).
- The geographical coverage of the project was perceived in different ways. One respondent saw it as strength of the project since nearly all regions with relevant economic clusters were engaged in the project. The large area covered increased opportunities for business relations. The point was strengthened by referring to the Baltic Supply project. This cooperation had many partners and thus delivered many business opportunities. Another respondent stated that the poor geographical coverage was a weakness of the partnership. Parts of the North Sea Region (NSR) were not represented or represented only by small organisations.
- The cooperation with the Baltic Supply project was seen in different ways. One partner thought that it was fruitful since the partnership of the Baltic Supply project was much larger than the NSSC one. It was also stated that the organizational complexity added to the project was difficult to tackle.
- A lack of involvement of companies in the project is seen by all partners as a weakness.

5.5. Project Impacts in Relation to Expected Outcomes

The impact of the NSSC project in respect to project objectives and expectations is evaluated below. In the first section the delivery and impact of project results that were defined in work packages are assessed based on publicly available documentary evidence. In

a second step impact is assessed more broadly against objectives and expectations on territorial, technological and policy innovation. The qualitative information for this analysis was acquired in interviews.

Realized project results

For the evaluation of impact through a document analysis, publicly available documents on project results that were defined in the project application were used. These include the policy recommendations (NSSC et al., 2012) and other documentation of project results available on the NSSC website, including the definition of clusters organisations active in maritime industries, food industries and energy industries in the North Sea Region and the guidelines formulated for improved tendering practices of SMEs. Next to written material, the website that has been launched through a common effort of the NSSC and the Baltic Supply project was analyzed.

In the NSSC project application a 'virtual environment' to extend knowledge for better SME performance was defined to be an important product of the project. The website which corresponds to this objective is called European Business Support Network (EBSN). It was launched in 2012. The website is a common product of the NSSC and the Baltic Supply project. In general it was difficult to distinguish the influence that partner projects had on the making and maintenance of this environment. The website gives access to several tools and databases that were defined as more detailed project results.

The *company register* (eubizz.net) allows SMEs to register and search for companies in Northern European countries by name, country and economic segment. Compared to the use of it by businesses from the Baltic Sea Region, it was at the time of the analysis underused by businesses from the North Sea Region. Selecting registered companies by a shared interest in economic segments at the attention of the NSSC project showed that few companies had registered up until autumn 2013. Some of the economic segments could not be chosen as a search criterion. These results allowed for the conclusion that the virtual business network has not yet caught the attention of SMEs in the North Sea region. We note that it was difficult to evaluate impact due to the limited time horizon we were looking at. On the EBSN website a link could be found to the Enterprise Europe Network (EEN), a database that allows small businesses to find appropriate partner companies Europe wide. That two company registers can be chosen might explain that one of them was used less extensively.

A self-assessment tool for SMEs was developed. It allows businesses to assess their performance in respect to major customer's requirements in the form of a SWOT analysis. The tool is publicly available and can be accessed via the EBSN website. Guidelines for tendering are summarized in several documents available for download. The use and impact of these tools could not be assessed through documentary evidence.

Next to these products several business-to-business meetings that were organized in the course of the project are documented (these events are also noted in activity reports). These were attended by project partners as well as companies from participating regions.

The NSSC project concluded with policy recommendation, formulated in cooperation with the Baltic Supply project. The objective of recommendations was, according to the project application, to promote innovative initiatives for improving SME market access. Six main points were extracted from experiences. Recommendations were to avoid duplication of services offered to SMEs, to prolong the functionality of EBSN website, to promote direct match making events, to develop local or regional one-stop-shops, to promote cooperation among projects such as the cooperation among the NSSC and the Baltic Sea project and to maintain a stronghold for SME internationalisation in the Baltic Sea Region Strategy Action Plan.

Project Evaluation

Below the NSSC project is evaluated from the perspective of participating project partners. Three interviews were conducted with representatives from involved organisations. Interviews were semi-structured, covering several issues, including the project formation, the quality of the partnership, territorial, technological and policy impact and an evaluation of the cluster approach. The NSSC project has participated in the Energy Vision North Sea Region (EVNSR) cluster project.

Territorial Impact

In general, respondents in interviews stated that the NSSC project had no territorial scope. When being asked about the economic cluster approach employed in the project and economic clusters that were at the attention of the project more specifically all respondents agreed that these were deducted from a concentration of specific industries in regions and that therefore the project had an implicit territorial aspect though.

Partners had different views and expectations related to the cluster approach in the project. One partner stated that the project was not focused on improving the economic performance of SMEs in distinct economic segments in regions but that the defined clusters functioned as a pilot context for pilot projects to test an approach to increased involvement of SMEs in transnational cooperation. For another partner the involvement of businesses from the distinct economic sectors at its interest was a core objective and motivation to participate in the project.

All respondents in interviews agreed that the definition of clusters at the attention of the project delivered difficulties. Reasons were various. One difficulty was caused by a variety of cluster definitions across regions. It was for example difficult to make a distinction among the off-shore and the maritime cluster. It was also perceived to be difficult to incorporate all sectors at the interest of different partners in the project. One respondent stated that not enough sectors were included and that this delivered a serious threat to the project. A third

notion on difficulties referred to the institutionalization of cluster approaches in regions. One partner explained that organisations representing industries were when the project was carried out at different stages of formation. In some regions they were in place already, in some they were emerging, in some regions there were no initiatives at all. This made transnational cooperation building up on a cluster approach difficult. The partner stated: 'Regions that get engaged in a transnational project such as the NSSC project should do their homework first. There should be an organization concerned about economic clusters before this region gets involved in a project that takes such organisations for granted.'

The territorial impact associated with the performance of economic clusters in regions is generally perceived to be low. A respondent explains that the effort to geographically localize ('map') cluster organisations turned out to be superfluous during the project since a similar database on the level of Europe was taken account off. Another partner stated that the cluster approach became less important in the course of the project. 'Contact among single companies became more important.'

Technological impact

A technological impact of the project was not discussed in interviews since the project had no technological scope.

Policy impact

Partners that were interviewed generally agreed that the expected impact of the NSSC project could best be allocated under the header 'policy impact' (we note that respondents in interviews were made aware of the broad definition of policy impact that was used in the research).

The problem perception underlying the project was strongly confirmed by partners. They agreed that the main barrier to transnational cooperation of SMEs is their lack of awareness of transnational business opportunities. A statement of one of the partners was representative of the position of others: 'SMEs don't have the aspiration to internationalize, they are busy with running their own businesses and they don't see the opportunity. The challenge is to raise their aspiration, to help them take a first step to access new markets outside of their own ones.'

Additional expectations on policy impact mentioned in interviews related to business development organizations (BDOs). One partner stated that 'regional development agencies (in different countries) are less well connected than one would think and bringing partners together is more difficult than one would expect. Personal contacts are very important.' One barrier to transnational cooperation among BDOs that was mentioned was the attention that business networks give to businesses in specific territories, partially obligatory (chambers of commerce). A partner representing a public authority noted that the project

resembled its objectives well. It was perceived as an opportunity to increase transnational cooperation via the participating business development networks.

On questions about the tangible impact of the NSSC project (increased involvement of SMEs on transnational markets) partners reacted generally remote. Impact that was mentioned consistently referred to involvement of single, identifiable companies. One partner stated that 'some good business-to-business relations were established in the course of the project' but more were expected.' Other partners mentioned distinct examples of companies that laid contacts to companies in other regions. There was broad agreement among partners that during the project it turned out that it was more difficult to engage companies in transnational business networks than expected. One respondent stated that 'there was a lack of involvement of companies in the project. Their engagement was crucial in achieving project goals and was specifically requested by the North Sea Region Programme Secretariat but it was difficult to contact them. Finally approximately 100 companies per region could be contacted.' It was also mentioned that impact in the form of new cooperation among SMEs was difficult to take account of and to follow up. There is broad agreement among project partners that contacts among single companies were largely laid at the business-to-business meetings. These meetings were broadly perceived to have been most useful in 'match-making' (see also policy recommendations).

The company register found little mentioning by partners. One partner stated to 'not have understood its point fully'. Another partner acknowledges that, when the project started, there was no awareness of a similar virtual environment on the level of Europe. A lack of awareness of relevant activities and instruments (such as database, company register) on the level of Europe was more generally described as a weakness of the partnership. Databases that were produced by single partners were perceived to be useful though. They are currently used by a partner organisation to identify businesses on direct inquiries. The tools for self-assessment and tendering procedures were, at the time of the analysis, used within partner organisations. One partner said that a pilot project on the use of the self assessment tool is on the way and that its organisation had run several workshops and events on the use of the guidelines for tendering. These workshops were advertised on the NSSC website, but there was little participation from businesses from other regions; the assumption was that it is too far travelling for these businesses for such events. Another partner explained that tools are currently used by its organisation to assist in single business cases. That knowledge about different instruments for assistance that has been gained in the course of the project allowed for a custom-fit application of them. The partner stated: 'To support regional cooperation is our daily business but approaches to transnational cooperation are new for us. We have learned'. This partner also stated that the 'idea' behind the project is still influential, also on new initiatives taken by its organisation.

Another impact of the project that was mentioned was an increased trust within the partnership. The NSSC project was perceived to have contributed to the sustainability of a

transnational partnership concerned about SME performance. Specific mentioning found the cooperation among the NSSC project partnership with the Baltic Sea partnership. One partner stated that cooperation among regions in Europe has increased. As an indication cooperation among organizations of the Baltic and the Black Sea region was mentioned: 'Organizations in the Black Sea region took account of the NSSC and the Baltic Supply project and formulated a similar project approach.' There were also learning effects about differences and similarities among the two regions (Baltic Sea Region and North Sea Region).

Summary: Policy impact/learning

An important objective of the case study is to understand how insights generated by projects have led to learning processes. For this purpose it was analyzed if findings have remained within partner organisations represented by individuals during project meetings and activities and/or if insights have spilled over to other organisations at different levels, notably local, national and transnational ones.

When summarizing impact that the NSSC project had, it can be concluded that tangible impact in the form of involvement of SMEs in transnational business networks was remote. In the course of the project it became apparent that barriers to involvement that were mentioned in applications were more difficult to overcome than it was expected. This notion has shifted the focus of the project from the involvement of groups of SMEs (involved in distinct economic clusters) to the involvement of single companies. Also other, additional barriers came to the foreground. A complex set of existing instruments for SME support at different levels was taken account of and it turned out that business development organisations can less easily act across national boundaries than expected. A specific barrier emerged through the cluster approach that was employed in the project. It became clear that consensus about economic clusters at the attention of the project was difficult to maintain. Different expectations that types of organisations attached to the approach became apparent.

While impact has not spilled over to many single companies yet, there is clear evidence that partner organisations participating in the project have improved their practices. The project has led to a greater awareness of barriers to transnational cooperation among SMEs. The expectation that barriers can be overcome through a set of managerial tools and instruments at the hand of SMEs only has been left. All organisations stated that a network to facilitate personal contact (business-to-business, match making) and assistance (such as a custom-fit application of tools) is important to make SMEs aware of transnational business opportunities and help them take a first step towards these. Ties among partner organisations, including partners from the Baltic Sea region, have become more sustainable. Although a partner stated that such outcome is not accountable, it is, seen the complexity of the transnational NSSC partnership, classified as a form of learning within projects here.

5.6. Participation in cluster projects

The NSSC project has participated in the Energy Vision North Sea Region (EVNSR) cluster project.

