The North Sea Region Programme
2007–2013

Investing in the future by working together for a sustainable and competitive region

North Sea Region Programme Papers No. 1

Sustainable Innovation Concepts in the North Sea Region
– Proceedings of the thematic seminars

Annual Conference 2009
Egmond aan Zee, the Netherlands

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Foreword

The North Sea Region Programme 2007-1013 is now well into its main operational phase. 70% of the Programme funding has been allocated to 39 projects.

Innovation and sustainability are key words for all projects in the Programme. The importance of these key words is emphasised both in terms of priorities focussing on different aspects of innovation and sustainability and as cross-cutting themes of the Programme.

On this background the choice of *Sustainable Innovation for the North Sea Region* as theme for the Annual Conference 2009 was a natural choice.

Prior to the conference a number of high level experts were invited to share their views and thoughts on the future of sustainable innovation in the North Sea Region. This publication is an outcome of their efforts and of a very active involvement of conference participants during the Annual Conference.

The paper is also the first publication in our new 'North Sea Region Programme Papers' series. The aim of the series is to supplement the Programme documents with relevant and informative publications.

The theme of this first issue is sustainable innovation concepts in the North Sea Region and presents papers on the topic which were presented during the seminar session at the conference. I hope you enjoy reading and can use the series as a source of information and inspiration.

Christian Byrith
Head of Secretariat
Viborg, October 2009

Introduction and Background

This booklet is a result of the Joint Annual Conference and General Assembly 2009 of the North Sea Region Programme 2007-2013 and the North Sea Commission, which took place in Egmond aan Zee and Haarlem, the Netherlands, 24-26 June 2009. The theme of the conference was *Sustainable Innovation for the North Sea Region*.

The conference highlighted not only the importance of innovation to enhance economic performance, but also the strong social and environmental dimension that innovation incorporates and the role transnational cooperation can play in this context. Innovation policy was placed in the context of the overall strategic policy agenda of the EU, particularly the renewed Sustainable Development Strategy of the EU (SDS) and the Lisbon Agenda.

Call for Papers

Prior to the conference, a Call for Papers had been announced inviting high level experts to share their views on sustainable innovation in relation to the North Sea Region and the Programme. Nine proposals were selected and their authors were invited to the Annual Conference. The successful papers linked to one of the Programme priorities – Innovation, Environment, Accessibility and Sustainable Communities – and highlighted the added value of transnational cooperation.

At the conference, the papers were presented in four workshop sessions on the priorities of the Programme. The invited researchers and practitioners presented their findings and discussed them with the audience. Through the discussions, the workshops opened up new perspectives on how the Programme could contribute to the development strategies for the region.

In this booklet you will find summaries of the four workshop sessions and a collection of the papers submitted to the Secretariat in response to the Call for Papers. A background chapter introduces the concept of sustainable innovation in the context of the Programme.

Acknowledgements

The feedback for the call for papers was excellent. The high quality of the abstracts submitted enabled us to invite all of them to be presented. The presentations provided first hand insights into ongoing activities and developments in all 4 priorities of the Programme.

The Secretariat would like to thank all speakers for their contribution to the conference seminars and the submission of their papers.

Carsten Westerholt
Project Development and Communications Unit Manager
Viborg, October 2009

Sustainable Innovation – Background Paper as Presented at the Annual Conference 2009

EU Policy Background

The EU policy framework highlights innovation as an essential component to increase the competitiveness of regional economies in Europe with the ultimate goal to maintain our welfare and quality of life.

This goal highlights the strong social and environmental dimension that innovation incorporates. It emphasises that innovation is not just to be deployed to enhance economic performance. Innovation policy is placed in the context of the overall strategic policy agenda of the EU, particularly the renewed Sustainable Development Strategy of the EU (SDS) and the Lisbon Agenda.

The EU Commission's 'Blue Book' on Integrated Maritime Policy promotes the cross-sectoral approach in the context of sea-related policies and emphasises the need for a knowledge and innovation base for the maritime policy. It recognizes that research, innovation and technology are crucial for the sustainable development of sea-based activities.

The Green Paper on Territorial Cohesion adopted by the European Commission in October 2008 strengthens the shift from traditional sectoral approaches to place-based approaches in relation to innovation policies. It favours an integrated approach to strengthen the EU's economic competitiveness and capacity for growth while respecting the need to preserve its natural assets and ensuring social cohesion.

Protection and management of water in a sustainable and innovative way is a key element for coastal zone management and tackling risk posed by a changing climate in the North Sea region. Implementation through the Programme is linked to the relevant European community frameworks.

For highly developed regions, such as the North Sea Region, the continuing challenge is to reinforce the attractiveness by increasing the competitiveness. Innovation is the key tool for achieving competitiveness; transnational cooperation offers the opportunity to innovate in a territorial instead of sectoral-based approach.

What is Sustainable Innovation?

Sustainable development means meeting the needs of present generations without compromising the needs of future generations. Sustainable activities should involve economic, social and environmental issues and develop those in a mutually reinforcing way. Resulting priorities include combating climate change, ensuring sustainable transport, addressing demographic and social inclusion issues and managing natural resources more responsibly.

Innovation, on the other hand, refers to the introduction of new or improved products, services and processes and applies to all sectors: Innovation ranges from technological to business innovation and from system to policy innovation and includes the commercial application of knowledge. It is therefore directly connected to the competitiveness of an economy. Innovation is therefore fundamental to long-term wealth creation.

Innovation and sustainability are inseparable, as the Lisbon and Gothenburg Strategies show. The term sustainable innovation combines the two underlying concepts; it refers to new and innovative

products, services and processes that incorporate the concept of sustainability and progress towards the goal of sustainable development and competitive regions.

Transnational cooperation offers the opportunity to involve economic, environmental and social elements in order to ensure the sustainability of innovation.

Sustainable Innovation through Transnational Cooperation
The North Sea Region Programme is designed to practically implement the EU policy goals in a transnational setting. The Programme builds on the key aspects of the Lisbon and Gothenburg Agenda – competitiveness through innovation and sustainability. The concept of sustainable innovation is embedded in the overall aim of the Interreg IVB North Sea Region Programme: Investing in the future by working together for a sustainable and competitive region. To make the North Sea Region a better place to live, work and invest in.

The main challenge on the Programme level is to find sustainable ways to address the key challenges as identified in the Operational Programme in an innovative way. Sustainable innovation needs strong cooperation between different sectors. Transnational cooperation offers the opportunity to innovate in a territorial-based approach and to involve economic, environmental and social elements in order to ensure the sustainability of the innovation.

Sustainable Innovation Related to Key Challenges for the North Sea Region
There are a number of key challenges for the North Sea Region. To address these challenges the concepts of innovation and sustainability are in particular related to:

Innovation capacity: A key challenge is to create a framework and reliable conditions that stimulate innovation and to cluster the relevant sectors in order to ensure the sustainability of the region.

Innovating for a sustainable environment: Climate change has become a major threat for our common future. A combined effort is essential for accommodating the need to reduce green house gas emissions as committed in the Kyoto and Copenhagen targets and simultaneously to adapt to the impacts of climate change. The sustainable protection and management of water and coastal zones through a common framework is a main challenge in this context. An integrated approach towards maritime policy is a key aim for water related environment challenges.

Innovating for sustainable accessibility: A main challenge is to reduce the increasing social, environmental and economic costs associated with the growth of the transport sector and at the same time to achieve high and sustainable accessibility throughout the North Sea Region. An integrated maritime policy approach will contribute to meeting this challenge in the context of sea-based accessibility. At the same time accessibility through innovative ICT-infrastructures is an additional challenge.

Innovating for sustainable communities: As innovation tends to concentrate in metropolitan areas, a key challenge is to connect rural areas to centres of knowledge in order for them to complement each other and to utilize their full economic, social and environmental potential. Sustainable innovation is a main tool in order to find new and long-term solutions for areas around the North Sea.

Overview of the Thematic Sessions

SEMINAR 1 – Building on our capacity for innovation

Moderators   Sina Redlich (NSRP Secretariat)
Jon Jordan (National Contact Point, UK)

Speakers

- Bart Schanssema (ERIP project): A Methodology for Transnational Knowledge Transfer to Increase the Competitiveness of Microcompanies Utilising Lean Manufacturing
- Susanne Neumann (NMU project): Innovative Concepts for Transnational Education and Research in Maritime Transport
- Sam Allwinkle (SmartCities project): SCRAN: the SmartCities (inter) Regional Academic Network Supporting the Development of eGovernment Services

SEMINAR 2 – The sustainable management of our environment

Moderators   Jesper Jönsson (NSRP Secretariat)
Hans-Åke Persson (National Contact Point, Sweden)
Carolien Ruebens (National Contact Point, Flemish Region of Belgium)

Speakers

- Hans Flipsen and Cato ten Hallers (Ballast Water Opportunity project): Maritime Eco-Innovation – Regional Opportunities from the International Arena
- Gerard McGovern (enercoast project): Transnational Energy – On Operationalising Transnationality

SEMINAR 3 – Improving the accessibility of places in the NSR

Moderators   Eva Eide (NSRP Secretariat)
Kate Clarke (National Contact Point, Norway)
Lidwien Slothouwer-van Schipstal (National Contact Point, the Netherlands)

Speakers

- Michael Glotz-Richter (CARE-North project): Low-carbon and Post-fossil Transport – Revised Paradigms for Accessibility within the North Sea Region
- Olav Hauge (StratMoS project): Transnational Cooperation and Sustainable Innovation – The Strategic Demonstration Project of Motorways of the Sea

SEMINAR 4 – Promoting sustainable and competitive communities

Moderators   Henrik Josephson (NSRP Secretariat)
Claudia Eggert (National Contact Point, Germany)

Speakers
- Dr. Frans Coenen (DC NOISE project): Demographic Change in Regional Labour Markets – Finding Solutions for Negative Effects and Searching for Opportunities. First lessons from the DC NOISE labour markets demonstration projects
- Richard Walker (MP4 project): Making Places Profitable – Meeting a Challenge of Sustainable Communities in Partnership

Thematic Session on Innovation – Summary

The session focused on Priority 1 – Building on our Capacity for Innovation.

General discussions

The session gave insight into the range of fields addressed under the priority through approved projects. It also pointed out those fields suggested by the Operational Programme that were not yet addressed by projects.

It was demonstrated how priority 1 projects tackle innovation in a cross-sectoral way: three projects have presented their sustainable innovation approaches within the seminar – based on the abstract that was submitted under the Call for Papers, which was announced prior to the conference.

Whereas a wide portfolio of projects has been approved under the priority and a large amount of the funding has been allocated, there are nevertheless thematic fields not yet covered. A main gap was identified to be Area of Intervention 1.4 'Promoting the adoption and use of ICT applications'. E-business and e-working activities, stimulating SMEs to engage in e-commerce and the use of ICT; and promoting the roll-out of high capacity internet provision offer fields for a potential impact transnational cooperation.

Presentations

Whereas ERIP (European Regions for Innovative Productivity) promotes innovation in the manufacturing sector in order to increase efficiency, the NMU project (Northern Maritime University) establishes transnational education schemes to support innovation and competitiveness in the maritime sector. The SmartCities project presented its approach establishing an academic network in order to support the development of innovate eGovernment services. All projects have transnational innovation concepts in common but complement each other through the specific sectors they are focusing their activities on.

A Methodology for Transnational Knowledge Transfer to Increase the Competitiveness of Microcompanies Utilising Lean Manufacturing (ERIP)

C. Herron, One NorthEast, UK
B. Schanssema, N.V. NOM, The Netherlands

Introduction

This research known as European Regions for Innovate Productivity (ERIP) has resulted from a major regional programme to disseminate selected lean manufacturing tools and techniques into general manufacturing companies in the North East of England (Herron and Hicks, 2005). The research methodology is intended to be transferable to manufacturing organisations and other public agencies within the EU. The presence in the region of Nissan Motor Manufacturing UK Ltd (NMUK) provided a unique access into the organisational methods of an identified lean manufacturing company.

The principle objective of ERIP is to inject a predetermined level of knowledge into a company, which will, with support, allow a company to develop its own style of production system. A key proposition is that progress within any company should be by evolution through learning and not off the shelf solutions. The proposition is that access provided by exemplars such as NMUK to participating companies will allow an element of accelerated transfer of knowledge. This is because companies can see the tools and techniques of lean manufacturing actually being applied. The overall scope of ERIP is the development and application of the tools and techniques of lean manufacturing deployed to start a micro company on its lean journey. Research will continue to modify the model based on results, and report the success and any failings of the model through case histories.

This paper introduces the technology transfer theory being utilised (Lillrank, 1995). There are many lean tools (Pavnaskar *et al.,* 2003), however there are so many that application can become problematical to industry. An important step therefore was the selection of lean manufacturing tools and techniques identified with the automotive industry. The specific tools were identified as those operated by an automotive exemplar and as such have demonstrated to be (when correctly applied) their efficacy (all be it in an automotive context).

Abstraction and application

Lillrank (1995) introduced the concept of 'abstraction' and 'application', which addressed the transfer of knowledge within complex systems (Figure 1). He also highlighted the difficulty in the transfer of organisational innovations over cultural, national and industry borders. Lillrank comments that: 'Ideas emanating from Japan have to travel along an 'idea line'. The 'distance is not only geographical, but also mental, due to differences in culture, society and history, as well as strategic paradigms'. The larger the distance the more is lost due to misunderstandings, incomplete information and missing essential parts of the original context.
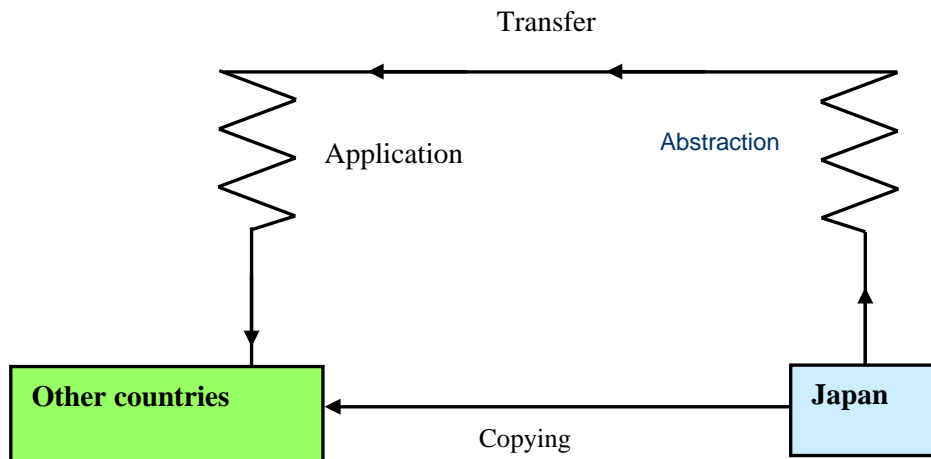
Figure 1. Transfer of complex systems requires abstraction and application

The premise is that new ideas get switched up through various levels of abstraction and packaged for the transfer process. The package may include concepts, models, tools, propositions of casual connections and illustrative examples. At the receiving end, an application process starts, and by interpretation and re-application over several learning cycles the receiver switches down the abstraction to suit local conditions. Thus the subject of the application becomes a part of the local learning process. The switching up and switching down, or the packaging and unpacking, are the key processes to understand and form the methodology for this regional programme. In our example western countries are replaced by NMUK.

NMUK has twenty years experience of the transference of techniques from Japan and is one of the invited exemplars. NMUK still transfers engineers to and from Japan to assist with abstraction an application of new ideas/techniques. Some of the techniques transferred in are of specific interest to this research i.e. those tools and techniques pertaining to lean manufacturing. The abstraction of the Nissan tools and techniques had to consider the operating systems under which they currently operate in Japanese sister plants. The first stage of ERIP is to abstract the knowledge and the skill to facilitate interventions to the IPC's.

It was immediately evident that the ERIP requires a diagnostic tool to establish the current productivity, manufacturing and training needs in any collaborating Company. A Productivity Needs Analysis (PNA) previously developed (Herron and Braiden 2004) is being tested.

Technology transfer

There are two clear facets to knowledge, the first being explicit which can be codified and easily transferred, however the second which is tacit has to be earned it cannot be bought. Without a model to abstract and apply knowledge it will be difficult not only to change but to sustain any improvement.

This project considers the importance of explicit and tacit knowledge to enable the efficient facilitation and accurate transfer of knowledge. The subject of knowledge transfer has been summarised by Gertler (2001), as "no matter which label one prefers, the production, acquisition, absorption, reproduction and dissemination of knowledge is seen by many as the fundamental characteristic of contemporary competitive dynamics".

Tacit knowledge has been classified as a subject and brought to the arena of academic discussion by Polyani (1966) and Zack (1999). Gertler specifying what it is by what it is not attempts to define it. Hence, the paradigmatic examples used to illustrate this idea, whether in Polyani's own work or else where, tend to focus on the performance of skills such as swimming, landing an airplane, identifying a person's face, riding a bicycle, or making bread. In each case, the successful performance of a skill depends on "the observance of a set of rules which are not known as such to the person following them" (Polanyi, 1958).

The question of shared values, language and culture is apparent within any manufacturing unit as well as across countries and cannot be underestimated with regard to the potential for misunderstanding concepts (Zack, 1999). The aspect of shared values is also commented upon by Clark and Meldrum (1999), who consider 'pockets of good practice'. They cite problem-solving groups as an example of a community or a pocket of good practice. They move on to say (quoting Hendry *et al.*, 1995) that within these communities "people share tacit knowledge and through dialogue bring this to the surface; they exchange ideas about work practice and research with new methods and ideas; they engage in discussions which affirm or modify theories in use; they innovate new problem solving routines and simultaneously manage and repair the social context".

Sako (2003) studied supplier development at Honda, Nissan and Toyota. She states "theories of organisational learning and knowledge sharing rarely demonstrate how tacit knowledge moves across firm boundaries". The definition given to supplier development is: a firm's attempt to transfer or replicate either some aspects of, or its complete in-house capability across firm boundaries. The ability to replicate such a capability is, in itself, also a capability. Sako goes on to say that "replication of organisational capability may be difficult due to the tacit nature of the knowledge to be transferred to suppliers…hands-on instruction must accompany classroom teaching, which makes the process labour intensive and expensive".

There is an acknowledgement from some researchers of the difficulty of introducing a paradigm shift such as lean manufacturing. The work of Papadopoulou and Özbayrack (2005) confirm the finding of this work by reporting:…'the transformation process to a lean manufacturing production system requires a lot of effort, participation of all levels in the hierarchy, introduction of new principles not only in the shop-floor level but also in the company culture and organisational structure. For the above reasons, transition can be slow, incremental, complex and stressful process that may also involve a great deal of uncertainty as there are no clear guidelines for the transition; rather the process differs substantially from case to case'.

The programme (ERIP) assumes that the major abstraction and application of the tools and techniques from Japan to NMUK had previously taken place. Of interest is the content of the Japan to NMUK transfer. Once this had been identified it assisted the NMUK knowledge transfer to general manufacturing. The ERIP project has to face geographical, educational, cultural, society and historical barriers, as well as established strategic paradigms at a local as opposed to a national level (Sako, 2003; Dyer and Nobeoka, 2000; Lloyd, 1994). The next stage is the training of IPC's to complete the final dissemination of lean methods into the tester companies.

Technology transfer in the UK

Transfer

Transfer + Japanese engineers

Application   Abstraction   Application   Abstraction

δ^2 α^2 δ^1 α^1

[Year 1]

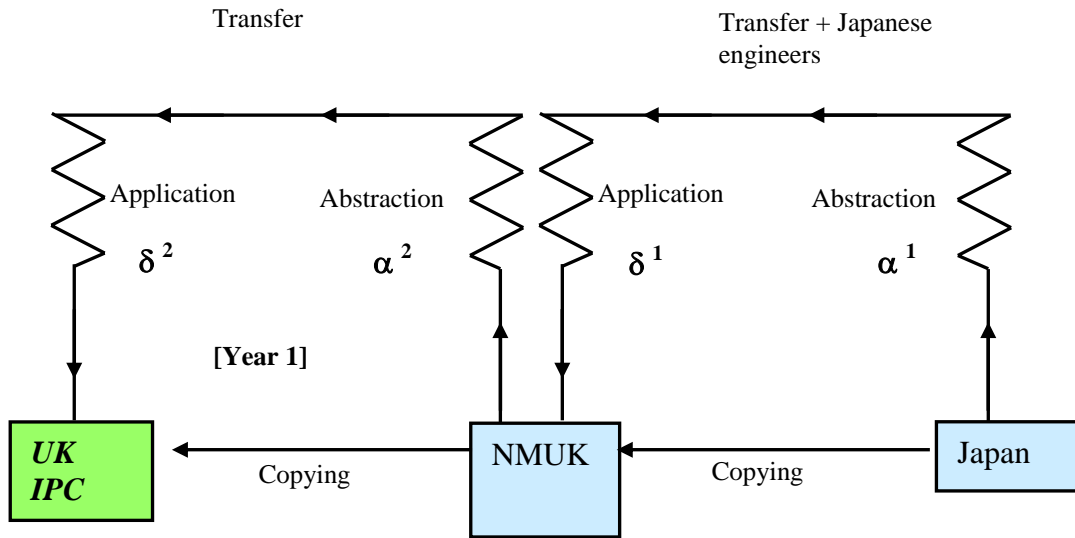| UK IPC | ← Copying — | NMUK | ← Copying — | Japan |

Figure 2. Transfer of elements of the Nissan Production Way to the IPC's (UK format)

The abstraction and application to the UK IPC was supported by the secondment of NMUK staff to the programme. Even with the use of 'western staff' it must be recognised that:

$$\alpha^2 < \alpha^1 \dots (\text{Eq}^n 1)$$
$$\delta^2 < \delta^1 \dots (\text{Eq}^n 2)$$

Lean manufacturing expertise was abstracted (α^1), from Japan and applied (δ^1), to NMUK. The second stage was to abstract (α^2) from NMUK and apply to the IPC (δ^2). The content and processes associated with (δ^1), and (δ^2), were pre-set and assessed to confirm compliance with appropriate standards. The reason for this disparity (Eq^n1 and Eq^n2) is that, as stated earlier, NMUK has undergone abstraction and application iterations for 20 years. Also the appropriate level of application for NMUK is unlikley to be same as other manufacturing companies. Consequently the level of abstraction must reflect the hosts level of capability to absorb and apply it. In common with Lillrank (1995) a lot of consideration has been placed upon the tacit nature of knowledge, which in this case has to be transferred within a limited time frame allowing for the required learning through trial and error. The proposed transfer mechanism is the CCAs, however it was not initially clear what the impact of these would be.
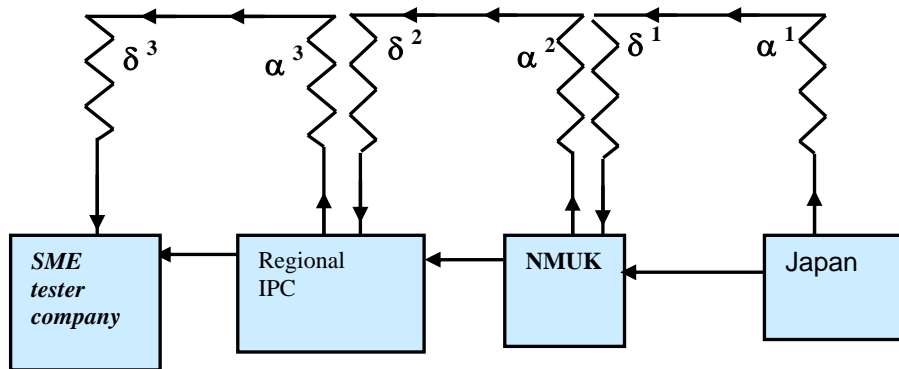
Technology Transfer in ERIP

Figure 3. The full model showing the staged levels of abstraction and application
The expectation is:

$$\alpha^3 < \alpha^2 < \alpha^1 \quad (Eq^n\ 3)$$
$$\delta^3 < \delta^2 < \delta^1 \quad (Eq^n\ 4)$$

This is not a loss *per say,* but the result of abstraction and application in that at each level of abstraction, the transfering engineer is of a higher level of knowledge and skill than that of the person receiving.

