Innovative Foresight Planning for Business Development

WP-B Final report

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Due to delays this version still contains graphical flaws/typos, these will be corrected in the final version.

for business development







Innovative Foresight Planning for Business Development – WP-B Final report – version 09-2011

PREFACE

Innovative Foresight Planning for Business Development is a project financed by the European Union through the INTERREG IVB North Sea Region Program. In the project, the partners actively use the knowledge and competence of universities, research institutes and the public sector, together with different businesses and companies to plan for the future in an interactive manner and creating a basis for innovative solutions. The project was designed to allow an active interaction between the private and public sector as well as entities on international, national and regional levels. The foresight planning method has been developed and adapted to the regions and clusters involved. The method has then been applied in real situations, providing experiences channeled into best practices and recommendations.

This report summarizes the findings from the IFP project. It was written by WP-B based on inputs from the partners. These have been supplied in the form of structured presentations using a common template provided by WP-B. The report finalizes the responsibilities of WP-B in the project, and supplies inputs for dissemination of project results, which is the responsibility of WP-A.

The county government of Agder has been the coordinator of WP-B. The Norwegian Institute for Urban and Regional research (NIBR) and the Work Research Institute (AFI-WRI) have been commissioned by Agder as consultants for all activities in WP-B. This report was written by senior researcher, dr. pol. Jan Erling Klausen (NIBR), senior researcher, dr. ing. Henrik Dons Finsrud (AFI-WI) and researcher, mag. Art. Hans Christoffer Aargaard Terjesen (AFI-WRI). The overall process description of the Advanced Technology cluster was written by Stuart Hodgson of IZET, that of the Finance Cluster by Tor K. Eskeland of Synergia AS and that of WP-D by Yellie Alkema of the SYARK Gebiedsontwikkeling. Tables and figures in chapter 1 were prepared and presented by MHG Carolina Björn and senior researcher dr. polit. Ove Langeland (NIBR).

Oslo, 07.09.2011

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AIM AND OBJECTIVES

A key aim for the IFP project has been to improve the basis for decision making by developing and applying innovative foresight planning as a tool both for the private sector and public bodies related to business development. The project partners have applied the foresight planning approach in key sectors, on a transnational basis, leading to action plans for future cooperation, identification of joint projects and business collaborations. Great emphasis has been put on developing arenas for networking between businesses and regions in a transnational context. The project has sought to develop and strengthen public sector facilitation by creating transnational networks and developing a toolbox.

The project has sought to absorb knowledge by exchanging experiences with other partner regions, in order to create an improved basis for planning the future. A key objective has been to develop new tools through an innovative approach to planning and decision making, i.e. "Foresight Planning", to apply the foresight planning method on specific clusters in order to expand their businesses and equally to the regional efforts to facilitate regional economic development. Generally speaking, the IFP project was initiated to establish an arena for cooperation between business clusters as well as public facilitators. It develops action plans and identifies projects for future collaboration between the regions, businesses and research institutions.

PARTNERS AND REGIONS

The project has brought together partners from six regions in five countries surrounding the North Sea: Denmark, Germany, the Netherlands, Norway and Scotland. The regions are the following:

- REGION CENTRAL DENMARK: Region Central Jutland
- NORTHERN GERMANY: Gesellschaft f
 ür Technologief
 örderung Itzehoe mbH IZET
- THE NORTHERN NETHERLANDS: Provinces of Groningen, Friesland, Drenthe, Groningen and in addition NOM (Northern Investment Agency) and Chamber of Commerce
- GREATER STAVANGER REGION: Greater Stavanger Economic Development, Sparebank 1 SR-Bank, Innovation Norway, NAV, NHO Rogaland, LO and BI, Stavanger. Greater Stavanger is lead partner for the project.
- THE AGDER REGION: Vest-Agder County Council.
- SCOTLAND: Scottish Enterprise

CLUSTERS

The project has compiled best practices around the North Sea in respect to foresight planning. Working groups within regional clusters were established to participate and form public private partnerships.

The North Sea region has acknowledged strengths in its research base and a number of key industries, and strong clusters located in the partner regions. However, to build on these strengths, to maintain and improve global competitiveness and sustainable economic growth, there is a need to improve linkages within and between the clusters, at a regional and trans-national level.

This requires an integrated, transnational approach to identifying opportunities, within the region and in the global market, and the synergies which will allow the regions, research institutions and businesses to work together to exploit the opportunities.

The individual regions on their own do not have all the components and critical mass to develop globally competitive clusters. Working together in an approach which combines knowledge and expertise in a process of foresight planning, and applying this to the development of the selected industries, the partners have designed forward strategies and concrete action plans which will build this capacity.

- FOOD CLUSTER: The objective for this cluster, in the framework of this project, is to use the Innovative Foresight Planning to make the food sector more competitive and to improve the quality of the food products in order to expand the cluster
- ENERGY CLUSTER: The objective for this cluster, in the framework of this project, is to use the Innovative Foresight Planning in order to accelerate transfer of knowledge and technology from the mature and world-class oil and gas sector in the North Sea area into the emerging global renewable energy sector, primarily in the area of offshore renewable (wind, wave, tidal) where the opportunities for knowledge and resource transfer are considered to be highest.
- ADVANCED TECHNOLOGY CLUSTER: The objective for advanced technology cluster is to create a basis for infrastructural decisions and strategic technology management with regard to the specific needs of technology companies. The challenge is to develop and establish Innovative Foresight Planning with a carefully evaluated set of indicators for tech clusters for the first time, through transnational and cross cluster cooperation.
- FINANCE CLUSTER: The challenge for the financial industry is both to serve the regional and national market better, but also to expand on the international market, not least because of the globalization of industries. The objective for this cluster, in the framework of this project, is therefore to use Innovative Foresight Planning in order to improve capital management as a basis for expanding applied finance services.

PROJECT STRUCTURE

The project has been organized in four work packages. These are shown in the figure below.

Figur 1: Project structure



WP A is an overall work package which supervises the work in the thematic work packages and extracts and disseminates the results from these work packages.

WP-B has been in charge of preparing an overview over initiatives, publications and studies that are documenting past developments and future trends, systematizing the material and developing criteria for assessing best practices. Data on structural factors such as population, employment and education in the partner regions have been gathered, and these have been assessed in terms of compatibility. WP-B has been responsible for compiling documents and studies on scenarios prepared in various regions, systematizing these and using them as inputs to developing the foresight planning method. WP-B has, crucially, been responsible for structuring the method of Innovative Foresight Planning for cluster development and for the individual region as a whole, for assessing the Innovative Foresight Planning processes, preparing recommendations on innovative foresight planning and giving recommendations on means of disseminate results of innovative foresight planning.

WP C has been in charge of establishing sub-groups for each one of the selected business clusters, carrying out and comparing SWOT analyses for the selected clusters, applying the method of Innovative Foresight Planning on the selected clusters, and structuring and conducting B2B events and cross cluster events within each of the transnational clusters. WP-C has furthermore worked on recommending activities and projects for regional development on the basis of the milestone planning tool, preparing recommendations on exchange of best practices in transnational clusters and B2B cooperation, motivating players from government, companies and universities to develop the cluster on master plan issues.

WP-D has been in charge of preparing an overview of public policy tools, compiling best practices, evaluation and assessment of public policy tools, carrying out SWOT analyses in the involved regions and applying the method of Innovative Foresight Planning on the regions as a whole. WP-D has furthermore worked at developing and implementing an online policy toolbox, developing regional and trans-regional networks and embedding and mainstreaming the developed tools and practices.

THREE "DIALOGUES" ON INNOVATIVE FORESIGHT PLANNING

This report has been prepared by WP-B to present findings pertaining to the responsibilities outlined above. The basis for this has been provided by the partners working in WPs C and D. Throughout the duration of the project; three "dialogues" have been conducted between these three work packages, as summarized in the figure below:



The *methodological* dialogue has been conducted for the purpose of structuring the IFP method, which is presented in a later section of this report. The purpose of the *empirical* dialogue has been to facilitate cross-regional knowledge transfer and learning. The main part of the report presents key observations on best practice based on this dialogue. The report furthermore summarizes the analytical dialogue, as the findings are compared and assessed in the last section.

ON THE REGIONS AND THE CLUSTERS

Each of the clusters includes several partner regions. The regional distribution of the clusters is presented in the map below.



Figur 3: IFP regions and clusters

The *energy* cluster involves business partners in Scotland, Greater Stavanger, Agder, Central Denmark and Northern Netherlands. The *food* cluster involves partners in Northern Netherlands, Central Denmark, Agder

and Greater Stavanger. The *technology* cluster involves partners in Northern Netherlands, Germany, Central Denmark and Agder. The *finance* cluster involves partners in Greater Stavanger and Central Denmark.

The clusters will be presented in more detail in a later section. The following section will present the partner regions from the perspective of employment, economic output and other structural data.

ON THE IFP REGIONS

This section gives and overview over some selected statistical indicators which are important for regional development, innovation and economic performance. First, some figures on population are given followed by an employment overview and education. Then some economic and science and technology indicators are presented.

POPULATION

This part gives first an overview over the total population of the studied regions and the population change in the decade from 1999 to 2009. This is followed by the composition of the population and population density.



Figur 4: Total population in IFP partner regions

Figure 1 shows the total population for NUTS 2 regions. Schleswig-Holstein, which is also a state on NUTS 1 level in Germany, is by far the largest region, with a total of 2, 8 million inhabitants. North-Eastern Scotland is the smallest, with less than half a million. In the EU the population size of NUTS 2 regions varies from 27 thousand in Åland (Finland) to 11.5 million in Île de France. The average size is 1.8 million (DEMIFER 2010). This indicates that all the studied regions, except Schleswig-Holstein are fairly small, 3-4 times less than the average. This again may influence the potential for developing strong clusters in the regions and for the development of institutions and support structures for innovative activities. However, the three Dutch regions which make up the larger NUTS 1 region Noord-Nederland are probably more comparable to Schleswig-Holstein and as such make up a natural geographical unit.

All regions have increased their population since 1999 but the growth rates vary, cf. figure 2. Midtjylland, as a new NUTS 2 region, is not in figure 2. Numbers are available from 2005 but since then there has been only a moderate growth. In North-Eastern Scotland the population decreased a little from 1999 to 2004 and

afterwards the region has only had a moderate population growth. Agder and Rogaland has experienced the strongest population growth in this period together with the Dutch region Drenthe whereas the population growth in Groningen and Friesland and Schleswig-Holstein has flattened out or stopped in the latest part of the decade.



Figur 5: Population change in IFP partner regions

POPULATION COMPOSITION BY SEX AND AGE

Figur 6: Population composition



As can be seen in figure 3 the regions have a very similar demographic composition. The age group of the economically active population (20 – 64) varies from 65 per cent in Agder and Rogaland to 70 per cent in Groningen and North Eastern Scotland. Agder and Rogaland have the largest group of young people, 31 per cent 0-19 year whereas Schleswig-Holstein has the highest percentage of oldest people, 8 per cent 65-69 year.

POPULATION DENSITY

Figur 7: Population density



Figure 4 shows that there is a marked difference between the Dutch regions and Schleswig-Holstein and the other regions with regard to population density. Population density is highest in Groningen with 250 inhabitants per square kilometer and lowest in Agder and Rogaland where there are only 26 inhabitants per square kilometer. The population density of a region normally says something about the degree of urbanism in the region and a lot of innovation studies have focused on the effects of proximity and agglomeration on innovation and economic growth. Urban areas seem to have a better potential for creating external economies of scale due to agglomeration effects on innovation and economic growth (Acs 2002). Peripheral regions, therefore, seem to be less innovative than urban regions and, although this may vary to some extent, regions with higher population density usually perform better than thinner populated regions (Simmie 2003).

EMPLOYMENT

This part gives first an overview over the employment rate for different age groups in the period 2007-2009. Unfortunately there is not enough comparable data available before 2007, which is why the overview only covers three years. Next it presents the unemployment rate for the regions in 2009 and the long term unemployment for the same year. Finally an overview of the changes in unemployment for 1999-2009 is given.

Figure 5 shows that the overall employment is highest in Agder and Rogaland with more than 70 per cent and lowest in Schleswig-Holstein with 55 per cent. For the other regions the employment rate varies between 60 and 66 per cent. When looking into the different age groups, there are some clear similarities but the picture also varies to some extent, cf. figures 6-9. The employment rate is, as expected, highest for employees between 25-44 years and lowest for the youngest and oldest in all regions. Schleswig-Holstein has the lowest employment rate in all age groups, except for the 55-64 years group where the Dutch regions have the lowest score, only 49 per cent in Groningen. The largest differences within the age groups are in the youngest and the oldest age group. The employment rate is 47 per cent in Schleswig-Holstein, 68 in Friesland and Drenthe and 67 in North Eastern Scotland, i.e. a difference of 20 percentage points. Agder and Rogaland have the second lowest score with 56 per cent. For the oldest age group (55-64) the difference is also app. 20 percentage points, around 70 per cent of this age group is employed in North-Eastern Scotland and Rogaland whereas that goes for app. 50 per cent in Groningen. The smallest differences in employment rate between regions are

to found in the age group 35-44 years where the rate is 89 per cent in Friesland and 83 in Schleswig-Holstein. This is also regarded as the most productive cohort of employees.



Figur 5: Employment rate 15 years or over

Figur 6: Employment rate 15 to 24 years



Figur 7: Employment rate 25 to 34 years



Figur 8: Employment rate 35 to 44 years



Figur 9: Employment rate 55 to 64 years

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UNEMPLOYMENT RATE (UNEMPLOYED AS A PERCENTAGE OF THE TOTAL ACTIVE POPULATION)

This part gives first an overview over the unemployment rate for different age groups in 2009 and then the unemployment rate distributed on sex and age for the same year. Then the changes in unemployment rates for the regions are presented. Finally long term unemployment rates, which may indicates whether unemployment is frictional or structural, is presented.

As can be seen from figure 10 youth unemployment is higher in all regions than the unemployment for people over 25 years. However, the youth unemployment rate varies a lot between regions. It is highest in Midtjylland and Schleswig-Holstein with more than 10 percent and lowest in Agder and Rogaland with less than 5 per cent.

Schleswig-Holstein also has the highest rate of unemployment for persons over 25 years (6, 8%) whereas Agder and Rogaland have the lowest rate (1, 7%).

The unemployment rate is usually higher for men than for women in both the age group 15-24 and 25 years and over. However, North-Eastern Scotland is an exception and in this region the unemployment rate is higher for females in both age groups. That is also the case in Groningen and Friesland for the age group 25 years or more.

The unemployment rate usually follows business cycles. It increases in recessions and decreases when economies are growing, with some time lag. As can be seen in figure 13 the development trend is more or less the same for all regions in the decade 1999-2009, although the level of unemployment varies between the regions. There was an increase in unemployment in the early 2000s which mainly was due to the economic crisis in 2000 also called the "dot com crash". This negative trend was followed by a steady decline in unemployment in 2005-2008. In 2007 several years with economic growth in the USA was followed a set back and the financial crisis which had negative impacts on the overall world economy (Nasjonalbudsjettet 2011). This is reflected in the recent rise in unemployment from 2008.

Unemployment can be either frictional or structural. Frictional unemployment exists because both jobs and workers are heterogeneous, and a mismatch can result between the characteristics of supply and demand. Such a mismatch can be related to skills, payment, work-time, location, seasonal industries, attitude, taste, and a multitude of other factors. Frictional unemployment is always present in an economy but is not necessarily a big problem if it is not too high and if the unemployed find work after some time. Then it may just indicate that there high mobility in the labour market. Structural unemployment, on the other hand, which partly can be measured by long term unemployment, is usually more worrisome. Structural unemployment occurs when a

labour market is unable to provide jobs for everyone who wants one because there is a mismatch between the skills of the unemployed workers and the skills needed for the available jobs. Structural unemployment is hard to separate empirically from frictional unemployment, except to say that it lasts longer. As with frictional unemployment, simple demand-side stimulus will not work to easily abolish this type of unemployment. Figure 14 may indicate that Schleswig-Holstein has the biggest problems with structural unemployment. The long term unemployment rate 2, 85 per cent in this region compared to only 0, 2 per cent in Agder and Rogaland.