- The lead partners in the NSSC project was approached by people who took the initiative for the EVNSR cluster. The NSSC partner offered to make one of the products of the NSSC project available and useful for the cluster project: the database on NSR companies. The partner stated that this dataset was perceived to be of importance for the cluster project since it registered businesses that are engaged in renewable energy market structures in the NSR. This type of engagement was also perceived to be of the interest of the NSSC partnership. Via the involvement of businesses, the energy vision could have become a platform for companies.
- This offer was accepted by the EVNSR partnership; for this practical reason the NSSC project became part of the cluster project. In the course of the EVNSR project the database was not used though. A partner stated: 'The engagement offered by the NSSC partnership was not embraced.' Reasons for this were unclear to the respondent in interviews.
- One partner in the NSSC project representing a public authority stated that it was generally interested in participating in the formulation of an energy vision. 'Such an effort is at the core interest of a regional public authority.' The notion that cluster projects are specifically at the interest of public authorities was shared by another partner. A third partner stated that 'such a vision is at the interest of universities or research institutes'.
- The EVNSR cluster project was by one partner perceived to be generally well focused and it was perceived to be 'a sensible decision' to construct a vision on renewable energy for the North Sea Region.
- Partners of the NSSC project took little account of the course of the EVNSR cluster project. Reasons for this were different. One partner stated to have felt responsible for the operational running of the Interreg NSSC project but not for the making of an energy vision. One partner has changed job after the conclusion of the NSSC project. One partner stepped out of the cluster project partnership at an early moment of formation (see below).
- One partner stated that participation in the cluster approach was felt to have been shaped by opportunistic reasons more generally. 'Organisations have participated in clusters to prolong project funding.' A partner stated that 'it is important to make sure that the right partners participate in a cluster. It is important that the cluster project is relevant for them.'
- One partner involved in the NSSC project has at an early moment of the formation of the EVNSR cluster project partnership considered to become involved. The organization decided to not participate since it perceived the funding made available, the obligations attached to it ('travelling to conferences', 'time for management') and

the projected output ('not worked out well enough', 'not a priority of the organization') to be not in balance. 'I can't justify my time travelling around and just talking. Involvement in projects needs to deliver specific outcomes.'

- One partner organization was at the time that interviews were conducted involved in another project with a similar scope as the EVNSR (Growing Renewable Energy Applications and Technologies; the project is part of the Interreg IVB projects in the NWE region).

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6. Climate Changing Soils (Biochar)

6.1. Introduction

The North Sea Region Interreg IVB project Climate Changing Soils (BioChar) focused on a technology to capture CO₂ from urban, industrial and agricultural biomass residues and reuse this in soil amendment. The technology, also called Biochar, leads to a reduction of CO₂ emissions into the air and is therefore positively associated with climate change mitigation. Adding the product of capturing processes, a form of charcoal, to agricultural grounds can simultaneously increase the fertility of soils and the productivity of agriculture. The broad aim of the BioChar project was to investigate and promote the Biochar strategy in a European context. The project started in October 2009 and finished four years later, in October 2013. Its total eligible budget was € 4.865.615, 00. It referred to the post-2012-Copenhagen agenda of the UN Framework Convention on Climate Change (UNFCCC). The United Nations Convention to Combat Desertification (UNCCD) had submitted a proposal to include Biochar as a CO₂ mitigation and adaptation technology to be considered in this framework in 2009. Within the North Sea Region Interreg IVB program the project related to Priority: 2 - Promoting the Sustainable Management of our Environment. Area of Intervention was 2.3 Adapting to and reducing risks posed to society and nature by a changing climate.

6.2. Aims and Objectives

Main objectives

According to the project application (BioChar, 2009), the problem perception underlying the BioChar project was that knowledge about Biochar in the North Sea Region was scarce and scattered. The Biochar technology has been applied in several regions in the world (US, Canada and Australia) and gained recognition in international debates on climate change but did around 2009 not catch sufficient attention among potential suppliers of feedstock, producers and end-users of Biochar in the North Sea Region yet. This problem perception led to the formulation of a set of main objectives of the project, including the

- Joint development and implementation of knowledge and methodological standards on Biochar feedstock, logistics, production, Biochar characterisation and environmental impact assessment.
- Joint development and implementation of methodological standards on Biochar applications for soil quality and fertility improvement, for soil remediation and for carbon capture and storage.
- Joint development and implementation of a Biochar knowledge dissemination strategy for authorities, producers and end-users of Biochar and a general public, raising awareness and building confidence in Biochar applications.

Expected project results

In the definition of work packages and on web pages related to the project and project partners these broader objectives were broken down into a list of sub-objectives on impacts and project results:

A joint Biochar strategy for knowledge dissemination to promote the production and utilization of Biochar, through the

- Organization of Biochar transnational conferences,
- Establishment and maintenance of an international web site with national language functionality,
- Distribution of information media,
- the setting up of transnational and national steering groups and transnational focus groups
- Setting up of National Biochar Competence Centres.

The formulation of a Biochar production and joint development strategy through

- Testing feedstock logistics (availability, sustainable production, utilization, cost and quality) across the North Sea Region
- Testing current and emerging Biochar production processes, their development and optimisation, management, energy efficiency and benefits and constraints across the North Sea Region
- Life cycle analysis (LCA) of Biochar production and application from selected feedstock and processes to assess Biochar contribution to EU carbon reduction obligations (carbon stocks, energy and finances)
- the joint development of standard protocols to determine Biochar performance to its potential use as carbon capture and soil storage (CCSS), soil improver and/or bio-energy source (Biochar and soil assessment protocols)
- Establishing Biochar as an effective and accepted conditioner for the improvement of soil quality, crop production and soil remediation; establish Biochar as an accepted CCS and make credits tradable on the carbon market, position BC production as alternative for biomass waste disposal.
- Through the demonstration of applications.

6.3. Rationale for the Project

When reviewing the objectives above on their belonging to the more general rationales that are distinguished in this case study (territorial integration, technological innovation, organizational/policy innovation), we note that objectives referred to technological and policy innovation mainly. *Technological innovation* was expected from an alignment of methodological standards to improve a general understanding of the technology and an analysis of conditions for Biochar applications in North Sea Region countries. An important

role in the generation of scientific knowledge played the testing grounds, distributed across several countries in the North Sea Region.

Policy innovation was expected from insights into economic benefits (associated with the trading of carbon capture certificates) and agronomic benefits of Biochar applications. An active dissemination of insights, underpinned by field trips and the demonstration of best practices, was expected to inform first a greater awareness, understanding and acceptance of the technology and second, on the long run, policy change in the form of commonly accepted standards for applications. The most clearly defined policy goal was to make credits related to Biochar applications tradable on the European carbon market. An important role in the dissemination of knowledge among practitioners and policy makers and therefore a greater awareness of the potentials of the technology was given to the national competence centres. In the project summary by the North Sea Region Programme (ERDF, 2009) it was noted that these new institutions should become focal points in promoting a Biochar strategy in countries. On the project website it is noted that the BioChar project will also ‘contribute to national discourse on Biochar in each of the seven participating countries around the North Sea. In countries where no sophisticated platform for discussion on Biochar related topics exists the project aims to create such a platform.’

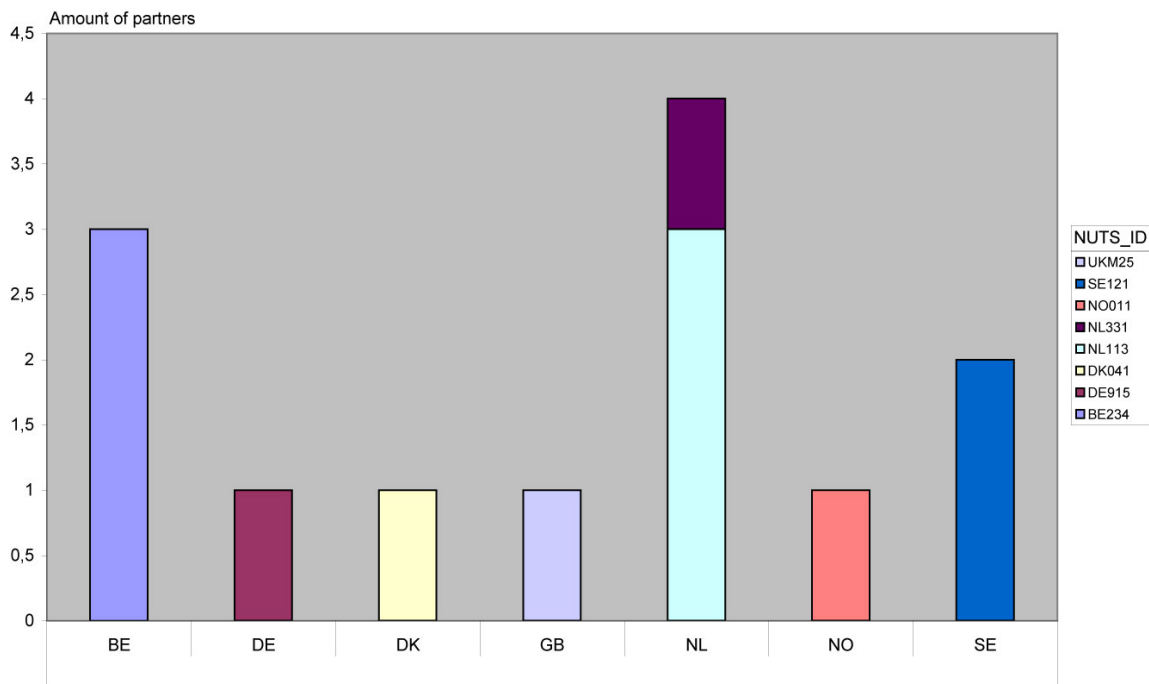
A *territorial scope* of the project remained largely undefined. In the application forms it was noted that the project starts off from a classification of regions in urban and rural ones and the North Sea Region was portrayed to consist largely of rural regions. Besides this notion (and few references to spatial characteristics in regions that relate to the production and use of Biochar and that might be uncovered in research) there were no references made to territorial change in project descriptions.

6.4. The BioChar Partnership

General Accounts

In the Biochar project 13 partners participated. According to the project application there were two partners that fall under private law, one is profit oriented and one non-profit oriented. 11 partners fall under public law and have no interest in profit. Partners came from seven countries, four from the Netherlands, three from Belgium, two from Sweden and one from respectively Germany, Denmark, Great Britain and Norway. Partner organizations were located in 8 NUTS 3 regions (see Figure 6.1).

Figure 6.1: Geographic distribution of Biochar partners by countries and NUTS3 regions



Geography of the Partnership

When distinguishing project partners by their interests, it appears that most of them have an interest in knowledge. Among the ten organizations with knowledge interests there were nine partners that are interested in research only and are concerned about specific research fields. These included the Universiteit Gent (University of Ghent, concerned about bio-systems engineering), the EV Institute for Agricultural and Fisheries Research, the Riso DTU National Laboratory for Sustainable Energy, the BioForsk Norwegian Institute for Agricultural and Environmental Research, the Department Earth Sciences at the Uppsala University (LUVAL; concerned about water, climate, ice, atmosphere, water exchange processes, wind energy and geohydrology), the Department of Microbiology at the Sveriges Lantbruksuniversitet (SLU, Swedish University of Agriculture), UK Biochar Research Centre at the Edinburgh University, the Fachgebiet Nachhaltige Energie- und Umwelttechnik (NEUTec, Department of Sustainable Energy and Environmental Technology) at the Hochschule für Angewandte Wissenschaft und Kunst (HAWK, College for Applied Sciences and Art) and Alterra B.V.. Alterra B.V. is a foundation of the University of Wageningen with an expertise in integral and sustainable approaches to ecology, water, soil, economic performance and food provision. One partner in the Biochar project, the Nutrient Management Institute, is a private organisation which has above an interest in research, an interest in profit. It is a consulting firm, specialized in soil quality and soil management. None of these research institutes expresses a specific interest in areas.