Constitution of level 1 abstraction to IPC

The tacit knowledge of the NMUK engineers combined with regional engineers has produced an abstraction level 1 for the IPC's. It cannot be assumed that the programme level 1 = NMUK level 1 nor was it intended to be so.
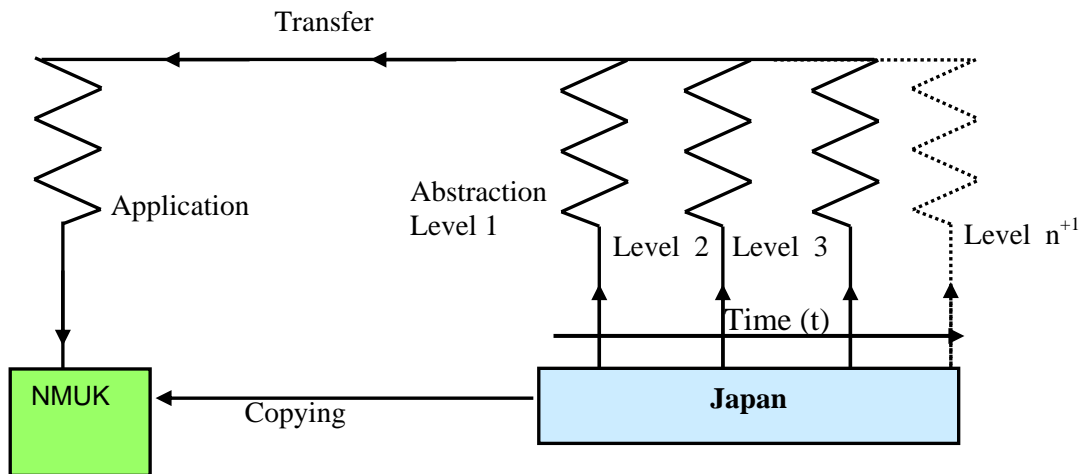
Figure 4. The image of the last 20 yrs of technology transfer within Nissan and ongoing abstraction and application

The tools and techniques to be understood and facilitated within a small group environment (abstraction level 1) to the IPCs are thought to be:
- NMUK level 1 was focused on Kaizen, skill control, 5S and standard operations under the Japanese heading of Genba Kanri.
- NMUK level 2 consisted of autonomous maintenance, JIT, and systematic problem solving.

  - NMUK level 3 has moved to TQM, and benchmarking.

This staged productivity journey has taken 20 years with a high level of support and training. A model developed by Bessant and Francis (1999) uses a 5 level approach that does not conflict with the approach of this research however, breaking down a subject or concept into stages may help a company who has started the lean process, and is trying to conceptualise where they are in terms of development. What is not offered is how to move from one stage to another.

Constitution of level 1 abstraction to the IPC's

The tools and techniques to be understood and facilitated within a small group environment (abstraction level 1) to the IPC's are: The DTI seven measures[1], 7 old QC tools, 5S, skill control, kaizen principles, standard operations, 7 Wastes and a selection of the following as appropriate to their own industry: SMED, problem solving, process flow, principles of OEE and lead time analysis.
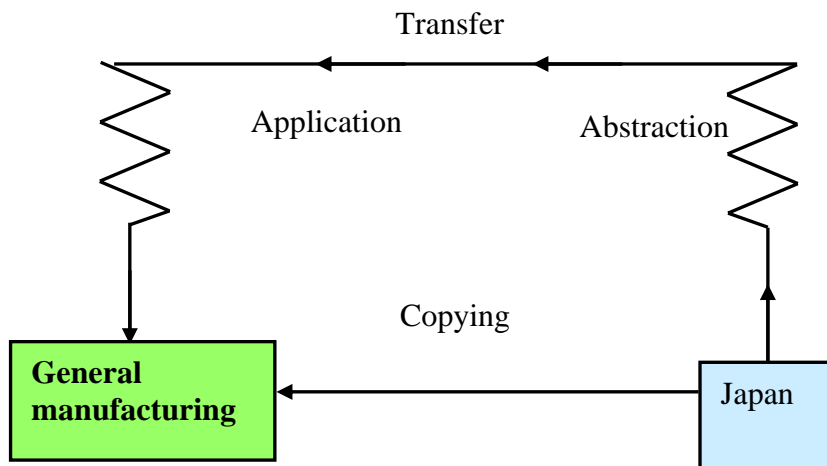

Figure 5. The ideal transfer of technology from Japan to general manufacturing companies.

The ideal scenario is that shown in above, which cuts out the 'middlemen' but it also removes the source of tacit knowledge. This is an attractive option as the cost of providing people to provide the tacit knowledge is high. A good example of the potential pitfalls of this route was the failed research in the UK of Quality Circles in the 1980's. Quality circles are a classic example of the Western belief in the miracle cure resulting from the five-day study tour to Japan, with little understanding of the philosophy behind the concept (Wickens, 1998). Companies have adopted the structured parts of lean, but often found it difficult to introduce the culture and mindset.

International context

In ERIP, the explicit and tacit knowledge are shared through IPCs (Innovative Productivity Centres) in 6 regions within 6 countries in the North Sea Region: England, Belgium, The Netherlands, Germany, Sweden and Norway. An IPC consists of a regional development

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[1]Floor space utilisation, value added per part, stock turns, OEE, not right first time, schedule achievement and operator productivity (DTI EID5e).

agency (RDA), a higher education institution (HEI), an exemplar and SME tester companies. In the last the method of abstraction and application will be tested. The knowledge within the different exemplars in these regions will be disseminated using the abstraction and application model shown above. This model will be used locally, but mainly internationally. The local version will use the local exemplar as the knowledge source for the IPC, which in turn will abstract and apply it to companies. The international bonds are even stronger, for NMUK will serve as a 'first exemplar' which will primarily share its knowledge with all IPCs in the project. Thereafter the companies involved can visit NMUK to get insight into their lean practices. Finally, partners in the IPC will visit other IPCs in other regions than the one in England to share in their knowledge as well: all RDAs, HEIs, exemplars and SMEs will exchange knowledge on their experiences with the model of abstraction and application. This will result in a transnational network of IPCs.

Moreover, developing the model with which micro companies can start on its lean journey means developing a methodology with which the regions (i.e. the RDAs) can start small and medium sized companies on their lean journeys. This methodology will reinforce companies and prepares them for supplying to more and more demanding industries (e.g. automotive, aerospace, food, process industry, etc.). Also, through ERIP and lean thinking, companies will learn to focus on their value adding activities only. Lean thinking, moreover, has influence on the three pillars of sustainability. Lean means productivity improvement (i.e. economic improvement). With lean, workers have influence on the way (their part of) the manufacturing process is set up (i.e. social innovation). And lean brings about a more efficient way of producing, which means saving on energy, water and other resources (i.e. safeguarding the environment). ERIP will thus (indirectly) promote sustainable innovation and entrepreneurship in SMEs.
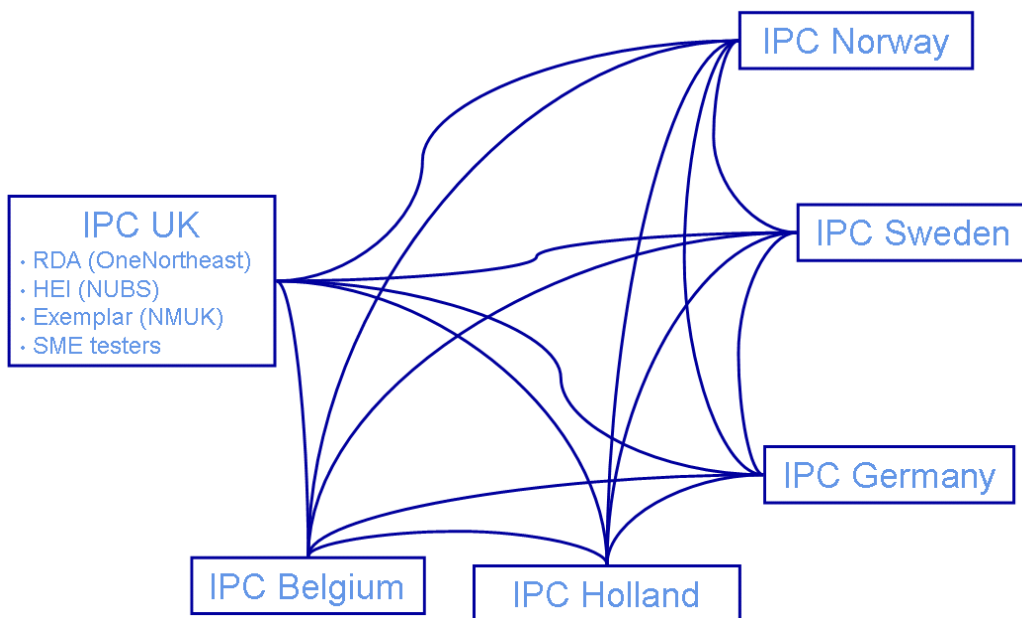

Figure 6. The international network of IPCs with the UK version explicated: RDA is OneNortheast, HEI is Newcastle Business University (NUBS), Exemplar is NMUK and there will be a group of SME testers.

Conclusion

With ERIP, the seasoned model of abstraction and application will be transferred to a new market: that of small and medium-sized enterprises. Hopefully, they will also reap the benefits as the bigger companies did with introducing lean.

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Innovative Concepts for Transnational Education and Research in Maritime Transport (NMU)

T. Pawlik, University of Applied Sciences Kiel, Germany
G. Wilmsmeier, Transport Research Institute, Edinburgh Napier University, UK
P. Zuesongdham, Jacobs University Bremen gGmbH, Germany

Abstract

The interrelation between the education and maritime industry is diverse, multilayered and rather complex. Education has to serve diverse interests and research needs. At the same time rapid changes in the economic, social and environmental spheres require quick and knowledgeable action from decision makers in industry and also the policy sector.

A central question is how this fuzzy and somewhat metastatic set of requirements and expectations can be captured and coordinated by the education industry to be able to develop a timely response or in the best case a foreseeing approach of future needs for education offerings?

The search for a response will inevitably rest on three main pillars: quality, internationalisation and accessibility. It is commonly known that the maritime industry, despite hit from the recent economic crisis, has a high demand for highly qualified personnel, whether ashore or aboard the ships. The maritime industry in its construct is most likely the most international of all industries sourcing, capital, human resources, services and their cargoes on a global scale. Accessibility is a consequence of the latter since the international characteristics and activities will either require education industry to train and spread knowledge wherever the learners are or has to take a form that is available in an almost ubiquitous way.

Within the "Northern Maritime University" (NMU) project, partly funded by the European Regional Development Fund (ERDF) in the programme of Interreg IVB North Sea Region (NSR), a service product portfolio and collaboration platform have been developed to specifically respond to the addressed challenges.

The NMU service product portfolio aims at increasing the mobility of students and lecturers. Furthermore, synergies will be achieved by improving access to the relevant learning and research resources of the whole NMU network. Mobility, as well as accessibility, is supported by a number of e-learning elements. The NMU service product portfolio integrates two dimensions of innovation: Service product innovation and process innovation.

The e-Collaboration platform on Maritime Transport Knowledge and Expertise aims at facilitating knowledge building through education, collaboration and cooperation in research activities and industry projects based on an innovative and sustainable concept using web-based technology. The platform offers a single entry point for the inscribed network parties, connecting e-learning and blended learning, and information resources with the knowledge network of the NMU partners. The integration of latest communication concepts, reaching from simple chat rooms to video conferencing, facilitates the bidirectional knowledge transfer.

This paper discusses the strategy to implement the e-Collaboration platform and pair it with the service product port

Introduction[1]

The need for excellence in research and education is recognised in a number of key EU policies, processes and strategies. The Lisbon/Gothenburg Strategy has the following aim: *"The EU should become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion".*

The EU has articulated *"the particular need for an all-embracing maritime policy aimed at developing a thriving maritime economy, in an environmentally sustainable manner".* In addition, it asserts that… *"Such a policy should be supported by excellence in marine scientific research, technology and innovation".* However, excellence can only be achieved if the underlying educational system and framework facilitates it. These articulated policy goals have been relatively recently promulgated and seem to represent a logical progression from the ongoing processes (Lisbon, Gothenburg, Barcelona, and Bologna) underpinning Europe's general educational policy and programmes.

Europe has traditionally been the fulcrum of the world's maritime activity. In recent years, however, the maritime industry has experienced significant structural changes, brought about by operational and technological developments that have led to a much wider geographical dispersion of maritime activity. This implies that a rethinking of educational approaches for the maritime industry has been required for some considerable time.

It is critical that, as markets become increasingly global, tariff barriers are fast disappearing and more information-based economies emerge, the maritime industry and related sectors need to emphasize innovation, competency and collaboration. Developing and managing knowledge as a strategic asset is the key to success in securing a sustainable source of competitive advantage in any emergent knowledge-based economy. To maintain competitiveness, companies need to capitalise on their intellectual assets, rather than to simplify their physical assets and infrastructure. However, in common with other regions of the world, the maritime sector in the North Sea Region is facing a dearth of well-trained maritime business managers. There is significant potential demand, therefore, for the offering of education and qualifications which enhance the innovation capacity within the sector; in the future, maritime business managers will need to possess multidisciplinary knowledge and skills to cope with growing maritime traffic, port development, and rising environmental challenges, all within an intermodal environment.

The relationship between the maritime industry and the education sector it draws upon is multilayered and rather complex, with the latter serving diverse educational and research needs at a variety of levels. At this particular point in time, the ambitious goals espoused above are not explicitly reflected in the provision of maritime education. Although advanced technical and commercial knowledge are important assets in the maritime sector, there is also a fundamental need for workers with relatively basic, but precisely defined, skill-sets. Investment in people and the division of labour remain relevant issues for the maritime industry. In a knowledge-based economy, higher education in particular plays a crucial role in reshaping and restructuring the social, economic and political institutions of a country, but cannot replace the value of practical knowledge. At the same time, rapid changes in the economic, social and environmental areas demand quick and informed action on behalf of strategic decision makers in industry and also the policy sector.

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[1] Related articles have been published in Public Service Review: Science and Technology (Issue 3): Cullinane, K. and Wilmsmeier, G.: Beyond Policies and Process; and Zuesongdham, P: Project Northern Maritime University (NMU); and on the NMU website – www.nm-uni.eu. This article partly draws on these existing publications.

The need for change in maritime education is reinforced by reflecting upon and evaluating the outcomes of the Bologna process and Lisbon/Gothenburg Strategy, the most salient of which include:

- The development of information and communication technologies providing new opportunities and possibilities of educational collaboration and cooperation at international level,

- The emergence of corporate educational provision through higher education institutions,

- The development of borderless higher education.

The pivotal question is how can the diverse, dynamic but somewhat ill-defined educational requirements of the maritime industry be identified and acted upon by the educational sector in a coordinated and timely fashion and in a form that meets the EU objectives for both education and maritime policy.

The search for a response inevitably rests on three main pillars: quality, internationalisation and accessibility. The maritime industry has a constant demand for highly qualified personnel, whether ashore or at sea. It is probably the most global of all industries in terms of sourcing capital, human resources, services and cargoes. As a consequence of the industry's inherently international characteristics, maritime education must endeavour to maximise accessibility, either by educating, training and spreading knowledge wherever learners are located or by disseminating it in the most ubiquitous form. This poses some fundamental challenges for a maritime education sector that can generally be described as rather traditionalist, nationally-oriented and exhibiting a dearth of multi-disciplinarity in its offerings.

This setting does pose significant challenges especially for a maritime education industry that can in general terms be described as rather traditionalist, locally-orientated and with a lack of multi-disciplinarity in its offerings. Consequently, the quest is:

a) To develop a service product portfolio that responds to the described complexity and
b) To design a platform that allows for continued, effective, flexible, and accessible bidirectional collaboration for the interested parties from industry, education and the policy sector.

Northern Maritime University – Academic network for innovative maritime education and R&D
The "Northern Maritime University" (NMU) has its origins in the specific identified challenges for the maritime industries in the North Sea Region and represents a direct response to the draft content of the EU Maritime Policy Green Paper and the Lisbon/Gothenburg Strategy. In particular, its development is based on the fundamental premise that the economic importance of the maritime industries to the European economy is extremely significant, with ninety percent of global transport undertaken by the shipping industry and forty percent of the global fleet based in Europe.

The NMU concept has been designed to meet these challenges by building up a strong transnational network of universities in the North Sea Region (NSR) which intensively and continuously integrates relevant stakeholders from the maritime business sector. The creation of a transnational maritime business knowledge base, encompassed within NMU, provides a timely and visionary response to reinforce and engender the development of maritime industries and to constructively contribute to the development of a North Sea and European Maritime Policy. This will be achieved by building a nucleus of skills, experience, competences and infrastructure for undertaking common research projects in the maritime sector and to also advise and enable governments, institutions and other public sector organizations to take forward policy decisions.

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Against this background, multidisciplinary qualifications in maritime business management will benefit greatly from exploiting the diversity, complementarity and synergies that exist between the maritime expertise and content already offered at several centres of excellence housed within the NMU partners in the North Sea Region. The partners include: Transport Research Institute, Edinburgh Napier University; Kiel University of Applied Sciences; University of Applied Sciences Luebeck; Molde University College; Gothenburg University; Jacobs University, University of Southern Denmark; Swedish Environmental Institute; University of Applied Sciences Bremen and the private sector partner Pantrak, UK.[2]

FIGURE 1: NMU – NETWORK
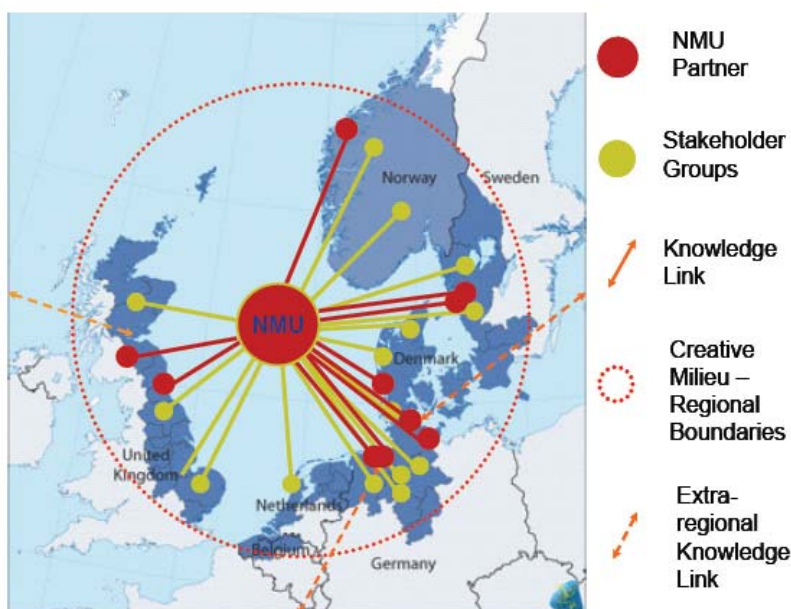
Source: NMU 2008

The development of the NMU represents an attempt to harness, connect and gather this broad range of knowledge and expertise within a common and lasting network of universities which specifically and directly addresses the needs of potential beneficiaries. In order to precisely determine what these needs are, the NMU project has realised a first scoping trans-national stakeholder study across all corporate levels within the maritime sector, in order to identify the sector's educational needs in respect of fostering innovation. In recognition of the project partners' experience and the received results from the scoping study, professional accreditation of individual programmes/qualifications within NMU's portfolio will be sought from as many and as diverse a range of sources as possible (e.g. Chartered Institute of Logistics & Transport, Institute of Chartered Shipbrokers, Chartered Insurance Institute etc.).

Innovative Elements in the NMU service product portfolio
The NMU service product portfolio aims at increasing the mobility of students and lecturers. Furthermore, synergies will be achieved by improving access to the relevant learning and research resources of the whole NMU network. Mobility, as well as accessibility, is supported by a number of e-

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[2] For full information on NMU project partners visit: www.nm-uni.eu

learning elements. Thus the concept is based on the three main pillars: quality, internationalisation and accessibility. The NMU service product portfolio also integrates two dimensions of innovation: Service product innovation and process innovation.

FIGURE 2: NMU – SERVICE PRODUCT PORTFOLIO
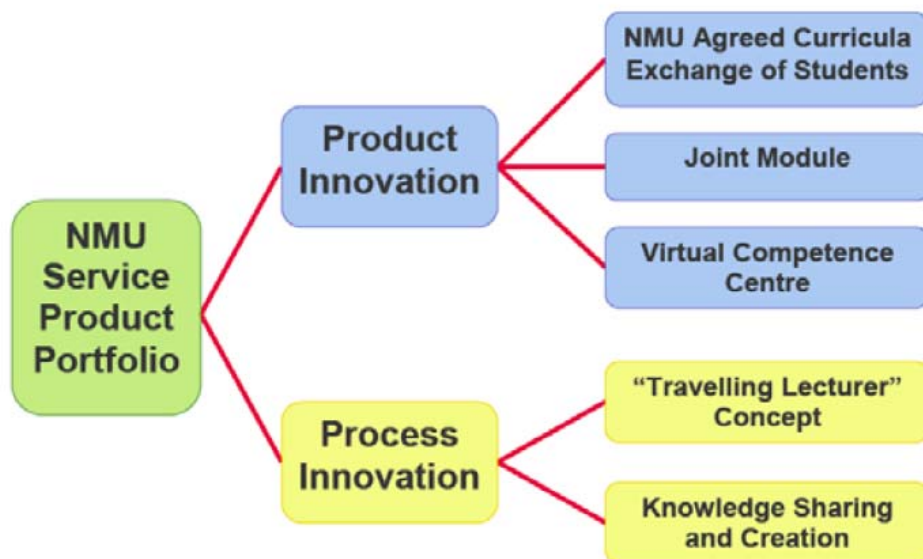
Source: NMU 2009

According to the Oslo manual of the OECD "a product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses"[3]. The NMU service product 'Exchange of Students' is a significant enhancement of existing practise, whereas the service products 'Joint Courses' and 'Virtual Competence Centre' are new products. Hence, all three service products belong to the category product innovation.