Figur 10: Uemployment rate 2009

Figur 11: Uemployment rate 15-24 years 2009





CHANGES IN UNEMPLOYMENT RATES THE LAST 10 YEARS

Figur 13: Changes in unemployment



Data is missing for Midtjylland before 2007 and North Eastern Scotland earlier than 2001.

The figure illustrates the strong cross-national trends in unemployment rates. All regions presented experienced falling levels of unemployment after the turn of the century, followed by increasing unemployment peaking in 2004 or 2005. A sharply declining tendency in the latter half of the decade was followed by increasing rates as the international financial crisis started to build momentum.





The figures

EDUCATION

Human capital (competences and knowledge) gained through education and experience is increasingly important for innovation and economic growth in all kinds of regions. Higher education is regarded as particularly important in knowledge-based economies such as the studied regions. The present data includes tertiary education (higher education) at a first and a second stage. The first stage must have duration of at least two years and can be both theoretically-based or more practically oriented and occupationally specific. The second stage leads to the award of an advanced research qualification and typically requires the submission of a thesis or a dissertation. Education from a university is a typical tertiary education.



As shown in figure 15 the regions differ substantially in terms of level of education. North Eastern Scotland stands out as the region with the highest rate of people with tertiary education attainment whereas Schleswig-Holstein has the lowest rate. The trend that more women than men have higher education is verified in five of seven regions although the difference in Groningen is only 0.1 %. This tendency is clearest in the two Scandinavian regions.

ECONOMY

Figur 16: GDP per cap in US dollars current prices and PPPs.



Figure 16 shows GDP (PPP) per capita which is the gross domestic product at purchasing power parity of regions per capita in 2008. This is the value of all final goods and services produced within a region in a given year divided by the average (or mid-year) population for the same year. It is used a rough measure which is used to compare national or regional wealth. As can be seen in figure 16 Groningen has the highest score (49700) and Schleswig-Holstein the lowest (24900). Unfortunately there are no present data for Agder and Rogaland but this region would probably get a very high score on this GDP measure. According to the OECD Factbook 2010 Gross national income per capita measured in US dollars, current prices and PPPs in Norway was more 59 000 in 2008. The NUTS 3 region Rogaland is one of the richest regions in Norway and although the two NUTS 3 regions Aust- and Vest-Agder which constitutes the rest of this NUTS 2 region is somewhat less rich, the average GDP per capita is probably still higher than for Groningen which has the highest score.

SCIENCE AND TECHNOLOGY

Figur 17: R&D exp., (total)



Figur 8: R&D exp. (business)



Economies have to be innovative in order to stay competitive and become prosperous. Particularly modern economies are often referred to as innovation-driven economies and science, usually measured by R&D expenditures, is one of the most important ingredients in successful innovation (Fagerberg et al 2005). Figure 17 show Gross domestic Expenditure on Research and Development (GERD) which is the total value of intramural research and development expenditures (R&D) of all organizations in performing sectors as a percentage of GDP. Figure 18 displays intramural research for the business sector. One of the key objectives of the EU during the last decade has been to encourage increasing levels of investment, in order to provide a stimulus to the EU's competitiveness. At the Barcelona Council in 2002, the EU agreed to a target of spending at least 3 % of gross domestic product (GDP) on research by 2010, of which two thirds was to be financed by the business sector (Eurostat 2011). Only Sweden and Finland has reached this overall goal. For Denmark the score is 2, 57, for Germany (2, 53) and for the Netherlands and Norway 1, 75 and 1, 67 respectively.

This national measure cannot be used on the regional level since R&D expenditures will vary a lot according to both the economic and the science and education structure in the different regions. But as can be seen in figure 17 North-Eastern Scotland is the only region that has a higher score than the national 3 per cent aim (3.12) and this is far above the UK average (1, 82). Midtjylland has the second highest score (1, 74) which is much lower than the national average and Friesland has the lowest score (0, 63) which is also much lower than the national average.

Countries with relatively high shares of business enterprise R & D usually also have relatively high levels of total GERD. The regionalised figures show a more ambiguous picture. North-Eastern Scotland and Midtjylland have the highest score also on this measure with 1, 15 and 0, 96 respectively. For Midtjylland that is far below the national average (1, 91) whereas the score for North-Eastern Scotland is fairly close to the national average for the UK (1, 21). Groningen has a very low score on R&D expenditures in the business enterprise sector, only 0, 14 whereas the national average is 0, 89. The same goes for Schleswig-Holstein with 0, 53 compared to the national average of 1, 84. Unfortunately there are no available data for Agder and Rogaland for none of the two measures but the national average for total R&D and business expenditures are 1, 67 and 0, 87 respectively.

PERCENTAGE OF HOUSEHOLDS WITH ACCESS TO THE INTERNET AT HOME

The percentage of households with access to Internet at home is an important indicator in an information society and knowledge economy. ICT is a basic technology in such societies and it is used both to work-related activities (home-work) and personal services (banking etc.) Figure 19 shows that internet access at home is widespread in all regions and that there has been a strong increase in Internet access the past years although there are some variations from year to year. Drenthe has the highest score in 2010 with 91 per cent of household with Internet access but the differences are rather small between the regions. The vast majority of households have internet access so the regions do not differ substantially on this indicator. Data is missing for Midtjylland before 2008 and for North Eastern Scotland after 2006. According to the Scottish Household Survey 2009, 70 per cent of Scottish households report having home Internet access in 2010.



2. THE IFP METHOD

BACKGROUND

The IFP project partners have conducted a number of foresight processes in the clusters and regions. These processes have been structured by a common approach which is termed "Innovative Foresight Planning" (IFP). Developing, applying and assessing this method constitute the core of the project. The following section presents the IFP method with a brief discussion of the model as a whole as well as its component parts. In later chapters, the IFP processes will be presented with reference to this model. A critical assessment is to be found in the last chapter.

WHAT IS FORESIGHT?

The IFP project draws on the previous and current practical experiences of the project partners (including NIBR) as well as on the general literature on Foresight. This literature cannot be summarized here, but the approach developed by members of the PREST centre at Manchester Business School has been particularly important.¹ A key aspect of this approach is that foresight should be seen as a deliberately designed process, marked by broad-scale participation, in which any of a number of available methods can be used sequentially for accumulating, transferring and transforming relevant knowledge and inputs concerning the future. While such processes should result in specific plans and measures for joint action, collective capacity building in the form of increased cluster integration and development of shared visions are normally seen as equally important. Henceforth, an important goal of the IFP project has been to use foresight as a tool for increasing the integration of the partner clusters and so increase their capacity for collective action.

THE IFP METHOD IN FIVE STAGES

The IFP method was developed by NIBR, based partially on the existing literature on Foresight, partially on the experiences of the IFP partners. While the method needed some level of specificity in order to fulfill its purposes, the partners agreed that it should be fairly flexible in terms of cluster-specific adjustments. Accordingly, the IFP method was structured as a generic model for foresight processes in order to achieve the appropriate balance between specificity and flexibility. The method is presented in the figure below.

¹ See for instance Georghiou, L., Harper, J. C., Keenan, M., Miles, I., and Popper, R., eds. (2008): *The Handbook of Technology Foresight: Concepts and Practice*. Cheltenham: Edvard Elgar

² We are indebted to Steven Stocks of Scottish Enterprise for compiling the material from the transnational collaborative efforts.

³ Steven Stocks of Scottish Enterprise has provided this account.

⁴ The Radar Group Model is described in detail in the document entitled "Technology Intelligence in Networks Innovative Foresight Planning for Business Development – WP-B Final report – version 09-2011 and Clusters".

⁵ NODE, which has got the NCE (Norwegian Centres of Expertise) status in 2009, consists of about 50 companies



These are the five stages of the IFP method. The pre-foresight stage (1) is where the process is planned and structured. Decisions are made concerning the scope of the process, the time frame and the resources available. A process organization is set up and the staff is appointed. Actor mapping, networking and recruitment are important tasks. Key events and milestones are planned.

The "data and inputs" stage (2) involves accumulating various kinds of inputs seen as relevant for the process at hand. Such inputs will often include various kinds of expert assessments and reports, but the is also a vast variety of methods available for gathering inputs from the whole range of stakeholders and others identified in the first stage. Such methods include for instance interviews, panels and surveys. The IFP partners have carried out SWOT analysis in their regions, and these are subsumed under stage 2.

A key concern in foresight processes is to facilitate interaction among a broad range of stakeholders in the cluster. Broad-scale participation is indeed a hallmark of foresight method, and the data and inputs accumulated in stage 2 should be made available for the participants in order to inform and enhance the quality of their deliberations. The data and inputs will normally need to be consolidated and transformed in order to be useful for this purpose, as many participants will lack the time and capacity for digesting substantial volumes of expert reports and analysis. This activity is carried out in stage 3. A variety of approaches has been used for achieving this, including writing synthesis papers or presenting inputs orally at conferences and seminars.

Stage 4 can be said to be the "heart" of the foresight process as this is the stage for direct interaction between the participants. Workshops, seminar, conferences and other kinds of events are organized and facilitated in order to exchange knowledge and opinions, discuss future developments, build common visions, reach agreement on plans and measures and not least increase the degree of integration in the cluster through network building.

The outputs of the foresight process (5) can be several and varied. While specific plans and measures for future action are important outputs, the foresight method also underscores the importance of network building as

this serves to integrate the cluster and provide basis for joint action. Such networks may in many cases be formalized to a smaller or greater extent.

For the purpose of simplicity, the method is presented as a linear sequence of five stages. The curved arrows however signify that IFP processes will normally iterate between the stages. For instance, following a workshop (stage 4) it may be deemed necessary to provide certain expert inputs (stage 2) which may in turn require transformation (stage 3) for use in a second interaction stage. Outputs (stage 5) may be provided in many phases of the process, not just at the end, and activities subsumed under stage 1 ("pre-foresight") including recruitment and planning, will normally proceed throughout the duration of the process.

3. THE ENERGY CLUSTER: OFFSHORE WIND

TOWARDS A TRANSNATIONAL CLUSTER

The five collaborating clusters in the field of Energy have been from Scotland, northern Netherlands, Central Denmark, the Agder region in Norway and Greater Stavanger, Norway. As will be apparent below, the energy-sector within this Interreg- program has been able to move towards a transnational cluster within the particular energy field of offshore wind². While maintaining their national cluster efforts, the emerging field of offshore wind has proved fertile for exploring joint strategies and linking businesses across nations. Let us take a brief look at the background for this.

A central point of reference for launching efforts in this field, is the fact that the EU has very ambitious and long-term renewable energy targets (2020+) to address climate change, energy security and economic competitiveness policy goals. The EU is unlikely to meet these without achieving a step change in renewables deployment. The Interreg-partners argue that offshore wind power offers the potential for very large scale wind farms that could close this gap and to create economies of scale. Therefore, the energy-partners quickly zoomed in on offshore wind.

There is a huge potential for offshore wind energy on and around the North Sea region. The North Sea Region is the global leader in offshore wind, both in installed and planned capacity and capability. 95%, nearly 900 MW, of the globally installed offshore wind energy is around the North Sea. Major growth is expected. Industry experts forecast some 2.4 GW installed capacity here by 2010. After 2010 more substantial growth can be expected. In UK waters, 10 GW offshore wind energy is planned by 2015; in Germany, 25GW is anticipated by 2030. The North Sea Region is the industry leader in offshore wind, with most of the key companies of the sector being located here. Offshore wind energy offers unique economic opportunities for coastal towns, allowing traditional maritime industries (offshore oil and gas, shipbuilding, marine sector) to diversify into the offshore renewables sector. This will create and safeguard jobs in the maritime industry. Total capital expenditure in the North Sea region alone is anticipated to be €5.3billion (£3.6bn) in the period 2005-2010, with substantial increases expected in the next decade. (source: POWER: Pushing Offshore Wind Energy Regions).

The technology builds on the most widely deployed and low cost renewable technology – onshore wind turbines, and it is the lowest cost 'marine' renewable resource. Apparently, the North Sea has some of the best wind resources in Europe, and beyond doubt, it has a well developed industry 'cluster' servicing the offshore oil and gas platforms along its coast. This is a strong base for project management, marine engineering and construction, cabling & shipping, to name a few.

In addition, there is a research base for marine, renewable and electricity power grid technology, and regional organizations and companies have skills and expertise which are readily applicable to developing offshore wind, the collaborating partners argue. At the same time, there are significant generic & 'North Sea Region' challenges, such as

- Skills shortages
- High cost of energy
- Grid connection issues
- Impact of failures offshore

² We are indebted to Steven Stocks of Scottish Enterprise for compiling the material from the transnational collaborative efforts.

- Coastal waters rapidly deepen
- Marinisation of this technology required
- Infrastructure required for mass deployment

In the following, we will provide a brief account of each of the partner regions and their IFP activities, before we return to the transnational aspects in more detail.

THE NORTHERN NETHERLANDS REGION

The Dutch partners in the IFP project started out without an existing cluster, and with an initial plan to focus on solar energy. Prompted by a kick-off meeting with the energy-partners in IFP, a broader scan of the energy sector options was carried out (wind energy, solar energy, biomass, carbon capture and storage etc). It soon became apparent that Offshore wind was the topic of common interest, and also with a particular potential for the North sea region.

The All-Energy Exhibition and Conference in Aberdeen was used as the focal event and the first step in bringing together offshore wind related companies in the region. The Northern Development Agency and the Energy Valley region commissioned a SWOT-analysis on the offshore wind sector in Northern Netherlands, and used this to identify key companies and to legitimate the Aberdeen-initiative. Early on, collaboration with the parallel Interreg project POWER Cluster was established, expanding the number of companies to meet in Aberdeen. The Aberdeen event comprised a number of mutually reinforcing processes, including a regional specific seminar, B2B meetings, transnational IFP-planning, networking and a brainstorming session with the participating companies, identifying main focus points in the cluster initiative. Organized visits to Husum Wind Energy fair and to Hamburg further strengthened the regional collaboration, which gained still further momentum by connecting to a developer of offshore wind farms outside of Northern Netherlands. This process has led to the formal establishing of the Northern Netherlands Offshore Wind cluster, NNOW. Its mission is to make the Northern Netherlands the main region for offshore wind energy in the Netherlands. The participating companies are reportedly enthusiastic about taking part in the emerging cluster, and have currently turned their attention from international collaboration initially, to harvesting the immediate benefits of regional collaboration centered around concrete wind park initiatives in their region.

Apparently, the IFP project has worked as a catalyst and brought forward a previously non-existing cluster on offshore wind, with a series of goals and activities laid out for the near future.

THE AGDER REGION, NORWAY

As was the case with Northern Netherlands, Agder in Norway did not have an energy cluster at the outset of the IFP project, despite its vast hydro power resources and Norway's third largest energy supplier, Agder Energy. However, the region has a strong cluster on offshore supply industry, NODE, and hence a world leading expertise as supplier for the offshore oil and gas sector. Initially, the NODE-companies had a marginal interest in offshore wind. Raising the awareness around this issue, and involving the actors in the Interreg-project was therefore a first obstacle to overcome. Fortunately, the NODE cluster is an experienced user of foresight processes, and the county council had already an Energy Plan for Agder in place. This created a good platform for involving the public actors, such as the county council politicians, municipalities and Innovation Norway, and in addition four research institutions took part in the project.