There were two public authorities with a broad territorial interest participating in the project: the province of Groningen (lead beneficiary) and the Flemish Region. Both authorities hold an important mandate for planning on the regional scale.

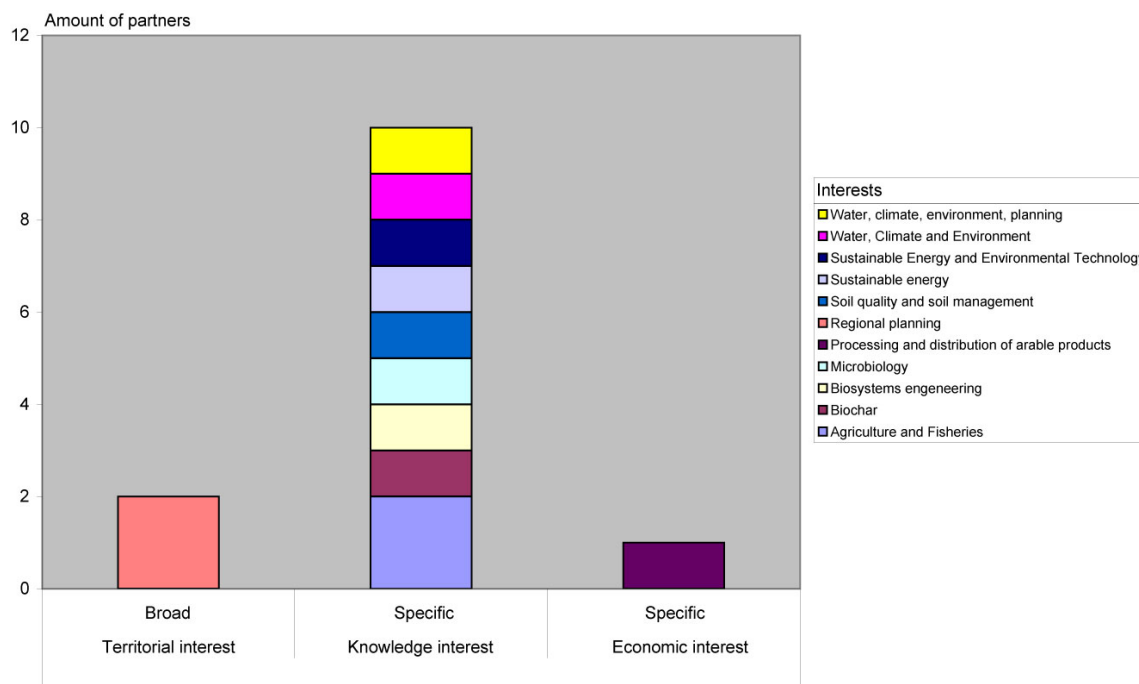
The Productschap Akkerbouw (Product Board Arable Products) is a public body with an economic interest in agriculture. *Productschappen* (Product Boards) in The Netherlands are boards that are established by and closely related to employers and employees organisations of distinct industries (therefore categorized as a composed organization). Dutch law provides product boards with some legal capacity; they can establish binding rules to control and support the production and use of specific goods. The Product Board Arable Products is interested in the production, processing and distribution of arable products.

Considering the interests and organizational structure of all partners in conjunction it can be concluded that knowledge interests in the BioChar project partnership prevailed. Knowledge fields at the interest of most partners are specific and aligned around the keywords agriculture, energy and sustainability. The partnership also largely consisted of organisations with a low degree of complexity. Except of the Product Board Arable Products none of the partners is composed of several organizations. Most of the partners have no specific areas at their attention. The ones that give attention to specific territories share an interest in planning on a regional scale (the region of Flanders can also be classified as supra-regional). Seen the marginal interest of the partnership in geographies, it can be described as one that was concerned about 'virtual networking' around a specific issue. For a summary of findings, please see Table 6.1 and Figure 6.2 below.

Table 6.1: Rationale and intra-organisational structure of Biochar partners

		Intra-organisational structure	
Rationale for cooperation		Single	Composed
Territorial interest	Broad	Flemish Region - Regional spatial planning, Flemish Region (BE, NUTS?) Provincie Groningen - Regional spatial planning, province of Groningen (NL, NUTS?)	none
	Defined	none	none
Knowledge interest	Broad		none
	Defined	EV Institute for Agricultural and Fisheries Research - Research, Agriculture and Fisheries Riso DTU National Laboratory for sustainable energy - Research, Sustainable energy Uppsala University, Department Earth Sciences, LUVAL - Research, Water, Climate and Environment, Ice and Climate, Atmosphere Water Exchange Processes, Wind Energy and Geohydrology Sveriges lantbruksuniversitet (SLU) - Department of Microbiology - Research, Microbiology Alterra B.V. - Research, water resources & climate change, spatial planning & ecology, green economy & biodiversity, soil, water & food security Nutrient Management Institute - Research and consultancy, soil quality and soil management UK Biochar Research Centre, University of Edinburgh - Research, Biochar Fachgebiet Nachhaltige Energie- und Umwelttechnik, HAWK, Hochschule für Angewandte Wissenschaft und Kunst - Research, Sustainable Energy and Environmental Technology Universiteit Gent - Bio-systems engineering	none
Economic interest	Broad	none	none
	Defined	none	Productschap Akkerbouw - production, processing and distribution of arable products, The Netherlands (NL)

Figure 6.2: Rationale of Biochar partner organizations



Partnership Formation and Quality of the Partnership

- The Biochar partnership was initiated by one single person who was strongly convinced of the potential of the technology. This conviction fell, at the time that the partnership assembled, on fertile grounds. A respondent in interviews notes that, in 2009-2010 Biochar was an upcoming issue that caught the attention and interest of a broad range of parties.
- The Interreg IVB North Sea Region Programme was seen as an opportunity to acquire funding for the investigation of a technology that was from the outset perceived to be at the interest of a broader transnational European.
- A respondent in interviews mentions that the partnership had to be assembled from ‘scratch’. Around 2009 there were no projects in Europe with a similar scope. Potentially interested partners (scientists) were addressed on European conferences. At one of conference three partners assembled. These partners applied a ‘diffusion approach’: they addressed others in their networks to become engaged. The final partnership was assembled during a second transnational conference.
- The lead partner, a public authority, was chosen for financial reasons.
- Respondents in interviews acknowledge a concentration of knowledge institutes in the partnership. Asked for strength and weaknesses of the partnership one respondent notes that this constellation ‘turned out’ to be ideal in retrospect. Another respondent mentions that the organisations with other than knowledge interests were well embedded in relevant European organisations.

6.5. Project Impacts in Relation to Expected Outcomes

Based on documentary evidence and two interviews held with representatives from participating organisations the realization of impact in respect to project objectives and expectations is evaluated below. In the first section the delivery and impact of project results that were defined in work packages are evaluated based on documentary accounts. In a second step impact is assessed more broadly against objectives and expectations on territorial, technological, policy innovation. The qualitative information for this analysis was largely acquired in interviews. Some statements in interviews were supported by documentary evidence.

Project results

In the BioChar project application a broad range of project results were defined. These related to main objectives, notably methodological standards for Biochar production, methodological standards for Biochar applications (specifically related to carbon capture and soil storage) and a joint Biochar strategy for knowledge dissemination.

To improve methodological standards for Biochar production several studies have been carried out. Next to these there were seven field trials demonstrating the effect of Biochar across different soil types and North Sea Region climate regimes. For the field trials a common protocol was developed. Results became available in 2012. They demonstrated a limited effect of Biochar to crop yield. Other research investigated the ability of Biochar applications to mitigate water contamination from pesticides, the role of Biochar in modifying soil properties and research into the influence of Biochar on soil-root interactions. Research results have been published in several academic journals.

Methodological standards for Biochar applications were investigated through research into ways how a process of producing Biochar and applying it to soil could generate carbon credits. Research has resulted in insights into barriers for trading such credits and recommendations to overcome them. Another research into Biochar applications has focused on the farmer's perspective on Biochar strategies. For this purpose several application cases have been investigated. Results gave insights into uncertainties that are currently felt by end user's of Biochar and that obstruct applications. The project partnership also laid contact to a Swiss company that sells machinery for the production of Biochar. Several sites where the machinery is in place have been visited.

An important objective of the BioChar project was the setting up of a joint strategy for knowledge dissemination to promote the production and utilization of Biochar. The project cooperation has produced a range of items that relate to this objective. Most of these are addressing an academic audience. Several articles in academic journals were published by members of the project partnership. Two conferences were held (First INTERREG-NSR Biochar conference, September 2011 in Edinburgh, UK; Second INTERREG NSR Biochar Conference, September 2012, Berlin, Germany) and an end conference is currently

announced. A book publication, summarizing outcomes of the project, is on the way. The publication is intended for a more mixed audience, including policy makers. According to minutes of project meetings, the book will give a comprehensive overview on research findings and conclude with recommendations on policies. Newsletters are published monthly since December 2012. The content of the series largely consists of summaries on scientific findings. Some contributions focus on institutional perspectives.

Intended products that relate to knowledge dissemination among a broader audience include the National Competence Centres. These were expected to spread scientific knowledge among practitioners' communities in countries. Most established centres were set up and are maintained by knowledge partners in the project. The centres take different forms in countries. In Norway, members of the BioForsk Norwegian Institute for Agricultural and Environmental Research created a website that is called Norwegian Biochar Competence Centre. In 2011 the institution organized a small conference on Biochar application in Nordic countries. In the UK, members of the UK Biochar Research Centre (UKBRC) at the Edinburgh University run a blog that provides a comprehensive overview of all activities related to the BioChar project. This website is strongly linked to other UK and European foundations concerned about the technology. In the Netherlands the Product Board Arable Products has taken a lead in setting up co-operation around Biochar implementation. The Dutch ministry of Economy, Agriculture & Innovation participates in this partnership. About Danish and Belgium competence centres, information could not be found.

The website that relates to the BioChar project is currently, compared to a multitude of other websites on Biochar, relatively inactive. Its relation with other websites (and the institutions behind these) is unclear. However, many websites related to Biochar in Europe refer to the Interreg IVB programme project BioChar via the BioChar site. An example is the web site European Biochar Certificate, issued by the Biochar Science Network Switzerland. In references to the BioChar project: 'The Interreg Project on Biochar is an important partner of the European Biochar Certificate and participates in its regular up-dating process.

Territorial, knowledge and policy impact

Below the BioChar project is evaluated against expectations expressed by project partners. Two interviews were conducted with representatives from involved organisations. Both respondents were in applications named as project managers. Several other organisations were approached for interviews but did not respond to the request.

Territorial Impact

It is noted above that the BioChar project had, seen the project application, no clearly defined territorial scope. In interviews some expectations were mentioned though. One respondent states that at the time when the project partnership was assembled policy makers were searching for practical ways to contribute to climate change mitigation

objectives, set out in broader policy frameworks (Kyoto, Copenhagen). The Biochar technology was perceived as an opportunity in this context. The technology was also seen as a plausible way to improve the economic conditions of farmers in regions, specifically through allowing them to trade with carbon capture certificates.

The impact of the BioChar project in respect to these expectations is acknowledged to be low. As described in more detail below, the project has brought uncertainties about the technology to the foreground. In combination with a breakdown of the market for carbon capture certificates these doubts have obstructed the realization of territorial impact. CCS strategies were seen to be important, also as a way to motivate the involvement of farmers. The decrease of the CO₂ value in emission trading systems took away this important building stone for territorial strategies. Policy makers also note that the Biochar technology can be an important ingredient in territorial strategies in the future. They remark that 'to have any form of serious territorial impact the widespread market introduction of Biochar is a necessity.'

