

*A Literature Overview*  
*for the Interreg IV North Sea Region Project on*

*Innovative Foresight Planning:  
The Role of (Regional) Government  
on Cluster Development*

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### *Abstract*

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With the continued upthrust of globalization and changes in European legislation on the horizon, this report summarizes the academic literature written on cluster development from the perspective of government, complemented with documents provided by the IFP working group. Persistent issues in traditional cluster policy are elaborated on, followed by an extensive evaluation on public procurement and the causal link between clusters and networks. The recommendations provided throughout the report could hopefully assist the international partners of IFP when reassessing their current practices in striving for the optimal cluster policy for their regions.

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*N.B. The terms “International partners of the IFP” and “IFP Working Group” are used interchangeably throughout this paper*

## **1 Introduction**

This report provides an overview on the literature written in the build-up to and since the start of the European project *Innovative Foresight Planning for Business Development* (IFP) in 2008. The main reason for the partners in the North Sea Region to initiate the project was to face the challenges that globalization has brought upon the competitive edge of the region's key industries. By sharing knowledge and competences that together should form a set of best practices within a framework of clusters, the transnational cooperation is focused on creating an improved platform for decision-making that brings about new waves of innovation to the partners' main industries, in turn spurring regional economic growth. Unfortunately, the project has recently been somewhat simmering due to a series of issues notorious in cluster projects. Some of these issues have been identified by Vincent de Lezenne Coulander (2010), who wrote an inspiring master thesis on the cluster policy in European regions. His conclusions will therefore function as a starting point for the issues set out in this report. Once the key issues in cluster policy have been addressed, special attention is appointed to *Public Procurement*, a leading concept in cluster policy of regions such as the United States. In addition, the causal link between networks and clusters is elaborated on for the international partners of the IFP to assess when cluster policy is most effective. In combination with their current cluster policy, the international partners of the IFP project could take these options into consideration by means of optimizing their policy practices.

The outline for the rest of this paper is as follows. Section 2 puts forward the key issues with cluster policies. Section 3 evaluates regional cluster policy, in which it elaborates on public procurement and the dyad relation between clusters and networks. Section 4 concludes and presents several recommendations for future cluster policy.

## 2 Issues Surrounding Clustering Policies in General

### 2.1 Definition Implications

*“[A] cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities”*

– Michael E. Porter (Nov/Dec 1998, page 199)

Originating from earlier theories on agglomeration economies, and economies of scale and scope (Goldstein & Gronberg, 1984), Porter’s cluster theory was largely accentuated by national governments and regional cooperative bodies such as the European Union. Once adapted by their policy makers, these governments allocated large pools of resources for the promotion of their geographically proximate business activities, with the main underlying principle to foster regional innovation and competitiveness (Phlippen & Knaap, 2007). One can conclude from Porter’s definition that clusters require economic activities by firms or other institutions, either horizontally or vertically alike, to be geographically close to one another. This is because firms will rarely innovate in isolation; capabilities are created or improved by interacting with others (individuals, firms, organisations), which justifies a clustering policy (Boekholt & Thuriaux, 1999). According to the definition of a cluster, participants are not required to cooperate with one other. This property is what makes it different from a *network*, which functions according to the exact opposite reasoning; cooperation is a necessity, not geographic proximity (Visser, 2000). Due to their collaborative property, members of a network are restricted and formally bounded by a contract, whereas membership in a cluster is more open and usually better accessible for potential new members (Rosenfeld, 1996). However, there is quite a correspondence between networks and clusters, and it is sometimes argued that the former enhances development of the latter (Boekholt & Thuriaux, 1999). Though Porter’s definition of a cluster is widely applied in regional policies, it is also criticized for its lack of clarity; for example, what is meant by geographical proximity, and how are ‘*interconnected companies and associated institutions*’ linked? A clear, descriptive explanation of the critique on Porter’s definition is provided by Coulander (2010). In brief, the definition’s implication is that too many business activities risk to be identified as a cluster, since these can be found in any thinkable geographical area and industry. In addition, the entanglement with the definition of a network and the fact that scholars are often applying their own alternative definition (Martin & Sunley, 2003) can possibly be linked to the disappointing results of clustering projects set up in the past.

## **2.2 Misfit between clusters and ‘best practices’**

Best practices are not clearly defined by cluster theory, but Hospers (2005) makes a nice gesture by stating that they are the key determinants for creating a successful cluster, in other words something each policy maker wants to take up in its regional cluster policy. However, there are some important caveats linked to achieving these best practices. Firstly, stimulating a region’s competitiveness involves targeting, which means that some segments of the economy are preferred to others when it comes to government support (Cowling et al., 1999; Hospers, 2005). Secondly, not only this selective ‘winner picking’ mentality itself is criticized; also the governmental bodies that are in charge of the picking have been known to solely focus on targeting high-tech sectors, thereby wrongfully assigning winners and creating so-called path dependency for their economy (Boekholt & Thuriaux, 1999; Coulander, 2010). Thirdly, and more specific to recommendations of this report, Coulander (2010) explains that the participating regions of the IFP are able to adopt each other’s best practices to some extent by means of a policy toolbox. The tools are describing the ways the regions treat their clusters and how national governments implement stimulating programmes. The use of this methodological outline for best practices is encouraged by the European Commission, but by doing this the participating partners face losing the competitive characteristics that lets their region stand out from the others. This is a crucial implication for the program, because it is exactly this difference that generates competitive advantage (Hospers et al., 2009). Fortunately, the IFP working group acknowledged this caveat and has shifted expectations in relation to the envisaged toolbox as a result of the project.