A process innovation "is the implementation of a new or significantly improved production or delivery method".[4] This is the case for the service products 'Travelling Lecturer Concept' and 'Knowledge Sharing and Creation'.

PRODUCT INNOVATION – Joint Courses and Exchange of Students
The NMU partners are developing a number of new courses in the wider field of maritime business management. Courses such as "International Maritime Human Resource Management", "Maritime Transport and the Environment" or "Ship Technology" are jointly developed within the NMU network and in close consultation with relevant stakeholders. Joint Courses will be part of the Agreed NMU Curriculum and specific module elements will be available as e-learning. Additionally, courses which already exist at NMU partner universities can be mutually accepted by the partners.

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[3] http://stats.oecd.org/glossary/detail.asp?ID=6868
[4] http://stats.oecd.org/glossary/detail.asp?ID=6870

Of course, the Exchange of Students is quite a traditional service product of universities, but in recent years students' mobility has gained importance significantly. In 2007 the European Ministers responsible for Higher Education in the countries participating in the Bologna Process re-emphasised in their "London Communiqué"[5] that mobility "is one of the core elements of the Bologna Process, creating opportunities for personal growth, developing international cooperation between individuals and institutions, enhancing the quality of higher education and research, and giving substance to the European dimension" [6] Two years later, mobility was characterized as the "hallmark of the European Higher Education Area" and it was stated "that mobility of students, early stage researchers and staff enhances the quality of programmes and excellence in research; it strengthens the academic and cultural internationalisation of European higher education. Mobility is important for personal development and employability; it fosters respect for diversity and a capacity to deal with other cultures. It encourages linguistic pluralism, thus underpinning the multilingual tradition of the European Higher Education Area and it increases cooperation and competition between higher education institutions."[7]

Still, there are a number of hurdles to students' mobility, such as the non-acceptance of modules or non-flexible curricula. The partners of the NMU network seek to overcome those hurdles by enhancing the possibilities for students to spend a certain period at another NMU university. The so-called Agreed Curriculum comprises the common NMU curriculum and the mutually accepted courses. Within the framework of the agreed curricula, the exchange can be organised very smoothly. Wherever suitable, NMU partner universities will embed their co-operation in ERASMUS agreements. A comprehensive NMU course handbook provides all necessary information on the NMU partner institutions and includes detailed descriptions of all modules with relevance to the NMU curricula. The module descriptions are set up in accordance with the requirements of the Bologna process and follow given accreditation guidelines.

PROCESS INNOVATION – Travelling Lecturer Concept
Faculty members of the NMU partners will teach not only at their home universities but also at the campuses of other NMU partners or, for example, during NMU summer schools at specific venues. Thus, those NMU students who are not able to study abroad can have access to an international learning experience and can gain from the diversity of the NMU staff. The organisational framework for staff mobility will consider the Guidelines for Quality Enhancement in European Joint Master Programmes of the European University Association.[8]

A modular approach
Joint NMU modules have a size of 7.5 ECTS credit points and are made up from five module elements of 1.5 ECTS credit points. Due to this modular structure, it is possible to deliver a module element during one week. Although different universities follow different approaches with regard to semesters, course structure, timetabling etc., this is important as it will always be possible to integrate one week of student learning experience into a faculty's schedule (e.g. during project weeks). Compared to the traditional short visits of lecturers, the modular structure of the common NMU courses enables short

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[5] http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/MDC/London_Communique18May2007.pdf
[6] London Communiqué: Towards the European Higher Education Area: responding to challenges in a globalised world.
http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/MDC/London_Communique18May2007.pdf
[7] Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven and Louvain-la-Neuve, 28-29 April 2009: The Bologna Process 2020 - The European Higher Education Area in the new decade
http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/documents/Leuven_Louvain-la-Neuve_Communiqu%C3%A9_April_2009.pdf
[8] http://www.eua.be/eua/jsp/en/upload/EMNEM_report.1147364824803.pdf

stays of foreign lecturers teaching self-contained units, whose outcomes can be fully credited to the relevant modules.

FIGURE 3: NMU COURSE MODULES AND MODULE ELEMENTS
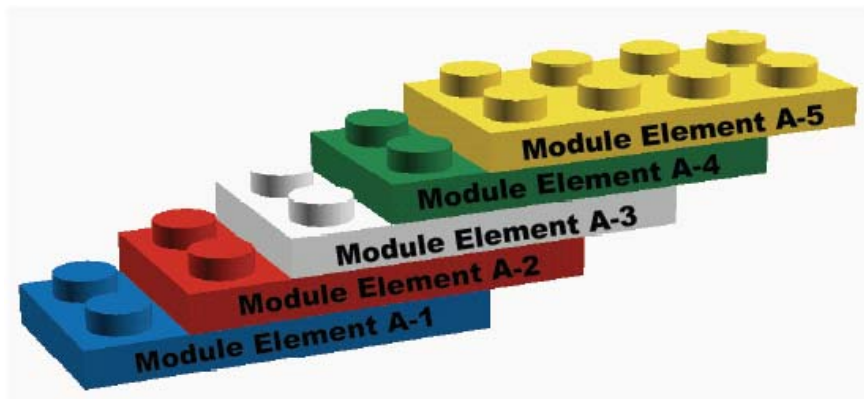
Source: NMU 2009

Knowledge Sharing and Creation
Each individual NMU partner university has close relations with maritime companies and other relevant organisations on a regional and/or national - and sometimes even international level. Such relations are already used to create and share knowledge in a number of ways. The NMU network enhances the options for the creation and sharing of knowledge by expanding the geographical coverage of individual institutions and by adding specific content. E.g., maritime companies searching for a lecturer to deliver in-house training will be able to address members of the whole (virtual) NMU faculty. Seen from the NMU's perspective, representatives from NMU stakeholders can be asked to lecture specific topics to the benefit of all NMU students, e.g. within the framework of a joint NMU summer school.

FIGURE 4: KNOWLEDGE SHARING
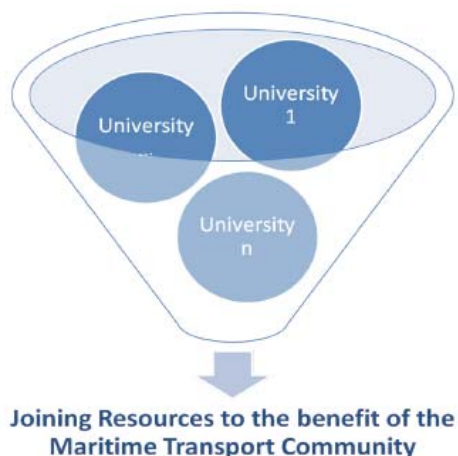
Source: NMU 2009

The NMU marketing platform shall include an NMU placement pool. Such an online job market can be used by NMU stakeholders to publicise their offers for work placements to current students, as well as

entry-level jobs for new graduates. Students from the relevant faculties of all NMU partner universities can present themselves to future employers by uploading their personal profiles to the website of the NMU placement pool.

A further approach for the creation and sharing of knowledge should be PhD studentships: NMU students with a high level of research potential will be jointly supervised by a member of staff at an NMU partner university and an employee of a NMU stakeholder organisation, in which the NMU PhD student will spend a certain period to work on his or her research project.[9]

The different parts of the service product portfolio shall be made available through the NMU e-Collaboration platform.

E-Collaboration platform

A key to address the challenges in education is accessibility. In order to facilitate accessibility and integrate it with today's demands of industry and technology and to enhance the service product portfolio described above an e-Collaboration platform has been designed. This platform aims for allowing a high level of accessibility to educational content, collaboration and cooperation in research activities and industrial projects among NMU members and stakeholders (industry, policy makers and students). Effectively, the NMU e-Collaboration platform allows for accessing the services and products of the NMU network within a single virtual location.

In order to make allowances for a maximised effective use of the platform, it was constructed under the principles of robustness, flexibility and simplicity and considering the "key ingredients" shown in Figure 5, below. In order to avoid technological dependencies on the one hand and to assure a high level of flexibility and sustainability on the other, the platform is developed using open source technology.

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[9] Cf. http://www.scitech.ac.uk/Grants/Studs/CASE/Contents2.aspx

FIGURE 5: KEY INGREDIENTS OF INNOVATION USED IN THE E-COLLABORATION PLATFORM
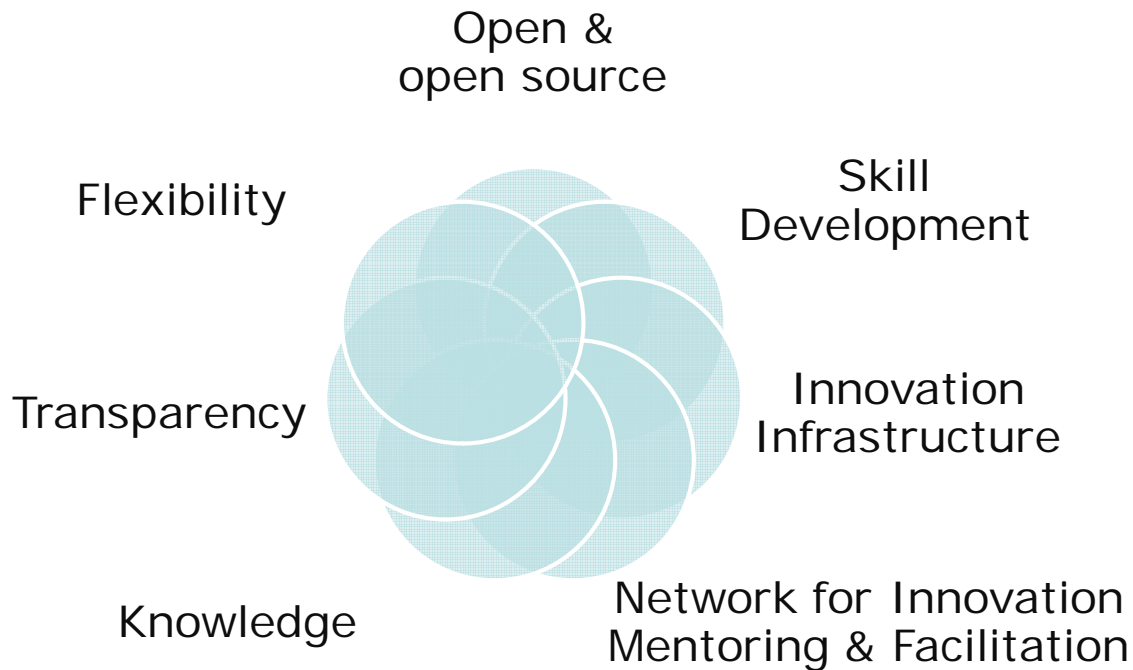
Source: NMU 2009

The e-Collaboration platform is not only meant to be of innovative character in itself, rather more important is that the e-Collaboration platform is a tool which allows for the development of knowledge and skills, networking, facilitates mentoring, and allows to access a "knowledge network for innovation".

Accordingly, the tool caters for a number of services and functions:

- Registration and access to NMU courses

- Information on NMU travelling lecture and student exchange opportunities

- Discussion for on key maritime topics including file sharing and video conferencing possibilities

- A pool of lectures, speeches and publications from NMU members

- Virtual Competence Centre

- Information on future and past events.

Besides the features listed above the NMU Wiki provides the collection of terminologies which can be used as a reliable source of information and knowledge on maritime transport.

A key feature of the e-Collaboration platform is the Virtual Competence Centre which integrates and organises skills, experiences and competences of NMU members for undertaking common research projects and advisory activities in the maritime sector. Researchers' profiles will be published and updated regularly. A comprehensive virtual university image will be provided, covering the whole

scope of university activities, including research, consultancy, knowledge transfer and, for example, the supervision of theses of various Master's degrees and PhD work, all with very rapid response time. Access to the platform is open to registered users. Registration is free and only serves the purpose to be able to directly contact registered members and to anticipate any potential misuse of information. Main target groups of the e-Collaboration platform include NMU community members, NMU stakeholders, other universities, research institutes, maritime related institutions and companies in maritime business and students.

The main benefits of the NMU e-Collaborationplatform can be summarised as followings:

- High level of accessibility to information among the community members

- Enhanced collaboration by exploiting available web technology

- Single access to all services and information

- Facilitated accessibility to knowledge on maritime transport

- Synergies between industry and education through knowledge and information trading

Challenges for success

Against this background, multidisciplinary qualification offerings will benefit greatly being set into a framework that allows for a high level of accessibility, reducing space and time constraints. Further, the diversity, complementarities and synergy that exist between maritime expertise and the content of academic programmes across Europe can be exploited in a more effective manner. Thus, the concepts deliver towards the important element of scientific integration within the EU's Maritime and Marine Research Strategy (2008).

The presented concepts also connect, gather and harness the expertise in specific aspects of the maritime sector already exists at several centres of excellence housed within universities that can develop to a common and lasting network of universities.

However, one of the fundamental challenges is how to integrate further fragmented, networks into a flexible, proactive, multidisciplinary knowledge cluster. While management literature acknowledges that small entities tend to be more flexible and innovative, a question remains over how the knowledge generated in these knowledge centres can be disseminated to a wider audience. There is a general willingness to cooperate among scientists, but will the presented mechanisms be dynamic enough to facilitate this cooperation. The first is step to provide a gateway, like the e-Collaboration platform, which gives access to the many and varied research centres is on its way. Now the challenge will be to drive the network and to seek support from policy makers and industry to allow the forming network to establish funding opportunities for research.

The expectation is to facilitate the formation of strategic partnerships among Europe's best business, research and higher education actors to promote and coordinate innovation, research and higher education at the highest levels. At the same time, however, maritime research and education should resist a tendency towards institutionalization which, in the long term, will undermine innovation and its proactive character.

Additionally, maritime education can only happen in conjunction with high level research. Maritime research and education needs to become an integral element of the "European Higher Education Area", providing knowledge, education and training with a global outreach that is achieved within the

context of the OECD/UNESCO Guidelines for Quality Provision in Cross-border Higher Education and which encompasses lifelong learning and certification, collective learning and multi-disciplinarity. European policies and strategies that are pursued post-Lisbon/Gothenburg must encourage effective co-operation within maritime education, built on common interests and the input of all participants. A prerequisite, therefore, is the voluntary nature of the co-operation. While the goals are clear, how to attain these goals must be left flexible. Transnational co-operation cannot be artificially induced, but must grow in an organic matter and in a manner that cannot necessarily be standardised.

Conclusions

The raising of standards in maritime education and training is essential. In line with the outcomes from the Bologna process, the emergent common modular framework for programmes of study will facilitate the forging of greater links and partnerships across Europe, not only between education institutions, but also between education and industry. The development of a series of integrated modular programmes within Europe would be in line with the Bologna process and allow for the transfer of students and lecturers to create a new European standard for maritime education and training. This does not imply that national standards should be swept aside, but rather that they are exceeded within this new framework. This would obviously require the support of national transport departments to approve pathways and agree on a complete set of revalidation and transfer routes within the maritime sectors. While the transfer routes are obviously essential to retaining skills within maritime clusters, this would also assist with initial recruitment by helping to build a positive image of a career in the maritime sector.

FIGURE 6: NMU – KNOWLEDGE CIRCLE
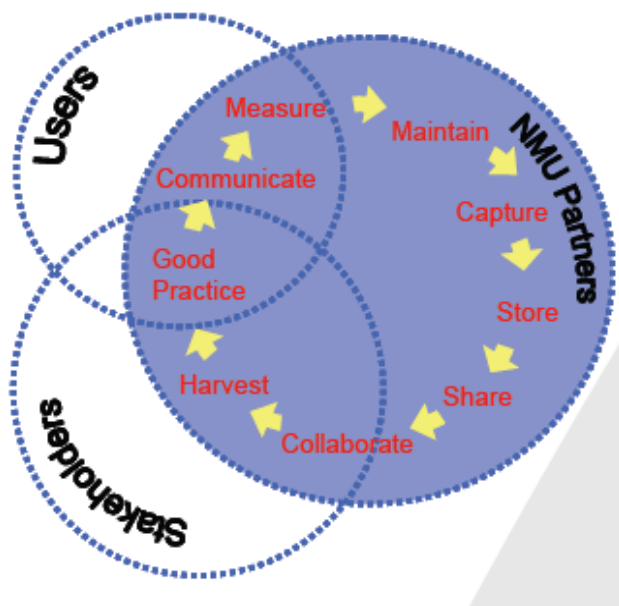
Source: NMU 2008

Maritime education is about being competitive at a global scale and within a global environment. Education for a globalized industry should not have borders, either national or European. Research and education partnerships should be based on excellence with EU policy and strategy supporting the establishment of strong networks and relationships and the building of long-term sustainable

capabilities. Steps towards excellence in research and education can only be realised if we free our minds of preconceptions and borders; physical, national and intellectual.

Research and educational development as presented above, centred on knowledge-based, networking clusters in which the mobilization and facilitation of knowledge is a key element. If underpinned by innovative thinking, products and processes maritime research and education shall contribute to a long term sustainable development of the maritime industry and its related sectors.

SCRAN: the SmartCities (inter) Regional Academic Network Supporting the Development of eGovernment Services

M. Deakin, Centre for Learning Communities, Academic Development, Napier University, UK
P. Cruickshank, International Teledemocracy Centre, School of Computing, Napier University, UK

Introduction

This paper outlines the SmartCities (inter) Regional Academic Network's (SCRAN's) three-way partnership and the organisation's way of working i.e. methodology. In this aim the paper draws attention to how the communication needs and technical requirements of the partnership and how they are being met. In particular, how they are being met in ways seen to be smart. In setting out how the organisation is doing this, the paper goes on to configure the 'triple-helix' of the SmartCities (inter)regional academic network and set out the 'step-wise' logic of the partnership's knowledge-base and learning platform. Having done this, attention turns towards the networking of the triple-helix by the universities and industrial sectors of what is known as the SmartCities venture. From here attention turns to the methodological question of how this knowledge-base can be used as a learning platform for the partnership to take SCRAN's eGov development programme full-circle?

Academic networking of the SmartCities venture

Figure 1 draws attention to the academic network underpinning the SmartCity venture known as SCRAN. In this respect it identifies the network of academic institutions, their city partners and the specific role they take on within SCRAN. As can be seen, for Edinburgh Napier University the main object of attention is methodology and for Mechelen (MEMORI) the object of the exercise is to help Kortrijk customise the development of their eGov services provision. In this respect, each academic institution, university, city and industrial sector is seen to contributing something towards the knowledge base each of them needs to learn about. That which it needs to learn about as eGov service developments and also requires for the programming of their customisation, multi-channelling and user-profiling to be understood by all concerned.

SCRAN as a three-way partnership

While the aforesaid draws attention to academic institutions and their city partners, it is the three-way partnership between the Universities, Industry and Government of the network that captures the science and technology around which the 'triple-helix' of regional innovation turns[1]. This offers an image of the triple-helix, SCRAN proposes to develop as the three-way partnership. As such the tri-partite nature of this partnership goes some way to capture SCRAN's particular take on the triple-helix

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[1] This paper's reading of the triple-helix relies heavily upon the representation of it by Etzkowitz, and Leydesdorff (2002, 2008) Unlike Etzkowitz and Leydesdorff (2002, 2008), however, this reading of he triple-helix does not rest at the level of institutions, but the communities of practice whose expertise we have take into represent the a- priori knowledge base for the model, the learning that flows from this and intellectual capital of the participants in question. In this regard the work of Amin and Cohendet (2004) reading of such models is useful for the reason, it is knowledge-based, but with an enterprise architecture that is geared towards the development of learning communities organised around cities and the intellectual capital of their regional developments. This combination of knowledge, learning and intellectual capital is a quite well established relationship, it is the link to communities of practice that is novel and which requires particular attention.

and serves as a means of drawing attention to the scientific and technological basis of the strategic research funded by the EC to support the innovative and creative use of ICTs by SmartCities.
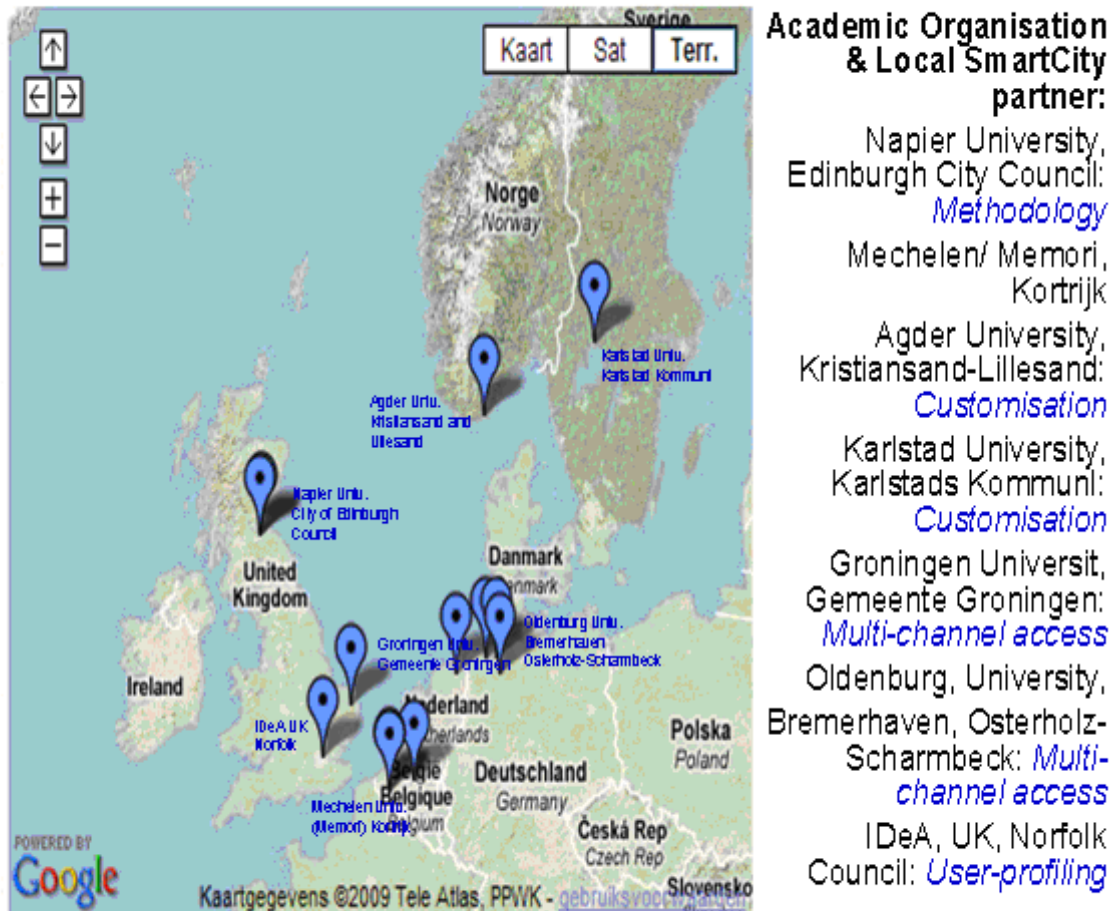
Figure 1: Academic organisation of SmartCity partner(s)

From here the organisational means needed for the said universities and their industrial sectors to use ICTs in the development of eGov services and required for governments to regulate this venture, can be explored in terms of the said partner capabilities. That is to say, explored in terms of the partnership's ability to assemble a methodology capable of not only customising the development of eGov services making up the SmartCities venture, but co-designing them in a way which allows the user-profiles of this constituency to be mainstreamed across the North Sea region.