Technological impact

The largest impact generated by the BioChar project is related to technological innovation. Research carried out (specifically on test sites) led to several analytical insights. Summarized by respondent in interviews they brought uncertainties about the toxicity of Biochar feedstock to the foreground and a restricted added value of Biochar to the fertility of yield crop in regions in the North Sea region. These insights have led to a large consensus among project partners that there are several fundamental questions about the Biochar technology that require answers before market introduction. There was agreement that the focus of the project should shift to these research questions, the most important of them being concerned about methodological standards for the testing of Biochar applications. Partners of the BioChar project have published in international journals and currently participate in several European and global Biochar knowledge networks. The most tangible impact can be seen in the setting up of the European Biochar Research Network under the European COST action framework. Direct impact of the BioChar project on this formation is difficult to trace. It can be noted that partners from the project cooperation participate in the network and that references to the BioChar project can be found.

Policy impact

As mentioned above, policy impact (in the form of standards for Biochar applications) was increasingly seen being outside of the scope of the project. An awareness of the dangers and restrictions has informed the strategy of policy makers in regions though. One policy maker notes that 'insights into the restricted added economical and agronomical value of Biochar has also influenced the way how farmers are currently approached on the issue. In the short term farmers in the North Sea Region will not be advised to apply the technology.' The idea that Biochar has potential remained but it became clear that a careful and stepped approach to implementation is required.

Summary: Policy impact/learning

An important objective of the case study is to understand how insights generated by project partners within projects and how they spilled over to other organisations. When reviewing the different impacts that the BioChar project had it can be concluded that important analytical insights were generated. Respondents in interviews agree that there was an overly optimistic perception about the Biochar technology when the project started in 2009. In the course of the project this perception changed. Insights into a restricted economic and agronomic value of the technology as well as insights into potential dangers incorporated in applications, made that enthusiasm decreased. Room for more careful considerations came available.

Insights generated during the course of the project have changed (sharpened) the focus of the project. More fundamental knowledge questions, specifically relating to methodological standards for testing production and applications became central issues. Objectives related to (territorial and) policy impact became secondary ones or were left. That there was agreement among partners on the change focus indicates that learning within the project has taken place.

Insights generated in the course of the project have also influenced the way how communication was approached. They informed two different ways of knowledge dissemination. Methodological standards for testing application are at the interest of a broad, even global, knowledge community. Analytical insights found their way into broader knowledge networks in a seemingly easy way. The most tangible impact can be seen in the setting up of the European Biochar Research Network under the European COST action framework.

When looking at the dissemination of insights in other than knowledge networks there are other conclusions. Project partners report in interviews that they tried to have information 'remain within the project'. They perceive Biochar still as a promising strategy in the context of climate change mitigation and as a way to increase the economic position of farmers in Europe in the future. To restrict negative news about the technology was seen to be important.

6.6. (Non) participation in cluster projects

The BioChar project did not become part of a cluster project. Reasons for this mentioned in interviews are summarized below.

- To not have participated in cluster projects is not seen as a missed opportunity since the cooperation that was set up under the COST action framework is perceived to be currently more relevant for developing the Biochar approach than a transnational cooperation under the North Sea Region Programme.
- There was an attempt by a partner in the BioChar project to participate in the setting up another cluster project. After having submitted a proposal as a response to the 2nd

call efforts were dropped since making an application took a lot of time and there was too little positive feedback.

- There is a general perception that project such as the Biochar project (focused on a specific technology, focused on research) is not suited for a cluster approach. The cluster approach is perceived to be more concerned about sharing practices and learning from each other. It is however also noted that the Biochar project might fit into a cluster approach that is concerned about soil enhancement in European regions more broadly. Within such a framework it could be investigated as one of several strategies.
- There is general doubt about restricting a cluster approach to the boundary of the North Sea region. One respondent acknowledges that the North Sea region can be seen as an 'Ecoregion' since regions around the North Sea have the same maritime climate and nutrient ingredients are similar. The Biochar project is perceived to have been fruitful in exploring these conditions. The boundaries are also perceived to be 'random' and it is felt to be important that they are handled in a flexible way though. Flexibility is seen to be specifically important when insights into specific regional conditions and strategies are to be combined with general knowledge. The partnership under the COST action framework is perceived well suited for this task.

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7. BlueGreen Coastal Energy Community (EnerCOAST)

7.1. Introduction

Bioenergy is a key contribution to attaining the EU's 20/20 renewable energy targets. The "BlueGreen Coastal Energy Communities" - EnerCOAST project (October 2008 – September 2012) applied proven supply chain management tools to the underdeveloped bioenergy market in a North Sea regional context. The project's focus was set on a range of regional bioenergy market initiatives and their transformation into sustainable value chains. Supply chain management is an integrative approach to deal with the planning of the material flows from biomass suppliers to bio-energy end-users.

The EnerCOAST working groups in England, Norway, Sweden, Denmark and Germany engaged in location-specific regional networks for the generation and use of bioenergy. Their work applied a common comprehensive economic model, proceeding from a location's natural conditions to an improved collaboration of energy producers and consumers. In doing so they established innovative elements of biomass use which could be analysed to optimize energy-autonomic and energy-efficient structures in coastal communities.

7.2. Aims and Objectives

The EnerCOAST project set the following aims and objectives

- To identify appropriate innovations and/or innovation gaps for the development and implementation of bioenergy solutions in compliance with natural resources and societal needs in sub-national settings in the North Sea region (i.e. reduce the regional dependence on energy imports and promote energy autarky or self-sufficiency),
- To employ a "sustainable supply chain management" business model to increase regional bio energy generation and market success (including the development of resilient investment plans and securing a sustainable income for regional energy producers),
- To exploit new sources of bio energy, specifically to improve energy production from marine and terrestrial biomasses in accordance with regional particularities, and
- To merge differentiated interests and varying regional conditions under a common strategic and methodological umbrella.

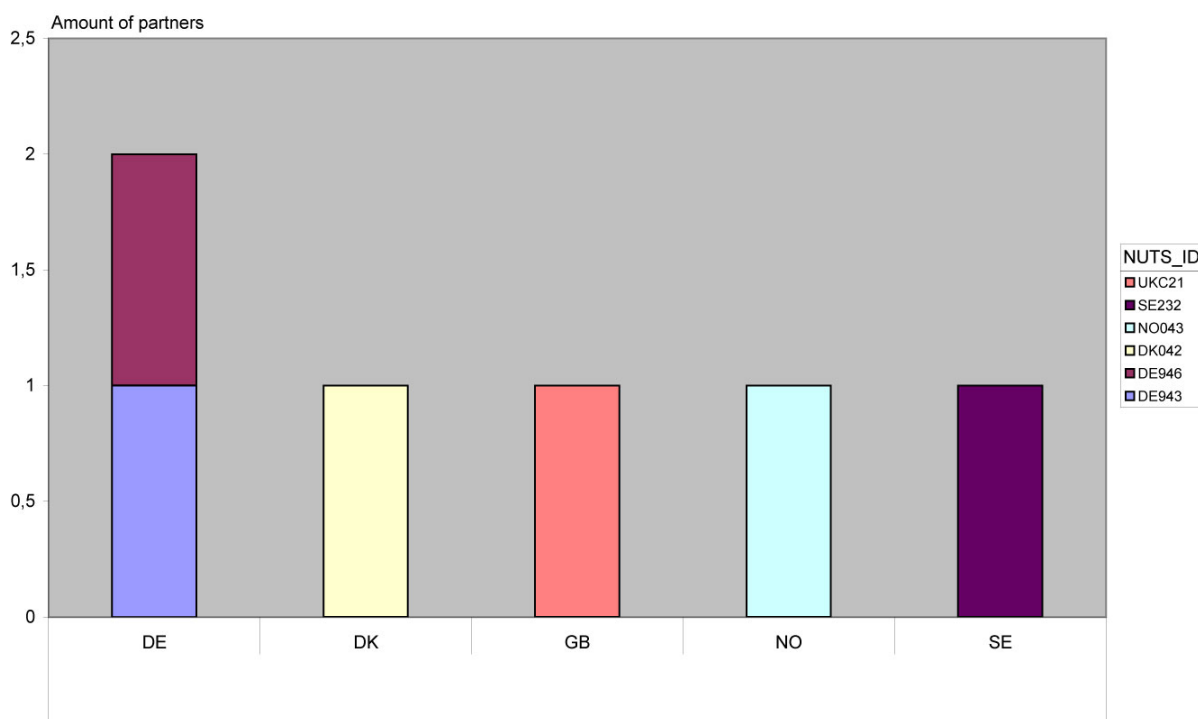
7.3. The EnerCOAST Partnership

General accounts

The EnerCOAST project involved six key partners plus their regional stakeholder networks. It was a stand-alone project which did not participate in a cluster formation.

The lead coordinator, Centre for Environment and Sustainability Research (COAST) of the University of Oldenburg acts as an umbrella group for five research centres. It is an academic non-profit institution of the university and falls under public law. With Northumberland College, Ashington (United Kingdom) a second academic non-profit partner institution under public law participated in the project. The Lower Saxony Chamber of Agriculture in Oldenburg was the second German partner. It is also based on public law and is non-profit oriented. The Chamber represents the interests of about 55,000 enterprises in agriculture and forestry-including about 4,300 horticultural enterprises, 50,000 private woodland owners, 160 mixed coastal and small deep-sea fisheries, 60 inland fisheries and about 150 aquaculture enterprises. The Chamber cooperates closely with municipalities and districts in Lower Saxony. The Norwegian partner in the consortium, Ryfylkekommunane iks, Hjelmeland (close to Stavanger), is a public institution based on not for profit law. It is organized as a regional incorporated foundation based in neighbouring districts. The Swedish partner, called Innovatum Technology Park, while similarly organized and structured, is however registered as a profit-oriented organization based on private law. Geographically, Innovatum is located in Trollhättan / Braland in the Northeast of Goteborg. The Danish partner in the EnerCOAST project used to be called Agro Business Park, Innovation Network for Biomass. Since 2010 it has been renamed to the shorter Innovation Network for Biomass (INBIOM). The network organization is oriented towards profit and based on public law. Its location is in Tjele in Mid Jutland and the Central Denmark Region. INBIOM acts as an umbrella organisation for six institutions active in the Danish regional energy sector and hence functions as an entry point into the sectoral regional stakeholder network. The geographic distribution of the project partnership is illustrated in Figure 7.1 below.

Figure 7.1: Geographic distribution of EnerCOAST partners by countries, NUTS3 regions



Geography of the partnership

The project partner network was selected based on their respective qualities, including:

- their expertise and reputation in energy-related work and strong commitment to regional engagement,
- their regional location in the North Sea Region and the transnational distribution between partners,
- their ability to link with and manage regional stakeholder networks with a representative involvement of partners from the business, academic, societal and public administrations.

The partnership assembly was confirmed, as one interviewee explained, through face-to-face exchanges and pre-project partnership meetings. Despite being a newly founded consortium, the network developed a closer understanding during the lifespan of the project and has subsequently proven its consistency, quality and longevity as a sustainable partnership. The partners' interests and rationales for engaging in EnerCOAST varied greatly – as exemplified in Table 7.1 and Figure 7.2.

The Norwegian Ryfylkekommunane iks, Hjelmeland expressed its main interest to be territorial in nature as it engages in regional development. This focus became evident in the actions they implemented in the region, which pursued the objective of implementing bioenergy as an economic sector and energy alternative in the neighbouring districts within which the local partnership operated.