KNOWLEDGE INPUT

Information exchange with a representative from the Interreg project POWER cluster turned out to be very valuable for the IFP energy cluster group. Agder Energy's competence on energy issues proved instrumental in

framing the effort, and a number of publications on energy issues from the European Wind Energy Association (EWEA) and other sources were distributed among the potential participants in the offshore wind initiative. Foremost, these documents and other practical information were distributed *after* interactive sessions in order to reinforce ongoing processes, rather than serving as input up front. Knowledge input at sessions was to a larger extent provided through oral presentations.

PROCESSES AND FURTHER DEVELOPMENT

The Aberdeen event was also a focal point for the Agder initiative. A preparatory workshop and a broader information meeting ran prior to the Aberdeen event in May 2010, followed by a thorough evaluation, regional workshops, IFP-workshops on energy storage and grid in Brussels and a regional B2B-workshop. The latter also was the starting point for an attempt to establish a "Southern Norway Offshore Wind" network, initiated by the Vest-Agder County council. Currently, establishing this network is the main focus of the IFP-project. Key activities include joint participating at a B2B-offshore wind arrangement in Denmark in May 2011, a similar event in UK in September, and a common stand at fair in Amsterdam in November. Hence, the international dimension (market access, partners etc) seems to be instrumental in forming the regional collaboration. The IFP process in Agder has spurred an increased attention towards a related energy issue, storage and grid, and the issue has already been taken beyond the scope of the IFP process into international relations, foremost linking the Agder region to the German federal state of Niedersachsen to explore future collaboration.

THE GREATER STAVANGER REGION, NORWAY

Greater Stavanger has, through the course of the IFP project, worked actively to promote and develop an integrated offshore wind cluster in their region. This resulted in cooperation around the Power Cluster Mid Conference activities at the All Energy Conference and Exhibition in Aberdeen in May 2011. The Norwegian group at All energy and the Ardoe House workshop represented the region's triple helix efforts, and were also encouraged to present during EU's open days event in Brussels in October 2010.

Greater Stavanger was at a later stage involved in organizing the power storage workshop in Brussels. These project activities have given us as a region and Greater Stavanger as partner numerable opportunities to harvest knowledge from other partners/experts and a better basis for going forward with our efforts to progress developments both related to renewables and to hydrocarbons. We have recently facilitated a work group on behalf of the County of Rogaland on how we possibly can reach the targets set for additional production of renewable energy by 2020.

Greater Stavanger emphasize that their participation has greatly increased their knowledge concerning offshore wind opportunities. They have come to be a source of knowledge and information for the lesser informed, and have become increasingly aware of the synergies between the oil &gas and the offshore wind industries.

A local university college has made a head on start on developing an education program about wind power techniques. They have used these contacts to form a foundation for applying for a Leonardo program (EU) and have gained federal approval to start the first class for wind power technicians in 2011, with an impressive oversubscription of 50%.

The IFP process has given Greater Stavanger legitimate reason to work and network with renewable energy developers/inventors locally. A recent white paper commissioned by the County of Rogaland showed how offshore wind could contribute to meeting the county's renewable energy targets by 2020. Yet in spite of this, offshore wind has not moved much during these three years in Norway. There is not even an emerging market for offshore wind developments, probably due to the lack of a regulatory framework. A particular impediment is that the Norwegian/Swedish electricity certificate incentives for new renewable energy would apparently

favor hydro electric energy and land-based wind power, at least this is the conception of key actors in the field. Thus there are few drivers in aggressive pursuit of offshore wind opportunities.

A number of future actions are projected to continue Greater Stavanger's efforts.

- We will continue to strengthen the early traces of a cluster and interest that we have by several activities.
- Arena Now participation An Innovation Norway supported project aimed to organize and position companies working with the offshore wind supply chain
- Continue to work in the region to strengthen our regional impact in the land wind development projects and its supply chain
- We hope to be able to continue our efforts in another EU-INTERREG or similar program retaining some of our IFP partners related to energy industry development
- Work to strengthen the ONS (<u>www.ons.no</u>) renewable park effort and similar initiatives
- Become the coordinator for regular follow up meetings of the renewable work group effort, to update the facts and keep the pressure on if needed, focus area Rogaland.
- Work with other Norwegian regions to spread knowledge about renewable energy opportunities and organize trip top relevant events.
- We are in 2011 going to organize trips for groups from academia, businesses and economies development players to the Clean Tech Week in Boston as well as the European offshore wind conference and exhibition in Amsterdam.

THE CENTRAL DENMARK REGION

Denmark has a long and strong tradition within the onshore wind power industry, with a correspondingly strong industry on wind turbine manufacturers and their subcontractors. So far, the wind turbine suppliers have been the focal point in the entire supply chain of the wind power industry. The shift towards offshore installations may very well alter the dynamics, the positions and the focus point from the wind turbine manufacturers to the developers of offshore wind parks, as well as increase the project scale and investment volume. The offshore dimension brings harbours, offshore vessels and other offshore related actors and competencies into the value chain, and calls for a redefinition of the stakeholder set and brings forward new challenges. This insight has grown out of the Danish IFP project, who has been led by the cluster organization MidtVind, together with CFU, a centre for suppliers.

The All Energy exhibition and conference in Aberdeen in May 2010 served as a focal point also for the Danish wind cluster, which brought 25 representatives along. B2B activities and networking proved valuable, and the enormous interest around the wind power issue and its future prospects was an eye opener to the participants. The Aberdeen event triggered a supply chain mapping of the Danish Wind Turbine industry, including an identification of the main players in the industry. This was followed by a SWOT and interviews to further clarify the challenges and opportunities for the industry. Several brainstorming sessions were conducted, some of them initiated further investigations or analysis to strengthen the knowledge base. Some of this information was obtained from existing sources and previous studies, and compiled into new formats. Flexible excel sheet and visualizations were used to communicate the content, in addition to taylor made reports. The IFP project has created new ideas for further development of the MidtVind cluster, including initiatives to form business networks within the cluster, and chairing a transnational B2B-meeting.

SCOTLAND

The Scottish partner has chosen to report their activities as part of the transnational efforts.

TRANSNATIONAL IFP PROCESSES

Below we return to the details of the transnational process. The purpose is to portray how the partners benefitted from getting together within the IPF project and how they started to build transnational linkages on cluster and company levels³.

Early on, the Interreg-partners set out to pursue a joint agenda. Scottish Enterprise hosted a meeting in Aberdeen on 1st December 2009, where it was concluded that, given the background situation with regard to offshore wind , the first major activity to be undertaken in the WPC Energy cluster would be in the area of Offshore Wind. In order to benefit from the interaction of a wide range of potential transnational supply chain representatives, it was decided that a workshop event would be held at The Ardoe House Hotel in Aberdeen in May 2010 just prior to the All Energy international conference in Aberdeen. It was felt that by "piggy-backing" the workshop on the All Energy event, it would be possible to offer a more attractive reason for potential supply chain delegates from all regions to attend the workshop.

- Invited representatives from a wide range of potential off-shore wind stake holders including Developers, Government, Academics, Consulting organisations attended
- The aim was to identify opportunities for the development of a trans-national North Sea Regional globally competitive Off-Shore wind supply chain
- International group convened to explore, agree, prioritise and seek solutions for the key challenges facing the development of a globally competitive offshore wind industry in the North Sea region.
- An Interactive session to input the knowledge and opinions from all attending in a lively and action oriented debate was held

AREAS OF FOCUS

- Planning
- Installation
- Innovation
- Development
- Testing

INTENDED OUTPUTS

- The identification of areas of opportunity for potential future supply chain development initiatives
- Inform strategic direction
- Inform project prioritisation
- Linked to further Interreg activities e.g. Power Cluster

IMMEDIATE OUTPUTS IDENTIFIED POST ABERDEEN MEETING

³ Steven Stocks of Scottish Enterprise has provided this account.

The IFP meeting held in Aberdeen prior to the larger conference, generated an action list to carry through after the event. The partners agreed on the following sceme.

ACTIONS – OFFSHORE WIND WORKSHOP FOLLOW ON WORK

- Each region will hold a meeting at which the output from the Ardoe session in Aberdeen will be explored in light of specific regional requirements etc. Then, based on this session each region will prepare a commentary that describes the following:
- Main value already derived from attending the Ardoe session both in terms of content and process and indeed the wider aspect of attending All Energy, 'piggy backing'.
- Which are the key areas being progressed by the region out of the Ardoe list of requirements; offer a short explanation of why this area / these areas are being progressed. Indicate the top 5 areas.
- How many and which of these areas being worked is your region most interested in working via the collaborative transnational approach.
- Describe what has happened post Ardoe (and initiated by the Ardoe session) in your region.
- Based on the output from Ardoe what would you like to see happening next?
- Compile draft report based on received completed templates. This report will highlight the areas that the five regions feel should be worked collaboratively across all, or sub sets of, the participating regions. It will also offer a summary of the pros and cons of the Ardoe / All Energy process as perceived by the regions, this can be supplied to Jan Erling Klausen who is currently undertaking a review of the IFP processes as a whole.

In terms of issues that cannot be addressed at the level of the IFP project, i.e. those emerging from Ardoe which need a response from the next level up e.g. HSE issues, Standards required, these will be highlighted in the final report.

It was agreed that the planned seminar – visit to Vestas, visit to offshore wind farm etc. followed by seminar / workshop session to present / explore offshore wind issues – will be delivered in April / May 2011as part of the Energy Cluster activity in 2011. The Danish representatives on the cluster will explore how this might happen and get back to other group members with a plan / description and requests for support. It was agreed that presentations should be from experts from as many of the five regions as possible, not just Danish experts.

Once the plan is received the concept will be tested with key members of the supply chain in each of the regions to test the appetite for the seminar etc.

FOLLOW-ON ACTIVITIES IN EACH REGION AFTER THE WORKSHOP

Each region held a meeting at which the output from the Ardoe session will be explored in light of specific regional requirements etc. Then, based on this session each region prepared a commentary based on the following headings:

1. What was the main value derived from attending the Aberdeen Offshore Wind Workshop both in terms of content and process, and the wider aspect of the timing of the event i.e. "Piggy-backing" on the All Energy event on the following days.

SCOTLAND

32 representatives attended from Scotland/UK – raising awareness of the trans-regional potential for offshore wind.

A working group has been set up within Scottish Enterprise which includes representatives from Scottish Government. This group meets and works in Scotland in support of this Sector.

AGDER, NORWAY

The two main values for the attendees from Agder were information about the development of the offshore wind market in the North Sea and contacts to stakeholders from both the own region and other regions and countries (networking). The group works and discussions during the afternoon session were regarded as the most useful parts of the Ardoe meeting. Also the exhibition and especially the seminars and "speed dating" on the All Energy event were regarded as worthwhile.

In terms of process the delegates from Agder were very satisfied with both the entire initiative and the role Agder's county administration played so far. All delegates who were contacted after the Aberdeen event wished to continue with the process.

STAVANGER, NORWAY

Opportunity to network and linkage to the Power Cluster

CENTRAL DENMARK REGION

17 Danish people including representatives of 11 private companies attended the Ardoe session. Approximately 24 people in total from Denmark were involved in the processes initiated by the IFP project and many of them did also participate in the All Energy exhibition and fair.

According to answers to a questionnaire we afterwards send out to the participants and other follow-ups, we have received the information, that the Danish participants gained very important new knowledge about the future development in the Offshore Wind industry in the North Sea Region

Participation in the All Energy fair did for some at the participants result in new contact and potential partnerships.

NORTHERN NETHERLANDS

The trip was organized by the IFP project and the Northern Netherlands Development Agency (NOM) in cooperation with Energy Valley. The 3-day trip contained several networking, knowledge-exchange and workshop-moments. All was connected to the big energy-event All Energy. This fair and conference was a 2 day-event with many opportunities to do networking and enhance the knowledge and state of the art in offshore wind power. The main goal was to find out whether there is a good basis in Northern Netherlands for building up a cluster. Besides that several contacts have been made with other clusters in the near area around the North Sea. Of course to business- to-business contacts were the main goal for the business-representatives travelling along.

In the early morning of Tuesday the 18th the delegates were presenting themselves and their businesses in a short 5 minute-pitch. The ones that used PowerPoint had the most effective pitches. This way of sharing information in a short meeting was also approved very positive.

IFP-meeting started later the same morning. This meeting with workshops was jointly organized, but mainly done by Steven Stocks, the chairman of the IFP-energy workgroup and Alistair Punt, a workshop facilitator, known by the workgroup, because he did some sessions earlier on. The meeting is found very positive. It was a way to appoint the most important topics in the Offshore Wind as a whole. Everybody was very much involved.

Innovative Foresight Planning for Business Development – WP-B Final report – version 09-2011

The results were put done in a separate overview. A short evaluation was done after the meeting by some of the IFP-energy workgroup.

The All Energy event started the following day. The Dutch and some Norwegian and Danish delegates staying in the same hotel paid a full day visit to the conference and fair. There were lots of lectures and the fair was built almost solely on offshore wind. The delegates were also positive about this profitable day.

On Thursday 20th of May some of the group joined the contact to contract meeting, organized by the Power Cluster. Some of the businesses evaluated this way of matchmaking very valuable. Again this is a good way of enhancing your network. The concept of C2C is a date of 15 minutes. The business representatives were able to register a few days ahead. Another person can subscribe based on the short description accompanying your picture.

As a whole the delegates were very positive about the total journey and the package offered.

2. Which are the key areas being progressed by the region out of the Ardoe list of requirements; offer a short explanation of why this area / these areas are being progressed. Indicate the top 5 areas

SCOTLAND

Key areas being progressed in Scotland include -

- Supply Chain Development Currently investigating opportunities to transfer oil & gas experience into
 offshore wind. A high level event was held in December bringing together private sector
 representatives from both the Oil & Gas and renewables sectors to identify key supply chain issues
 needing to be addressed, including: O&M, Health & Safety and installation.
- Infrastructure Development Have completed a national analysis of potential infrastructure capabilities and have identified specific areas required to be addressed to enable the region to be a competitive in the offshore wind sector for manufacture and O&M. Have then gone on to use this study to raise a £70m public sector fund to further develop as necessary infrastructure in the region.
- Logistics Studies have been undertaken to identify optimum logistics for installation and maintenance from Scottish ports
- Design Optimisation Separate Foresighting activities have been commissioned in Scotland to identify technology innovations for the optimization of future offshore wind structures

AGDER, NORWAY

- Logistics/Construction & maintenance vessels and services: This is seen as Agder's main competence field due to the existing offshore industry cluster. The industry's know-how could play an important role in finding solutions to existing technological shortcomings.
- Infrastructure/Ports: There is a demand for better port capacity for both assembling and shipping windmill components to offshore installations. The ports in Agder could contribute to overcome existing shortcomings.
- Grid and energy storage: Agder as the southernmost part of Norway can be a natural hub for energy exchange with Europe. By building new cables can offshore wind installations be connected to energy storing systems (pump storage) in Norway.

STAVANGER, NORWAY

- Government support scheme as well as licensing and consent programs
- Supply Chain development however our near time market and training arena have to be the North Sea Market
- Education Progress the work with getting educational institutions involved and programs in place
- Design optimization Fully benefit from our marine and petroleum experience base foster innovation and development of new solutions our chosen focus areas shall be:
- Take part in what happens in the North Sea Market as supplier of services and products.
- Be in the forefront on deep water floating and floatable offshore wind.
- Logistics and Installation prepare to enable deep Norwegian ports to be used at a future point in time for assembly and service.