What such a representation of the triple-helix model goes some way to uncover is the scientific and technical capacity of this particular academic network and what it offers the SmartCities partnership. In particular what if offers the SmartCities partnership as a platform of ICTs supporting the development of eGov services as part of a regional innovation system.

Methodology

It also needs to be recognised the 'novelty factor' making the triple-helix attractive is also offers an insight into its weakness, as it does not explain how (i.e. by what method) the three-way partnerships of such collaborative ventures can be made either functional, or operational in concrete institutional settings (by either the CoP, or learning supporting the development). To achieve this, theoretical and practical guidelines on how to use the model must be developed, partly with respect to how collaboration between the three strands of the helix, i.e. universities, industry and government can support the development of SmartCities venture into eGov services as part of a regional innovation system.

In methodological terms, the challenge this poses in turn means the academic network has to organise:

- the production for knowledge internally (i.e as the SmartCities venture);
- externally as part of a regional innovation system and
- represent SCRAN as a way of systematically 'turning innovation inside out' by representing the:
  - triple-helix of the SmartCities venture
  - the organisation of this venture into knowledge production as the social capital of a learning community
  - the collaboration needed for universities and industry to be smart in constructing the advantage this offers cities to meet their eGov. service development commitments
  - the consensus-building needed to support the development of 'trans-national' standards for the development of eGov. service provision
  - the practical application of such standards in building the capacity required for and co-designing the development of eGov. services capable of being mainstreamed across the North Sea's regional innovation system

The unique nature of this academic network rests with understanding triple-helix models are not just about offering theoretically-informed research and technical development opportunities, but a methodology for producing a knowledge of the advantage which the social capital of learning communities construct as the mainstay of such ventures.

This is because with SCRAN, research and technical development is not the network's common denominator. For SCRAN this lies elsewhere and with the academic nature of the network's intellectual capital. In particular with the advantage it manages to construct as the social capital of those learning communities supporting the creation of wealth. Set within such a terms of reference, it is proposed that SCRAN's particular task is to search out the potential advantage which the intellectual capital associated with this learning community is able to construct as a platform for wealth creation regulated by the development of electronically-enhanced services (eGov services).

Figure 2 sets out SCRAN's attempt to overcome such methodological challenges such a process of the knowledge production raises and offers an initial representation of the triple-helix this network advances to begin meeting them. As can be seen, in semantic terms the three institutional dimensions of universities, industry and government of SCRAN's institutional relations, are represented as the intellectual capital, wealth creation and regulation of eGov service developments and that production of knowledge which is managed by SmartCities as part of the North Sea's regional innovation system. Set out as an actor-network matrix of such institutional relations, it is universities, industry and government which make up the columns of the matrix and their respective

contributions to the generation of intellectual capital, wealth creation and regulative standards of such developments that make up the knowledge production of the left hand row.

This first institutional step into a formal representation of SCRAN's triple-helix is then given content in terms of the analytical spaces the matrix opens up for the SmartCities venture to cut across this as part of the North Sea's regional innovation system. This networking of SmartCities as a regional innovation system in turn relates the universities engaged in the generation of intellectual capital, industry involved in the creation of wealth and government regulating the standards of the service development (i.e. the generation and wealth of eGov service developments) back to those actors associating with one another as a community of learners. What the wealth created by this process of knowledge production contributes by way of and through this learning community is represented in the right hand column of the matrix. This is shown in terms of the advantage which the SmartCities venture constructs as a platform of wealth creation by the development of eGov services.

All of the aforesaid is then captured in the far right-hand column in terms of what the knowledge produced by this venture contributes to the development of eGov services as part of a regional innovation system. That is to say, by way of and through the associated capital of learning community set up to regulate the customisation of eGov service developments, the wealth created from their co-design and intelligence generated about the user-profiles of the North Sea's regional innovation system.
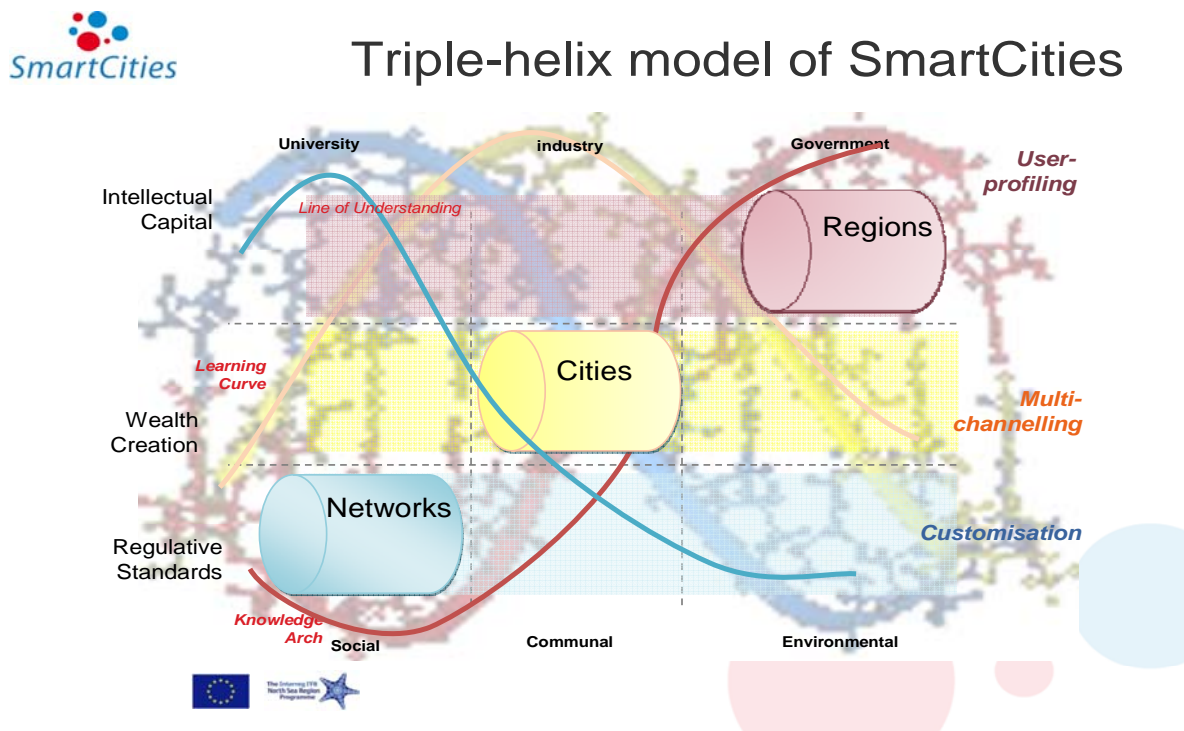

Figure 2: The triple-helix of SmartCities 1

Revealing how the triple-helix of the SmartCities venture can be equally advantageous, however, is not so simple. This is because proving that it is socially-inclusive, equitable and justly participative,

requires the academic community as a whole to accept the value of SCRAN's proposal for the need to 'invert' the normal representation of its institutional relations. For with out 'turning the relations up-side down', it is not possible to bottom-out the knowledge-base of the capital associated with the learning communities of this venture and as the 'wealth of intellect' needed to start meeting the regulative standards set as a baseline requirement of the network's initial step-up. Those standards that in institutional terms set up the network as such a socially-inclusive, equitable, and justly participative community of practices generated from the intelligence and wealth of the SmartCities venture in eGov service development.

Figure 3 attempts to underscore this contribution as a second-order configuration of the triple-helix for SmartCities. For this configuration shows the university as being responsible for building the capacity of the enterprise architecture and business models acting as a platform for cities to be smart in co-designing the development of eGov services with customised, multi-channelled access, targeting specific user-profiles as components of the North Sea's regional innovations system.
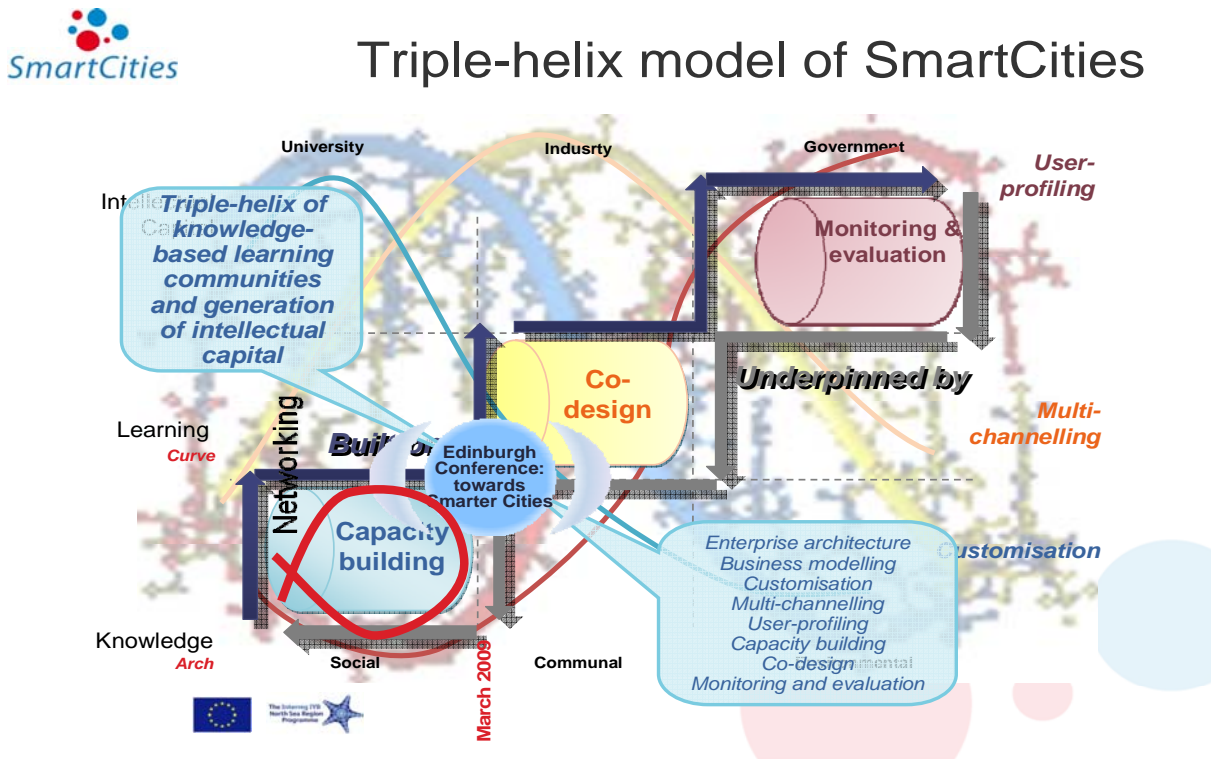
Figure 3: The triple-helix of SmartCities 2

Represented in this way, it is possible to specific about the duties and responsibilities of SCRAN's triple-helix become clear. For as figure 3 shows, while the work packaged together under the titles of: methodology, customisation, co-design and user-profiling provide the backdrop to SCRAN, it is not proposed the SmartCities venture should cover all of them as components of the North Sea's regional innovation system. Rather it suggests SCRAN should use the triple-helix as a means to cut across them, concentrating the efforts of network's associated communities on learning about building the capacity needed for this knowledge-base to support the co-design, monitoring and evaluation

requirements of eGov service development programmes. That capacity building which is the responsibility of the universities to construct the social capital of the knowledge-base they advance as the network's learning community.

Organised in this way, it is possible to see the knowledge-base and learning curve SCRAN's triple helix sets for the venture. What this also illustrates is the step-wise logic of SCRAN's particular take on the institutionalisation of the model. In particular the fact it builds off a given knowledge-base and is creative in using the wealth of industry underpinning the enterprise architecture and supporting the business model of the SmartCities venture. Those architectures and models that are particularly important for SCRAN. Important because such architectures and models provide a platform for the associated capital of the communities which the network serves to learn about what the co-design, customisation and multi-channelling of eGov service programmes means. Learn about what this all means and then put this to good effect by using such instruments as the basis to not only monitor, but evaluate the implementation of such eGov service development programmes as part of a regional innovation system.

Conclusions

This paper has focussed on SCRAN's three-way partnership, its way of working i.e. methodology and drawn attention to the communication needs and technical requirements of the organisation. In particular those needs that require to be met for the (inter) regional academic network to be smart in transferring knowledge about eGov development programmes between cities. In meeting this aim, the paper has reported on the methodological aspects of SCRAN and as a three-way partnership supporting the SmartCities venture into eGov service development.

It has found the key factors distinguishing SCRAN from the other networks are as follows:

- Here the university engagement is not a top-down exercise in the generation of intellectual capital, creation of wealth, but the social capital of knowledge production by communities learning about how the development of eGov services can regulate this process.
- As such their involvement can be said to be bottomed-out on the networking of social capital and while grounded within the third mission logic of participation, out with the normal domain of the triple-helix.
- Undercutting previous representations of the helix, the object of the exercise might be said to be that of using the networking possibilities of social capital to stabilise cities by making their learning communities smarter creators of wealth and generators of the intellectual capital governing regional innovation systems.
- Networked as the associated capital of web 2.0 technologies, the aim is for the learning communities of these cities to work smarter not harder. Their ambition being to create wealth terms of economic worth, but gauged in terms of what it is possible to appropriate as intellectual capital. The intellectual capital that in this instance is important because it generates the means by which it becomes possible for the knowledge produced by these learning communities to be codified. That is to say, not left as the tacit every-day knowledge-base of routine practices, but instead represented explicitly as a codification which offer sufficient critical insight to be exceptional. To be exceptional in the sense they are capable of building the capacity needed to over-ride economic interests and grant civil society the power required for cities to be smart in governing such developments as part of a regional innovation system.

- While this vision of SCRAN maybe the enterprise shared across the partnership, the collaboration underpinning such a joint venture needs to be constructed through consensus-building.
- As communications lie at the centre of the network and it is the collections of web-services that support the consensus-building which is needed for cities to work smarter, it is the constructing of these platforms which are critical.
- This is because such platforms are pivotal in making it possible for the members of networked communities to learn about what works in the development of eGov services and relay a knowledge of both the wealth creation and governance opportunities underlying this onto others as part of the 'democratic body' supporting the mainstreaming opportunities such programmes offer.

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Thematic Session on Environment – Summary

The session focused on Priority 2 – The sustainable management of our environment.

"We're all winners". So far there have been 15 projects approved, all targeting European policies (during four calls for proposals). Projects that have been approved under the priority "the sustainable management of our environment" tend to tackle the following themes:
- Climate Change issues
- Reducing carbon emissions
- Coastal management strategies
- European strategies

Ballast Water Opportunity presentation
Ballast water is water carried by ships to ensure stability, trim and structural integrity. It is a major source of pollution in the North Sea. The project Ballast Water Opportunity works in the framework of Agenda 21, the International Convention for the Control and Management of Ships Ballast Water & Sediments, the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), member governments and the shipping industry to tackle the ballast water problem.

Q&A – Discussion
- The full title of this project was Removal of Barriers to the Effective Implementation of Ballast Water Control and Management Measures in Developing Countries. It was more simply referred to as the Global Ballast Water Management Programme, or GloBallast. How will your findings be embodied from a regional perspective to a larger international context?
- Without the North Sea Region Programme, what other initiatives could/would have been used to tackle this problem?
- How can the relation between Interreg programmes and European guidelines be interpreted?

Enercoast presentation
According to Gerard McGovern, the concept of transnationality would be approached as some kind of a "language game". He used his project enercoast as a background to illustrate this statement. At the moment, "sustainability" is largely misunderstood by different stakeholders. Companies perceive sustainability as the combination of bits and pieces that can be added or subtracted as pleased according to the political agenda, eg. a green roof, a windmill, corporate social responsibility.

A project proposal should constitute a new language game for all involved. It is a basic linguistic mistake to make abstract terms transnational. Especially in times when knowledge is measured in km broadband. The working rule of a good transnational project should be to develop common solutions in order to commonly identified problems.

Q&A – Discussion
- How do we practically engage in 'transnational activities' and 'transnational solutions'?
- What are the success criteria achieving 'transnationality'?
- How should a project balance the relation between the local, the regional, the national and the transnational? What about this balance in terms of material investments?

- According to the experiences made by the enercoast project, what are the main challenges in achieving to integrate a transnational methodology in the project?
- The last part of the presentation addressed the transfer of regional solutions within the partnership. Obviously the next step would be to disseminate these solutions within the North Sea Region area. The communication of project results is a major challenge to a lot of Interreg projects, how to ensure that the message of the project gets through?

Maritime Eco-Innovation – Regional Opportunities from the International Arena (Ballast Water Opportunity)

dr. C.C. Ten Hallers–Tjabbes, FRIN (Corresponding Author) CaTO Marine Ecosystems & Royal Netherlands Institute for Sea Research (NIOZ), The Netherlands
dr. J.T.M. Flipsen, Evers + Manders, The Netherlands

Summary

Maritime and marine environmental issues are global issues as their impact affects the entire globe. To address such issues a transnational approach is necessary, which involves both horizontal and vertical collaboration.

In this paper a number of topics that are currently addressed in the international arena will be described. To solve these issues, Policy, Innovation and Science need to act together in a triple helix-based approach. However, the triple helix in itself is a challenging mode to work with, which increases when one applies it in a transnational setting. Using the approach with regard to such complexity, the North Sea Ballast Opportunity consortium has built a project that addresses one of the maritime challenges; The development of tools for the Implementation of the IMO Ballast Water Management convention. Thus the Ballast Water Issue may benefit the North Sea Region as we ensure a leading role. The expertise, so developed may offer a practice framework that can be adhered to in other projects, and even may set an example for a guideline to increase the impact of the Interreg North Sea Regional Programme.

Introduction

*The global character of Maritime and Marine activities*
The world's many-fold International maritime and marine activities are highly represented in the North Sea region. As merchant shipping is surging (expected to double or triple in the next 20 years), they offer challenges for sustainable innovation, transnational collaboration and offer opportunities to enhance the strategic impact of the North Sea region and its Interreg NSR IVB programme in the international policy arena. Alongside maritime activities many other marine activities take place in the North Sea region; there too the region has a high profile.

Maritime and marine activities support our societal welfare and wellbeing through creating economic prosperity, transport, accessibility and supply routes. Yet, while doing so they also affect our environment, in particular the marine and coastal environment, but also human health. Maritime and marine activities are by nature global activities, shipping stretches over the global oceans, fisheries and mineral extraction can be found throughout the world seas, while tourism has expanded to the world's coasts and beyond in the open sea.

The global character of the activities results in affecting the environment across the oceans and their borders; even when activities are localised, their impact will nevertheless be spread beyond by natural currents and processes in the sea. Marine waters flow, ever so slowly, through all oceans, in a

continuously moving ocean conveyor belt, for half an ocean along the surface then to dive down to proceed over the ocean floor and to resurface at the other side of the globe. Our warm North Sea waters root from such process, as water heated in the tropics is flowing North East by the Gulf Current. Far North, in the Arctic Ocean, the Current dives down to the ocean floor, driven by minute differences in density. The saline tropical water floating on top of the less saline colder waters at a certain point cools down to a level where it gets heavier than the underlying waters and consequently sinks, forming the major driver of the global ocean conveyor belt. The equilibrium is subtle and changes in world climate may threaten the balance, with disastrous consequences for the North-East European climate.
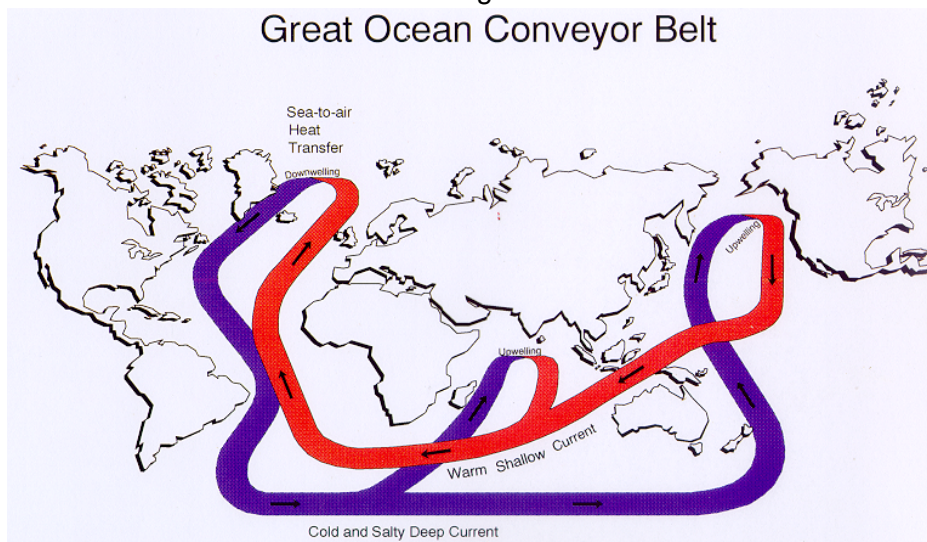
The North Sea Ballast Water Opportunity project utilises one of the major ecological challenges in global shipping the International Maritime Organization (IMO) faces by stimulating private investment, innovation and public-private transnational collaboration in all seven North Sea Countries.

The International Marine Policy Arena
In the international maritime policy arena, the International Maritime Organization (IMO) is an important platform, which has a global responsibility to reduce the ecological impact from shipping. The environmental impact from shipping has many faces. Pollution resulting from operational shipping activities was the first to be addressed by IMO, with oil pollution up front, triggered by major disasters such as the Torrey Canyon that stranded on Brittany's rocky shores, resulting in massive ecological impact. Operational oil discharges were included along, which also put an end to the tarry remains that in the past were so common on the North Sea beaches.. The then adopted MARPOL (73/78) Convention was expanded by provisions for other forms of pollution (chemicals and different types of operational pollution, including air pollution).

The United Nations Conference on Environment and Development (UNCED, 1992) urged IMO to address the problems caused by harmful anti-fouling and by the transfer of harmful organisms by ballast water from ships (IMO Agenda 21 of UNCED, 1992). The latter two issues have both resulted in separate IMO conventions, in brief the Anti-Fouling (2001) and the Ballast Water (2004) Convention.