Both Northumberland College in the United Kingdom and the Centre for Environment and Sustainability Research COAST at the University of Oldenburg, followed predominantly knowledge exchange and knowledge transfer interests when participating in (and coordinating on behalf of COAST) the EnerCOAST project.

Innovatum Technology Park, Trollhättan, Sweden and Agro Business Park, Innovation Network for Biomass, Tjele, Denmark both shared a similar profile: They are profit-oriented umbrella associations representing several sectoral (energy) or multi-sectoral enterprises. They act as entry points into regional stakeholder networks and markets and can be seen as pursuing mainly economic interests.

The Lower Saxony Chamber of Agriculture, Oldenburg, Germany represents and supports the agricultural and fisheries sector in the state of Lower Saxony. Thus it pursues both sector-economic interests as well as territorial interests. As an EnerCOAST partner the Chamber of Agriculture actively participated in German case studies of EnerCOAST which supported building the regional stakeholder network and conducted field tests.

The partner institutions' motivations to engage in a transnationally operating project such as EnerCOAST (despite or possibly because of their varied interests) were multiple and varied, as the interviewee's responses and the documentary review equally demonstrates:

Firstly and most importantly, the extended possibilities of sharing knowledge, comparing know-how and exchanging best practices models, i.e. the transnational learning experience beyond set national boundaries and fixed sector responsibilities have been valued highly. Secondly, transnational collaborations are considered more effective than those undertaken within a national framework. Access to (analysing and transferring) a broader spectrum of regional bioenergy solutions through the international platform proved pivotal in developing integrative and innovative approaches to sustainable business management processes. This also promoted cohesion among the participating regions. Thirdly, one interviewee referred to the project's methodological meta-objective to develop and test a new strategic approach towards contextualised 'transnational learning' applicable to wider issues beyond bioenergy (compare also Section 7.4 on territorial impact) as being critical.

The interviewees elaborated that the project explicitly chose to be a stand-alone project and not join a cluster, even though they had been repeatedly approached by the EVNSR cluster. A lack of trust and common objectives, as well as the lack of a perceived benefit of a clustering approach specifically for the EnerCOAST methodology and working approach, were mentioned as major reasons grounding this decision. It was also perceived that a certain sense of conflict and competition would enter the project partnership if EnerCOAST joined the named cluster.

However, the EnerCOAST project liaised with other North Sea Region energy projects at individual partner level when EnerCOAST partners participated in further endeavours.

Mentioned examples included the projects “BioM”, “HEC” and “Implement”. From the EnerCOAST perspective such looser partnerships helped to frame and underpin the project management and outcome (dissemination) processes. EnerCOAST partners also participated in conferences organised by other energy projects. These events served as platforms for exchange and dissemination of ideas and findings. Some of these exchanges took place in the IVA-level Dutch/German and the Skagerrak context, others with actors in the IVB-regions of Central Europe, Northwest Europe and the Atlantic.

Conclusions on geography of the partnerships

Viewing the interests of all EnerCOAST partners in conjunction it can be concluded that the rationales within the partnership are diverse and cover all categories of territorial, knowledge and economic interests.

Nevertheless, and although the involved partner organisations demonstrated such a varied range of interests, two interviewees explained, the overall project aim which was to merge differentiated interests under a common strategic and methodical umbrella was accepted by all partners. One interviewee added that in fact the partners’ different interests – which are seen to stem from their varying backgrounds - helped to highlight important perspectives and value diverse standpoints on the topics at hand.

This diversity of institutional players, and in particular the interaction of science institutions and regional business innovation clusters, as well as the involvement of regional governmental bodies and decision-makers, was seen as providing specific added-value. At the same time, a common strategic and methodological umbrella enabled a standardised assessment and fitted the knowledge transfer and learning adaptation processes. Thus more comprehensive and integrated solutions to the issues at hand could be developed.

This coherence of the learning processes across the regional, institutional and expertise elements of the partnership network has been recognised as one of the main success stories of EnerCOAST. Basic to this success was the – by and large – explicit preparedness and commitment of the partners and the regional stakeholder networks to learn from their European counterparts, for example via participation in the study tours. Two interviewees recommended this successful partnership model for wider application to energy-related projects involving all sub-national regions in the wider North Sea Region.

Exceptions from this partnership pattern were observed for the German EnerCOAST partners, which did not show the same level of interest in transnational exchange as their international partners. One interviewee related this to difficulties in engaging stakeholders on the basis of a binding commitment in the German context (to a lesser extent also evident in the Norwegian partnership context).

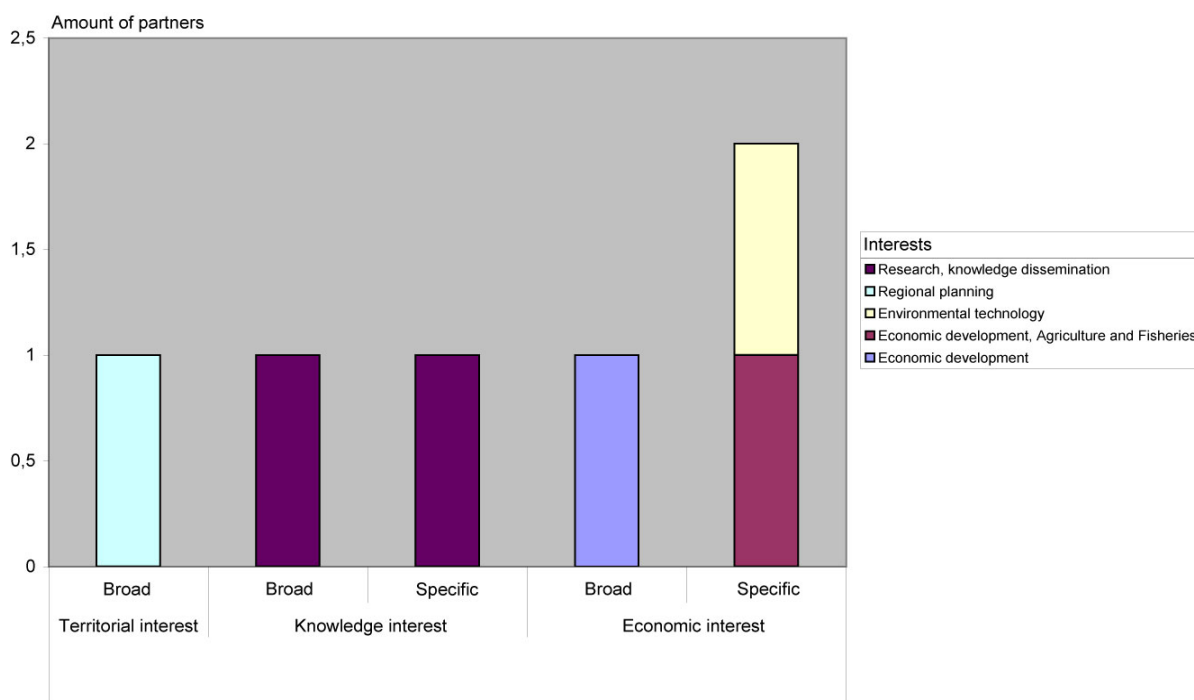
More generally speaking (and applying to the entire network), a lack of – or simply the challenge to bridge completely differing – administrative and operative policy frameworks

have been found to weaken the project’s partnership structures and outcomes (especially the case in the participating UK and German regions).

Table 7.1: Rationale and intra-organisational structure of EnerCOAST partners

Rationale for cooperation		Intra-organisational structure	
		Single	Composed
Territorial interest	Broad	Ryfylkekommunane iks, Hjelmeland, Norway	none
	Defined	none	none
Knowledge interest	Broad	Northumberland College, United Kingdom	none
	Defined	COAST, Oldenburg University, Germany	none
Economic interest	Broad	none	Innovatum Technology Park, Trollhättan, Sweden
	Defined	Lower Saxony Chamber of Agriculture, Oldenburg, Germany	Agro Business Park, Innovation Network for Biomass, Tjele, Denmark

Figure 7.2: Rationale of EnerCOAST partner organisations



7.4. Project Impacts in Relation to Expected Outcomes

Territorial impact

The notion of territorial impact is important in the EnerCOAST context in various ways, including

- the expectations asserted to the transnational framework design of the project which equally touches upon sub-regional levels;

- the integration of territorial impact questions in project aims and objectives, here developing regionally adapted and fitted energy solutions;
- the involvement of multi-level stakeholder networks representing different territories and spatial dimensions of the energy landscape in the North Sea region;
- the relevance of spatial factors in the methodological approach and analysis (e.g. regional surveys, field tests, integrative supply chain management); and
- the explicit consideration and tackling of territorial planning aspects of energy infrastructure and land use, as well as regional development plans (where existing).

As noted, spatial integration as enabled by the transnational framework of the EnerCOAST project was considered as particularly fruitful in terms of the mutual learning processes and the exchange of best practice models of regionally-adjusted energy solutions. Thereby, the transnational project platform was perceived as a key to the development of integrative sustainable business management processes and energy solutions.

Simultaneously, as two interviewees pointed out, this construction implies that expectations of territorial impact and the spatial dimension were not stand-alone issues. Instead, they formed part of an applied contextualized perspective integrating spatial with thematic issues, for example in (planning and implementation) the targeted supply chain management tool across the participating regions.

In terms of concrete changes in land use, the EnerCOAST project introduced, among other things, energy production from marine and terrestrial biomasses (which do not need to be cultivated) as an alternative to traditionally used cultivated maize to the regional landscape. By doing so, one of the overall aims of the project was met, at least partially (see section 7.2).

In terms of territorial cohesion, as a result of project activities, several regional profiles have been developed. For example, the Ryfylke region declared bioenergy as a significant part of its regional profile and crucial energy source. Another example, the Dornum pilot region in Germany now calls itself 'an energy community'. A third example, the Swedish partner region bought 40 biogas busses and explicitly highlighted the use of biogas as a vehicle fuel.

It was pointed out during interviews that the spatial dimension and territorial impact played a more vital and visible role in those participating regions which contained valid regional development and regional energy infrastructure plans and active regional governments. This was the case in the Danish, Swedish and Norwegian sub-regions, but not so in the German context where territorial impact questions had to be delegated to the stakeholder consultation process.

Technological impact

The EnerCOAST project already envisaged technological innovation by design: Technological impact is embedded in the project aim, namely to identify appropriate innovations and/or innovation gaps for the development and implementation of bioenergy solutions in compliance with natural resources and societal needs in sub-national settings in the North Sea region. The project approach of linking sustainability measures with supply chain management to bioenergy processes is in itself an innovation. In this regard the overall project objective (see section 7.2) was clearly met.

With regards to regional implementation, specifically high levels of technological innovation were reported for the Danish and the Swedish participating partners and sub-regions. Some promising start-ups generated innovation potential in the Norwegian context. In Germany a new technology has now been introduced and runs in a pilot phase in one of the regional biogas plant.

The particular EnerCOAST method, i.e. to first assess biomass in a sub-regional context and then combine this with tools to calculate business development potential, may also be considered innovative. This model was applied to e.g. municipal energy planning in Denmark (Municipal Biomass Action Plan) and piloted by the German partners.

Furthermore, the Swedish partners developed an innovative entrepreneurial concept, later adopted and proclaimed by the whole EnerCOAST project, whereby supply chains are being owned by all stakeholders and monopolist interests prevented. For regions with no existing gas grid EnerCOAST suggests to combine the transport of biogas pipelines and to link multiple biogas plants to a common upgrading station as an energy and cost-efficient innovation.