CENTRAL DENMARK REGION

- Logistics / installation. Due to lack of special ships and heavy equipment it will be very important to support expansion of capacity in this field. Infrastructure/ Logistics will be very important for the future competition between countries. A good infrastructure means cost reduction and ability to deliver on time. This however will to a large extent be a governmental responsibility
- *Education.* The very high requirement for safety training and other sorts of training for offshore work will put pressure on the working force available. It will be extremely important that a standardization of education in the offshore sector will take place in the future and that take the educational capacity will be expanded.
- Supply Chain Development. Denmark already has a very well functioning supply chain. But the Danish offshore wind industry is under pressure, e.g. because of attractive tariff subsidies in other countries, which means that there is an incentive for the Danish turbine manufactures to move their production and produce locally. Therefore the supply chain needs to be further developed.
- *Grid.* The production of wind energy cannot be produced and delivered in full accordance with the needs, which means that storage of the energy will be required. A form of intelligent or smart grid seems to be the only realistic solution we have to meet the future need, which means that inherent in the grid system must be some form of decision-making, communication with the customers, possibilities for converting the energy automatically etc.

NORTHERN NETHERLANDS

- Cluster development with focus on:
- Public Relations and Marketing
- Education, labour market issues (standardization)
- Process innovation
- Lobbying on key issues as supergrid, energy hub etc.

3. How many and which of these areas being worked is your region most interested in working via the collaborative transnational approach.

SCOTLAND

- Health & Safety
- Standards
- Grids / Energy Storage

Innovation – Potential for joint EU funded innovation on offshore wind

AGDER, NORWAY

Grid and energy storage: This issue cannot be solved by only one country. It is evident that collaborative transnational approaches are needed to connect the energy producing areas with the main energy consuming regions in Europe.

STAVANGER, NORWAY

• Supply Chain and Education

CENTRAL DENMARK REGION

- Education and grid are in our opinion areas which must be managed in a transnational approach. In frame of our IFP project education will be the most obvious subject to go on with.
- Furthermore we think, that an attempt should be made for developing the value chain in the North sea region.

NORTHERN NETHERLANDS

- Learning from other networks
- B2B across the North Sea
- Lobbying on key issues

4. Describe what has happened post Ardoe (and initiated by the Ardoe session) in your region.

SCOTLAND

Main activities post Ardoe have focused on supply chain development. With focus on the transfer from offshore oil and gas to offshore wind supply chain

AGDER, NORWAY

A survey was done among the delegates from Agder about their expectations towards and their comments on the Ardoe session and the All Energy event. A follow-up meeting was organized in September where all the Aberdeen-delegates were invited. Main purpose of the meeting was a discussion of further steps.

STAVANGER, NORWAY

No information available

CENTRAL DENMARK REGION

• Some partnerships between individual companies are now in progress.

No initiative has started as a direct result of the Ardoe workshop. However a strong development has happened within the Midtwind suppliers network in the wind industry: Two more Danish companies have become members of the network, and the cooperation between the companies has been intensified both in depth and with taken up new areas for cooperation such as education, corporate social responsibility and test facilities

NORTHERN NETHERLANDS

- First review in Harlingen on July 5th (results: see no. 2)
- Business trip joint activity with Syntens to Hamburg/Husum(September 21-23)
- Presenting our companes to BARD engineering on September 27th
- Installing a lobbyist for O Windpower by Energy Valley
- Building up and organizational structure for the O W Network called NNOW

5. Based on the output from Ardoe what would you like to see happening next?

SCOTLAND

- Transnational activities to focus on:
- Health & Safety
- Standards
- Grids / Energy Storage
- Innovation Potential for joint EU funded innovation on offshore wind

Activities could include the initiation of a further, specific Interreg project in offshore wind to take these forward.

AGDER, NORWAY

- The most fruitful next steps from our side would be:
- The planned session on energy storage and grid
- The planned visit to one of the big wind turbine producers in Denmark, included a visit to a large wind farm
- More transnational B2B events with participation of the most important wind energy stakeholders

STAVANGER, NORWAY

We need to support innovation that can bring down cost of all segments in an EPCI value chain.

Test and trial of new technology will be extremely important to enable us at a somewhat later stage to be able to offer tried and tested solutions. This will make the offshore wind market "bankable" to a larger degree.

CENTRAL DENMARK REGION

- Transnational efforts to establish standard education with enough capacity to train the sufficient work force.
- More efforts to support and initiate transnational B2B activities, which will also be an important element in developing the supply chain in the offshore wind industry.

The visit in Denmark in spring 2011 with a follow-up conference on some of the subjects identified during the Ardoe workshop, sharing Danish experiences with our IFP partners, other sorts of facilitation of the cooperation during the visit.

NORTHERN NETHERLANDS

- Doing a joint (interreg IVB) application for more budget on:
- Learning from other networks
- B2B across the North Sea
- Lobbying on key issues

Processes typically of a muddling through-type, where the process has not been designed as a whole, but as a step-by-step approach, where the next step has grown out of the previous one.

SOME IFP CHARACTERISTICS OF THE ENERGY SECTOR

Based on the above accounts, what seems to be the central IFP-related issues? One of the strong features of the collaboration on offshore wind was its immediate transnational dimension, which in turn accelerated regional collaboration. The sector has a clear business focus, and the ability to connect companies across the North Sea at an early stage seems to have been a wise approach. A reliance of SWOT and value chain analysis is a common characteristic in order to develop a sufficiently shared knowledge base for convening the actors. Interactive events seem to have been fairly traditional, but the ability to utilize international conferences and piggy back on them has proven to be a useful and somewhat creative approach. None of the participating regions have developed a clear process design, but rather taking one step at a time, and no one seems to have utilized the potential of scenario building. Instead, expert analysis' have played the role of creating future perspectives. Process or facilitation skills are reported as instrumental in the successful B2B-meetings and workshops, where the Aberdeen event hosted by Scottish Enterprise appears to be well designed and facilitated. In most regions, the IFP process has moved the field on offshore wind forward, created new collaborative structures, useful relationships and shared understanding.

4. THE FOOD CLUSTER

Four food clusters has participated in the IFP project. These four clusters are located in three different countries: One cluster in Denmark (Central Denmark), two clusters in Norway (Greater Stavanger and Vest Agder) and one cluster in the Netherlands (Northern Netherland).

DIFFERENT CASES, DIFFERENT STORIES

Intentionally this section was supposed to give a short overview over the different stories following the four different cases, and by that give a backdrop before describing the case of "best practice". However, despite much effort spent on analyzing the data collected from the different food clusters, this was unfortunately not possible to accomplish because the quality of the data from three out of four clusters was insufficient to a degree that it made it impossible to "write it out". A template presentation is only available from the Danish IFP process. The Danish contribution is a very solid case, and is presented as "best practice".

BEST PRACTICE: THE DANISH WEST COAST FISHERY CLUSTER

The IPF Method is – as described earlier – a process divided into five stages: 1) pre-foresight, 2) data and input, 3) information and transmission, 4) interaction, and 5) output. While this report is a stage five-activity, the rest of the process is far more fluid. Between the first and last stage there are no hermetic bulkheads. On the contrary, between the different stages there will always be close contact, parallel activities and overlapping milestones. When writing out this case of best practice the headings was at first organized in stages from one to five, but after a while that disposition didn't make any sense because only the first heading could be labeled "Pre-Foresight". The Danish case has followed the IFP Method "manual" strictly, and as a result they ended up with a 'live' process: a process where the activities and milestones are pacing back and forth between stage two and five – just like the IPF Method is supposed to work. Should however the reader be in doubt about what stage what activity primarily "belongs to" when reading this case of best practice, it is recommended to read this with the IPF Method figure (figure 4) at hand.

DEFINITION AND DELIMITATION OF THE CLUSTER

The key companies in the cluster are Thyborøn Port, Hvide Sande Port, Thorsminde Port, Thyborøn Fishermen's Organisation (representing 303 fishermen), Hvide Sande Fishermen's Organisation (representing 120 fishermen) and Danish Fish Auction with divisions in all three ports. Besides these key companies the important players are the three ports' service companies as well as the buyers. Tourism plays an important part, but it is not directly related to the cooperation of the cluster. Consequently, tourism is not included in the mapping of the players. It has been estimated that 239 different key companies are in the cluster (ports, vessels, auctions, buyers and the service industry). The different players can be listed as this:

- 3 Ports (Thyborøn, Hvide Sande and Thorsminde)
- 1 Auction (1 auction with three divisions in Thyborøn, Hvide Sande and Thorsminde)
- 144 Vessels (allocated with 63 in Thyborøn, 64 in Hvide Sande and 17 in Thorsminde)
- 16 buyers (allocated with 10 in Thyborøn, 4 in Hvide Sande and 2 in Thorsminde)
- 75 service companies (allocated with 35 in Thyborøn, 30 in Hvide Sande and 10 in Thorsminde)

The cluster mobilizes more than 1000 jobs directly and considerably more if other industries and actors that are in interaction with the cluster is accounted for. The West Coast Fishery Cluster is therefore considered an important factor for the survival of the West Coast. The three ports Thyborøn, Thorsminde and Hvide Sande are the foundation of the cluster and are the framework for the other players. The three ports also contribute the largest amount of money to the cluster cooperation.

MAPPING DATA COLLECTION AND INTERVIEWS

Based on fundamental knowledge about the three port's different players and interviewing the involved parties, the key players were found. As the cluster has edible fish as its central focal point, the main focus has been on companies and organizations working in the primary value chain.

The first phase was conducted as a collection and screening of statistical material. The material primarily stems from the Danish Fishermen's organization, the Ministry of Food, Agriculture and Fisheries, the three port's Fishermen's Organizations, Danish Fish Auctions, the three ports and the companies related to the ports.

The screening quickly showed that the fishing industry is difficult to map, as the data from the various public authorities and the data from the various players differ. The way in which the various players collect and estimate data also vary. For instance the Danish Directorate of Fisheries' accounts of landings differ from the numbers that Thyborøn Port and Danske Fiskeauktioner (Danish Fish Auctions) have registered as landings. Also, it has been difficult to estimate the number of vessels belonging to the different ports. In the following mapping, when in doubt, the numbers and estimates of the cluster's players have been used. The data regarding turnover from the different players have in several cases been difficult to obtain. The Fisheries cluster contains many players both regarding number and interests. Therefore, it has been a challenge choosing which things to map. In the light of the differences in the statistical material, further studies were conducted using phone interviews as well as personal interviews with the cluster's key players (the three port's Managing Directors, the auctioneers, some buyers as well as the consultants in the Fishermen's Organization). When in doubt the numbers and estimates of the key players have primarily been used during mapping.

CONDUCTING THE SWOT-ANALYSIS

After the above-mentioned mapping the first written material was drawn up and sent to the cluster's key players for comments. Soon after reading this material the key players were invited for an afternoon of assessing the cluster's strengths, weaknesses, possibilities and threats. All the cluster's players showed great interest in the work. Participating in the SWOT- day were the three port's Managing Directors, the two chairman of the Fishermen's organization, the Managing director of Danish Fish Auction and the cluster's Director of Development. The SWOT-analysis itself was conducted as a discussion in which the writer allocated the statements into the four parts of the SWOT. Also, the writer asked clarifying questions as well as acted as mediator during discrepancies.

SWOT-FINDINGS: STRENGTHS, WEAKNESSES, POSSIBILITIES AND THREATS

The fishery cluster is characterized by the individual players in the three ports as being interdependent. All players have a strong sense of entrepreneurship, are willing to take risks and to invest, if the right idea comes along. The greatest strength of the cooperation in the industry is that it has the size to lift the future challenges in terms of education, technology, quality and logistics. With the transitioning to Internet auction, the gateway to Europe was opened and the existing patterns of trade were challenged.

In all three ports one find a service trade, which both nationally and globally has a well-known brand and which, along with the three ports, makes a great foundation for the entire cooperation. Even though the fishermen are many miles from shore, the auction, the port and each other, their interest in and use of new technology makes communication swiftly and efficient. The clusters key players see this as both strength and a weakness. The cluster cooperation holds many opportunities for development and growth. It has become the foundation of supply, sale and marketing, which have not previously been present for the individual players. The cluster cooperation seek to compensate declining prices on fish through increasing focus on quality and sea packed fish,

the unbroken cooling chain, faster logistics to the consumer, etc. Also, all involved have an increasing focus on sustainable fishing, expressed through the MSC-certification (Marine Stewardship Council), as well as closer relations between the fishermen and the industry in order for the supply to be better adjusted to the trade capacity and demand.

Many of the assessments and statements in the cluster cooperation build on subjective criteria. This is particularly obvious when it regards quality and price. Many of the challenges that other rural areas deal with, such as migration, problems with recruitment of working power and maladjusted age composition are however also valid for the West Coast. The players have never promoted the trade, which makes recruiting for the fishery and the service trades one of the great challenges in the future.

The three ports are the cluster's basic companies and at the same time each other's rivals. It is estimated that the greatest challenge for the cluster cooperation will be that none of the players resort to promoting own interests ahead of the cooperation's interests.

The fleet is made up of larger and fewer ships and whether the ports are able to maintain the necessary depth of the water level to serve the fleet is a real threat.

PREPARATION OF THE MATERIAL

The process' criterion for success was that the collected material, the SWOT-analysis and the final report could be used by the cluster's players afterwards. When the first written material and the discussion from the SWOT-discussions resulted in greater demand for further details and information, a further data collection was conducted to ensure the quality of the material.

DETERMINING THE FURTHER PROCESS AND METHOD

As a result of the previously described history, the fishery cluster has a steering committee, made up by a representative from each of the key players in the three ports as well as a couple of other players. Each party contributes financial depending on their turnover, numbers of members, and other aspects. There's great variation in the contributions that stretch from 30.000 Danish Kroner to 750.000 Danish Kroner a year. The biggest contributor is Thyborøn Port. The cluster's structure is both the biggest strength and its biggest challenge.

The large steering committee and its different players provide ownership and an opportunity to act quickly, as all the decision-makers are present. The challenge is that many of the clusters' activities are nearly similar to the key players' core qualifications. Therefore, discussions often arise, whether the actors who contributes the most (the ports), or the actors with the core competences (auctions and the fishermen's organizations) should decide, which activities to initiate. At times, it has been a rigid and laborious process, which has required a strong chairman.

Before the scenario process was initiated, a steering committee meeting was held with all players present, and a decision on the future process taken. To allow the scenario process the best possible conditions, it was decided to let the companies, who have the future challenges of the edible fish at closest range, work with the future scenarios.

FROM SWOT TO SCENARIO WORKSHOPS

Based on the SWOT-analysis, selected actors were invited to a scenario workshop, where they were asked to do a "postcard from the future"-assignment. Taking starting point five years from now, they were asked to describe how the challenges they had pointed out in the SWOT- analysis, had turned out. They all had to work with dream

scenarios, and make a suggestion on how these scenarios had appeared.

Quite a few reminders had to be made to get the involved to return the postcards, and one of the postcards was created as an interview. All in all, it was a great exercise that formed a great foundation for the further selection and description of various dream scenarios. However, it has also been the experience that methods which require input and work before and after sessions, has been difficult. These types of companies gladly participate in meetings and exercises etc. However, a facilitator who prepares the reading material and the process for operation is needed.

With the SWOT-analysis and the "postcards from the future" at hand, another scenario workshop was held. At the second scenario workshop the goal was to structure the scenarios and make a milestone plan that key agents could commit themselves to. It was accomplished with great success.

PLANNING DAY

Based on the previous work, the facilitator developed three different future scenarios for the steering committee to work with. The three scenarios contain three different ways of organizing the cluster and three different approaches to the activities. Hereafter, all the representatives were invited to a strategy seminar. This seminar was later known as the "Nørre Vosborg agreement".

It was an epoch-making day, where the parties for the first time, for good and bad, noticed the challenges, barriers and possibilities this cooperation provides. Also, the individual representatives' roles in the cluster were made more visible. As a result of the strategy seminar, a few representatives in the steering committee were replaced and based on the strategy seminar the work in the cluster was restructured. Furthermore, 3 primary objectives were determined and coordinators for each of the objectives were employed. The facilitator has been maintained throughout the process. Ever since the "Nørre Vosborg agreement", the cooperation has developed constantly and during 2011 a new restructuring will take place.