Ship recycling and dismantling resulted in another separate convention, adopted in May this year (2009). Other environmental issues that have recently been taken up on the IMO agenda are bio-fouling, underwater noise and ship strikes with whales. Several IMO issues interlink with other international regulatory frameworks. IMO develops policies for reducing air pollution by ships, focussing on noxious exhaust gasses (NOx and SOx) and on greenhouse gas emissions by ships. Reducing CO_2 emissions into the atmosphere is also a marine issue, as sequestration of CO_2 under the sea bed and ocean fertilisation are explored for feasibility to serve the same goal. Both options are regulated under the London Convention (1972)/London Protocol (1996). The London Protocol to the London Convention was the first international regulatory regime based on a precautionary approach by introducing a reverse listing of categories of waste that were allowed to discharge into the marine environment, albeit under strict conditions of a waste assessment guidance. The change from the old London (Dumping) Convention (1972), where anything was allowed to dump except substances on a list of strictly defined categories only, was a major breakthrough in marine environmental regulation; the process of change was initiated and maintained by European parties to the London Convention, several of them coming from the North Sea region.

The North Sea countries have a long-standing tradition in developing policies for the marine environment of the North Sea in their International North Sea Conferences that took place since 1984 at tri- and later five-year intervals. The lead partner of the Ballast Water Opportunity project has a long-standing tradition in co-operating with policy makers and industries on marine environmental issues.

Ballast Water
The IMO Ballast Water Management Convention (BWMC) seeks to reduce the environmental and socioeconomic impact of invasive species discharged in Ballast Water. The North Sea harbours over 230 exotic species (16% of the species monitored). Each year 2 new species settle in the North Sea; many other species are released that may cause damage, but fail to gain a permanent foothold. The annual damage in Europe is estimated to be €11.4 billion. Representatives from several North Sea countries contributed substantially to the development of the Convention and its guidelines for uniform implementation.

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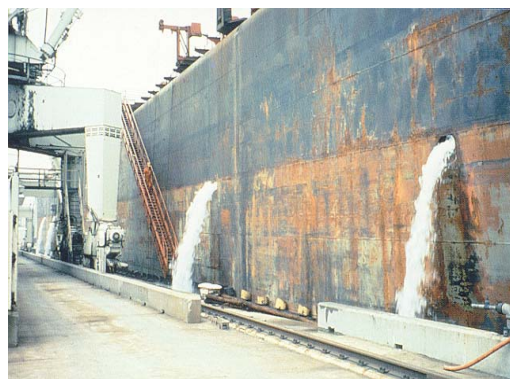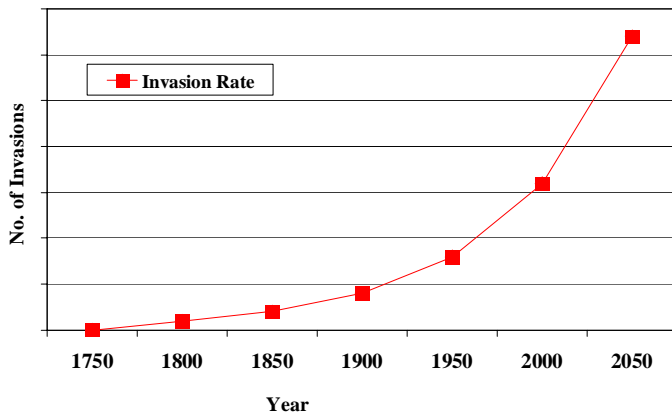
Apart from ecological damage, human pathogens can be transferred and cause outbreaks of epidemics, such as cholera in Peru caused by pathogens that were brought in by ships from South Asia. After the alarm was initially raised by the World Health Organization, since 1990 IMO set out to develop mandatory regulations, resulting in the Convention. In the BWMC the practice of ballast water exchange will be phased out until 2016, after which all ballast water is to comply with a standard (D-2) that sets limits to the amount of organisms that ballast water to be discharged still may contain. The amounts defined in the standard are several factors lower than the amount that ballast water contains at present. Advice from ICES (Intergovernmental Council for the Exploration of the Sea, with head quarters in Denmark) was leading in defining the D-2 standard. The BW Convention enters into force 12 months after ratification by 30 States, representing 35 per cent of world merchant shipping tonnage.

The implementation of the Convention and in particular to achieve the D-2 Standard requires the development of ballast water treatment systems. The North Sea Countries host 29 initiatives in development of ballast water treatment. Just the initial market for refitting ships will be over €8 billion (700 systems/year) without counting the market value of equipment and employment needed for compliance, enforcement and monitoring. The North Sea region also hosts long-standing scientific expertise in oceanographic research into the eco-physiology and population dynamics of plankton communities of the type that is also taken up by ballast water.

Impact	
Ecological	New permanently established invasion every 9 weeks
Economic	A multitude of several $ 100*10^9$ / year
Human Health	Cholera outbreaks, paralytic shell fish poisoning, etc.
Environmental	Collapsed ecosystems

The international Arena
International organisations play a major role in maritime and marine issues, connecting to these platforms offers ample opportunity for the North Sea region to contribute to developments in a manner that also allows to strengthen the region and develop sustainable innovation, in particular by joining hands between regulators, scientists and the industry, and support the process by involvement of public stakeholders and the industry. Examples of such Triple Helix cooperation resulting in a breakthrough in sustainable policy can be learnt from the maritime history. For example the Anti-Fouling convention was the result of fruitful interaction between scientists and policy makers from the North Sea region to begin with, after the alarm was raised by scientists investigating the North Sea environment and public stakeholders (dockyard workers and NGOs from the North Sea region). The North Sea Conferences twice urged IMO to stricter regulate anti-fouling to curb the adverse impact of the highly toxic tributyltin (TBT) (Esbjerg Declaration, 1995; Copenhagen Statement of Affairs, 1993). The process was further enhanced by support form innovative industries, largely from the North Sea region that took a lead in developing alternatives. Proactive players from the maritime sector followed suit, so enabling to gain experience and assess the feasibility of the solutions generated by the paint

industry. Inspired by the example set, other parts of the world followed suit and IMO started developing mandatory regulations. Throughout this process, players from the North Sea region disseminated their experience by investigating and involving policy makers in other regions, such as South-East Asia (MEPC 38/; Swennen et al., 1997) and southern Europe (MEPC 44/INF.11; MEPC 46/INF.2; ten Hallers-Tjabbes et al, 2003).

Triple Helix at a Transnational Level

In order to have any impact on maritime and marine environmental issues one needs to address the participants and stakeholders. The *scientific* community has in-depth knowledge of marine and maritime issues. They have in-dept knowledge and understanding of these issues and are able to asses and evaluate alternative measures. They are driven towards societal impact; however, they do not always have the tools to translate these in policies or technology.

The National and International *Governmental* organisations may decide upon new policies. They often depend for their information on lobby from NGO's, IGO's, scientific reports, and business information and statistics. With this, they have to balance the multiple uses of the marine environment.

The Global maritime *Industry*, especially from the western countries, is motivated to decrease their impact on the environment. They do have ample technological knowledge and engineering skills to innovate and integrate new technology. However, in a globally very competitive market they have to safe guard their economic margin to remain competitive, thus contributing to our welfare. They also have a very good international lobby to protect their interest.

At an international level all participants in the triple helix (Etkzowitz & Leydesdorff; *1997*) take on a complexity that surpasses the national level. The governmental section is taken over by a mix of international organisations, both governmental and nongovernmental interest groups, national and regional representatives, all having their own interest at heart. Scientists also may have their own interests, such as the scientists Watson and Crick that needed the x-ray data from Frankelin. Mutually they refused to collaborate, but worked in heavy competition to unravel the DNA double helix on which the name of the triple helix is inspired. Industry comprises a mix of companies that have their alliances and compete on the same market, thus often reluctant to participate in these projects when there is no clear economic benefit.

If this does not provide a sufficient challenge, then think of how to balance the interests between these three groups without breaking any legislation that is set to ensure a level European playing field and fair global competition.

Introduction of Public Private Partnership (PPP) in the Interreg programme thus introduced a number of challenges, such as:
- To utilise the European legislative aspects;
- To balance the interests of the different groups;
- To ensure that research institutes and industry obtain a return on their investment, as they can only then contribute to our sustainable wellbeing;

- To design an effective ownership structure that suits the goals of the program and ensures optimal use of the results.

To arrange this we may have a look at the European Framework Programme, that took over 20 years to come up with a reasonable scheme and mechanism to improving on this aspect; they involve interest groups from all different participants to implement the regulations. Interreg introduced such PPP just two years ago and has a different objective. Hence do not expect the issues to be resolved within a year. They may require scrutiny until introduction of Interreg V B.

In the mean time we have to do with what is there, and even then it is possible to bring the parties together and have them work constructively. The most important trick is to align them around a common goal, where the success of the project will guarantee an advantage for all. Let's look at an example.

The North Sea Ballast Water Opportunity Project

The project offers an example of utilising international challenges in support of sustainable innovation, while enhancing regional strategic impact and competitiveness. The IMO Ballast Water Management Convention is continuously being ratified by more and more countries and is expected to come into force within a few years from now.

But what is the problem?
Ballast water is distributed over several places of the ship, it contains various organisms that may survive and strive in the anoxic environment. We cannot predict which will survive the journey and cause an effect. Once organisms are introduced in the North Sea, they may travel along with the current and end up anywhere else in the North Sea to infect animals and humans or disturb the ecosystem.

Compliance requires innovative treatment and detection techniques and certification for industry to confirm their compliance. Enforcement of legislation should pay attention to the complex technology and biological system while it may not hamper ship operation unnecessarily. Detection techniques should provide results within hours to allow realistic enforcement, while this is now only possible with laborious laboratory techniques.

We have seen the environmental impact of Ballast water. However, implementing the convention is something different than just ratification. It requires resolving many problems that none of the individual countries or groups in the triple helix can provide on their own.

Scientists do have the knowledge on marine species, ecosystem and processes to know what the impact of bio-invasive species can be. They can also detect and eradicate different aqueous species; however, they cannot draft legislation let alone enforce it. Nor can they produce the systems that ships will need to comply with the convention. They do have a long-standing tradition in cooperating with both policy makers and industry and have a responsibility to inform and support society. The Ballast Water Opportunity Beneficiaries comprises six scientific institutes and research companies and involve numerous others. From these NIOZ took the initiative; however, their resources are limited.

Government departments, such as BSH are faced to resolve the shortcomings of the convention that hinder implementation and hamper ratification, such as:
- How to test BWM treatment systems
- How will this stand up in court
- How to detect (non) compliance
- How to evaluate the implementation of the BWM-convention

With BSH also the other national administrations in the North Sea Region face the same problems, hence they all participate in the project as well, as do a number of IGO's and NGO's. The transnational collaboration lead by NIOZ and BSH may provide solutions to the problems.

The maritime industry requires development of new technology to comply with the convention and check there performance. Supplying industry wishes to provide technological solutions, however:
- Which systems will help to comply?
- Will early introduction lead to a competitive advantage or losses as legislation changes
- Who can provide support in development BWMS, especially without using Active substances
- What will be required for monitoring compliance?

These are questions that require transnational horizontal and vertical (cross-sectoral) collaboration.

The Transnational and Cross-sectoral will;
- Speed up and enhance development of BWM-systems;
- Stimulate acceptance with ship owners resulting in a competitive advantage;
- Facilitate harmonised implementation;
- Increase the demand for research and test facilities

By doing this benefitting all stakeholders described in the triple helix model.

The beneficiaries and sub-partners gain the opportunity to work with the Ballast Water Management Convention while they contribute to the Interreg objectives as well:
- Harmonisation of legislation and control -> cohesion and better accessibility (Interreg)
- Competitive advantage for shipping industry through innovation (Lissabon)
- Environment: reduce impact of maritime activities (Gothenburg)
- Increase of research facilities (Lissabon)
- Improve the influence of the North Sea Region (Interreg)
- Facilitate access to information (Aarhus)

Conclusion and recommendations

As illustrated there are numerous maritime and marine environmental issues that need our attention. To resolve these global issues transnational and cross-sectoral approaches are required. Interreg can make a difference by supporting projects that can achieve this impact.
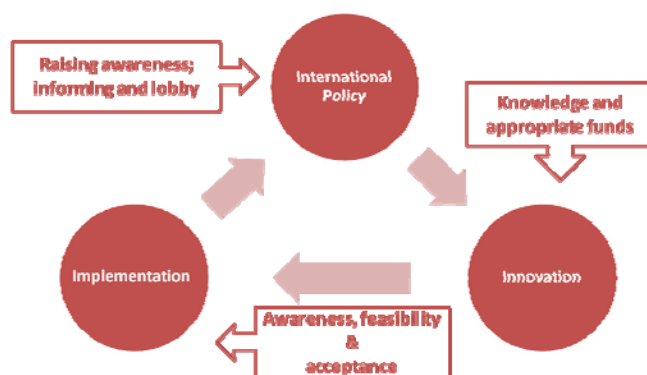
To be effective at a transnational cross-sectoral level a triple helix approach is required. A project should be able to address and involve all players as they all need to be convinced of the need and contribute to investigate the feasibility of the solutions. Working in a triple helix approach with Public Private Partnerships requires a delicate balancing of interests for which the Interreg programme could not and is not jet attuned optimally. This may take several years and involvement of multiple stakeholders and experts to achieve.

Historically, the process is often started by NGO's and IGO's that address the relevant international organisations by raising awareness and activating them to take action.

However, action from the international arena will require scientific confirmation on the seriousness of the issues. While science also needs to provide convincing leads that solutions can be achieved that may be acceptable by the marine and maritime industry.

In the mean time industry needs to be stimulated to check the feasibility of the scientific solutions and translate them into innovative applications. As solutions become available they may reduce the resistance of the industry to regulations that restrict marine and maritime activities for protecting our environment. This in turn will enable the drafting, ratification and implementation of new international agreements and instruments. As conventions are imposed, the front runners may even gain a competitive advantage if they can rely on a large region to back up the application of their innovation. The North Sea Region is such a region.

The North Sea Ballast Water Opportunity Interreg Project illustrates such an approach, addressing all players simultaneously to offer integrated solutions that can be supported by all. Already within six months, they have attracted the attention of the international arena by requests for support in workshops and conferences.
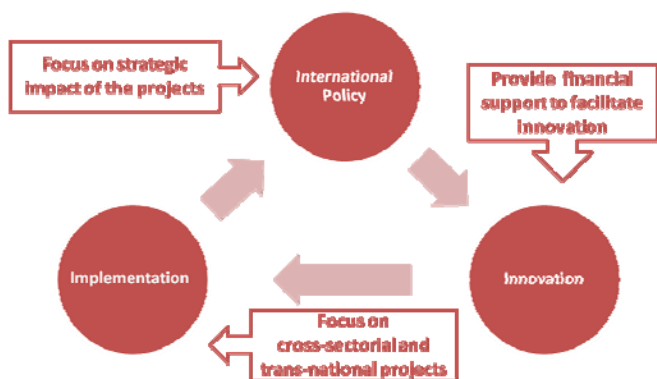
What is effective in the maritime and marine environmental issues may be effective in other environmental issues as well. Especially as a large number of environmental issues also have transnational characteristics. Interreg can not only stimulate to find solutions to the environmental issues, it can strive for a transnational cross-sectoral impact to resolve the issues. It should therefore support projects that address and involve all parties from all three spheres of the triple Helix as depicted in the last figure and accommodate their participation.

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Transnational Energy – On Operationalising Transnationality (enercoast)

G. McGovern, University of Oldenburg, Germany

„Transnationality" is currently one of the most cumbersome concepts in the Interreg language game. Those who speak fluent Interreg (a North European dialect of Eurospeak) share some understanding of what the concept is designed to generate in terms of associations. Indeed, several mapping exercises – notably at the 2008 Interreg conference in Hamburg – have been conducted with a view to ridding the concept of its fuzziness, a superfluous luxury that project designers cannot afford especially in the light of the stockpiling of European policy objectives such as sustainable development, knowledge economy, territorial cohesion, gender mainstreaming etc., all of which ideally have to be implemented in one single sector-specific 36-month project. Yet, amidst all the concept acrobatics it is worth a reminder that in addition all Interreg projects are intended to deliver some added value to the communities involved and to those providing the required co-financing effort. Hence adherence to the "transnationality" requirement, no matter how it is unpacked, must at the same time deliver on the home front.

The 2008 working solution to the transnationality dilemma provided a strong hint of what the eurocratic authors ought to have been promoting, namely "common solutions to commonly identified problems". In the following a systematic approach to delivering such solutions will be presented; it will be maintained that "transnationality" once freed of its linguistic woolliness deserves a more constructive response on the part of project developers.

Transnationality: the conceptual dilemma

The initial difficulty with the concept of transnationality arises from the fact that the term does not occur in everyday educated English, only in Eurospeak. And the abstract variant creation was certainly not selected in the interests of clarity! Hence there are lots of transnational (adjective, attribute) phenomena scattered over the globe but it is difficult to encounter (total) transnationality. This dilemma is similar to the one facing "sustainability", a political concept based on the three-pillar model with its social, economic and environmental elements, which in its political usage is usually kept sufficiently vague so as not to entail binding commitments or severe, short-term restrictions on economic growth[1]. Handling the concept is made no easier by referring to the three elements as no transnational agreements exist, which weight the same. Hence anyone is free to deploy the term "sustainability" at will, i.e. as a political conformity claim to legitimise the pursuit of vested interests.

At least on a conceptual level the sustainability dilemma can be resolved simply by consulting the original Brundtland report of 1987[2] and the Rio declaration[3] that followed. Both refer to "sustainable development", to a process and not to an abstract nice-to-have entity. The rest is a matter for professional process management, which as in the model proposed by the European Foundation for

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[1] For a treatment of the three-pillar model see Niko Paech, „Zur Brauchbarkeit des <Drei-Säulen-Models>" in „Nachhaltiges Wirtschaften jenseits von Innovationsorientierung und Wachstum", Marburg 2005, p. 92 ff.
[2] http://www.un-documents.net/ocf-cf.htm
[3] http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163

Quality Management[4] always demands defined targets, the identification and mobilization of enablers, a monitoring of whether the targets have been achieved and renewed target-setting. In a similar vein the "transnationality" dilemma can be resolved in terms of project management by replacing the term by "transnational learning" or better still by "transnational knowledge generation". This, as will be seen, is difficult enough and there is no lack of pitfalls, but the activity is worth pursuing in the light of the overall Interreg objective of capitalizing on regional resources to the benefit of regional communities.

In search of the knowledge asset

The pitfalls referred to above all have a central focus and arise from diversified attempts to define what sort of knowledge ought to feature as an output of transnational cooperation. Unfortunately the modern-day knowledge mongers (knowledge management consultants) still seem to be struggling with the differentiation between facts, information and knowledge with their remit restricted to filling organisations with lots of bits of information and some configuration techniques or search engines. Similarly, the most prominent advocate of the knowledge society, the European Commission, has despite its continually reiterated commitment to the Lisbon Strategy little to offer by way of assistance in designing (sustainable) knowledge generation systems with its sustainability indicators indicating less than the obvious[5] (unless we consider measuring kilometres of broadband to be of strategic significance).

No stocktaking of academia's response to the knowledge challenge will be attempted here; it displays, no surprise, a state of fragmentation caused by the superfluous dichotomy between individual and organisational learning[6]. The current debate has not yet managed to reinvent the wheel, namely the one described in Wittgenstein's language game theory, which provides an epistemological starting point for the pooling of diverse knowledge resources. According to Wittgenstein meaning and use are synonymous. Hence all knowledge is contextualised or intrinsic to a particular language game[7]. There is no a priori hierarchy spread over ranges of language games; what is fascinating and highly productive is the study of the interdependencies between various language games. The term "bridge concepts" can be used to denote the conceptual interdependencies between different language games or bodies of knowledge. These enable us to operate – with lower or higher degrees of efficiency – in multilingual situations, even those that arise within the framework of national languages such as German or English (Wittgenstein's examples). A perhaps more accessible term for language games is Wenger's "communities of practice"[8]

Although Wittgenstein never claimed to have discovered a theory of interdependencies his analyses of the "grammar" of ordinary language reveal a system of intertwined relations that resist any reductionist simplification. This feat alone makes Wittgenstein the first philosopher of knowledge to have detected what we would today celebrate as an ecological mindset. His approach to handling apparently disparate (language) phenomena revolutionised the closed-shop approach to knowledge, where each language community insists on its own axiomatic or ideological inroads, thus making inter-disciplinary resources pooling an almost insurmountable ordeal. Investigating interdependencies is a highly

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[4] www.efqm.org

[5] The EU's sustainability indicators are managed by Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/introduction

[6] The tendency on the part of organizational learning experts to relegate individual learning (old epistemology) to the mechanisms of behavioural psychology is exemplified in "Psychological Perspectives of Organisational Learning", Maier, Prange and von Rosenstiel, "Handbook of Organisational Learning and Knowledge", Oxford 2001

[7] The number of language games in operation is no less than the number of communities that cultivate their own language specialities. These include not only the multitude of professional languages but also the whole range of modern-day communities, from net-based forums to religious congregations.

[8] „Communities of Practice", Etienne Wenger, New York 1998, based on a field study in a medical claims processing department of a large US insurance company

suitable and productive approach to addressing both the sustainable development challenge and the task of transnational project cooperation.

The transnational assignment: designing relational settings

Transnational cooperation projects, especially those dedicated to promoting sustainable development initiatives, differ from or extend beyond Wittgenstein's "Investigations"[9] in one key aspect: the former are embarked on with a view to generating new joint knowledge solutions and are not solely focussed on the analysis of the interdependencies between existing but hitherto inaccessible bodies of knowledge[10]. The central challenge of project development – independent of its sectoral focus - hence translates into the question of how to design transnational learning frameworks that enable diverse contributions from a range of language games to be pooled on a common platform. Needless to say the structure of the ensuing knowledge base should be such that the deployment of the gained insights into the discovered interdependencies be made possible in a cross-cultural context. In a more concrete vein and as a preview of the bioenergy challenge addressed in the *enercoast* project, the project search for innovative strategies extends beyond the call for a transposition of the German feed-in renewables tariff law[11] into national legislation of all of countries around the North Sea (although the EEG has undoubtedly served its German purpose and is envied by many renewable energy promoters throughout Europe). As will be illustrated below a closer investigation of the interdependencies between supply chain variants can help specify the business innovations needed to capitalize on bioenergy potential in a range of differently structured market settings.

The design of such knowledge frameworks is issue-related or framed to meet specific objectives such as the EU's 20-20-20 target or the more ambitious target of the Central Denmark Region, which calls for at least a 50% renewables share in its energy balance.[12]. From a technical perspective the framework design can be seen to comprise a range of bridge concepts that together constitute a relational setting. This "reframing of issues" is aptly classified by Lewin as the "management of planned change"[13] and is treated extensively in social-constructionist literature and collaboration theory[14]. According to Lewin the synonymous process of "cognitive restructuring" is central to the role of change agents and the pursuit of action research designed to redirect social developments that are off-track or give rise to intolerable dissatisfaction: "The research needed for social practice can best be characterized as research for social management or social engineering. It is a type of action research, a comparative research on the conditions and effects of various forms of social action, and research leading to social action"[15].