The mentioned barriers for technological innovation included:-

- business plans which did not provide a comprehensive guide to investment;
- an incomplete research base;
- the timescales needed to develop the common sustainable supply chain management language and to align various sets of bio energy competencies;
- inappropriate regulatory frameworks regarding input materials and emissions; and
- changes in national /regional legislation which render the development and implementation of technological innovation more complex.

The general picture showed that technological innovations (which accomplish a substantial bioenergy increase towards the North Sea region's energy transition) should go hand in hand with the involvement of able and well-matching innovation partnerships. It is then down to the partnership to assemble all relevant actors and sectors and to ultimately be able to mobilise un-used energy potentials and apply socially accepted solutions. The

challenges of merging the often differentiated interests and varying regional conditions under a common strategic partnership umbrella were realised, due to the respective commitment of all partners towards this criteria.

Policy impact

The EnerCOAST project addresses and is embedded in the following policy strategies and reference circles:

- At European Level the European Renewable Energy and Climate policy set the general policy framework.
- In Denmark, Sweden and Norway consistent national policies exist on national energy, climate and nature protection strategies which offered additional guidance
- However, the changes in the German national 'Energiewende' policy during the timespan of EnerCOAST implied that a consistent backdrop against which the project could have developed policy or organisation innovation was missing.

However, in all given contexts, the interviewed project partners felt that both, community and sub-regional policy level proved decisive for developing policy impact – in terms of positive outcome when available and binding (as the case in the Scandinavian partner countries) or when available on a facilitative basis (as with some communities in Germany and the United Kingdom). Adverse effects are prone to follow when there is no policy at sub-regional levels. Generally, the interviewees pointed out that consistency of policy frameworks at all political levels played a pivotal part in framing innovation.

The EnerCOAST project also reached policy innovation through its individual organisational structure and applied working method. In the opinion of all interviewees the process of finding and implementing bioenergy solutions benefitted specifically from the multi-stakeholder partnerships between industry, public administration, science and society across various local, sub-regional, regional and transnational levels.

It ought to be noted that, as one interviewee elaborated, the range of policy impact depended to a certain extent on the level of political interest in the topics, methodology and outcome of the EnerCOAST at relevant sub-regional levels. Close cooperation between project partners and regional/local governments would tend to imply greater policy output, impact and dissemination. One interviewee referred to the example of the participating Innovation Network for Biomass in the Central Denmark Region where the regional authority even commissioned the project with the development of a number of renewable energy planning documents including the "Perspective Plan for Renewable Energy, Central Denmark Region".

In some cases innovation as introduced by EnerCOAST has moved beyond the group of actual participants in the projects. The EnerCOAST methodology and technical approach(es)

are generally transferrable beyond the bioenergy sector to any context integrating sustainable development criteria into (business) decision-making processes. Relevant criteria are a supply chain which does not function sustainably and stakeholders with an interest in optimization. For example, the evaluation matrix developed by EnerCOAST to transfer potential of bioenergy solutions can be applied to different contexts, with the results of the evaluation then feeding concrete adaptation processes. As noted previously, barrier factors to such approach can include a lack of regional political support, missing sub-national policy framework, a shortage of thematic, technological or geographic know-how and/or societal opposition.

8. E-Logistics in North Sea Region Harbour Cities (e-harbours)

8.1. Introduction

The E-Logistics in North Sea Region Harbour Cities (e-harbours) project aims to create a more sustainable energy model in harbour regions on the basis of innovative, intelligent energy networks (smart grids). This will help harbour cities to overcome the challenges of high energy consumption and low efficiency, high CO₂ emissions and the low level of renewable energy production in harbour areas. The project, which had a total budget of €4,820,120 was led by the municipality of Zaanstad, Netherlands, runs from September 2010 to February 2014. In total eight partners participated in the project, which successfully demonstrated six “Showcases” on, for example, smart grids for managing domestic energy consumption, e-mobility (electric cars), renewable energy and monitoring/implementing flexible energy demand.

8.2. Aims and Objectives

The ambitions for the e-harbours project are directly related to the European 20:20:20 objectives. Recognising the logistics difficulties faced by harbour cities in terms of maintaining economic growth whilst trying to minimise energy demands and the impacts of CO₂ emissions on the environment, the challenge is to innovate logistics systems to overcome these problems. In addressing the transnational dimension to e-harbours, the project application lists three main points as to why a transnational approach is required. First and foremost, this is because the transformation of the energy network (the *energiewende*) is a transnational issue. Secondly, the expertise required for such a transformation is not available in every country, and the fact that some countries are further ahead than others in addressing these issues makes knowledge exchange important. Thirdly, transnational working opens up new opportunities, such as being able to link smart energy networks across boundaries, or to offshore wind farm developments.

Project Objectives

The main aim of the e-harbours project is transformation of the energy network in North Sea Region harbour cities to a more sustainable and accessible energy model. This is to be achieved by setting new standards in virtual power plants¹ for industrial end-users and electric mobility.

¹ A Virtual Power Plant (VPP) can be defined as a cluster of technology applications on intelligent energy consumption in a distributed setting, optimising electricity consumption in space and time. It can consist of technical components, varying from smart metering, load shedding and energy forecasting to combining consumers and producers as “prosumers”.

e-harbours has three main objectives. These are to:

- Increase the production and use of renewable energy in harbour cities. Harbour cities have extensive industrial areas with a great potential for development of sustainable energies; from wind, solar PV, tide, waves and the reuse of industrial waste, heat or cooling available;
- Increase the use of energy smart grids. Attuning demand and supply of energy by flexible demand management, instantaneous load shedding (both directions), energy labelling, intelligent storage;
- Increase the use of electric transport, a perfect partner to connect to large scale renewable energies and leading to a healthier environment in the harbour regions.

Project Expectations/Work package outline

In order to achieve its objectives, the e-harbours project has been organised into four main work packages:

- Project management – besides administrative activities, under this work package an international steering group (ISG) consisting of WP leaders across the project as a whole will participate in regular meetings to monitor the progress of the project.
- Publicity and communication – under this work package, led by the city of Malmö, a number of separate activities are envisaged that will provide inputs into the project from relevant stakeholders from beyond as well as within the project partnership, as well as providing outlets for disseminations of key project messages and results. These include an initial stakeholder analysis to identify other harbour cities, energy networks and energy projects that may provide expertise. A communications strategy, website, newsletters, LinkedIn group and transnational events delivered to audiences including other harbour cities, members of the public, politicians and policy makers are the main tools for increasing project visibility and demonstrating project activities. In addition to this, the project has designed in activities to ensure that they key messages of e-harbours continue to have an impact after the project is wound up –these include incorporating the e-harbours “brand” into other networks such as the EU Covenant of Mayors, and developing a framework for further implementation of the e-harbours concept in the North Sea Region.
- Transnational knowledge development – smart energy networks – This work package focuses on the development of Smart Grids and “Virtual Power Plants” (VPPs – coordinated groups of small energy producers and end-users), first by increasing understanding within the project partnership of smart grids, developing showcases and then reviewing the application of VPPs to produce business cases, outlining the economic, technical and organisational aspects of implementation. This work will be supported by the North Sea Region Energy Platform, made up of project partners and external expertise on smart grids and electric mobility, brought together to guide the methodology of this work package and the showcases. Hamburg, Antwerp and

Uddevalla will provide the showcases for this work. (Uddevalla Energi, a Swedish company, subsequently dropped out of the project partnership and their showcase was not realised).

- Innovation – Electric harbour logistics – Here the project partners will focus on investigating the potentials for the implementation of large scale electric mobility in harbour cities. Showcases on the integration of electric transport (such as electric boating and smart grids), will be used to test different aspects of electric mobility. Data collection from these showcases, analysis and evaluation by the Energy Platform members will then provide results and key messages that can be communicated to policymakers at regional, national and European level. Zaanstad, Amsterdam, the Shetland Islands and Malmö will provide the Showcases for this work package.

8.3. Rationale for the Project

Territorial

The anticipated territorial impacts of the project (contributing to the aims of the Lisbon and Gothenburg Agendas) are defined broadly in terms of more efficient use of energy that is being generated (for example, using the flexibility concept to manage energy consumption in times of high demand or surplus), reducing carbon emissions and noise levels through the use of electric transport (mobility), and fostering economic and social cohesion through providing new opportunities in a technologically innovative energy sector.

The Point of Departure: Smart Grids and Virtual Power Plants document (e-harbours, 2011a) notes that increasingly decentralised electricity production, incorporating energy from renewable sources that cannot easily be controlled (turned on or off) provides a challenge for energy distributors who need to stabilise electricity grids, and end users can play a part in helping to balance supply and demand. By using smart grids to reduce energy consumption in times of high demand elsewhere, end users effectively “give back” their electricity to the grid, thereby introducing energy flexibility. Large industrial operators who produce their own energy on-site (or households) can further assist in energy balancing through combining with other energy users in a “Virtual Power Plant”, distributing energy with greater predictability and efficiency throughout the system.

In terms of electric mobility, the Point of Departure: Electric Mobility document (e-harbours, 2011b) acknowledged that the increasing use of electric vehicles may stimulate greater energy production, and there is a risk that this could in fact cause more pollution if energy is generated from fossil fuel sources, however the incentives provided at European level for increasing renewables production create synergies with electric mobility (e-harbours, 2011a). One of the greatest energy challenges (and potentials) is to harness the power of surplus renewable energy created in times of low demand, and so the storage of energy in vehicle batteries or use for vehicle charging can help to balance energy use. In addition, new technologies for energy efficiency and carbon

reduction in harbour cities are expected to provide a unique selling point, making them more competitive in the global marketplace.

Innovation

The e-harbours project has great scope for innovation, as smart grids and electric logistics are both relatively new technologies. It is anticipated that the work of the project will deliver:

- new decision tools to help integrate energy demand, supply and storage,
- energy management intelligence linked with ICT infrastructures,
- innovative business cases for energy end-users or “prosumers” and other stakeholders, facilitating a more social dimension to energy systems,
- innovative integration of electric transport use in freight (shipping, rail and road) and cars.

Policy

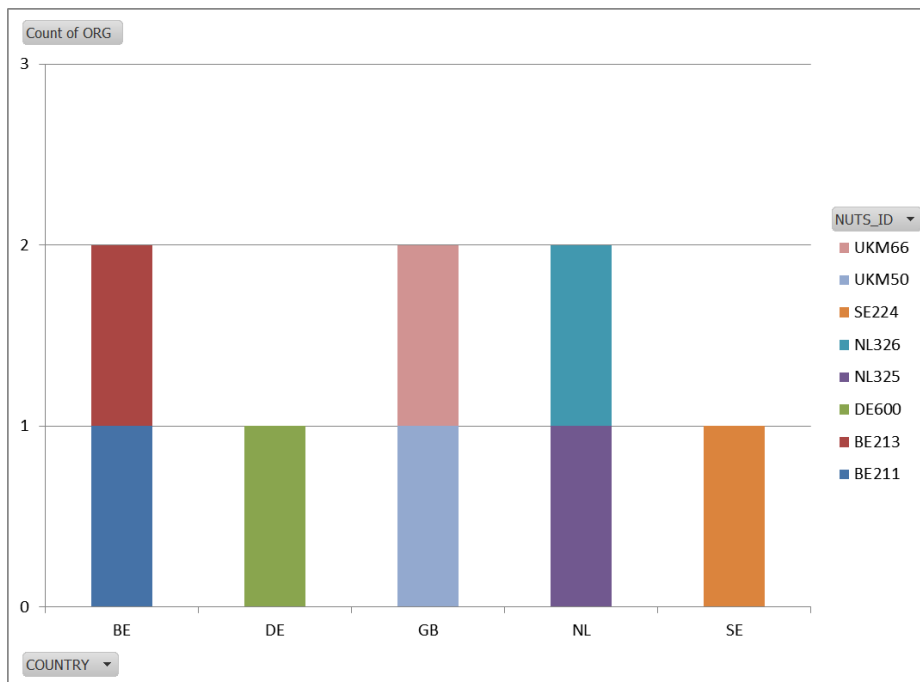
One of the main expectations of the e-harbours project is that the results of its showcases and demonstrations of virtual power plants, electric mobility and energy flexibility can be synthesised to provide a framework for further take up of the virtual power plant concept in the North Sea Region. In part this will be achieved through establishing linkages with key European initiatives on smart cities and grids (such as Knowledge and Innovation Community – European Institute of Innovation and Technology or KIC-EIT), and broader governance networks with strong energy and environmental dimensions such as the Covenant of Mayors.