SELECTED, IMPORTANT EXPERIENCES FROM THE DANISH CASE OF BEST PRACTICE

It was difficult to get people to contribute with input and work both before and after a session. As an example, the "postcards from the future" called for quite a few reminders. On the other hand however, activities where people showed up contributed and then left were the most successful ones.

Undoubtedly, the planning day for the chosen players were the most effective and successful day. However, to succeed whit this kind of activity, it is necessary to have a facilitator prepare, facilitate, manage and operate the process.

The greatest challenges during the workshops were was to keep the "alpha males" separated (conflict handling). Workshops like this are all about humans and human relations.

Overall, there is no doubt that the cooperation has been successful for the players' companies (growth and visibility). The cooperation between the players in the three harbors has created some swells in Denmark's other ports. This has caught attention both in the local region and in the Ministry of Food, Agriculture and Fisheries.

5. ADVANCED TECHNOLOGY CLUSTER

The Advanced Technology cluster was at the outset marked by diversity, and includes industries that operate in different markets using quite varied production technologies. The AT cluster group in WP-C has however found two common denominators to provide the basis for cross-regional activities in this cluster. These are (1) a shared focus on sensor technology, and (2) use of the "Radar Group Model". In the following section, two of the regional IFP processes (Central Denmark and Agder) are briefly described, followed by a cross-regional perspective on the advanced technology cluster (written by Stuart Hodgson). The Central Denmark case is finally described as a case of "best practice" in the AT cluster.

OVERVIEW: CENTRAL DENMARK/CENSEK

The Central Denmark Advanced Technology case concerns CenSec, Center for Security, Aerospace and Defense Industries. CenSec is non-profit organization for small and medium enterprises that are or wish to become suppliers to the defense, security or space industries. The main challenge for CenSec was lack of knowledge about the creation of business networks within the cluster. To tackle this problem, an action plan was drawn up in consultations with the management of CenSec and its advisory board. It was decided to focus on the security market. By means of market analysis a number of market segments were identified. A specific segment was chosen, and actor mapping proceeded within this segment based on inputs from CenSec employees. A SWOT analysis was carried out, identifying strong and weak sides of the CenSec organization. A detailed study of the Global Homeland Security market 2009 – 2019 was commissioned to increase the understanding of the general situation in the security market, in addition to a mapping and analysis report prepared by the Oxford research group ("Mapping and analysis of the Danish defense and security industry: Barriers, potentials and strategic perspectives"). Brainstorming sessions were carried out, and inputs from various experts were obtained. A number of interactive events were hosted, notably the NEXT conference in Arhus, organized by Innovation Lab. This conference put emphasis on the application of the high-end sensor technologies within many industries. Furthermore, a Security market conference was organized by CenSec to raise the awareness among Danish companies about the security market and to show the available opportunities within this field. Both conferences provided important arenas for business to business activities and networking, as well as providing insights into the security market. The IFP project has provided valuable insights and advice for improvement and further development of the CenSec business processes, and has facilitated interaction and network building between members of the cluster.

OVERVIEW: AGDER/DIGIN FORESIGHT LIGHT

In Agder, the AT cluster process concerns DIGIN, an cluster with about 50 members providing digital services in various fields including but not limited to education, systems development, social media and entertainment. DIGIN conducted a "foresight light" process revolving around one two-day conference, which resulted in a joint application to the ARENA program of the Research Council of Norway. The process kicked off in May 2010, and involved certain activities in conjunction with other WP-C AT cluster regions, such as participation at Next Conference and IFP activities in Århus and participation at Sensor Universe Conference in Groningen. In June 2010 DIGIN employed a full time manager and the board decides to proceed with an application to the ARENA program. A key challenge was to attract as many DIGIN members as possible as participants in the foresight process. The conference was preceded by a phase involving accumulation of data and inputs. Applications and documents from (neighboring) Grenland ICT network were shared with Digin. Extensive interviews with all Digin member companies were conducted, Digin board workshops and panels with members from other networks/clusters in the region (Node/Eyde/USUS/eHealth) were carried out. There were also workshops with public stakeholders, including Innovation Norway, various municipalities and the county government.

edited, condensed and analysed the interviews. All DIGIN members provided feedback on the draft application by email. The two-day conference was conducted from lunch to lunch, and was facilitated by a consultant from Foresight Norway. The main outcome of the foresight light process was the application to the ARENA program, and the establishment of Partnerships with other networks in Denmark (ITforum Midt-Jylland) and Netherlands (Sensor Universe). The ARENA application was motivated by the desire to evolve the DIGIN cluster further, to explore market opportunities in the areas of elderly care services, cultural enterprise and tourism.

OVERVIEW: IZET

A lengthy and involved cluster analyses was carried out in the structure, practice, and character of the north German Advanced Technology Cluster. This involved three rounds of data collection, carried out largely through interviews, and eveluation, which was carried out in cooperation with Prof. Hans Koller of the Institute for Industrial and Technology Management at Hamburg's Helmut Schmidt University. The results were analysed alongside those of the other AT Cluster partners.

These activities illuminated the strengths, weaknesses, opportunities and threats of the cluster group. Foresight was, however, not being practiced anywhere within the group or amongst its partners, and none of the players had a concept of how to proceed with foresight tools. This point represented a weak link in the IFP-process; moving from this point into the practice of foresight planning required further input. This input came from HSU and NIBR, Oslo and led to the group embracing the "Radar Group Model" as a potentially effective foresight tool applicable to the situation of the AT Cluster and its partners. The Paper entitled "Technology Intelligence in Networks and Clusters" resulted, which was the basis for piloting the RGM within a subsection of the regional cluster

Within the pilot subgroup "Eva Technologies" a project group of 12 organisations collaborating on an advanced renewable energy solution the RGM was implemented and run for approx.. 12 months. The basic concept was perceived to be natural and helpful, little resistance occurred. However in the practice of the RGM difficulties arose which were common across each of the participating subgroup, and have been reported in various contexts:

- Trust is a prerequisite for the transfer of information gathered by the different radar groups. Within the corparate environment for which the RGM was developed there is a much higher level of intrinsic trust and common vision, making information transmission very much more fluid.
- Vision of the implmenetation of the RGM is much less clear cut within the cluster/network environment. In an enterprise environment a considerably stronger sense of common goals and corporate vision characterise the RGM environment. In the sub-groups of the clusters represented in the RGM pilot phase the divergence of common goals and vision was clearly apparent, making it hard work to gain the necessary attention required by the process.
- Motivation of the players involved was, as a result of the above, difficult to generate and maintain beyond the short term. Given the relative lack of trust, common corparate goals and shared vision reported by all pilot groups, it was clearly a challenge to provide a common and equally satisfying answer to the question repeatedly posed by corporate participants: what is in it for me?

Building on the strengthened networking resulting from the RGM cooperation between the regions, IZET organised and participated in three international B2B events. These were, in each case, put on parallel to relevant industry fairs and conventions, providing a context for transnational interaction and collaboration. Within this scope IZET organised the an event parallel to the "New Energy" fair in Husum, North Germany. This event was, together thie the other B2B events, transnational in scope, practice and results. A "weakness" with regard to the transnational results of the AT Cluster was simply the very great difficulty encountered in

practically forming "Radar Groups" with sufficiently homogenous focus – technology, target markets, strategic aims – to make such colloboration feasible in a transnational setting.

Although IZET was not foreseen as a partner for Regional Development at the outset of IFP (IZET is in fact a tool of RD policy makers) an opportunity was identified to implement some of the findings gained from IFP in the setting of regional development. IZET was able to apply foresight to regional development within the context of the Steinburg+ regional development group. 2 Innovative events resulted which combined envisioning plenaries and Radar Group styled idea collection and strategy development.

With between 150 – 200 participants the events were deemed very interesting, dynamic and productive. As adirect result of the activities ongoing working groups have been launched with a focus on implementation of regional future goals in the key areas of infrastructure, education, advanced technology, healthcare, business, energy and environment.

A CROSS-REGIONAL PERSPECTIVE ON THE ADVANCED TECHNOLOGY CLUSTER (BY STUART HODGSON)

PRE-FORESIGHT

The Advanced Technology Cluster comprises four separate regional clusters/networks:

- DIGIN IT Network, Agder County / NO
- CENSEC Security Industry Cluster, Midt-Jutland / DK
- Hightech Itzehoe Mcroelectronics Cluster Schleswig-Holstein / D
- Sensor Technology Network North Netherlands, NL

The main challenge to the AT Cluster lay in the facts that there was no practice of foresight within any of the above clusters/networks. Also, the diversity of the market and technology focus amongst the groups gave the AT Cluster a particularly non-homogeneous character. Prior to the project cooperation there was also no common activity or contact between the groups.

The timeline reflected that of the project agreement, and is presented in the figure below.

Figur 11: Time frame of the AT cluster IFP process



DATA AND INPUTS

In view of the challenges identified in the pre-foresight phase, the main task initially was to evaluate the strengths, weaknesses, opportunities and threats to each of the clusters/networks in order to identify opportunities for initiating the innovative foresight processes within each network/cluster individually, yet with overlap between the network/clusters giving the process a transnational and cross-cluster character.

In 2009 a detailed information collection and evaluation process was carried out, in three rounds. In round I, basic information covering size, character, focus, history of the cluster/network, also structures within the network, regional economy, labor market etc. was collected. The results are presented in the figure below.

Figur 12: AT cluster assessment in round I



Round II focused on the cluster environment, providing a more detailed insight into the dynamics of the cluster; key players, resources, organisational structures, economic environment, competition etc. The results are presented in the figure below.

Figur 13: AT cluster assessment, round II



In round III, the Business Climate and Cluster Development was in focus. This round aimed at providing information pertaining to the business environment in which the clusters/networks operate, and also performance of the cluster/network within that environment.

Figur 14: AT cluster assessment, round III



This process was supported by Hamburg's Helmut Schmidt University, Institute for Industrial and Technology Management, identified as a valuable partner due to the experience of Prof. Hans Koller in the field of enterprise foresight planning. By autumn 2009 the data was evaluated and discussions were ongoing regarding a suitable expression of foresighting within and across the cluster/networks. This was a particularly challenging part of the process due to the inhomogeneous character of the AT Cluster.

The discussion finally came down to the options of focusing foresight development activities on

- Common areas of organizational and structural development within the clusters
- Sensor technology as a broad technical field in which all clusters would have representatives.
- A pragmatic pilot application of a foresighting tool based on a small group of companies within each of the clusters/networks.

In consultancy with Helmut Schmidt University, Institute for Industrial and Technology Management, the AT Cluster decided to opt for (c) and the application of a model developed by Prof. Koller for an enterprise environment: The Radar Group Model, RGM.⁴

INFORMATION TRANSMISSION

In 2010 the Radar Group Model was introduced to the individual clusters/networks within the AT Cluster group for pilot implementation within a specific sub-group of the cluster/network. Across each of the participating subgroups common challenges were met in the implementation of the RGM:

- Trust is a prerequisite for the transfer of information gathered by the different radar groups. Within the corparate environment for which the RGM was developed there is a much higher level of intrinsic trust and common vision, making information transmission very much more fluid.
- Vision of the implmenetation of the RGM is much less clear cut within the cluster/network environment. In an enterprise environment a considerably stronger sense of common goals and corporate vision characterise the RGM environment. In the sub-groups of the clusters represented in the RGM pilot phase the divergence of common goals and vision was clearly apparent, making it hard work to gain the necessary attention required by the process.

⁴ The Radar Group Model is described in detail in the document entitled "Technology Intelligence in Networks and Clusters".

 Motivation of the players involved was, as a result of the above, difficult to generate and maintain beyond the short term. Given the relative lack of trust, common corparate goals and shared vision reported by all pilot groups, it was clearly a challenge to provide a common and equally satisfying answer to the question repeatedly posed by corporate participants: what is in it for me?

INTERACTION

With the RGM pilot groups in all clusters/networks making (slow) progress in the implementation of the model, in late 2010 and into 2011 the cross-cluster transnational interaction was facilitated through B2B activities to which the members of the RGM sub-groups were invited.

Three events were organised, each piggy-backing a larger foresight and/or industry-focussed conference or symposium, to provide added value and increased motivation for the participants.

- The NEXT Future Conference, Aarhus/DK, 30.08.-01.09.10 provided in ideal setting both for the AT Cluster meeting held on 31st August as well as a preliminary B2B meeting amongst cluster member companies, providing the first concrete opportunity for interaction among and dissemination between the subgroups.
- INCSU (International Networking Conference of Sensor Universe) in Leeuwarden / NL, 24-25.11.10
 provided the second opportunity for B2b facilitation and interaction between the sub-groups. At this
 meeting the first opportunities for transnational cooperation between members of subgroups in
 DK/NL were identified.
- New Energy Alternative Energy Congress and Exhibition, Husum/D, 17-18.03.11 offered the third opportunity for transnational interaction and dissemination between the participants.

These events were different in character, but followed the basic concept of ensuring a relaxed and creative atmosphere to facilitate open exchange. Short presentations were given by selected participants to provide input and direction to the group dynamic. Interaction was then a combination of periods of Q&A within the group, and one-to-one discussion amongst participants.

The former, more group orientated interaction, tended to facilitate openness and participation, whereas the latter was more significant in terms of specific exchange between participants with common fields of technical and/or commercial interest. It was in this context that the first joint cooperative activities between Danish and Norwegian were forged.

OUTPUTS

The implementation of the RGM is ongoing in the Norwegian, Danish and German subgroups, whereby issues of trust and motivation to participate continue to represent a headwind to progress.

The participants consider that the application of foresighting and, specifically, of the RGM, is a medium to longterm investment. The opportunities presented in the framework of the IFP project is perceived to be more of a "sowing" exercise involving preparation of the ground, germination of the process seed, and some degree of methodological growth and maturing. The "reaping" of a harvest in terms of substantial and decisive input into the strategical processes of the cluster/network management is still some way off, and is dependent upon the ability to identify, communicate and "sell" the process to the advisory boards

In Norway the transnational element to the activities will be maintained through the anticipated participation of the other IFP regions in an ICT event organized by DIGIN in autumn 2011.

Only in the Northern Netherlands has it become apparent in the duration of the project that the RGM does not provide a viable framework for an effective foresight process. The RGM activities were best developed into a series of networking workshops which were decoupled from the overriding strategic process associated with foresight planning.

By way of conclusion, the AT Cluster coordinators not that there is considerable potential for application of the RGM to technology clusters, whereby interesting avenues of further study and investigation are wide open, specifically in the areas of trust development within cluster/networks, and vision-casting and –penetration as prerequisites for a successful long-term foresight process.

BEST PRACTICE IN THE ADVANCED TECHNOLOGY CLUSTER: CENSEK, CENTRAL DENMARK

The Central Denmark Advanced Technology case has been outlined above. It concerns CenSec, Center for Security, Aerospace and Defense Industries, a non-profit organization for small and medium enterprises that are or wish to become suppliers to the defense, security or space industries. The IFP process highlights several aspects of best practice which are noteworthy in this context and cam be related to the five stages in the IFP method.

PRE-FORESIGHT

The Censek process defined its key challenge early on. It was felt that lack of knowledge about the creation of business networks within the cluster was the key problem to be tackled. From the outset, this scoping decision was made in close collaboration with the stakeholders. Meetings with the management of CenSec and its advisory board are noted in the case study report, and these apparently included intense discussions about the IFP method. To ensure commitment and close interaction with the key actor in question throughout the process is fundamental for ensuring legitimacy and shared ownership, and this has apparently been the case in Central Denmark. This is certainly best practice as it increases the chances of the results actually being put to use. The case study report, in line with this, notes that the IFP project has provided valuable insights and advice for improvement and further development of the CenSec business processes, and has facilitated interaction and network building between members of the cluster. This may not have turned out to be the case if the IFP process had not been so firmly grounded with the key actor in the cluster - all too often, reports and other outcomes of foresight processes end up gathering dust on office shelves. But furthermore, close connections with a key actor will often be a prerequisite for actually being able to carry out the process according to plan. In central Denmark, Censek seems to have provided invaluable assets to the process, including drawing up the action plan, identifying relevant actors, understanding the market, encouraging participation and building networks.