Setting up the required cognitive setting for initiating change processes entails an "unfreezing" of traditional concepts and a "refreezing" of insights in a setting better equipped to handle the targeted scenario. The decarbonisation of energy production is a highly qualified candidate for such a change process; to be achieved it demands a reframing or a recontextualisation of existing knowledge resources. One welcome spin-off effect of such a change-driven process – if managed collaboratively - is that hierarchical classifications of different forms of knowledge (e.g. professional versus lay

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[9] Ludwig Wittgenstein, „Philosophical Investigations" translated by G.E.M. Anscombe, Oxford 1953
[10] Experienced project developers may consider such an objective unfundable. Disputes, I would recommend, should focus less on the approach but more on the dimensioning of the deliveries.
[11] Erneuerbare-Energie-Gesetz, Renewable Energy Sources Act, March 2000,
http://www.umweltministerium.de/english/renewable_energy/doc/3242.php
[12] Central Denmark Region, Regional Development Plan,
http://www.regionmidtjylland.dk/regional+udvikling/den+regionale+udviklingsplan/english+version/focus+for+action/energy
[13] Lewin, Kurt "Resolving social conflicts; selected papers on group dynamics", Gertrude W. Lewin (ed.), New York 1948
[14] For an example focussed the sustainable development issue see Bouwen R. and Taillieu T., "Multi-party Collaboration as Social Learning for Interdependence: Developing Relational Knowing for Sustainable Natural Resource Management" in Journal of Community & Applied Social Psychology 14: 137-153 (2004)
[15] Lewin 1948

knowledge) quickly become redundant; all stakeholder inputs (inputs from a range of language games) are weighted according to the demands of re-designing the process in question.

Reframing bioenergy: the enercoast transnational framework

The Interreg North Sea Region *enercoast* project addresses the processes that determine the success of bioenergy initiatives in a coastal environment defined in a regional context as including both the coastal area and its hinterland. The scanning exercise conducted during the project design phase produced a supply chain management perspective with identification of process management tools as a transnational approach to re-examining both bioenergy success stories including their optimization potential and those initiatives that to date either under perform or fail to take off. It was considered that the enabling factors were distributed across the entire value chain and no isolated activity could provide a sound basis for sustainable business initiatives of lasting regional benefit. Hence the language of supply chain management was adopted as a project meta-language, albeit with an extension of its grammar.

Traditional supply chain management focuses on the factors of quality, speed, dependability, flexibility and costs to identify the potential for increased stakeholder performance in a given supply chain. Sustainable Supply Chain Management (SSCM)[16] additionally applies sustainable development factors in its performance assessment. To facilitate the *enercoast* analysis a total of five generic bioenergy process stages were identified – production of raw materials, transport logistics, energy conversion, grid access and consumption. These five process stages provide a basic analysis framework currently being applied to a total of ten regional bioenergy supply chains. The analyses are conducted in a uniform manner in all the participating regions[17] in direct collaboration with the involved stakeholders. Using this common framework approach and in line with the EFQM process management model, group activity then focuses on five key assignments:
1. Agreeing on targets for each process stage
2. Identifying enablers for each target
3. Selecting appropriate indicators for each target set
4. Collecting process data and
5. Evaluating process performance against the indicators

The ensuing SSCM matrix currently being generated will display entire supply chains and their interdependencies and enable the identification of promising bioenergy market strategies.

Transfer of expertise takes place throughout and, decisively, in the development and pre-testing of the business plans the project is committed to deliver. In addition, opportunities for direct stakeholder interaction to facilitate the cross-cultural BtoB transfer of proven solutions have been foreseen.

Bioenergy interactions

The superstructure outlined above functions as a relational framework providing a transnational platform on which regional initiatives can be communicated and optimized and their performance measured in accordance with transnationally applicable indicators.

Even at this early stage of the project with its focus on staging the analysis settings, synergies are already expected to include the adoption of elements of the Fyrbodal smart grid strategy in other partner areas, the adoption of joint German-Danish marine energy crop research in several partner

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[16] This variant of SCM was first introduced by Stefan Seuring and Martin Müller, see „Zum Entwicklungsstand des machhaltigen Managements von Wertschöpfungsketten", Umweltwirtschaftsforum 14-3, Spriner-Verlag 2006
[17] German North-West Region, Ryfylke (Norway), Fyrbodal (Sweden), Northumberland (UK), Central Denmark Region

regions and the deployment of alternative biomass resources to counteract maize monocultures. The currently expected range of supply chain specific interactions is displayed below:
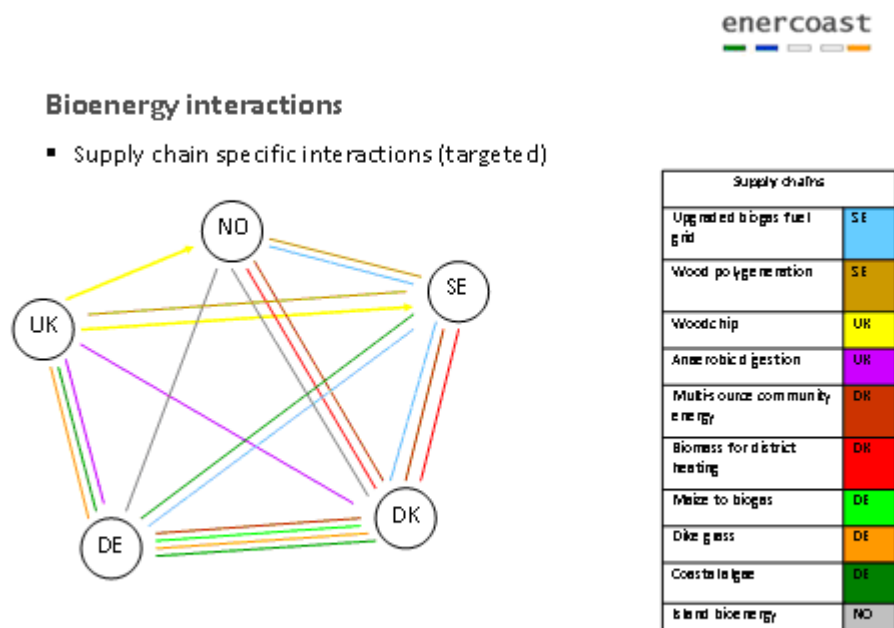
The degree to which the high expectations are fulfilled in terms of increased regional bioenergy efficiency and CO_2 reduction will depend on a large range of (defined) factors. It can, however, be safely said that without the appropriate learning framework such and similar targets could never be projected in a transnational setting.

Résumé: the case for relational settings
In its summarized form the above transnational learning setting may appear somewhat complex. However, in view of the complexity of the core issues – sustainable energy and regional development – this approach to engineering change in established energy patterns has been kept to a manageable format. The need to construct such relational settings as knowledge generation frameworks becomes apparent via a sober assessment of the following:

- Disparate bodies of knowledge and national sector solutions cannot be transported directly across cultural boundaries without exporting their enabling cultural, social and political determinants
- No matter how "sustainability" is perceived from a subjective perspective, the management of sustainable development agendas relies on bundling diversified stakeholder perspectives
- Sustainable development parameters need to be contextualized and feature in the targeted processes or else be ignored

It can be concluded that transnational learning platforms are essential if regional innovation is not to be based solely on legislative inventiveness or unforeseeable encounters and the powers of intuitive adaptation. Hence streamlining the design of such platforms and their embedded processes can help shorten the long road towards a more sustainable regional development. This applies both to those

sectors where national competition structures and the fight for subsidies impede cooperation between stakeholders at a local level and those innovation areas where the needed sparring partner competencies just happen to be somewhere else across the border or over the sea.

Thematic Session on Accessibility – Summary

The session focused on Priority 3 – Improving the accessibility of places in the North Sea Region. It was introduced by a brief presentation of the priority, including an overview of approved projects so far. It was pointed out that at this stage most funds are available in Priority 3 and that the Programme would therefore like to see more applications in this priority.

Presentations
The session presented two calls for papers, one by Michael Glotz-Richter based on the recently approved project Care North (Carbon responsible strategies in the North Sea Area) and the other one by Olav Hauge based on the StratMoS-project. The two papers presented the projects on which they are based and provided examples of how the respective projects are promoting *sustainable innovation* in line with the heading of the seminar.

The Care North project will promote sustainable innovation by testing and demonstrating new technologies on hybrid cars & vehicles (e-mobility) - bringing these technologies closer to market introduction. The project has an ambition to demonstrate that the North Sea Region is a spearhead when it comes to technologies and business concepts in this field, and will give presentations to this effect at the Expo 2010 in China. The project will also develop innovative approaches to mobility management.

The StratMoS project used their Russia-related activities to illustrate sustainable innovation. The project, and its predecessor NMC I and II have developed a comprehensive network with Russian authorities and businesses to promote alternative transport routes to North West Russia – supporting the booming industrial developments in this area, as well as providing an alternative route to the congested Baltic Sea. The Demo project "Basis" will test a new intermodal route from the Continent and the UK to Murmansk. It will also exploit "positive effects" of climate change by promoting new transport options in the Northern Sea Route opening up as a result of ice melting – shortening the travel time by 10 days compared to current alternatives.

The two presentations showed that Transnational Cooperation could promote sustainable innovation in various ways by testing and demonstrating new technologies, generating new knowledge, and facilitating cooperation and trust building – the latter being particularly important in relation to countries like Russia and China.

Questions, comments and discussions
Michael Glotz-Richter confirmed that the Care North project also has an ambition of influencing the travel behavior of ordinary citizens. The media and politicians would also be important targets to achieve this. Asked how the project could actually stimulate behavioral change, Michael Glotz-Richter emphasized that this would require a combination of both "hard" (infrastructure and technologies) and "soft" measures (information and awareness raising on sustainable alternatives, improving the perception of sustainable transport). Although the project is covering a wide range of topics, Michael Glotz-Richter agreed to the assumption that there would still be room for exploring several topics in further depth in other projects, e.g. food logistics and hybrid vehicles based on other energy platforms such as bio-fuels, hydrogen or natural gas. Michael Glotz-Richter agreed that the new EU Directive on

sustainable procurement could promote the introduction of more sustainable fuels in buses due to the high costs being put on polluting vehicles under this directive.

Asked about the role of private partners in the StratMoS project, Olav Hauge pointed to the fact that about half of the partners are private or non-governmental. Demo 4 on "Secured trade lanes" has only got private partners. The share of private partners was also reported to be substantial in the WP and demo addressing hubs and hinterland. There is impossible to do anything sustainable if private partners are not involved to achieve long term impact.

Replying to an observation about similarities and interfaces between StratMoS and the Dryport project, Olav Hauge confirmed that the application is committing StratMoS to cooperate with Dryport and other related projects.

Other observations and comments
- The approval of Care North is illustrating the fact that Priority 3 is not only about sea-based freight transport, but may also address sustainable urban transport, logistics and multimodal transport corridors by any mode.
- The Secretariat should take into account the complexity of developing good transport projects in the context of project development events and assessments.
- It is a challenge for "public transport projects" to demonstrate transnationality in a convincing manner as this form of transport as a matter of definition has a more regional character & scope. Representatives of the Secretariat emphasized that the crucial point is whether the activities could make a long-lasting transnational impact. One of the Contact points present suggested that transnationality could also be promoted through good dissemination, like with the Care North project.

The North Sea Programme should consider to introduce a "mechanism" for promoting cooperation between related projects, for instance by making dedicated funds available for such cooperation. Representatives of the Secretariat informed that the Monitoring Committee will discuss how inter project links may be fostered, e.g. in terms of "umbrella" projects.

Low-carbon and Post-fossil Transport – Revised Paradigms for Accessibility within the North Sea Region (CARE-North)

M. Glotz-Richter, Free Hanseatic City of Bremen, Germany

2009 is a crucial year in the international effort to address climate change and, with the United Nations Climate Change Conference (COP 15) in Copenhagen in December – setting the follow-up commitment to the Kyoto targets.

The North Sea Region is intensely affected by the effects of climate change – especially the costal areas. At the same time, our continued increase in transport-related CO_2 emissions, are undermining other climate protection efforts. Whereas industry, energy production and households reduced their CO_2-emissions, the transport sector still shows an increase.
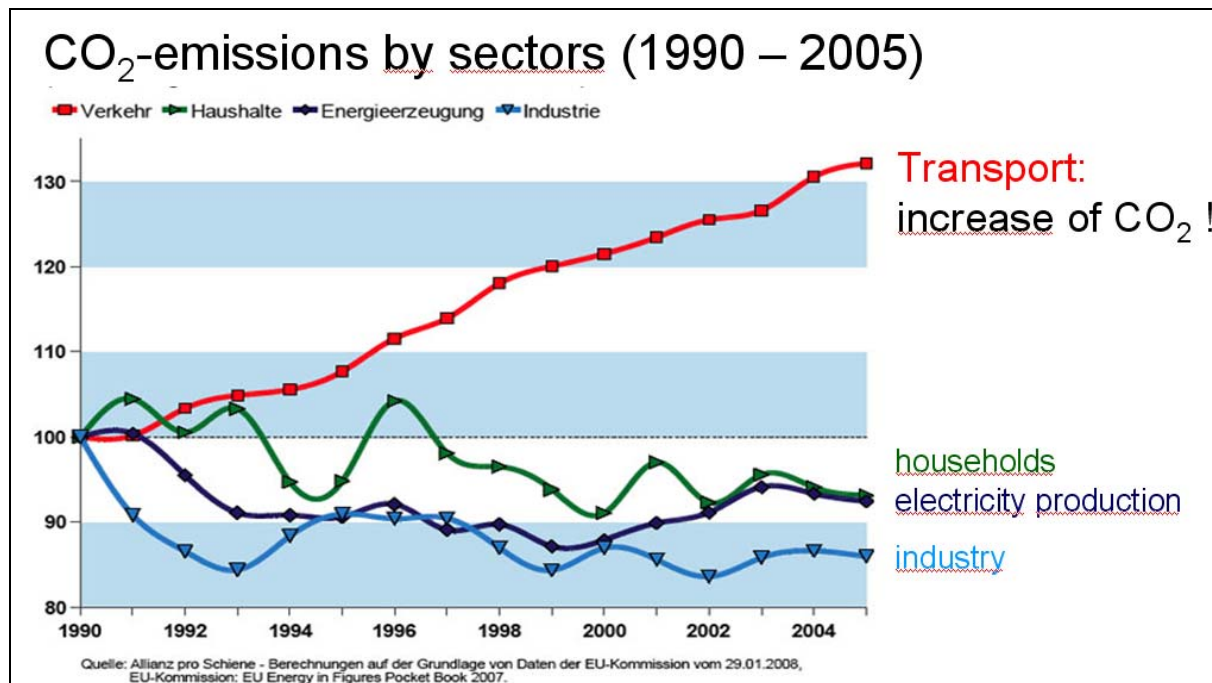
Source: Allianz pro Schiene- based on "Statistical Pocketbook EU energy and transport in figures 2007 -presented by EU 01/2008
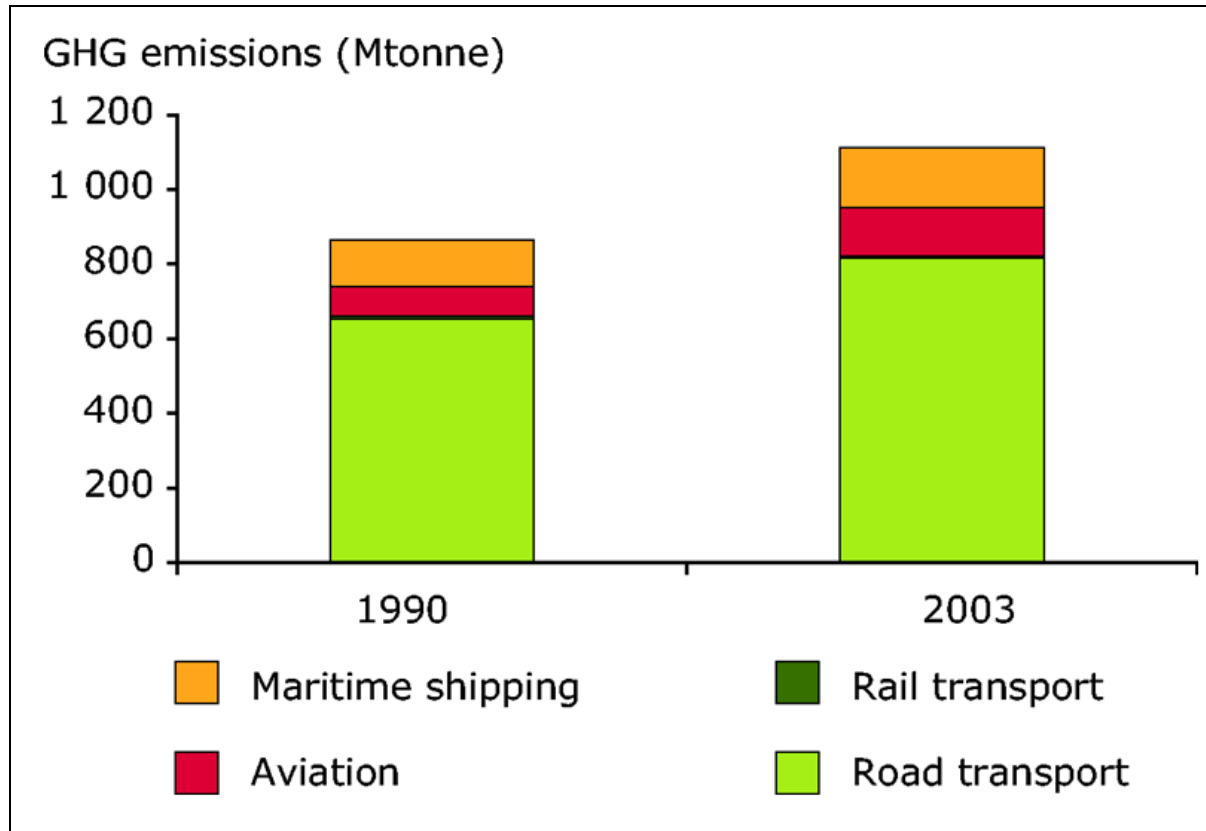
Source: EEA (European Environmental Agency), EEA Signals 2009 Key Environmental Issues facing Europe

But there is another aspect of strategies towards post-fossil mobility we have to deal with: the impending limit of mineral oil supplies which will lead to much higher mineral oil prices than today.

The combination of these two factors demands a re-thinking of the traditional understanding of "transport" (building more road transport infrastructure) to a broader notion of "accessibility" (the ability of all citizens to meet their daily social, health, personal and economic needs safely, comfortably and conveniently) as we start to adjust to a post-fossil mobility.

There is an urgent need for low-carbon accessibility strategies at the local and regional level and a comprehensive and strategic approach will reduce the economic and social vulnerability of regions when oil prices rise again. We must also keep in mind that land transport will be included in emissions trading, creating yet another dimension to the economic framework.

Transport is a politically and economically sensitive theme and pioneers are needed to lead the way toward low-carbon accessibility. The presentation will show that the NSR has huge potential to lead the way with innovative transport strategies which could improve the economic performance of its regions and cities in a post-fossil economy. Building on the transnational links already forged by the NSR is vital; transnational collaboration is needed, both in terms of building political support and momentum, as well as in concrete terms of establishing uniform standards and infrastructure across

the region (as outlined in the CARE-North project proposal "Carbon-responsible transport strategies for the North Sea Region").

CO_2 reduction strategies for transport (accessibility) must address both "hard" measures (technical developments) as well as "soft" ones (behaviour change). Measures to consider include:

Alternative Fuels and improved propulsion technologies – Increasing Carbon Efficiency

Technical developments are ongoing in the field of alternative fuels and propulsion. But even renewable fuels require additional improvements in the efficiency of vehicles and the transportation system. There are also infrastructural requirements to consider. The role of biofuel is limited – and we have to take the questions of sustainable production into account.

In the field of making vehicles more efficient, the hybrid technology can play a role. Especially for vehicles with a stop-and-go drive cycle (like waste collection and urban buses) this technology looks promising. But except from a few pilot demonstrations, the technology has not yet reached the broader market and shown its full potential.

Electric Mobility ("eMobility)" – Zero Emission Mobility

For the North Sea Region, "eMobility" has a great deal of potential as it offers the possibility of combining with an expanded wind energy industry in the North Sea Region. There are as well new options for electric Public Transport (including trolleybus and innovative bus-tram combinations). Here, we can combine the higher efficiency of directly powered electric vehicles with the higher attractivity of modern collective transport systems like trams, trolleybuses and innovative bus-tram combinations.

Examples of very efficient electric Mobility: tram in Bremen – optically guided trolleybus in Castellón

A fleet of electric vehicles with battery storage can serve as buffer storage when there is a surplus of electric energy (e.g. due to heavy wind at off-shore wind energy plants). But the technical requirements are intense and the infrastructure needs (especially re-charging infrastructure) can likely only be implemented in private-public partnerships. A deviant performance and technical infrastructural requirements may lead to more changes in transport patterns.

On the other hand, there are limitations for electric mobility. The question of efficiency must be answered – also with the given generation of electricity. As well, it must not happen that electric cars are just added on to the existing fleets – increasing the problems of parking and the demand of road

space in our cities. As electric cars have some limitation in range and performance, Car-Sharing can play a crucial role in implementing and promoting electric cars,

New Mobility Culture
97% of all trips are local or regional (up to 50 kilometres), about 60% being less than 10 kilometres. This underscores both the need and the potential for behaviour change in transport patterns. Mobility management and the promotion of Car-Sharing (car-clubs) is a huge area of largely-unexploited potential. The change in transport patterns and the increased efficiency in car sharing fleets have already led to noticeable CO_2 reductions - implementing the objectives of the EU Green Paper on Urban Transport. Car-Sharing services can help to introduce electric vehicles – as there is a choice of vehicles. Car-Sharing stations can be equipped with the necessary element to become charging stations for electric vehicles.

Car-Sharing:

A car whenever you need it !

Access at any time with smart-card and PIN

The application of new technologies combined with behaviour change offer an opportunity to maintain and improve upon transport/accessibility services and infrastructure within the NSR over the long term – with the added benefit of also developing business opportunities as a forerunner for carbon-efficient mobility – which will have impacts far beyond the NSR borders.

This is an opportunity to raise the profile of the NSR as a future-focussed, liveable, sustainable, and accessible region – but it will only succeed if priorities are set appropriately.

The CARE-North project
The Interreg project CARE-North (Carbon responsible transport strategies for the North Sea Area) is going to prepare strategies and implement pilot actions in the partner sites. This shall conclude in a combination of a strategic approach, pilot demonstrations (in various action fields) and an assessment of impacts - combined with strong awareness raising.