8.4. The e-harbours Partnership

General Accounts

Within the e-harbours project partnership, two partners each come from the Netherlands, Belgium and the UK, whilst one partner comes from Germany and one from Sweden (see Figure 8.1 below). Each partner is located in a different NUTS3 region.

Figure 8.1: Geographic distribution of e-harbours partners by countries, NUTS3 regions



Three of the partners are public authorities whilst one is a publicly owned harbour authority. These fall under public law. Two partners are universities, one (VITO) is a publicly owned independent research institute and the final, PURE Energy Centre, is a public knowledge centre and business providing renewable energy services.

Geography of the Partnership

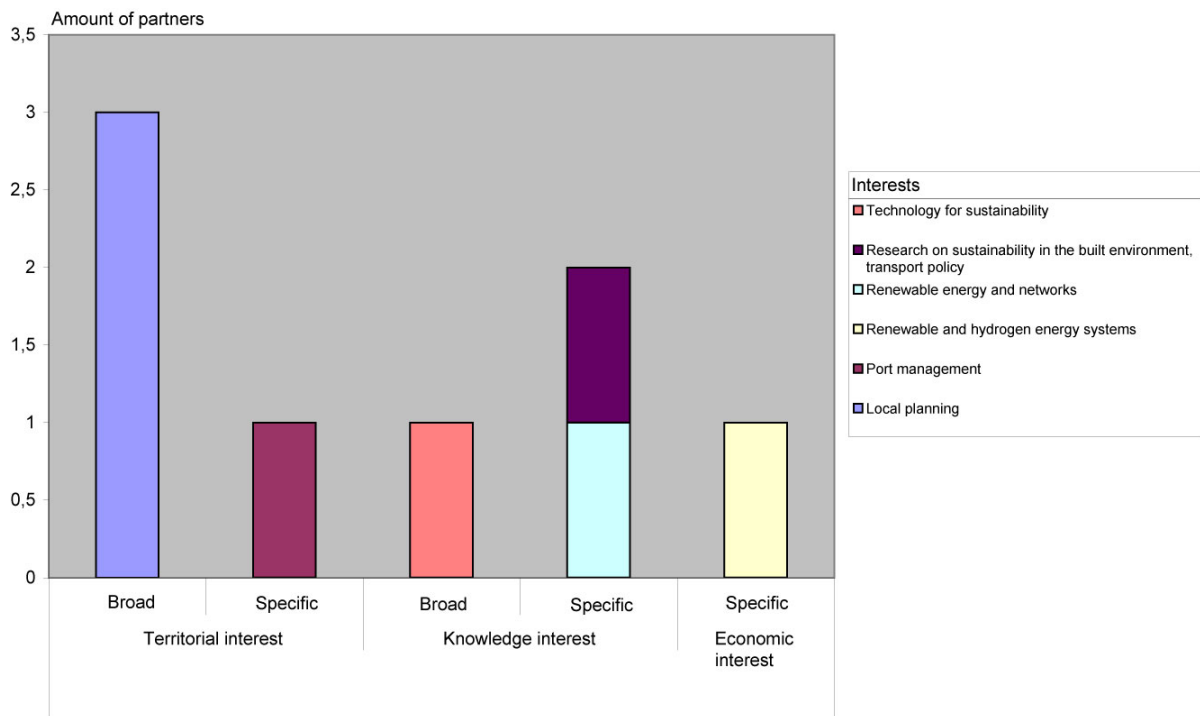
The interests of the project partners tend to focus on territorial and research/knowledge dimensions (Figure 8.2). For the local authorities in the main this is a broad territorial interest, covering different aspects of sustainability including eco-friendly transport, increasing use of renewable energy and combating the effects of climate change. The Port of Antwerp also has a territorial interest, which is more narrowly defined by its role in the management of port traffic and the provision and maintenance of dockside facilities. In undertaking this role, the Port authority also seeks to make the port's activities more sustainable for the benefit of the environment and society.

The second most common interest of project partners is the knowledge dimension. The Robert Gordon University offers education in a range of subjects including engineering, architecture and the built environment. Two research centres within the University - one dedicated to management, governance and society (IMAGES) and innovation, design and sustainability (IDEAS) are involved in the E-Harbours project. Within the Hamburg University of Applied Sciences, the Competence Centre for Renewable Energy and Energy Efficiency undertakes research and teaching activities in the fields of energy networks and renewable energy. VITO is an independent, publicly owned research institute working on technological

innovations to support the transition to a low carbon society and sustainable industries in the province of Flanders.

Only one partner has an economic interest. The PURE Energy Centre in the Shetland Islands, Scotland, provides and installs a range of renewable energy systems including photovoltaic and wind energy. It is also a leader in hydrogen fuel technology for the public and private sectors.

Figure 8.2: Rationale of e-Harbours partner organizations



The organisational structure of the partners in each case is relatively simple, with each partner being a single entity rather than representing further consortia or groups. (Table 8.1).

In summary, as the e-harbours project has as one of its overall ambitions to demonstrate a business case for smart grids, the interests of the project partners indicate a strong focus on research and building political support for the ideas put forward. The relative lack of partners from the private sector (i.e. with an economic interest) may present a challenge to realising this aim more fully. This, along with other impacts of the project is examined in the following sections.

Table 8.1: Rationale and Intra-organisational Structure of e-harbours Partners

Rationale		Intra-Organisational Structure	
		Single	Composed
Territorial Interest	Broad	Municipality of Zaanstad - Spatial planning Municipality of Amsterdam - Spatial planning City of Malmö - Spatial planning	-
	Defined	Port of Antwerp - Port management	-
Knowledge Interest	Broad	VITO - technology for sustainability	-
	Defined	Hamburg University of Applied Sciences - Renewable energy and networks Robert Gordon University - Research on sustainability in the built environment, transport policy	-
Economic Interest	Broad	-	-
	Defined	PURE Energy Centre - Renewable and hydrogen energy systems	-

8.5. Project Impacts in Relation to Expected Outcomes

This part of the case study makes use of both publicly available documents produced by the e-harbours project consortium and evidence gathered from interviews with project partners [from Gemeente Zaanstad, Port of Antwerp, Robert Gordon University and Hamburg University of Applied Sciences].

The primary outputs of the project can be classified into three main types. First, published materials such as the project website (which includes a short film produced about the project), flyers, newsletters and reports. Secondly, events including workshops, meetings and conferences, either organised by the e-harbours consortium, or where the project was represented. Finally, and the most substantial outputs of the project have been the Showcases. The Showcases comprise of six cities/areas where project partners are located, and within these one or more case study activities have taken place, for example the simulation of Virtual Power Plants, building of eco-houses, or the rollout of electric car charging stations. Each showcase represents examples of early adoption of smart grids and energy flexibility – undertaking substantial activities and outputs in their own right that would make for an interesting analysis, however this evaluation attempts to provide an overview of the project work as a whole.

In relation to impacts, many of the activities of the project are orientated towards establishing the potential of smart grids to support implementation in the future. In this respect the short term nature of the project and the timing of this research cannot provide a full picture of the lasting impacts e-harbours might have, but rather gives a summary of achievements to date and an indication of future developments.

Territorial Impacts

With respect to territorial impacts, the Showcase cities and case studies have mostly provided examples of impacts at a relatively small scale or at local level. In particular the following activities have had a territorial dimension in terms of realising renewable energy potentials and more integrated forms of planning:

- In the city of Malmö, eight new demonstration eco-houses were built in the Western Harbour development in partnership with the energy company E.ON. The houses were fitted with wind turbines, PV systems, electric car charging stations and smart grid controls allowing residents to monitor energy use and generate their own power. The first tenants moved into the houses in April 2013.
- In Amsterdam 16 new electric boat charging stations using energy from renewable sources (energy from waste) have been installed. This will enable greater use of low emission, electric boats for leisure activities in Amsterdam's congested canals.
- The REloadIT Smart Grid scheme in Zaanstad uses renewable energy (wind, PV) to charge car batteries for use and energy storage based on smart grids, vehicle use, optimisation of electricity costs and minimising CO₂ emissions. ReloadIT was awarded the prestigious Alliander award for innovation at the P-NUTS awards, which recognise the contribution local areas make to promoting renewable energy use in the Netherlands.
- Also in Zaanstad, the municipality has now signed contracts with a number of private sector companies and energy suppliers to investigate implementation of a Smart Network, with residual heat from industrial production being used by the local hospital. This will help to balance the energy system, reduce costs for energy consumers and reduce the carbon footprint of the municipality.

Technological/Innovation

Due to the nature of the e-harbours project, there is a high level of technological impacts and innovation being achieved across all the showcases. Examples include:

- The Port of Antwerp with VITO has conducted research into energy flexibility (a demand-side response audit), with five companies – three cold storage facilities, a sludge processing plant and chemical works. A "Virtual power plant" was developed to simulate energy production and the consumption processes of the participating companies within the port to show how revenues can be optimised using flexibility. These companies have undertaken a barrier analysis and see the potential of energy flexibility, with estimated returns on investment possible within 2-4 years, however implementing such as system requires a lot of effort in terms of labour, monitoring and maintenance for a small gain (electricity cost saving of 5-10%). A second demonstration, showing how a wind turbine and smart grid can be integrated to assist the activities of a sludge processing plant has also been developed.

- In Zaanstad, simulated integration of wind turbines and district heating/cooling facilities with the HoogTij industrial development using smart grids, creating a cheap energy system that can attract new companies to locate within the development.
- PURE Energy Centre and Robert Gordon University have carried out an energy audit and feasibility study of integrating renewable energy solutions/smart grids in Scalloway Harbour, Shetland Islands, Fraserburgh and Orkney Islands. This has helped to produce a business case for flexible energy. In Orkney this is particularly interesting as the Islands produce surplus energy (from micro-generation) in a relatively enclosed energy system.
- A second RGU study, examining energy consumption in the logistics chain of fish products provides a new interest for the fishing industry. The ultimate goal of modelling the chain from catching fish to packaging and sale is to develop a labelling system for more informed consumer choices.
- The energy mapping techniques used in Hamburg for the property analysis of port infrastructures and how they may be utilised in smart grids were relatively new. Such an exercise had only previously been done for specific sectors or large regions of Germany rather than narrowly defined geographical areas.

Policy

Whilst the application for the e-harbours project refers to the Europe 20-20-20 ambitions as a driver for accelerating transformation of the energy network in harbour regions, further international, national and regional policy drivers have also played a role with regards to individual partners and their reasons for joining the project. Of particular importance is the German *Energiewende* (energy transition), which is providing the push for greater use of renewable energy within the German system. Over the course of the project, it has been reported that e-harbours activities have contributed to delivering the national policy ambitions of “Sweden Towards a Low Carbon Economy”, “Low Carbon Scotland: Meeting the Emissions Carbon Reduction Targets 2010-2022”, the Flanders Smart (Grids) Hub, Zaanstad’s Climate Neutral Vision and the Environmental Programme for the City of Malmö (2009-2020).