DATA AND INPUTS

The Central Denmark IFP process made extensive use of a variety of methods for providing and accumulating various data and inputs as a basis for the process. A thorough actor mapping process was conducted, based on inputs from Censek employees – who relate to actors in the industry on a daily basis and should be highly knowledgeable about the cluster. In addition to the market analysis conducted by CFU and the advisory board of Censek, a study on the Global Homeland Security Market was purchased, as well as a mapping and analysis report. Central Denmark in other words chose a strategy for accumulating data and inputs where external expertise complemented, not supplanted, internal expertise. This may be noteworthy item of best practice. Attempts should probably always be made to utilize own expertise to the max, instead of only procuring external advice. Apart from being economical, this strategy may raise and consolidate the awareness about the situation among key actors in a way which cannot always be achieved by using external expertise. The SWOT analysis and brainstorming sessions carried out in the IFP process complement this picture: These methods can

often serve not just to increase knowledge and understanding, but also to raise the general engagement and involvement.

INFORMATION TRANSMISSION

The Central Denmark case study report notes the importance of enabling the participants in interactive events to use all the information and inputs that were gathered. Care was taken to transform the information into "usable, flexible and accessible forms", including apparently an innovative use of flexible excel sheets. It would be highly interesting to have these demonstrated in more detail, and the Central Denmark team is encouraged to add these as an attachment to the report. They could also possibly be included in the IFP toolbox which is to be prepared by WP-A.

INTERACTION

As noted above, a number of interactive events were hosted, notably the NEXT conference and a Security market conference. The case study report notes that these events served several purposes. In addition to providing insights into the security market, they provided important arenas for business to business activities and networking. It is also interesting to note that an "external" event (the NEXT conference) was utilized actively as an integrated part of the IFP process alongside the conference organized by Censek itself.

OUTPUTS

The case study report notes a variety of outputs which in combination appears to have come a long way in terms of justifying the time and resources put into the process. These include the accumulation and dispersal of useful future relevant intelligence, increased awareness about the market and its opportunities, as well as insights and advise for improvement and further development of the CenSec business processes. But in addition to these knowledge-related outputs there have apparently been other benefits as well, notably the creation, expansion and deepening of networks in the Danish security industry. It is particularly relevant to note that these outputs seem to a large extent to have been achieved through the duration of the process, not just as a "final" output. It is for instance noted that the SWOT analysis has been valued as an output in its own right, not just as a means to inform the process in which it was an integrated part. Also, awareness raising and network building occurred throughout the process, not a less important output.

6. FINANCE CLUSTER (BY TOR K. ESKELAND)

INTRODUCTION

The Finance clusters in regions of Central Denmark and Greater Stavanger have been identified, described, evaluated and compared in terms of being prepared for the future. Both regions are the second largest financial clusters outside their respective capital areas measured by operating capital. Sparebank 1 SR-Bank has coordinated the present part of the project.

The main goals for the processes and the project as such were to answer the question of how to strengthen the financial clusters in both regions in order to service the future requirements and needs. The partners thus decided to arrange a workshop consisting of dedicated people dealing in practice with finance related tasks in order to gain more in depth knowledge to the financial services in relation to the Business Development Cycle.

The Business Development Cycle (see figure below) was divided into three parts; namely the framework (mapping the market), start ups/early stage development (phase 1) and growth/expansion (phase 2) seen by the financial point of view. The aim was to identify where the curve is week or even disconnected and where it is strong, and what could be done to strengthen the curve both with local actions as well as by InterReg Best Practice.



Financial Services – Business Development Cycle



The Business Development Cycle curve and a list of "Red Line" arguments were communicated to each of the participants, requested to be included in the presentations and/or discussions.

The questions asked included:

- Where and when is the Business Development Cycle curve strong and where is it weak
- Describe the respective phase of the Business Development Cycle curve
 - What is functioning
 - Where are there room for improvements
 - What are the consequences as a result of change in official conditions
- Compare the respective phase between the regions
- What and where are the InterReg Best Practice opportunities
- Could the findings create further academic studies

 And most of all: How to strengthen the financial cluster foundation to service the future's requirements and needs.

Based on the above, the agenda was developed into three parts:

- The financial framework
- The start ups/early stage development
- The growth/expansion development

Within each of the chapters, representatives from the each of the two regions presented their views, followed by discussions as basis for forming findings and conclusions. Additionally to the speakers, also a handful other participants were invited; all with specific interest to the agenda.

The detailed agenda of the workshop was continuously adjusted as the planning progressed. The goal was to make an InterReg comparison of the different phases on the curve. Inviting the right expertise was thus a challenge, but easier when the agenda was set and the first key speakers signed on. The limit of 25 participants ensured frank discussions, and the setting at Sola Strand Hotel made the correct frame. The social arrangement at Engøyholmen Kystkultursenter where seafood etc was served, strengthen personal relationships.

The discussions and material from the work shop are extensive. Below is a list of some of the achievements, findings and conclusions from the process and meeting. The list may not be complete and the conclusions are based on the authors' judgement and interpretation. Potential feedback and comments are appreciated.

THE FINANCIAL FRAMEWORK/MAP

The following section is based on the presentations "Kapitalformidling og aktører i den samlede virksomhetscyklus samt lidt om finanssektoren i RM" (Bent B Mikkelsen, Central Denmark Region) and "The regional financial cluster and its importance for the offshore wind cluster" (Martin Gjelsvik, IRIS).

Representatives from both the Central Denmark and Greater Stavanger regions gave a detail overview over the financial actors in the respective areas.

- The strategic focus' in Central Denmark are on energy and environment, food, welfare innovation and tourism, while the Greater Stavanger financial cluster has particularly focus on start ups and industries related to oil and gas activities.
- Both regions have several instruments for start ups, but are often small and fragmented. How could the start ups be serviced financially all the way through the "death valley"?
- Capital allocated to offshore wind is marginal in the Greater Stavanger region. Interesting strategic positions to be taken before they are occupied by others. How could the financial market build competence in the industry and who should do it? And futheremore, how and who should take the initiative to establish an offshore wind cluster?
- The relative position of Denmark at the pillar level, GEDI (Global Entrepreneurship and Development Index) position, shows positive drawings towards opportunity start ups, networking and technical sector, but less successful in growth and internationalization. How could the identifies weaknesses be improved?
- A GEDI position study could been useful for the Greater Stavanger region in order to find its relative position in the market. Who should take the responsibility to carry out the study?
- Hosting cooperation between experienced international companies and newcomers turn out to be successfully in Central Denmark. How could the arrangement be arranged in Greater Stavanger businesses?

- "Capital coaches" providing competence and access to capital networks (e.g. Business Angels and venture funds) is successful in Central Denmark. How could a similar network function in greater stavanger?
- Generally: The financial maps in the two regions are drawn; the actors are disclosed and their position on the curve is defined. In-depth information is given in the presentations.

START UPS/EARLY STAGE (PHASE 1)

Based on the presentations "Visjon: Raskere og sikrere fra ide til vekstbedrift" (Marit Hagland, iPark), Regionale kapitalformidlingsinitiativer i regional Midtjylland – presentasjon og erfaring" (Oluf C Lund, Væksthus Midtjylland), "Business Angel Netværk" (Peter Kjeldbjerg, Nupark Innovation) and "iPartners rolle og bidrag" (Stig Feyling, iPark)

The representatives conducted presentations related to start-ups and businesses in the early stage phase.

- How to finance the way through "death valley" is the main question. Several tools, arrangements and programs are available in both regions. However, do they work, are they too fragmented and are they available at the right place and time.
- Iparks Incubator program both invest and support new business ideas at early stages. Additionally to in house expertise, including experienced ipartners, the network both financially and technically is extensive. It is proven that the program/arrangement is successful and the net return of investment for ipark is favourable. Is the capital base sufficient to support the right candidates over time?
- Iparks Start Fund, which is being established, will be a necessary tool in this regard. The fund will be a joint venture between official funds, other private funds and private people.
- Væksthus Midtjylland is one of 5 municipal finance Business Links in Denmark for financing and supporting start ups and early stage business with growth potential. Several programs are offered such as START, CONNECT, Accelerate-Spin offs and Business Angels. Væksthus Midtjylland has also different programs for SME's that has existed for more than 3 years.
- The program for Accelerate-Spin off identifies and develops activities that does not necessarily fit into a company's main business. May a similar program fit into the Greater Stavanger region?
- "Business Angels are not angels". However, as an organized program to facilitate early stage businesses, it is successful in Central Denmark. Ipartners and other persons take the same role in Greater Stavanger on individual bases. Experience for Central Denmark tells that a program like this will only function if it is organized and partly funded by official funds. May there be interest in greater stavanger for organizing such a program?
- Nupark is a business and incubator park which is home to more than 100 companies. Nupark bridges
 the gap between Capital Coaches and Business Angels ("Proof of Concept" phase). The new project
 "Facilitation of Business Angels network" searches for and brings together new Business Angels, and
 establishes networks with the purpose of supporting promising new companies. Such a program has
 been increasingly important particularly due to the last financial crises.

DEVELOPMENT/EXPANSION STAGE (PHASE 2)

This section is based on the presentations "Progressus" (Per Arne Jensen, Progressus), "Finansiering af SMEs i Danmark" (Thomas Stendys Hoffmann, Vækstfonden), "Kapital og kompetanse i oljesektoren" (Pål A Dahlberg, Hitecvision), "Bankens rolle i utviklingen av den regionale næringsutviklinng – Hvordan banken tilpasser til

fremtidig behov og krav" (Thomas Lidsheim, SR-Bank Markets) and "Utvikling av masterprogram i anvendt finans" (Bjarte Ravndal, UiS).

The representatives presented their missions and thoughts related to businesses in the phase of development and expansion stage.

- The Progressus Fund invests in candidates in the growth phase with international ambitions, primarily within oil and gas related industries, IT and technology. The fund is established by the partners, institutional investors (Argentum and SR-Bank) and several private investors. The focus is on established companies with proven market acceptance and unexpected growth potential. The management team takes an active leadership in their companies, and add new investments if and when synergy may be achieved. The experience is that it is hard to let professional investors in as shareholder to a fair price for a gründer. The aim is to develop the business than the specific idea. The fund has a clear sector focus and invest where the potential is greatest.
- Vækstfonden is a state investment fund which aims to create new growth companies by providing venture capital and competence. The fund finances through several channels during the companies development axes. Additionally Vækstfonden provides loan and "mezzanine" guarantees, thus to market prices. The instruments are long term and covers support through the cycles. Long term instrument that covers a company's development has proven to be successful. Similar programs could be looked into in greater stavanger region.
- Hitecvison is a leading specialized private equity investor in oil and gas related industry, and has over the last years been very successful. Focus on management, synergies and organization/reorganization are always driver. Growth, risk and return on capital are all elements being evaluating. Venture funds and private equity funds have available capital. But the focus is mainly on the sector of oil and gas related industries. Who should take care of all other industries?
- SR-Bank is an independent savings bank with head office in Stavanger. It is the 5th biggest bank in Norway, and has a strong foothold in the region. To improve the excess to capital, particularly from abroad, SR-Bank is turning into a public company (ASA (Aksje Selskap Allment)). Improved base of capital will make the bank in even better situation as being a catalyst for the local businesses. The bank is an important player in the local community both as banker but also as market maker and supporter of the professional and social network.
- SR-Bank plays an active role in the local and regional development. The banks do not take the same role in the Central Denmark region. How may the banks in the central denmark region be persuaded to take a more active role in the regional development?
- The need for academically educated people to the local financial market in the Greater Stavanger region has been urgent. Cooperation between several local financial actors including funds and banks has financed a study at UIS. This is now a part of the MBA program provided at the university. It is interesting to notice that the needs initiated from the privat business create a study at UIS at graduate level.
- Are there any financial clusters in the two regions in question? It depends how it is defined. In the Greater Stavanger region the network is tight between the financial sector, businesses and the university, and cooperation between the actors function well. A title of such a mutual beneficial cooperation could be "the Stavanger Triple Helix".



"The Stavanger Triple Helix"

The interaction between three key partners



GENERAL

Several interesting general achievements have been reached through the planning process and conduction of the work shop. Some of them is summarised below.

- A clearly defined limited group of key persons with common interests meeting in historic environment during an intensive day of discussions, is achievement as such.
- Presentations and discussions strengthen both the local network, but not least the network and bounds between the regions. The challenges are to use the network and further develop it.
- The conclusions and findings should be used and published through appropriate channels. Additional to being part of the various IFR reports, the information could be of interest in the "Industrial Barometer" (Konjunkturbarometeret) in Greater Stavanger and similar publications in Central Denmark.
- A joint Central Denmark/Greater Stavanger presentations could be of interest in other forums and connections.

PUBLICATIONS/REPORTS

"The Regional Financial Cluster and its importance for the Offshore Wind Cluster" (Martin Gjelsvik and Atle Blomgren, IRIS, rapport 2010/111, July 2010) In July 2010 "The Regional Financial Cluster and its importance for the Offshore Wind Cluster" was published. The report gives an overview over the regional financial cluster in the west coast of Norway. It furthermore evaluates the financial cluster's impact on the offshore wind cluster, and describes two scenarios for a regional offshore wind and financial cluster.

The report concludes among other things that the combined effect of a substantial market, access to an everlasting natural resources, related knowledge and technology and a proven capability for innovation, should lead to a strong regional position within the growing offshore wind. The lack of political and economic incentives combined with the present and continued success of the oil and gas cluster, may, however, impair

the transfer of capabilities, human and technological recourses to the offshore wind sector. It is therefore important to take strategic positions now before they are occupied by others.

"CAPITAL MARKET IN THE CENTRAL DENMARK REGION" ("KAPITALMARKEDET I REGION MIDTJYLLAND") by accociated prof Jesper L Christensen, Aalborg Universitet, August 2009. The report includes a description of the capital market and a discussion of problems and barriers in the market caused by the financial crises. The problem in a nutshell is, that the possibilities for financing of risky and development oriented activities has been worsened at the same time as the companies to an increasing degree must compete on knowledge and innovation. Furthermore, the report includes a mapping of financial actors in the Central Denmark Region. The main part of the report is an empirical analysis based on telephone interviews with representatives from 636 companies in Central Denmark Region and five interviews with representatives of important suppliers of capital. Among the findings can be mentioned, that 43 % of the companies are of the opinion, that there is a need for political initiatives to improve the access to capital. On the other hand, 38 % of the companies are of the opinion that the existing supply of capital is sufficient

7. IFP IN REGIONS (WP-D)

OVERALL PROCESS DESCRIPTION (BY YELLIE ALKEMA)

This paper is a description of the current and envisaged process in WP D – public facilitation of clusters. WP D is part of the activities in the Interreg IVB NSR project Innovative Foresight Planning (IFP).

Compared to the work and the processes run in WP C in food, energy, advanced technology and finance clusters the work in WP D is different, since WP D focuses on long term policy on economic development and the role of clusters therein. This means that only a slight amount of organisations and people in the regions are involved in the process of improving the current policy. The transnational aspect is very interesting since best practices could be copied, though starting points diver enormously between regions.

PRE-FORESIGHT

In the application form the aims and objectives for WP D are defined as follows:

To integrate the facilitating role of the public sector in the foresight planning framework and cluster cooperation activities, to involve business in process.

To maximize the facilitating role of the public sector in serving economic development and dealing with the discrepancies of the labour market.