The project partners are from Göteborg, Malmö, West Yorkshire, Aberdeen, Province of Fryslan and Bremen. Additionally, ICLEI (Local Governments for Sustainability) represents many further cities

around the North Sea and enhances the impacts of the project especially in the field of dissemination within and outside the BSR.
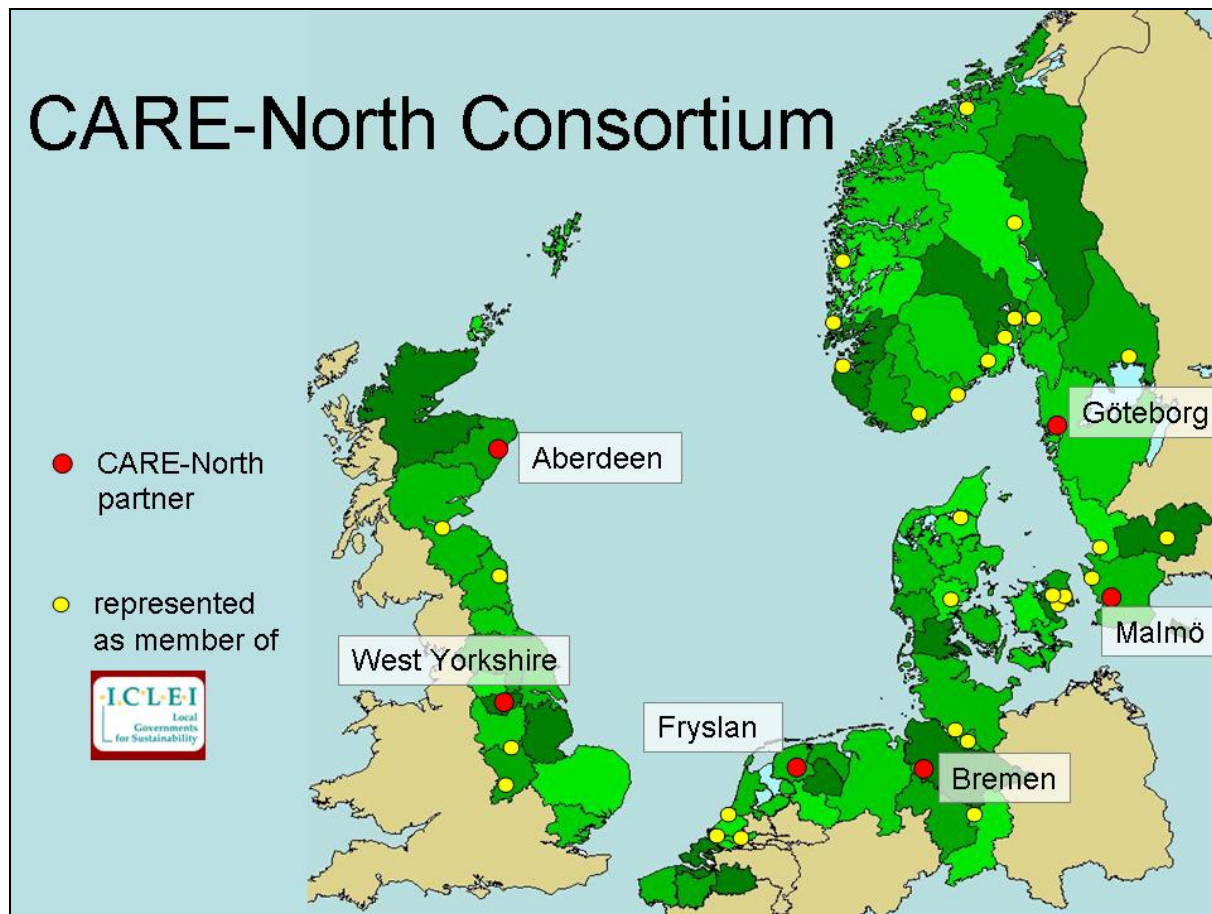
As part of the workplan, there will be awareness raising actions with the COP15 United Nations Climate Change Conference. The Project CARE-North with selected Lighthouse Implementations from CARE-North will be presented on the Sixth European Conference on Sustainable Cities & Towns in Dunkerque (France / NWE) in 2010, where more than 1000 local government leaders from all over Europe as well as representatives from national networks of local governments, European institutions and NGOs will be present. It will be the largest European conference dedicated to urban sustainable development and will explore how local sustainability can represent an answer to the current economic, social and climate crisis. It will also provide an opportunity to assess and push forward the progress and achievements of European local governments in the field of sustainable development, using the Aalborg commitments as a fundamental instrument

In 2011, the ICLEI European Congress in Hämeenlinna (Finland/BSR) will be the next highlight to present the CARE-North approach and progress to a wider European audience.

CARE North starts in summer 2009 and will run for three years. In 2012, the Final Conference of CARE-North will be a contribution of the Rio+20 process for global sustainability.

CARE-North represents a high level of transnationality – in the approach to the problem(s) and to the transnational role of the pilot actions. The planned awareness action will reach out beyond the NSR borders – sharpening a profile of innovation of the NSR. The North Sea Region has an obligation to be a forerunner in technologies, services and infrastructure for sustainable mobility – and can see it as a chance to prepare for new market opportunities when getting into the post-fossil era.

Transnational Cooperation and Sustainable Innovation – The Strategic Demonstration Project of Motorways of the Sea (StratMoS)

O. Hauge, G. Eiterjord and H. Sørensen

The abbreviation MoS stands for "Motorways of the Sea". The project title is StratMoS, so the intention with the StratMoS project is to contribute to the development of Motorways of the sea. As the long version of the project title indicates, the project has both a strategic profile and a concrete tangible profile.

Key points about the StratMoS
The StratMoS project was initially developed by the partners in another Interreg North Sea project, the Northern Maritime Corridor project, in short called the NMC project. The vision and the aim remained much the same as the NMC project, but the profile of the StratMoS project is expanded.

The vision is formulated as follows:

Efficient, safe and sustainable transportation, connecting coastal areas and enhancing regional development in the North Sea Region, extending to the Barents region

We remind ourselves all the time that transportation is not an aim in itself, but shall serve a purpose, in our case it is regional development.

The more specific aim of the project is formulated as follows:

To promote and facilitate shift of cargo from road to sea based intermodal transport, and improve accessibility within the North Sea Region, extended to the Barents Region by supporting the implementation of MoS and related transport networks in integrated logistical chains.

So the StratMoS project is pursuing the two-folded objective of Motorways of the Sea, namely to shift cargo from road to sea and to improve accessibility to peripheral areas and regions.

The project has partners from all North Sea countries apart from Sweden, and has associated partners in North West Russia. There are 31 partners altogether.

As mentioned above, the StratMoS project has a two folded profile, both strategic and concrete/tangible.
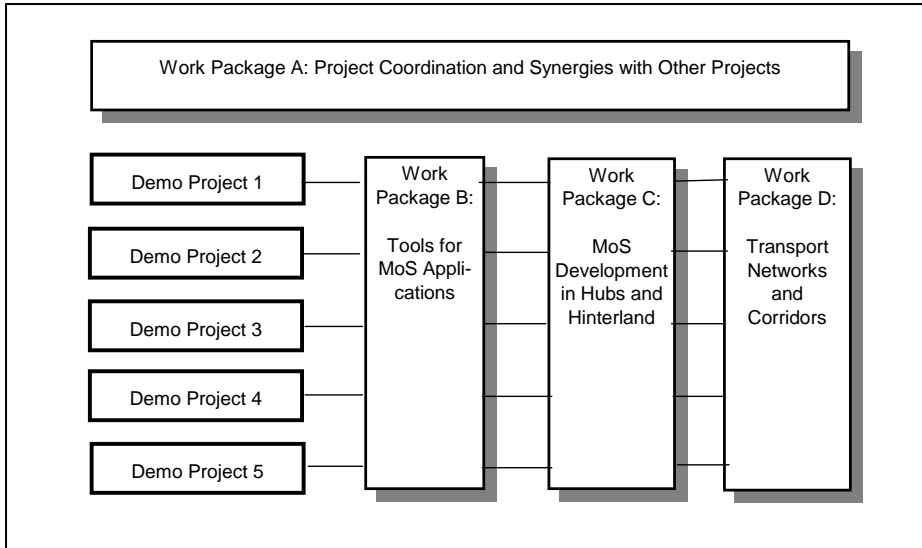
The structure of the project is therefore composed of work packages on the one hand and demonstration projects on the other hand. The work packages are policy oriented and are developing methods, while the demonstration projects are pursuing concrete actions in order to improve intermodal transport.

The demonstration projects are as follows:

- DP1: Northern Maritime Corridor – Barents Sea Intermodal Service: Developing more frequent and regular sea services between the Continent/UK and Norway/North West Russia. The demo project is carried out together with Russian partners
- DP2: NORSHUKON (Norway-Shetland-UK and Continent RoPax MoS): Pursuing a new sea service between Mid-Norway and UK/Continent
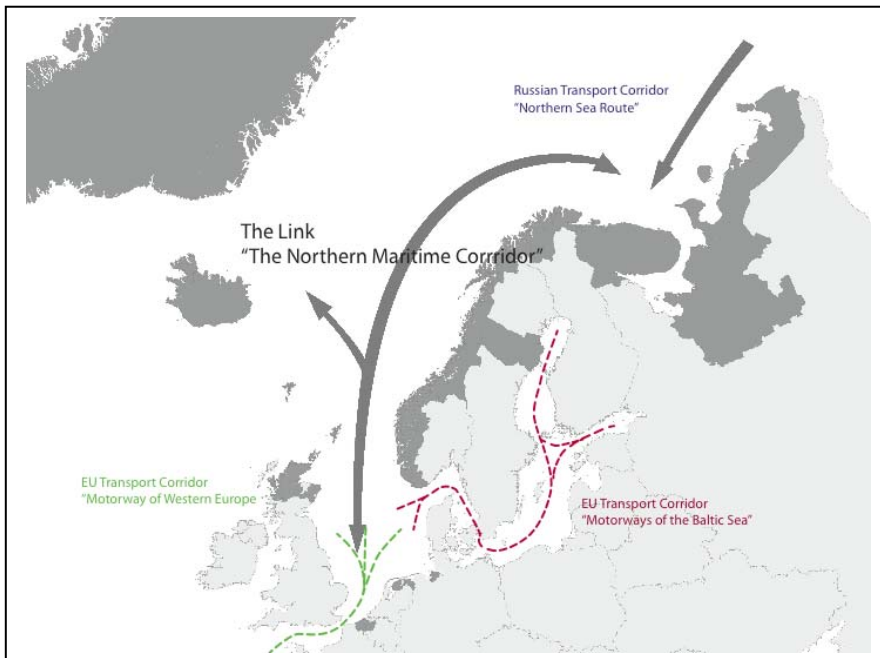
- DP3: Development of the Port into an Intermodal Hub: Pursuing development of ports into intermodal logistic hubs, in several location
- DP4: Secured Trade Lanes in the North Continent – Russia Corridor: Testing electronic devices fixed on containers, to make intermodal transport more efficient and secure, not least in respect to customs clearance
- DP5: Offshore Hubs and MoS Linkages: Analysing the concept of offshore hubs for transhipment between deep sea transport and feeder transport.

The dotted lines at the lower end of the map are two of the four Motorways of the Sea that the EU-Commission defined in the TEN-T network. The North West Europe MoS and the Baltic Sea MoS are ending somewhere in the middle of nowhere, in the middle of the North Sea.

In the upper end of the map an arrow is coming from the North East. It is the Northern Sea Route from the Barents Sea to the Berings Strait, the "North East Passage".

The Northern Maritime Corridor is the missing link! It is the fifth MoS in Europe!

Examples of transnational cooperation and sustainable innovation

To materialise and concretise the "Fifth MoS in Europe", a concrete initiative is taken to improve the sea services between the Continent/UK and North Norway/North West Russia, The so-called BASIS project (Barents Sea Intermodal Services).

The main aim is two-folded:

- Improved services between the Continent/UK and Norway/North Russia,
- Being a supplement to Baltic Sea ports

A common working group is established, comprising shipping companies, forwarders, ports and regional authorities, i.e. both public and private sector. This cooperation shall contribute to ensuring sustainable transport to the High North:

- Serving the petroleum exploration in the High North
- Reducing long haul trucking

At the same, one has to be observant and take heed of:

- Vulnerable environment
- Environmental friendly logistics

But one should not miss the purpose of transport which is economic and regional development. The transport system shall improve the opportunities for regional development.

So: No transport unless it serves a valid purpose!

Networking is the clue and pre-condition to find new solutions and new developments, particularly so with Russia. The network is inherited from the NMC project. The networking started 6 years ago, so it takes long time to come to the encouraging level it has today, but then it has the potential to be lasting!

The innovative approach that was used was to conduct common workshops based on a common concern and challenge in the Barents region, the offshore petroleum exploration. Furthermore, it

became a common platform for both public and private sector, supporting PPP initiatives. The innovative aspect was to make an arena for conveying competence and economic interests.

A spin-off effect has been a cooperation agreement between Rogaland County Council and Nenets region as well as Arkhangelsk region in Russia. The northernmost counties in Norway did already have similar agreements.

The common working group for the BASIS project mentioned above has a wide membership in order to approach the task ahead. The situation is that there is a poor direction balance, as Russian ships are fully loaded southbound, but merely empty northbound, while the opposite is in general the case for European ships.

So the innovative approach in order to promote environmental sea transport to be more competitive, is to create and nurture the win-win situation at hand. It is to establish what is well known in the air transport industry, namely "code sharing". This make both parties more competitive and can in our case contribute to shift from road to sea.

The financial crisis we experience for the time being, demands new solutions. That goes for infrastructure and technology innovation as well as organisational innovation. The crisis provides an opportunity!

The Icelandic shipping company Eimskip is a member of the BASIS working group. Eimskip has been calling Murmansk for some years, but not on a regular basis. Through the NMC and BASIS project the manager of Eimskip has expanded his relations with Russian entities like port administration and customs. So now their service has become regular and more frequent.

Eimskip has even called the port of Pechenga which lies in the military zone that is generally a closed area for foreigners. This demonstrates a crucial element in order to pursue sustainable innovation: Confidence building, and in this case credits go to the Interreg programme!

The Northern Sea Route, which is to sail through the North East Passage to the Berings Strait, is just fantasy in the minds of the ordinary European. Not so for the Russians. The Northern Sea Route celebrated its 75th anniversary two years back! During the Soviet time some thousands of ships used the Northern Sea Route, but it ceased almost completely after the fall of the Soviet Union.

The Partnership for Northern Sea Route was established several years ago, with the purpose of revitalising this route as a viable route internally in Russia as well as an international corridor competing with the sea route through the Suez Canal. A new test sailing will be carried out this summer.

What caught our attention is that the Northern Sea Route defines implicitly the Northern Maritime Corridor as their western link and the link to the central areas of Europe. So the NMC project took the innovative move to become a partner in the partnership for Northern Sea Route.

The main purpose for the NMC project at that time, and for the StratMoS now, is to enhance and enlarge the network with Russian entities dealing with sea transport and intermodal transport in the High North. The innovative aspect is to combine the two initiatives, creating synergies.

Sea transport in this area is definitely a challenge due to the harsh and vulnerable environment. This requires innovation in the context of sustainability, both in terms of technological innovation and of organisationsal innovation.

But the impact of the climate change creates opportunities that can be utilised. The reduced ice cap in the Arctic makes the Northern Sea Route much more feasible. The reduced sailing time of more than 10 days, at least in the summer half year, provides a potential savings that should be explored.

Another idea is to use the rail system through Russia. The map shows two alternative routings for bringing coke from China to Norway. The coke is for heating and melting iron in the melting plant in Finnfjord in Northern Norway.

The options are:

- By sea all the way through Suez Canal
- By rail to Arkhangelsk and then by sea to Finnfjord

This route will save at least 10 days transport time, almost 1/2 of the time. One test consignment has been made and more will come this year.

The StratMoS/BASIS project will monitor and learn from the test consignments:

- Proving that it works.

- That rail and sea intermodal transport can functions well
- That the transfer point in Arkhangelsk is working without delays

So, the innovation is to prove that new intermodal links, based on sustainable transport means, are working!

The StratMoS project has another interesting demo project related to Russia: Secured Trade Lanes between the Continent and Russia. This demo project will demonstrate the use of electronic devices fixed on containers, and demonstrate how this improves the information flow and makes the transport more secure.

The diagram below shows that a transport from Antwerp to St. Petersburg and Moscow has a number of links in the transport chain that can go wrong and create delays. The project will demonstrate that intermodal transport can be efficient and secure, like long haul trucking, even though it has to go through several hubs and more procedures. The project will demonstrate this by introducing innovative means, establishing a common platform for information flow combined with the electronic device that carries all essential information.
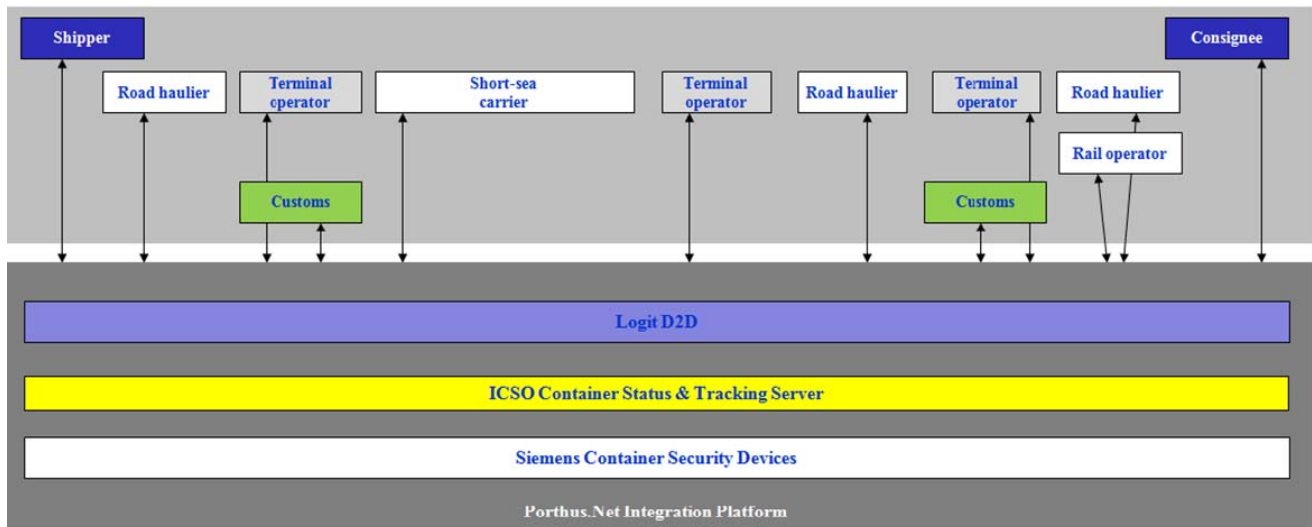
So, this shall prove that intermodal transport can be efficient and secure, and have an information flow that is transparent between players in the total transport chain.

The "Northern Dimension" is a newly created funding regime that should be used for sustainable innovation, not just investing in traditional transportation means.

The Northern Dimension is a body comprising EU, Russia, Norway and Iceland with purpose of funding activities and investments in the High North. A separate funding scheme for transport and logistics is in the wake of being established.

The StratMoS project has taken an initiative to form a common working group, proposing investments that are combined and form a consistent approach to sustainable transport in the High North, linked to the markets in Europe. A focus will be on the needs for logistics services generated by the petroleum exploration.

Summing-up
There are four aspects to highlight:
- Network across countries and sectors create new knowledge and opportunities
- Building confidence
- Demonstrate idea through examples and pilot initiative
- Nurture win-win situations

So back to my initial point: Transport is not an aim in itself!

- Sustainable innovation must consider all aspects of sustainability, i.e. ecological, social and economic aspects
- In other words: Sound regional development.

Thematic Session on Sustainable and Competitive Communities – Summary

The session focused on Priority 4 – Promoting sustainable and competitive communities. The session aimed to present future prospects under the priority as well as highlight strengths and weaknesses of projects to date. With more than 70% of the total ERDF and circa 82% of the funding for priority 4 funding allocated, it was concluded that competition is likely to be hard for the remaining funding.

Discussion on funding possibilities

A discussion on the relevance and need to shift funding between priorities arose. It was stressed that such a decision is complex to implement, since the formal decision has to be taken by the Monitoring Committee of the Programme, followed by an approval from the Commission. No such initiatives has been taken to date and it was advised that project developers work from the assumption that funding will remain as it is.

It was reinforced that Secretariat staff as well as National Contact Points could be used as a resource when looking into potential project ideas and also assist further into the development of ideas. Project developers were advised to check already approved projects and cross reference with the Operational Programme to find potential gaps and outstanding issues to be addressed by projects to easier identify relevant and potentially fruitful project ideas.

Two projects which submitted abstracts under the Call for papers earlier in the year were invited to share their papers and reflect on their respective projects: DC NOISE and Making places Profitable (MP4).

Presentations

DC NOISE addresses issues related to demographic change with special attention to the North Sea Region. In his presentation Frans Coenen stressed that there are both challenges and opportunities arising from demographic change and that there is a strong connection between sustainable development and successful long term solutions to demographic change.

The paper stresses that demographic change should be addressed by addressing challenges related to the labour market and that there are three primary channels for demographic change to affect this: labour supply, labour productivity, and labour demand. Mr Coenen also pointed to an issue often overseen with ageing populations and demographic change which has to do with the outflow of experience from the work force and labour market which has potential effects on productivity and innovative capacity.

MP4 addresses issues of place making (making places attractive to live and work in) and place keeping (maintaining a high standard and potential quality of life for residents in a region) in regional economies and stresses that for regional economies to be successful over time there must be a strong focus on making places and regions attractive to live and work in.

While place making is readily accepted and a often used term to describe the process of improving the potential qualities of life in areas, place keeping is many times overseen. In his presentation Richard

Walker argued that a balance between place making and place keeping is essential in order to improve and maintain the quality of life in regions that are threatened by out migration and other effects of demographic change. Place keeping is many times cost effective and very efficient in relation to place making, but is often over shadowed by place making projects which are costly and take time to be implemented.

Demographic Change in Regional Labour Markets – Finding Solutions for Negative Effects and Searching for Opportunities (DC NOISE)

First lessons from the DC NOISE labour markets demonstration projects

F. Coenen, CSTM, University of Twente, The Netherlands
R. Galjaard, Bureau PAU, The Netherlands

Introduction

This paper is based on the first results of the labour market demonstration projects within the Interreg IVB North Sea Region project. In DC NOISE 9 regions from 5 countries in Europe work together to deal with the consequences of demographic change. DC NOISE stands for Demographic Change: New Opportunities In Shrinking Europe.

The central aim of the DC NOISE project is to ensure that the North Sea Region is ready to cope with her new demographic future. That means both dealing with the negative effects of demographic change and at the same time taking advantage of the opportunities offered by this process.

Demographic change consists of different trends, like total population decline, diminishing number of young people, shrinking labour force, ageing society, changing ethnic composition of population and changing household composition. These trends will have negative effects on the labour market and through these negative effects on the labour market have effects on society. For instance a shrinking work force means that it will be difficult to find enough people to work in the health care, while at the same time because of demographic change more health care worker are needed. This eventually can lead to less quality in health care. Demographic change also means that there will be new opportunities. If there are less people available in the health care sector and we are forced to introduce new IT solutions, it could also be that quality of the health care is improved due to these new IT possibilities.