Besides assisting the delivery of other policies, e-harbours provides examples of influencing future policy that reach from the local to European scale. These impacts have been most apparent in the following Showcase activities:

- Amsterdam has developed a Canal Cruise Guide to stimulate “clean boating”, i.e. using electric-powered canal cruisers – explaining the business case and technological options. This has been aimed at policy makers, boat operators and municipalities across Europe, where canal or river cruising is a significant tourist activity, e.g. Venice, Bruges and Paris.
- In Hamburg, the potential benefits and barriers to implementation of smart grids have been documented to provide evidence of their benefits to decision makers and

develop national and transnational recommendations for accelerating their take-up. There was optimism that the recommendations would have an impact at the local and regional level, for example some stakeholders that Hamburg UAS had talked to at the start of project weren't aware of the issues or the economic potentials coming in the future – the Chamber of Commerce is now interested in smart grids and flexibility measures, and will potentially extend offers for their members regarding counselling and advise on the use of such technologies.

- Also in Hamburg, the Port Authority has introduced a plan called “Smart Port Energy”, a master plan that sums up different energy initiatives for innovative, eco-friendly, intelligent energy solutions for the harbour. Partly because of work undertaken by E-Harbours, the document included the question of flexible consumers, consumers exchanging thermal energy with their neighbours and feeding into district heating to be more flexible in their energy consumption. (This work has not officially been released yet).

Project results have been disseminated through a number of events organised by the project consortium, for example its mid-term conference held in May 2012, and more local events such as the Intelligent Energy Solution for the Hamburg Harbour Roundtable, May 2013. e-harbours has also been presented at a number of international events, including:

- E-Mobility conference, Malmö (Nov 2012) – putting the business case for electric transport. Showcasing innovations in electric vehicles, charging station networks, battery technologies and potential for vehicle to grid renewable energy storage/transfer from ships,
- ReloadIT presented at the World Electric Vehicle Summit, Oslo, May 2013,
- Green Port Congress, Hamburg, October 2011,
- Conference hosted by the Council of Taiwanese Chambers of Commerce in Europe, June 2012.

More broadly through the e-harbours project new networks are being created that will ensure on-going impacts of the research. For example, as the project has progressed Robert Gordon University was able to extend its data collection activities to cover Fraserburgh harbour on the Scottish mainland and the Orkney Islands. This work was not foreseen at the beginning of the project, but became possible due to partner dropout and budget reallocations. Hamburg University of Applied Sciences are also looking to conduct follow-up research with VITO on intelligent energy management in container terminals.

Contacts with other North Sea Region projects, such as CaRe-North, Energy Vision North Sea Region, Clean North Sea Shipping, FP7 projects and European alliances such as Intelligent Energy Europe and Net-COM (networking in support of obligations under the Covenant of

Mayors) have been made. In addition, staff exchanges between partner institutions and cities, for example an exchange involving the cities of Malmö and Amsterdam, plus E.ON and WSP energy providers to share experiences of smart grids, E-mobility and air quality have all helped to promote further development of activities based on the e-harbours initiative.

8.6. Project Evaluation

Having laid out the work of e-harbours, the following section provides a more qualitative evaluation of the project, based on documentary analysis and interviews with a number of project partners.

Composition of the Partnership

The concept for the e-harbours project was originally put together by an individual working as a consultancy rather than the project partners themselves. This individual had proposed the idea to the municipality of Amsterdam first, and then approached the municipality of Zaanstad, who became the lead partner. The consultancy already had a large network of contacts working in energy and thus was able to bring these people into the partnership, and these partners provided further networks to make up the project partnership – for example VITO (the Flemish research consortium) provided the link to the Port of Antwerp.

The composition of the project partnership meant it had strengths in terms of its expertise – the team included a mix of research and technical expertise in the energy sector, transport, ICT and smart grids (through the academic institutions of Robert Gordon University, VITO and Hamburg UAS) and public bodies capable of reaching a large audience through showcase activities. However, one of the main areas of knowledge that was missing from the project partnership at its inception was an understanding of legal and market perspectives on energy – individual partners were aware of issues in their own country, but there was nobody with a transnational perspective that that could understand the potentials for realisation in different countries. Some partners felt that this understanding would have been useful to have from the beginning, although over the course of the project there was an exchange between partners on the issues for their respective countries.

Project Impacts

Section Three has outlined the main activities of e-harbours that have led to territorial, technological/innovation and policy impacts at a variety of scales. Of these three dimensions, the greatest impacts appear to have been made in technology and innovation. Regarding the territorial dimension, many of the project activities have focused on defining potential benefits that may be realised through further implementation, and the activities within Showcases are illustrative of this potential on a very small scale.

A degree of uncertainty about territorial impacts was evident amongst some project partners, with one noting that in order to achieve some of its territorial impacts (i.e. the implementation of smart energy management), there has been significant stakeholder engagement with businesses, electricity companies and electricity suppliers, but this has not required an input from the municipality (city government) with regards to spatial development. Similarly, another stated that as a highly developed port area, there was a greater emphasis on changing how things are done within existing structures rather than intervening in an on-going development process, and at a wider level the project would not make a significant impact in terms of accelerating the energy transition, as there are other stakeholders with much greater influence (such as energy companies).

Impacts in the fields of technology and innovation have been more easily identified, with the Showcases providing physical demonstrations and a wealth of data and analysis of the smart grid and electric mobility concepts. It was observed that the technologies and methods used are easily transferable to other harbour cities, with for example VITO taking an interest in the results of Hamburg's studies on smart grids, especially for refrigerated container facilities. There is also interest amongst the project partners that if a follow-up project takes place this should be extended to other harbour cities, where the tools and approaches of e-harbours could be used again.

In trying to create wider policy impacts that facilitate the incorporation of smart grids and electric mobility into the energy transition, the project partnership has had to undergo a significant learning process. As one partner noted, at the beginning of the project, e-harbours' scope was quite wide, with a big variation in approaches and case studies. Therefore the focus of the project was not clear at the beginning and partners only came to agreement at meetings after the application had been granted. As the partnership progressed through different stages of work, the partners have had to change their positions "from researchers to economists to communication experts" in order to make people aware of the possibilities of smart grids and promote these ideas to higher levels of government.

Within the partnership, these experiences of learning have been variable – the project partners started with different levels of expertise and some were "leaders" in their field while others were followers. One partner noted that learning from others had been difficult, as the showcases were all different, with another stating that there is no such thing as "best practice" to draw from because the energy landscape is so different in each country in terms of networks, fiscal policies, subsidies, tariffs, actors. However the different types of expertise present within the partnership (technical knowledge, or having the right networks of contacts) are complementary and have helped to produce clearer results.

Another important learning dimension has been coming to appreciate the value of transnationality. This is best exemplified by the municipality of Zaanstad, which had not previously participated in Interreg projects. One of their motivations for being involved was

an attempt to position the municipality in a way that demonstrated a more international outlook and made the area more attractive to potential investors. More fundamentally, this approach required a change in organisational outlook, as the perspective of the municipality was to see their counterparts in neighbouring countries as “other” places, rather than embracing the broader notion of Europe as “one state”. This was reflected in the fact that staff within the municipality would question the necessity of travelling to meetings in Brussels and elsewhere in order to learn about what other regions or localities are doing with regards to energy. Now, the municipality is keen to extend its work with European partners through new projects, such as under the Horizon 2020 programme.

8.7. (Non) Participation in Cluster Projects

The e-harbours project does not belong to either the LOWCAP or Energy Vision clusters of the North Sea Region Programme. The lead partners were invited to a meeting outlining the purpose of the clusters at an early stage, but as the e-harbours project itself had only been in operation for one year it was not felt that the project was in a suitable position to make a contribution to the energy clusters. However, e-harbours has made contact with other North Sea Region projects such as C2C-Islands, CaRe-North (through Robert Gordon University, a partner in both projects), the Maritime Transport Cluster and has fed into the activities of the Energy Vision North Sea Region cluster. Developing these connections has helped to create an informal cluster of projects with similar interests. As one partner stated, “Even without the cluster we would have started to talk to other projects.”

However as the LOWCAP and EVNSR clusters have developed their outputs, this has created further interest from some partners within the e-harbours project. For some individuals they were not aware of the clusters until quite recently and feel that if they had known earlier, they might have given more consideration to taking part. (It is unclear whether this is due to lack of communication by the lead partner or a broader lack of communication between the individual and the North Sea Region Programme). For the lead partner, and with the benefit of hindsight, had they been able to gauge the impacts at a local level that there has been in the e-harbours project, they would have found it useful to become partners in the Energy Vision and Maritime Transport clusters to develop further synergies with projects related to shipping and ports.

8.8. Summary

The e-harbours project has sought to tackle one of the more complex problems of transitioning to greater use of renewables, namely achieving balance within the energy system. Whilst the technologies needed to do this are in an early stage of development, e-harbours has raised awareness of the need for greater cooperation between actors in all

parts of the energy system to achieve this balance whilst taking advantage of lower electricity costs and reducing environmental impacts. Smart grids and electric mobility provide not only ways to help meet the Energy 20-20-20 goals, but due to their highly technical nature provide opportunities for innovation and green growth. e-harbours has successfully demonstrated the benefits of this technology, and now the challenge is for others to implement these technologies on a larger scale across the North Sea Region and beyond so that environmental, economic and social benefits can be realised.

Barriers to Implementation and Moving Forward

Looking to the future and the possibilities for realising the expectations of the e-harbours project, significant efforts have been made to demonstrate the application and benefits of smart grids and electric mobility as ways to increase the use of renewables and manage energy demand. However there was a clear feeling from partners that the work of e-harbours needs to move on from “virtual” working and feasibility studies to more concrete implementation of some of the technologies that have been tested. The Showcases have built enthusiasm and can enable this next step – but there is a question as to whether this is still part of the project or a follow-on activity that would require further planning. Some of the spin-off activities that may result from the project (further research collaborations, reuse of residual heat in Zaanstad) indicate that project partners and third parties are already thinking about the future and in some cases taking those steps.

A framework for further implementation was required as part of the project application and the e-harbours website will remain live after the project has closed and will provide tools allowing port cities to identify their own energy profile and potential savings that can be made through energy flexibility. There has already been interest from companies wishing to buy the project domain and website content, which indicates a strong outside interest in maintaining and building on project results.

The greatest barriers to further implementation of the e-harbours concepts could be seen as administrative, with partners noting the difficulty of engaging the private sector in EU funded projects because of this. Another barrier may be the lack of knowledge amongst wider stakeholders of the benefits of smart grids and electric mobility. The project has created a “story” of energy as a commodity for large end users. By raising awareness of their energy position (usage and energy costs), this can provide a starting point for organisations or individuals to take actions that are not necessarily dependent on project funding.

Finally, and in some respects the biggest barrier to further implementation, is the lack of an integrated framework for energy across the North Sea Region or Europe as a whole. As previously mentioned, each country has its own energy policies, regulations and different markets for energy production and supply. This creates a greater impetus for transnational working, but requires more creative thinking – it was suggested by one partner that if further projects in a similar field were to take place, then local solutions that are not

dependent on national [energy] regulations could be the focus, for example the electric mobility elements of the e-harbours Showcases, which are more easily replicated in other countries.

References

www.eharbours.eu

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