The activities scheduled are:

- D1- Report on global inventory public policy instruments 1 sept 2009
- D2- Document/ publication "best practices" 2011
- D3- Report on SWOT analysis per region: topic = policy-instruments in specific clusters after each meeting
- D4- Report on IFP-design per region after each meeting
- D5- Policy toolbox's first draft- plenary meeting 2010
- D6- Report on networkanalysis Feb 2011
- D7- Working (= implemented) policy-toolboxes in 6 regions July 2011

Figur 15: Scheme on interaction between WP D and B and C



DATA AND INPUT

After decision to run the process as stated in the pre-fore sighting phases **Research was done by RuG State University of Groningen** to make a complete survey on the current policies in the participating regions and countries on cluster development. Background and theory on public support to clusters is described in the introduction of the paper. The input from the countries came from all kind of literature research and a **questionnaire** send to all partners who are participating in WP D and IFP as a whole. The questionnaire tries to distinguish the various governmental layers, their cultural dimensions and policies: broker, training and market policies.

After the research was done the group decided to make *SWOT analyses of the regions*. The results are differing from none till a short summary per region. The SWOTs are hardly comparable. Therefore the group decided to focus on *Best practices*. When a region is visited the host invites a policymaker who can explain in what way cluster or economic development has been elaborated. All regions have given some good examples in their presentations. In a telephone interview cluster facilitator with a lot of practical experience (also with public policy) gave their view on the role of public bodies in cluster development. The results will be used as *draft recommendations* for finalizing the work of WP D.

The next step in the process is to make sure all *Information is gathered in a digital toolbox and used to obtain more data.* The final step will be to *update the Groningen research* and see if the regions have changed their policies or are planning to shift to another policy for example through the EU 2020 regional policy.

INFORMATION TRANSMISSION

All input delivered as stated above is presented in power points and discussed on several meetings.

Meeting Hamburg, October 2008

Defining aims, objectives, activities an output for WP D

Meeting Groningen September 2009

- Presentation on the research done by the University of Groningen, by Mr Vincent de Lezenne Coulander. Discussion on how to share knowledge between the regions since the policies differ a lot.
- Presentation on best practice Northern Netherlands: regional economic development policy "Koers Noord"
- Presentation on supporting the sensor cluster by excursion to IJkdijk

Meeting Aarhus, January 2010

• Presentation on Regional Economic Plan Central Denmark by Pia Fabrin

Meeting Hamburg, April 2010

• Discussion on how to proceed

Meeting Stavanger, June 2010

- Presentation on regional development plan Greater Stavanger
- Presentation on Energy Strategy Greater Stavanger
- Presentation on regional development plan Agder

Meeting Groningen, Aug/Sept 2010

- Presentation of digital toolbox
- Excursion to Groningen Seaports

Meeting Aarhus all WP's, November 2010

• Input from WP C and B needed, more pragmatic input to the subject from cluster facilitators.

Meeting Amsterdam(scheduled for April 7th 2011)

- Learning to use the digital toolbox
- Discuss further proceedings
- Regional meetings (not scheduled yet)

Meeting Edinburgh (all WP's)

Final Conference

INTERACTION

The interaction on the subject is done between the representatives of the partners per region. There are no regional teams to follow the proceedings or to discuss shifts in policies or other. The group decided to give this fact a pragmatic approach. Only when something new can be delivered to the policymakers to enhance the discussion this will be organized. In the beginning of April 2011 recommendations will be formulated and then shared with the world by the IFP website and the **Digital toolbox.** From there regional policymakers will be invited in a regional session to discuss if cluster policy is still on track. EU's Regions 2020 and the Cohesion Policy is most likely influencing the national and regional programmes. During **Workshops and interactive** events - organized by regional partners themselves - the new perspectives will be discussed.

During the final conference **a discussion** with a broader public will be organized as well. The

OUTPUT

Report "The Role of public authorities in clusters"

This report is a broad survey of the national and regional policies on cluster development and can be used as a good starting point to see whether current policies are still fitting in the interregional context.

Presentations of best practices

The presentations are delivered by all regions and should be edited to use them as examples in an overall report.

SWOT papers

The result of the SWOTs is the experience that a regional SWOT is hard to compare to another regional SWOT. The exercise was useful to reflect on own regional practice.

Digital toolbox (to be implemented from April 7th)

Is developed in August 2010, but not used by the members of the WP D team. The cause could be the digital barriers to log in and edit your personal pages. In April a short course will be given to overcome these problems.

Recommendations (scheduled)

These should be ready and discussed by the Edinburgh all WP's meeting in order to give a clear picture during the Final Conference.

AGDER

The regional process in Agder had a focus on development of the county's innovation system. The export oriented industries in Agder to a high extent have foreign owners. Agder's industries needs to be among the world's most competitive with regard to productivity and quality in their respective markets in order to ensure further investments and development. To achieve this, the industries have to be continuously innovative and must avoid the risk of lock-in to outdated technological trajectories. Better linkages between the companies and the R&D environment, in particular the university, were needed, as well as closer cooperation between companies in the same industry sector. This is reflected by the fact that Agder lies well below the national average when it comes to R&D expenditure per capita. A definite need was felt to make better use of the existing labour resources, particularly those represented by women and by young people so that they more often choose "technical" education and careers. Based on an OECD report on Agder's regional innovation system one important focus was to clear the way for new thinking about strengths and weaknesses of the regional innovation system and effective instruments for business development.

Agder's process was linked IFP to the process around our Regional Development Plan Agder 2020. Several existing clusters were involved in the process, i.e. the NODE⁵ and Eyde networks. There existed already good relations and a good cooperation climate between the public and the private sector in the regions, so the

⁵ NODE, which has got the NCE (Norwegian Centres of Expertise) status in 2009, consists of about 50 companies in Agder that are producers of and suppliers for drilling and mooring equipment for the oil sector. The Eydenetwork came in to the national cluster programme "Arena" in 2010. It consists of 10 companies, mainly producing metals (e.g. nickel, aluminium, silicium) and all highly dependent on electric power.

threshold for inviting companies and clusters was very low. The regional politicians (county council, county mayor) were informed and involved in order to achieve the necessary political awareness and commitment.

The process involved a broad range of regional stakeholders, from both private and public sector. One central activity within the process was to analyse and identify future challenges and opportunities, and to plan initiatives to better meet these issues. Politicians were actively involved in the whole process and there was also established a steering group with members from the political parties. A number of written inputs were put to use in the process.⁶ Interviews were conducted with cluster facilitators in the participating regions. There have been coordinating and brainstorming meetings with representatives from the cluster organizations. Also the meetings and discussions with the other participating regions brought useful input.

The main outcome of Agder's process so far is a collection of documents about public policy tools for business development (overviews, SWOTs, best practices) that are supposed to be a part of the final "toolbox" or "knowledge base". In the working group meetings we were given interesting presentations about cluster initiatives in our regions and there have been good discussions about best practices with respect to public policy tools. However, until now the group was not able to identify best practices that could fit in all the participating regions, due to very different political and administrative systems and framework conditions.

⁶ These included the OECD report "Entrepreneurship and the Innovation System of the Agder region, Norway", published in June 2009, the business monitor for Agder, the country Report Norway as part of the INNOVA Cluster Mapping project, published in December 2007, "The role of public authorities in clusters: A study of cluster policy in European regions", Vincent de Lezenne Coulander, master's thesis in Economic Geography at the University of Groningen, published August 2009 and several evaluation reports on instruments for facilitating business development in Norway and Agder.

8. CONCLUSIONS AND RECOMMENDATIONS

KEY FINDINGS, OBSERVATIONS AND EXPERIENCES SUMMARIZED

The IFP project has structured the IFP method and applied it in a selection of regions and business clusters in five countries. The generic nature of the IFP model (presented in section 2 of this report) allows us at least to some extent to bypass the substantial variations between the IFP "cases" and discuss and analyze the partner's experiences in an overarching manner.

The IFP method is a model in five stages. In the following, we will highlight experiences drawn from the presentations made by the project partners related to each of these phases individually. Following this, we will move on to discuss the IFP method as well as the project critically and in its entirety, and provide a few recommendations.

PRE-FORESIGHT

The pre-foresight stage is where the process is planned and structured. Decisions are made concerning the scope of the process, the time frame and the resources available. A process organization is set up and the staff is appointed. Actor mapping, networking and recruitment are important tasks. Key events and milestones are planned.

A key purpose of organizing foresight processes is to integrate the business cluster. By making people get to know each other, increasing the total volume of interaction, building relations and trust and so forth, one would expect the cluster to increase its capacity for collective action. Hence, much of the literature on foresight puts emphasis on network building to the extent that this is seen as equally important to the specific plans and measures that are laid out as a result of the process. Following this, in the original version of the IFP model, network building was primarily seen as one of three categories of *outcomes* of an IFP process and duly located at the fifth and last stage of the model.

This is in itself very much in line with what the partners report as key outcomes of their IFP processes. However, several of the IFP "cases" has served to emphasize the importance of network building also in the *outset* of the project, in its first stage, and throughout the duration of the process. For some of the partners, network building activities have been among the first activities they have initiated. There seems to be several aspects to this:

- Relevance: Scoping the project requires a deep-set understanding of the ways of thinking in the business sector in question. A particularly important issue is the question of how the process might affect the profitability of companies in the not too distant future the bottom line is the bottom line. This will normally be the most immediately urgent issue for potential participants from the business community. It is vital for organizers to scope and define the IFP process so as to make business community participants perceive it as relevant for profitability otherwise they may choose not to get involved at all. Obtaining these kinds of insights necessitates a good deal of interaction with business representatives.
- Ownership: Network building is, furthermore, a key prerequisite for creating involvement and a sense of shared ownership of the process. Several IFP "case" reports have underlined this. Organizing the process is a necessary first step, and some of the partners have found ways to involve key stakeholders in shared boards, panels and the likes from the outset. This has in fortunate cases created a shared sense of ownership ad engagement among which may have strongly facilitated the progression of the process.

- **Legitimacy**: Early involvement of key actors can be crucial for ensuring that key elements of the process are seen as legitimate. This includes for instance the organization of the process who will be represented in governing bodies, procedures for decision-making, how will various positions be filled, and so forth. Such issues take on a special significance where public governments are involved, as foresight processes may interface with decision-making processes in elected bodies.
- **Resource mobilization**: Network building in early stages may be a means for soliciting various resources from participants that may provide a boost for the further progression of the process. Such resources may include work time, expenditures, access to privileged information, infrastructure or other assets that may be valuable through the duration of the process.
- Snowballing: IFP organizers may find themselves in a situation where the cluster in question is poorly integrated and characterized by a multitude of disparate and disconnected networks. In such a situation, it can be highly valuable for the organizers to be able to utilize the networks of early participants as a source of contact information for further involvement. We have seen that many or most IFP processes has used actor mapping techniques at early stages, in order to identify potential participants and stakeholders that may potentially get involved. In many cases, these mapping techniques have been based on the networks of early participants who are knowledgeable about the cluster and the region. In this sense, the networks are expanded through "snowballing".

The Central Denmark advanced technology cluster CenSek provides an illustration of this. The IFP process started out with what is termed intense discussions with CenSek and its advisory board concerning the IFP method, and this apparently served to ensure legitimacy and shared ownership. The utilization of CenSek's contacts can be seen as a case of "snowballing". Similarly, an early activity in the transnational IFP process in the energy (offshore wind) cluster was hosting a workshop just prior to a major event for the industry, the All energy international conference in Aberdeen. This enabled the process team to solicit participation of a wide range of potential stakeholders at an early stage.

DATA AND INPUTS AND INFORMATION TRANSMISSION

The "data and inputs" stage involves accumulating various kinds of inputs seen as relevant for the process at hand. Such inputs will often include various kinds of expert assessments and reports, but the is also a vast variety of methods available for gathering inputs from the whole range of stakeholders and others identified in the first stage. Such methods include for instance interviews, panels and surveys.

A key concern in foresight processes is to facilitate interaction among a broad range of stakeholders in the cluster. Broad-scale participation is indeed a hallmark of foresight method, and the data and inputs accumulated in earlier stages should be made available for the participants in order to inform and enhance the quality of their deliberations. The data and inputs will normally need to be consolidated and transformed in order to be useful for this purpose, as many participants will lack the time and capacity for digesting substantial volumes of expert reports and analysis.

Several partners have noted dilemmas concerning data and inputs, not least related to information transmission.

Data: Throughputs or outputs? The setup of an IFP process normally involves planning a great deal of knowledge accumulation, and all IFP "cases" have to a varying extent involved solicitation of reports, assessments and the likes and/or utilization of existing materials. The IFP model puts emphasis on how such data and inputs should be accumulated and transformed through the process – the idea being that inputs obtained at early stages should inform and affect proceedings in the later stages, eventually leading to a consolidated vision and informed strategies (throughput). But some of the partners have emphasized that such inputs may also be taken by the actors as valuable end products in their own right (outputs). Indeed, offering relevant business intelligence may be a strategy for

convincing actors to join the process. One should probably see the IFP process partially as a continuous learning process, and the inputs are not just means to reach some final outcome.

- Digestive capacity: The concept of "information transmission" implies that data and inputs which too often come in the form of voluminous and highly specialized reports needs to be transformed into "digestible" formats in order to be useful at later stages, by a broad range of actors. Yet this is easier said than done. Some of the partners have noted how it is difficult to make workshop participants prepare for the workshop by reading materials submitted to them in advance. Alternatively one may ask the experts to attend the conference to present their findings, but it seems important not to allow excessive presentations drain the participants of energy and engagement. This can be a difficult balance, which needs to be found in each case probably no general rule can be made to guide the decision on the volume or format of inputs presented to workshop participants.
- Can debates be enlightened? Information data and inputs can be engaging and inspirational. Providing the right forms of new information may in lucky instances transform world-views and understandings, direct attention in new directions and possibly improve our outlooks. Yet information can also be numbing to creativity, in cases of overload. It can be seen as irrelevant, obsolete, off the mark. Its veracity may in some cases be put into question, which could jeopardize the legitimacy of those who put it forward. Several IFP partners have noted such issues, which seems to be relevant for process organizers in general. Again, finding the right balance this seems to be primarily a matter of experience among the facilitators.
- Supply side or demand side information? A pertinent issue to raise is one of who should decide what kinds of data and inputs should be solicited. Should process organizers solicit various inputs on their own initiative, or should stakeholders and process participants in general be allowed to do this? By allowing participants to identify information needs, one may ensure the relevance of the inputs that are solicited; this may also create a heightened sense of ownership and interest. One may also avoid a situation in which participants feel manipulated by the selection of information they are presented with. However, such demand-driven information solicitation may in many cases fruitfully be supplemented by information gathered on the organizers' initiative. Many potential participants may feel induced to participate if they are offered free information. And if such information proves engaging and relevant, this may boost the process in many ways.
- What is "expert" information? In many cases, data and inputs are solicited from actors outside of the process, or indeed from outside of the region in question, such as for instance national or international research institutions. In such cases, reports and assessments are produced by highly specialized experts from a variety of professions. Yet the key "experts" are perhaps equally often found among the stakeholders and other participants. For instance, where the industry in question relies on specialized technologies, superior knowledge on this probably resides with the firms in the cluster, not necessarily with external experts. The ability to draw upon the knowledge and specialized competencies of the participants in the process seems to be a vital issue.
- The balance between expert/specialized knowledge and other knowledge forms: Several partners have underscored the importance of "knowing the business", the region, the people and the history. These are different kinds of knowledge from what can be obtained from experts. Indeed, much of such knowledge cannot be codified or made absolutely explicit, but remains "tacit" to use a term from knowledge theory. Yet such knowledge may be equally important as other forms of knowledge. This puts emphasis on the participative and stakeholder-driven aspect of IFP processes. Since implicit or tacit knowledge and knowhow can only be obtained through direct interaction, a broad base of participation will in many cases be a key asset.