Problems with the labour market can be solved with national and European regulations and policies. For instance national governments can either force or financially motivate people to work longer and retire latter. The demonstration projects in the DC Noise project concern regional and local measures. This paper addresses the question *what can local and regional actors do to overcome the negative effects of demographic change on the labour market and seize opportunities of demographic change*?

We will discuss the changes in the regional workforce through demographic change and the relation to measures in the demonstration projects with the help of as simple input and output model, presenting the regional workforce as a stock of people. Measures within the demonstration projects will be described to illustrate how negative effects can be overcome and opportunities seized.

Demographic changes and the labour market

Demographic trends can have direct implications for labour markets through three primary channels: labour supply, labour productivity, and labour demand (because of shifts in the structure of aggregate demand). It is generally recognized that ageing societies will face economic and social challenges. What will inevitably happen in the labour market is that the labour force will shrink as large numbers of workers retire and the characteristics of the labour markets change. The workforce will be on average older and their will be less young people in the workforce. A shrinking labour population causes shortages on the labour market but may also affect the labour productivity and the innovative capacity. This is related to general characteristics given to people of a certain age. Less young people is often viewed from the perspective of less people in the labour force who are recently educated with fresh ideas. And a loss of older people through retirement is often viewed from the perspective of a loss of senior knowledge and experience. Young people are given general characteristics like healthy, energetic, ambitious, motivated, etc. Older people are associated with heath problems, risk avoidance, old ideas, low motivation and pre-pension behaviour. These views are or course generalizations and prejudices. Older people can through life long learning have fresh and state of the art knowledge, while freshly graduated can have knowledge who does not fit work expectations.

Even if we would not be confronted with demographic change, the regional labour market would still be changing due to other factors, like globalisation. There are many regional and interregional push and pull factors on people to move from region to region. This can range from differences in regional wages and costs of living to all kind of aspects of quality of life in regions. Quality of life can encompass such different things as crime rates and the availability of culture and good education. In how far general quality of life factors determines the attractiveness of a region depends on personal preferences and the appreciation of certain qualities in a region, which often depends on ones phase of life. For instance the situation if a person has a young family or is nearly retired. But the most important factor is of course the availability of jobs. However attractive a region is in terms of living quality, many people won't stay in or move to a region if there are no suitable jobs available. Suitable jobs are often not only a job for the person himself but also a suitable job for their partner. Even the availability of one job will not be enough because people will look upon a region from the perspective of a career perspective and the potential to job hop. The attractiveness of a region is also a cultural phenomenon. Many young people want to work where according to their feeling 'it is happening'. There will be difference between regions in how far people are willing to move away from the region were they have their roots.

The regional workforce needed depends on the general economic situation. Regions and certain economic clusters can become less or more important economically.

What also can change the labour market are the regional ambitions. For instance the partner region Twente wants to create 10.000 new knowledge jobs in the region.

In general the Lisbon process prioritised the importance of the knowledge economy in Europe and the need for higher educated and skilled people to realize this knowledge economy. This asks for a new labour market (see hereafter).

Demographic change, the labour market and sustainable development

Sustainable development is related with demographic change through the labour market in a number of ways. Demographic change influences the population in a community, region or country in terms of size and characteristics. Sustainable development means meeting the needs of present generations

without compromising the needs of future generations. Sustainable development should involve economic, social and environmental issues and develop those in a mutually reinforcing way.

The number of people in a region is often considered as a negative factor for ecological sustainable development through the factor overpopulation. More people lay a stress on the ecosystem. People through their economic activities contribute to the economic sustainable development.

Uneven population development between regions or countries threatens territorial cohesion and social development and touches on the equity dimension of sustainable development The Lisbon strategy has prioritized socio-economic issues in the European development. Through the Lisbon strategy together with the Gothenburg strategy Europe is striving for a balance between the social, economic and ecological dimension of sustainable development. At the Lisbon meeting, the European Council set as the strategic goal for the Union: "*to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion*"*.* The Stockholm European Council then decided that the EU sustainable development strategy should complete and build on this political commitment by including an environmental dimension. This recognizes that in the long term, economic growth, social cohesion and environmental protection must go hand in hand.

The relation between demographic change and sustainable development through the labour market lies in:
- the amount people available for economic and social activities;
- the skills and knowledge available for development, particular through innovation

For realising the Lisbon goals the labour market is very important because it stresses more and better jobs. On the other hand one of cconditions that stimulates innovation is the presence of high educated and skilled people.

In this paper we take the valuing of stocks of capital, notably of social and human capital, as a framework to link demographic change, regional workforce and population size and it's characteristics to sustainable regional development and it's relations with the other two dimensions. In this conceptualization regional development is more sustainable as it maintains or increases the total stock of social and human capital in a region. Differences between these stocks of social and human capital in different regions lead to an unbalanced development and inequity between regions.

The capitals approach to sustainable development

The capitals approach takes as a starting point the idea that sustainable development can be defined by reference to changes in the stock of different forms of capital. Here we distinguish four different forms of capital:
- economic (manufactured or human made) capital;
- human capital (individual skills and resources);
- social capital (relating to norms and social relationships);
- natural (or environmental) capital.

A way of looking on sustainable development is that the sum of these four capitals, per capita, should not decline over time. This is than seen in terms of the total stock, so the decline of one form of capital can be compensated for by an increase in another, such that total stock per capita is maintained. Substitution would only be acceptable for the maintenance of sustainable development as long as the loss of capital doesn't represent a critical threshold beyond which the level of capital stock is deemed to be unacceptable. These acceptance would than be based on costs or social norms. For natural

capital it is easy to image the type of threshold. For human and social capital it is much more difficult to image such a threshold. The concept human capital is frequently used in contemporary sociology and economics. It has numerous definitions. In economics the roots of the concept can be traced back to Adam Smith. In socio-economic sciences it was introduced in the sixties. Human capital was defined as the resources at the disposal of individuals and social communities. A relation was made with economic development. Baker emphasized the role of healthy and well-educated people who work actively and thus make decisions on human capital and economic development (Baker, 1964). More recently Richard Florida popularized the human capital factor in economic development. According to Florida economic growth appears where well-educated people are present, as they are advocates of creative capital (Florida, 2004).

The OECD (1998) defines human capital as the knowledge, abilities, competencies and other attributes embodied in individuals who are suitable for the economic activity required of them. This is a broad definition of human capital which does not include formal education received in the course of their learning but includes other skills learned by the individual during training courses (*life-long learning; job training*) and at work (*learning by doing*). These concepts play an important role in the Lisbon strategy.

Social capital is a related concept and often discussed together with human capital. Putnam (2000: 19) writes "whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. And 'interaction enables people to build communities, to commit themselves to each other, and to knit the social fabric. A sense of belonging and the concrete experience of social networks (and the relationships of trust and tolerance that can be involved) can, it is argued, bring great benefits to people'. Both human and social capitals are supposed to shape the level of economic development of countries and regions.

Increasing the stock of the four capitals

There is much literature on how to attain regional economic growth and how this is related to the other forms of capital. There are options to let natural capital grow, for instance by creating nature areas, but this would go on the expenses of economic capital. There has been a lot of discussion if we simultaneously could let the stock of economic and natural capital grow. This is the discussion about decoupling economic growth and environmental pressure, which is mostly about having economic growth without additional degradation of the environment

There is an increasing interest among academics and policy makers in the concept of social capital especially in social capital as an important factor in explaining economic success. Although the concept may be highly appealing it is hard to measure empirically. As a consequence empirically the question is still not answered if social capital in terms of generalised trust and association activity influences economic growth (Beugelsdijk and Van Schaik, 2003). If this relation is unclear it offers little possibilities for developing policies to stimulate social capital in a way that it would have a positive impact on economic growth.
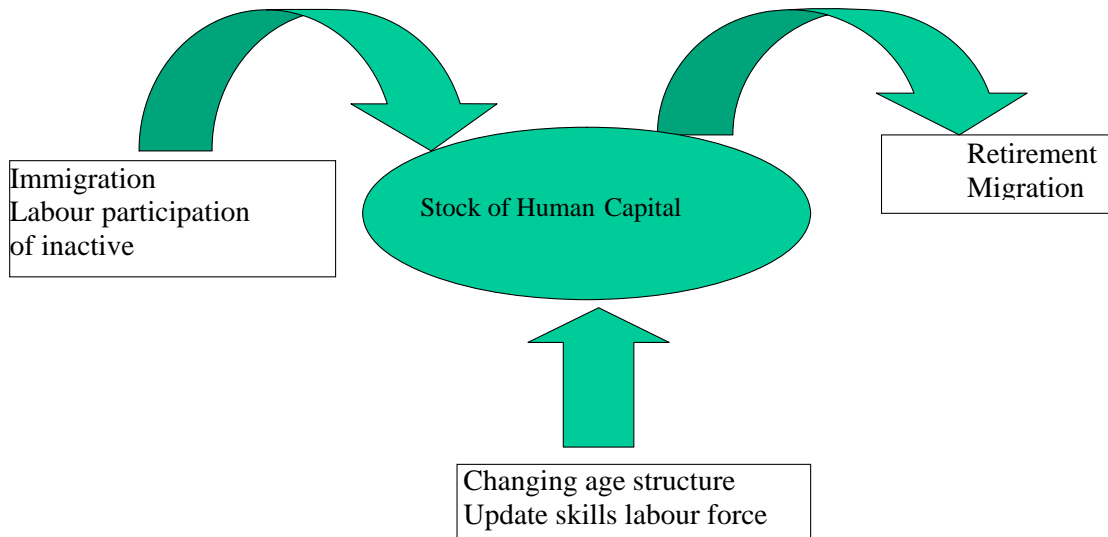
Our focus here is human capital. We define human capital as the knowledge, skills, competencies, and attributes, embodied in individuals that facilitate the creation of personal, social and economic well-being (OECD, 2002).

We consider it as a form of 'capital', which can accumulate over time, were we can invest in and which can depreciate. Not everybody agrees about the use of human capital in relation to human

development. The objections are that human (and social) capital are not a form of material, energy or money, it is not a good. Another objection is that human capital degrades people to only economic production factors. And indeed one way of looking on human capital is as a production factor to produce economic output. Human capital can not only be seen as a means for economic development were education makes people more productive in economy. Education (and other individual attributes like health) leads to the individual ability to lead a joyful, fulfilling life (Meadows, 1998). The end of a raise of human capital is than social well being (of individuals); the goal of the social dimension of sustainable development. As human capital is higher, especially if we operationalise it as a higher the level of education of the population, it can be more productive for both the economic and the social dimension of sustainable development. Sustainable development is the balancing of the various types of capital so that they do not hold back each other.

Changing the 'regional stock'.

We translate the capitals approach here in 'stock' approach to show through what mechanism the regional workforce. This illustrated in the following model.

Immigration
Labour participation
of inactive

Stock of Human Capital

Retirement
Migration

Changing age structure
Update skills labour force

We will look here into four mechanism related to this model;
- What adds to the stock?
- What reduces the stock?
- What changes the composition of the stock?
- What changes the need for a workforce of a certain size?

The first mechanism concerns factors that add to the stock. The first way to let a regional stock grow is new young people entering the work force. Due to demographic change less and less young people will be available. Some region are lucky because they have the presence of a good infrastructure for (higher) education and maybe be able to keep a greater share of the graduates of this education in the own region. Another mechanism is to let more previously inactive people entering the workforce. Some speak here about a silent reserve of women not working yet or people who are unemployed, who could be used in the labour process. This means that although the population as a whole shrinks and the number of people who can work (roughly between 16-65) shrinks likewise, through a higher

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labour participation of those who do not work or work full time yet, the size of the labour force can stay on the same level.

Another mechanism to raise the regional stock is immigration from other regions in the country. This means that through economic and quality of life factors mentioned before people would decide to move to the region to work and life there. Some factors as for instance higher wages could potentially also bring more commuters to the region. The last factor, immigration from other countries where there are still people available could be another mechanism. This factor is politically strongly contested. First there is the question if these people, particular if they concern skilled people, can be missed in their home country. And secondly there is political opposition, mostly from right wing parties who oppose against bringing foreigners with different religions and ethnic and cultural background to the country. The exception seems to be higher educated for whom they are willing to make an exception. And short term seasons workers, who do not want to settle permanently are more accepted, but they only form a solution for particular shortages in the labour force.

The second type of mechanism concern the factors that reduce the stock. Here the relation between demographic change and the shrinking work force is the most obvious one. These factors are old people leaving the work force because of retirement and the migration of people to other regions in the country or the migration to other countries. If this migration concerns skilled or higher educated workers we often talk about brain drain.

Demographic change does not only concern the size of the regional stock but also changes in the composition of the regional stock. Characteristics of a stock can be the type of economic clusters in the region, the average age of the working population, the level of skills and education, labour participation within the stock (number of part-timers), the number of commuters to the region or the number of commuters in the stock. The composition will depend on factors as the peripherality of the region, transport infrastructure, availability of natural resources, etc. The average age of the work force changes because of ageing. Another characteristic that can change is the average level of skills and of education due to for instance life long learning. And also the labour participation level (of part timers) in the work force can change.

As we have mentioned before the size of a stock is relative anyway, depending on the demand for labour caused by changes in the economy and economic clusters. The changing demand can be initiated by polices and investments. And the demand for labour of certain clusters can change due to rationalisation of services and production (IT), the outsourcing of production and services to other regions and countries

Examples from the DC NOISE labour market projects

The labour markets in the action regions in the DC NOISE project face similar challenges within the different situation and characteristics of their own region. Changes in the labour markets are not homogenous. The main changes in demographic characteristics in the labour markets like ageing, depopulation, shortage of highly educated employees, etc will depend on regional characteristics. Also the effects of demographic change on sectors of the labour market can be quite different. For example, the effects on the health care sector is different in comparison with the effects on the industrial sector were potentially more labour could be rationalised or outsourced to other parts of the world. There will also be a difference in labour mobility. Higher educated will more easily go to other regions or even other countries, a phenomenon known as brain drain.

Some regions in the project are more peripheral and others are more core economic regions. They have their own economic structures and have undergone very different regional structural economic changes. Migration of the labour force to other regions is more likely in peripheral regions as core economic regions will have more economic power and a different salary structure. The acceptance of solutions will also be different between the different regions. For instance the level of immigration is influenced by political decisions.

The measures in the demonstration projects are focussing on what is seen as a specific problem within the regional labour market because of demographic change. There is no objective reason why a stock of a certain size or with certain characteristics would pose a problem for a region. Where a certain stock would lead to problems in one region it does not have to lead to problems in another region. This is relative to the demand and supply of labour in the region. This does not just have to be a problem with a general lack of supply. In the first place there could be a specific demand of a certain economic or service cluster for a workforce of a certain size, age and education level which is not or will not be present anymore in the future in the region. Secondly a problem could be that although there is enough supply of labour in the future, there is mismatch in supply and demand. For instance labour of a certain qualification level is asked while there is an oversupply of low qualified labour. Problems can also lie more specifically in the characteristics of the workforce. So although there is enough supply of people with the right qualifications to fulfil all jobs there can be a loss of senior knowledge because of ageing. Or there might be a lack of young, recently educated. This could threaten the innovative capacity of the workforce because an ageing could become more risk avoiding and less ambitious.

The measures in the demonstration projects at the one hand address these problems and on the other hand use the mechanism to change or stop the change of the regional stock as described in this paper.

The first type of measures in the demonstration projects concern creating enough supply of in a specific labour cluster. When labour supply gets short the public services have to compete for people. Particular in economic good times a government job is seen as less favourable compared with private business where jobs are attributed characteristics like more dynamics and wages are presumed to be higher than in the public sector. In economic bad time people are more willing to accept a public service job with more job security.

In the DC Noise partner region Knutepunkt Sørlandet, in the city of Kritiansand coordinated actions are undertaken to recruit and keep highly qualified personnel for public services. For instance by collecting the public sector vacancies on one website. The project particular focuses on the fields of social health care, the technical branches in public services and the school network were the competition with the private sector is felt the strongest.

The public service where the problem of getting enough people is largest, because more people are needed as a result of the ageing population, is the health care sector. In the partner region Groningen the demonstration project focuses on interesting new people for health care jobs, but also on motivating healthcare workers to stay in the sector. To interest more young people to work in the health care sector innovative care solutions like IT are stimulated. Though process of mentoring and coaching,   knowledge and skills of older, experienced people in the health care sector are transferred to new people and this is also used to motivate people for health care jobs.

Unfortunate many older workers in the health care sector quit there job, while as we have seen the workforce in general is becoming older. The partner region East Flanders focus in their demonstration project on a better labour market participation in the health care sector, especially of 50plus people as a way to not only keep workers in the healthcare system but also to find new people.

As we mentioned above part of the solutions for a shrinking workforce is working on the mismatch between supply and demand, were at the one hand people are not active on the labour market because there are for instance unemployed, and on the other hand more people will be needed in the future. In the partner city region Hamburg the demonstration project concerns the integration of long term unemployed elderly (50plus) into the labour market through extensive processes of matching, education and coaching of people. Part of the supply problem is not only people being unemployed, but also people leaving the region. In our partner region Groningen part of the demonstration project is the long-term retention of poor educated people for the region by offering them training and/or guiding them towards health care jobs.

As we mentioned before particular higher educated are very mobile on the labour market. Higher educated are crucial for a strong regional competitive economy in sense of the Lisbon strategy.
In the partner region Twente the demonstration project is about getting and keeping enough higher educated and skilled people in the workforce. Measures concern interesting graduates to work in the region and attract people from other regions by publicity campaigns and facilitating their move to the region. As we have seen above, to interest people for a region has much to do with the attractiveness of a region. The labour market demonstration project in the city region Bremen therefore focuses on raising the attractiveness of a city region to highly trained employees.

The problem with a shrinking work force not just lies in to few people but also in the loss of senior knowledge due to retirement. In the partner region Knutepunkt Sørlandet, in the town of Venesla, the demonstration project focuses on keeping senior staff (and their knowledge) in the municipal organizations by motivating and facilitating people that run towards their retirement to keep longer in the organization. To secure that the knowledge of employees stays in (smaller) companies a demonstration project is set up in our partner region Zeeland to document knowledge, skills and procedures with means like videos.

To keep older people in the workforce is not just a matter of motivating the employees bur we also need an age-conscious staff policy in organisations, particular towards 50plus citizens. In the province of West Flanders the demonstration project works on sensitizing the labour market for the particular problems of 50plus employees and reinforcing their position.

Conclusions
This paper addressed the question *what can local and regional actors do to overcome the negative effects of demographic change on the labour market and seize opportunities of demographic change*?

We discussed the changes in the regional workforce through demographic with the help of as simple input and output model, presenting the regional workforce as a stock of people. The underlying mechanisms were used to describe a number of measures within the DC Noise demonstration projects that to illustrate how negative effects can be overcome.
What we can learn is that the regions face very similar problems but come up with different solutions depending on different mechanism. Starting point for all projects is however that we have to raise awareness on demographic change and the effect on the labour market to create (new) solutions. Transnational cooperation plays an important role to help to achieve this. Through transnational

cooperation we learn about solutions tailored to the specific region, but who do from good examples for other regions within the North Sea Region. We learn about obstacles and changes, and do's and don'ts. The exchange of regional consequences and solutions are an important tool for raising the awareness and the problem perception in the DC NOISE regions. All regions are forerunners in some aspects, due to their demonstration projects and can thus inspire the other regions.

An important starting point underlying many of the demonstration projects is that we should not accept the relative low labour participation rates of the elderly. The process of an ageing society will then automatically result in a shrinking labour force. We have to develop a different view towards the traditional labour force age (16-64) and it's characteristic (silent reserves). Furthermore, we have to realize that, in the end, demographic change is all about sustainable development. There can only be a sustainable future if all capitals (ecological, economic, human) are in balance in a region.

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Making Places Profitable – Meeting a Challenge of Sustainable Communities in Partnership (MP4)

R. Walker, South Yorkshire Forest Partnership/Sheffield City Council, UK

Introduction

A key challenge facing communities throughout the North Sea Region (NSR) is to offer a high quality of life, in order to attract skilled employees in the global knowledge economy. This is a concern shared by areas in economic decline and in post-industrial communities, where the threat of market-failure is most acutely felt. Key EU policies supporting the Lisbon/Gothenburg process confirm the importance of providing attractive investment locations.

As well as providing the right mix of physical development ('place-making'), delivering sustainable communities demands a long-term commitment to maintain high-quality places and to manage the right balance of legitimate activities. The EU Structural and Cohesion Funds programmes have made great progress with the building regeneration agenda. Many Interreg projects have achieved considerable success in this respect by embedding innovations into improved policies and strategies.

The concept of placemaking

'Placemaking' is a term widely used by architects, town planners and urban designers to describe the process of creating attractive squares, parks, streets, and waterfronts. Landscape often plays an important role in the design process. Attractive, diverse and accessible spaces contribute to delivering sustainable and competitive communities.

As with nearly every great success story comes a new challenge, in this case, how to maintain the real and multiple benefits of well designed places. However, less satisfactory progress is being made to sustain long-term benefits of regeneration. In particular, good practice in open space maintenance by public private partnerships remains rare, untested and lacks profile. Making Places Profitable (MP4) aims to help solve this problem.

Many local authorities and public agencies face a struggle to obtain sufficient resources for maintenance, with budgets being directed towards high profile and new designs instead. Place-keeping suffers from being far less glamorous, whilst being as important for social, economic and environmental reasons. A key challenge is therefore to make the most efficient use of the available resources, through cooperation between different sectors towards shared goals.

This is a job that no single member state can achieve alone. The challenge is of such a magnitude that it requires the critical mass of action that only transnational cooperation can deliver. The partners in Making Places Profitable are working hard together to find strategies to upgrade public and private open spaces and to provide for their long term maintenance.

Aims of the project

Making Places Profitable aims to

- Demonstrate how the positive socio-economic impacts of open space improvements can be maintained in the long run by promoting innovative partnership approaches involving private enterprises, communities and government.
- Illustrate and promoting best practice in place-keeping transnationally.
- Provide workable solutions to address maintenance and management requirements and to mainstream best practice in place-keeping across the whole of the NSR.
- Embed place-keeping innovations into improved policies at every level.
- Develop a shared agenda for the long-term improvement of open spaces and bring about a major shift in EU cohesion policy towards the long-term security of its investments.

Innovative open space products, processes and services will be used to demonstrate how to deliver more sustainable growth solutions in expanding areas and amongst key communities.

In cooperation with key EU policymakers and networks, we will provide workable solutions to address maintenance and management requirements. The strategic goal is to bring about a major shift in EU cohesion policy towards the long-term security of its investments. The end-result will be a shared agenda for the long-term improvement of open spaces, enabling communities to realise their potential, and delivering attractive locations in which to live, work and invest.

Imprint

**The North Sea Region
Programme Secretariat**

Jernbanegade 22, DK 8800 Viborg, Denmark
Phone: +45 8728 8070 | Fax: +45 8660 1680

www.northsearegion.eu