INTERACTION

This stage can be said to be the "heart" of the foresight process as this is the stage for direct interaction between the participants. Workshops, seminar, conferences and other kinds of events are organized and facilitated in order to exchange knowledge and opinions, discuss future developments, build common visions, reach agreement on plans and measures and not least increase the degree of integration in the cluster through network building.

Indeed, all the processes reported on in the present volume have conducted a number of interactive events through their duration. Regrettably, few details have been reported concerning the exact organization of the IFP partners' events. Yet the inputs from the partners allow us to make a few other remarks.

- What are the functions of interactive events? The IFP cases provide examples of interactive events workshops, seminars, conferences and the likes being hosted at all stages of the process. A certain pattern seems to emerge regarding how such events can serve different functions; furthermore it seems as though these functions are seen as especially appropriate at specific phases of the process.
 - Actor recruitment: This issue is of course especially salient in the early stages of the process.
 Hosting a seminar is seen as a great way of inviting relevant stakeholders into the process, and this strategy is quite often used. However, actor recruitment is not delimited to the first phases, but one that needs to be minded through the duration of the process.
 - Network building: Interactive events are where the majority of IFP process participants actually meet face to face, and so they provide very important arenas for allowing various actors in the cluster to expand their networks. Such opportunities are sought-after and may provide important incentives that can be used by the organizers to attract participants. Network building is most often seen as a key prerequisite for building collective capacity and integrating the cluster, which are among the most important goals of IFP processes. Accordingly, this function is a major *rationale* for hosting interactive events.
 - Learning, information accumulation and sharing of knowledge and insights: Workshops and seminars do not only represent an opportunity for getting to know other actors, it also provides important venues for sharing knowledge and insights. This function can be served by asking stakeholders to give presentations in plenary sessions or in groups, but one should never underestimate neither the volume nor the importance of the informal knowledge exchange that takes place more or less continuously through the interactive event - indeed, this is what truly makes these events "interactive". The consequence is that such events should always be organized with considerable "slack" in the program, to allow all participants the opportunity to talk and interact.
 - Building shared visions and worldviews: Interactive events provide organized as well as informal opportunities for cluster integration through the development of shared ways of thinking. This includes developing shared vocabularies, problem definitions, ways of understanding the business cluster and the region in a broader context, and ultimately building shared visions of possible future developments. The IFP partners have employed various methods for achieving such outcomes, including for instance the "Radar group" model used by the Advanced Technology cluster (see chapter 5). Yet again it seems that the informal interaction on these events supplement and support the effectiveness of the organized methods being used.
 - Resource pooling, action orientation, strategy development and identification of business opportunities: Least but not last, the interactive events may also be oriented towards action. They may serve as arenas for identifying opportunities for the cluster, developing strategies and measures to take advantage of these, and for deciding on what resources the actors may provide for implementing such measures, unilaterally or collectively.

- Limits to structuring? Whereas all interactive events need to be organized and structured in advance, it has been emphasized how one should in some cases "plan for the unplanned". This is something of a paradox: The best way of unleashing creativity and releasing a free flow of ideas is not necessarily to abstain from planning and structuring the event. Rather, methods that ensure for instance that everyone at the table gets their say no just the few, ever-present loudmouths can prove very fruitful. The concern for "keeping the alpha males separated is cited by the Central Denmark partner in the food cluster as the greatest challenge of the workshops undoubtedly a challenge many will recognize.
- Piggy-backing industry events: This strategy was used with considerable success in the Advanced technology cluster, as IZET hosed three B2B events parallel to relevant industry fairs and conventions. In this way the number of participants probably exceeded those who would have taken the time to travel to a free-standing event. This strategy was also used by the Offshore Wind (Energy) cluster, in hosting a workshop just prior to the All Energy international conference in Aberdeen.

OUTPUTS

The outputs of the foresight process can be several and varied. While specific plans and measures for future action are important outputs, the foresight method also underscores the importance of network building as this serves to integrate the cluster and provide basis for joint action. Such networks may in many cases be formalized to a smaller or greater extent.

- Integration: A number of IFP partners have emphasized that the "clusters" referred to in the project description in actual fact did not really exist as integrated networks with a shared sense of common goals and interdependencies. One of the most important outputs of the IFP project has been to reverse this picture in several cases. For instance, the Northern Netherlands region reports how the IFP process has led to the formal establishment of the North Netherlands Offshore Wind cluster, NNOW. This cluster has met with considerable success in terms of engaging businesses and other relevant actors and initiating collaborative efforts. Similar examples are seen in other cases and clusters, for instance the "Southern Norway Offshore Wind network", the Danish security industry (advanced technology cluster) and the "Stavanger Triple Helix" (Finance cluster). Although presented as an "output" of the process, integration of course takes place throughout its duration.
- "Germination": Not all IFP processes may expect to reach a point of decisive influence over strategic decisions in their clusters. Outputs probably have to be assessed with reference to the maturity and degree of integration of the cluster in question. If the process takes place in early stages of cluster integration, outputs of a less tangible nature may however be important for further developments. The Advanced technology cluster, in this vein, reports that providing decisive inputs to strategic decisions is still some way off, but it is felt that the process and the use of the "Radar Group Model" has been a "sowing" exercise in terms of preparing the ground and "germinating" the process seeds the results of which may be "harvested" at a later point.
- Knowledge generation: Such outputs include accumulation and dispersal of relevant information, increased awareness about the market in question and its opportunities, providing analysis of strengths and weaknesses, identification of business opportunities and so forth, as cited by most of the IFP partners. They include also accumulation of knowledge on further process development and methods for this purpose, for instance the "toolbox" of the IFP project's WPD (regional facilitation).
- Action: The bulk of the IFP processes' outputs seem to fall within the three categories above. Few of
 the IFP processes seem to have led directly to decisions on specific collaborative business activities, at
 least on the transnational scale, although with notable exceptions. This should not necessarily be
 taken as an indication of failure. IFP processes are probably mostly suited to achieve outputs termed
 as "integration, germination and knowledge generation", and these outputs should normally be taken
 as prerequisites for achieving more specific collaboration on later stages.

THE APPROPRIATENESS OF THE IFP MODEL

As noted previously, the IFP method was designed so as to balance two potentially contradictory concerns; namely, specificity and flexibility. On the one hand, it was deemed necessary to provide a joint framework of some specificity for the partner clusters and regions in order to achieve "European added value". Indeed, the project description referred to the "IFP method" as a concrete, identifiable method which should be structured by WP-B to guide the processes in WP-C and WP-D. These processes should furthermore be made subject to comparison and assessment by WP-B. This last requirement seemed to add emphasis to the need for a specified joint framework. On the other hand, it was agreed that the method should not unduly restrict the partners in WP-C and WP-D from organizing and carrying out their processes in accordance with regional preferences and contingencies. The IFP method was not, in other words, to have a prescriptive status for the project partners, but was intended as a supporting tool for organizing the processes, sharing experiences and facilitating cross-regional learning and knowledge exchange.

From the outset, WP-B sought to balance the needs for specificity and flexibility through dialogue with the project partners. By drawing on the accumulated reserve of experience among the members of the IFP consortium as well as in NIBR and AFI, the "IFPO method" was structured in five stages which were meant to correspond to basic features of most, if not all, actual foresight processes. The IFP method is, as such, a "generic" model which allows for a very high degree of flexibility and which accommodates regional variations to a very great extent.

In hindsight, however, one may reasonably ask if the IFP method turned out to be too "generic". Several – or indeed most – of the IFP project partners have found it hard to present and discuss their processes with reference to the five stages. WP-B distributed a template for structured presentations in which the partners were asked to provide answers to a set of questions pertaining to each of the five stages. Although this set-up was presented and discussed on several project events, only a minority of the partners have seen fit to supply a presentation in accordance with the method and the template. This has adversely affected WP-B's ability to perform its set tasks, because knowledge exchange and cross-national learning was to be achieved by using a joint framework. The response to NIBR's presentations of the method and the template on project events has, however on the whole been positive. As a consequence one can only speculate about the exact nature of the method's inappropriateness.

NON-HOMOGENOUS CLUSTERS

The IFP project description relies heavily on the development of transnational clusters. For instance, an envisaged result of WP-C is formulated as *"Expanded business opportunities and job creation through close transnational business development"* (project description, p. 25). From the outset it has been felt that the project to a great degree should relate to transnational clusters with the aim of further integration. The project set-up did not however ensure that the regional clusters involved in the project were parts of the same branch of industry, line of business or value chain. As a result, the clusters in WP-C were faced with very different conditions for creation and deepening of integrated, cross-regional and international business clusters.

The *energy* cluster decided to focus on offshore wind, and this focus was shared by all the five partner regions who participated in WP-C. As a result, this cluster is probably the one that has come the longest way towards building an integrated international cluster. It should be noted that this focus was chosen during the IFP project – the project description includes a much broader range of renewable energy sources. The situation is rather different in the other clusters. The *food* cluster faced a situation with greater variety among the branches of industry involved: Culinology in Greater Stavanger, local foods in Agder, offshore fisheries in Central Denmark

and --- in Northern Netherlands. As a consequence, it has been less relevant for actors in these very diverse industries to devote time to cross-regional network building. The focus of WP-C has, accordingly, to a greater extent been on the IFP processes in the individual regional clusters. As for *advanced technology*, the situation at the outset appeared similar. The Agder case concerns a cluster of rather loosely defined ICT enterprises, each operating in rather different markets (education, entertainment and so forth). The Central Denmark case (Censek) involves a cluster of defense suppliers. The Northern Germany case is about the hightech Itzehoe Microelectronics Cluster, and the Northern Netherlands case involves the Sensor Technology Network North Netherlands. The note that summarizes the AT cluster in WP-C, in accordance with this, notes that "the diversity of the market and technology focus amongst the groups gave the AT Cluster a particularly non-homogeneous character". Yet by identifying a common technological field – sensor technology – and by utilizing a common model (the "Radar Group Model"), the processes within each regional network could be complemented with activities of a transnational and cross-cluster character. As for the *finance* cluster, activities were delayed and cannot be assessed at this stage.

The fact that the Energy cluster chose to focus on offshore wind, and that the Advanced Technology cluster chose sensor technologies as a shared point of reference, proves that integration can be achieved even in a situation where the partners at the outset were quite diverse. A similar development does not seem to have occurred in the *Food* and *Finance* clusters. Yet it can be argued that future project proposals should be developed with this in mind. Although it would certainly be more demanding to write a proposal in which the partners are better aligned in the outset, this could prove valuable in terms of higher goal achievement.

INTEGRATED PROJECT DESIGN

INTTERREG is an "applied" program, and projects should not be evaluated by the same standards that apply to strictly academic projects. Whereas INTERREG-projects aim at producing tangible results in each of the participating regions, the situation is different in regular, comparative social science projects. In the latter category, rigorous demands concerning standardized case study design and use of common methodologies are put to the (often largely academic) partners, in order to ensure comparability. This is not a chief concern in INTERREG. Even so, organizing an international project needs to be justified with reference to some result that could not have been obtained by the project partners unilaterally. In the case of the IFP project, these are highlighted in the project proposal, which is rather ambitious in that it involves a common method (the IFP method), activities to further cross-regional/international cluster integration and not least cross-regional assessment. This clearly calls for some degree of standardization of the processes included in the project.

In the IFP project, this degree of standardization has only to a limited extent been achieved. While some of the "case" processes reported above apparently have been conducted very much in line with the gist of the IFP process, and some at least have been given a presentation with a similar, five-stage structure, others seems only to a limited extent, if at all, to have been affected by the common framework. A number of processes apparently have been included in the project only nominally, in the sense that they have been run fairly independently of the IFP project. The organizers and the participants seems to have lacked awareness of the IFP method and the common framework, they have not participated in project events and in some cases few attempts have been made by the partners in WP-C and D to make amends to this situation. This of course has caused impediments for WP-B's efforts to guide these processes and not least to compare the experiences. In future project proposals, the partners should be encouraged to ensure that the processes included in the project design are actually conducted in a more integrated manner. This would strengthen the justification for organizing a cross-national project because the added value would then be higher.

IS THE "PROCESS" APPROACH APPROPRIATE?

The IFP method is presented in this report as a process in five stages. Although the method certainly encourages iteration between these stages, each of which may be repeated several times and in various sequences, the idea of a definable, reasonably integrated and unified process design has certainly been prominent. It has been brought to our awareness during this project that this assumption may not always be realistic, or even desirable, for several reasons:

Firstly, "foresight" processes (of which IFP processes is one of several subgroups) tend to be time-consuming. In the literature, the time span is often referred to as between six months and two years (Koschatzky and Koll 2007, Georghiou et al. 2008) and this has not been atypical in the IFP project. It is certainly ambitious to maintain a fairly unified process design through such an extended period. Not only will participants in the process often change, because for instance participating companies see fit to send different representatives to different events. But changes in personnel among the organizers and facilitators can also change as a cause of turnover. This has proved a serious obstacle for some of the IFP partners. A less ambitious design would be more robust in light of such problems, yet this may lessen the value of using a longer time horizon.

Secondly, many of the activities that go into an IFP process are fairly similar to the regular mode of operation in many organizations that are tasked with boosting regional development - public, semi-public or private organizations alike. These furthermore operate in a regional context in which they commonly relate to a fairly set number of firms, academic institutions, public bodies and so forth, and the substantial challenges they try to tackle on a daily basis will often be closely related to those addressed by a foresight process: Expanding and enhancing networks, increasing knowledge and insights, building awareness and in general trying to build capacities for the future. In other words, the activities, tasks and aims of IFP processes may not dramatically differ from the day to day business of regional development agencies and others involved. Workshops and seminars are regularly hosted in all regions in any case, expert advice is procured, coordinating bodies are established and networks are built and integrated further even in the absence of a foresight process. Seen from this angle, one may argue that it is only the integrated process design which sets an IFP process apart from a regular working situation from the point of view of many participants. But such a design may, in light not least of the turnover problems mentioned above, prove tenuous at best. And as some of the more successful IFP cases have shown, valuable outputs may in any case be provided in all phases of the process, not just as an end product. It may be fruitful to reflect on not just the feasibility but also on the desirability of relying too heavily on a comprehensive, unified process design in which all stages must be completed for the process to achieve its purposes.

Thirdly, and related to this, the IFP project has increased our awareness of the challenges related to knowledge *transmission* – the third stage of the IFP process. An important aspect of an integrated, unified process design is that it should accommodate for not just accumulation of a varied body of knowledge – expert advice, stakeholder inputs and so forth – but also for utilization and transformation of this body of knowledge through the duration of the process. Notably, discussions conducted in interactive events such as conferences and workshops should ideally be better informed by being supplied with expert inputs and the likes. The process should overall serve to make the total body of future-relevant knowledge greater than the sum of its parts, mainly through interaction among the participants. But this is also a rather ambitious goal. It has for instance in many cases proved a challenge to transform expert reports into a digestible format. Workshop participants normally have limited time (or propensity) to study reports and materials in advance, and it is not necessarily fruitful to overload a workshop with a row of experts presenting their findings. But it may also be a challenge even for the facilitators and organizers of the IFP process to overcome a rapidly accumulating body of knowledge. This again is a word of precaution against depending overly on a comprehensive, unified process design.

References

[To be completed!]

Acs, Z. J. (2002): Innovation and the Growth of Cities. Edward Elgar publishing. Cheltenham, UK.

http://epp.eurostat.ec.europa.eu/statistics explained/index.php/R %26 D expenditure

Fagerberg, J., Mowery, D. C. and Nelson, R. R. (eds.) (2005): The Oxford handbook of Innovation, Oxford University Press. Oxford.

Nasjonalbudsjettet 2011

Simmie, J. (2003): "Innovation and Urban Regions as National and International Nodes for the Transfer and Sharing of Knowledge", *Regional Studies*, Volume 37, Issue 6-7, 2003.

http://www.scotland.gov.uk/Publications/2011/08/17093111/10