## **2.3 Linking Clusters and Cluster Policy to Innovation and Economic Growth**

Apart from definition implications and issues with best practices, academic literature has mostly argued for disappointing effects of clusters and cluster policy on innovation and economic growth (Benneworth & Charles, 2001; European Commission, 2008; Weterings et al., 2007) According to Coulander (2010, page 10), “*A cluster exists primarily in the eyes of the policymaker or adviser.*”, and Benneworth and Charles (2001) say that lobby groups often push governments into directing their attention to certain sectors of the economy. Consequently, it may well be possible that instead of picking winners, cluster policy shifts to ‘backing losers’ (Martin & Sunley, 2003). Coulander (2010, page 10) mentions an example in England, where “*some weak sectors receive support under the guise of cluster policy*”. This does not necessarily have to put a check on economic growth and innovation, but the IFP working group could assess

if the occurrence of these desirabilities can be enhanced by considering more alternatives for their current cluster policy. Should cluster policy be focused on designing the cluster, or might it be better to instead *facilitate* cluster emergence by providing potential firms with the necessary institutions? This shift in public policy was first introduced by the Austrian economist Kirzner (1979), who argued that ‘regulators’ designing projects

- often disregard the downsides of their policies
- lack commercial insight, which prevents them from identifying opportunities for coordination when profitable endeavours are initially not at hand (usually at the start of the project)
- ‘stifle’ entrepreneurial creativity due to the strict guidelines of the project’s design

thereby increasing the likelihood of steering the market onto a path which is not desired by consumers. Changing policy to facilitate cluster emergence has gained increasing popularity among the US states, Canada, Great Britain, and New Zealand (Hospers et al., 2009). This Anglo-Saxon view of protectionist facilitation will now be elaborated on thoroughly.

### **3 Evaluation of Regional Economic Cluster Policy**

Regional economic cluster policy until now has focused on copying the success formulas that make an ultimate cluster, the best case being Silicon Valley in the United States. Examples also exist within the European Union, such as the textile industry in North Italy, the automotive industry in South-West Germany, or the maritime sector in the Northern part of the Netherlands. What characterizes these clusters is that their history goes back many years, if not many decades, which makes scholars wonder whether planned clusters formed through policy efforts, especially in the high-technology sectors that many international partners of the IFP wish to target, can result in similar success stories (Boekholt & Thuriaux, 1999). As was mentioned, the imitation behaviour of a leading firm in the industry and the sharing of information could result in the loss of competitive advantages, and because there's no blueprint for a successful cluster (Weterings et al., 2007) policymakers could face the risk of harming innovation and economic growth in the industries that they are targeting. However, as examples from several US states show, there are other ways with which policymakers can reach their objectives. One of these ways, coined as *Public Procurement*, will be discussed here. Through public procurement, many US states persuaded potential firms to cluster in a certain geographical area by promising them with several beneficiaries, such as tax credits and operating facilities (Boekholt & Thuriaux, 1999).

#### **3.1.1 Public Procurement: Theoretical Background**

The advantages of public procurement were identified at the start of the 1990s when Geroski (1990) argued that it enhances the diffusion and creation of technological innovation. In that same year, Porter (1990) published *The Competitive Advantage of Nations*, in which domestic demand was identified as being one of the prime sources for the innovative strength of a country. Public procurement in turn serves as a powerful tool for demand-oriented innovation policy, because “*the government specifies a desired output and leaves it to the creativity of private businesses to achieve this result with the most effective and efficient technologies*” (Aschhoff & Sofka, 2009, page 2). Examples from EU member states are provided by Ebersberger (2007) who, among others, explains that the demand behaviour of Finnish consumers and government for new products and services has made the country an interesting location for high-tech companies to introduce their innovative products. The next section elaborates further on public

procurement and discusses the causal link between clusters and networks. These will then be visualized in a matrix as proposed by my supervisor Yellie Alkema from SYARK. This matrix is still under revision, but the concept can be readily used by the IFP working group to explore the options and possible opportunities for the cluster policy.

### 3.1.2 IFP, Public Procurement, and European Legislation

*“Public procurement is hardly used to support clusters.”* – Coulander (2010, page 40)

This quote taken from Coulander’s conclusion on the IFP project identifies an important implication for the effectiveness of the programme. The author argues that public procurement is seldom applied by the regions which are related to the IFP project, as it is relatively vague to the international partners what effect public procurement has on their cluster policy. In addition, and maybe most importantly, European legislation on public procurement (by EU often referred to as ‘tenders’) is perceived to be a millstone for the initiative. This is worrisome, as it might get increasingly difficult for the international partners to get businesses to settle in their regions; see the interview with Kim Nedergaard for an example of Central Denmark (Alkema, 2011a). Nedergaard’s concern seems justified, as also Boekholt & Thuriaux (1999, page 408) argue that several networks created in the previous *Danish Network Programme* ended after a few years because *“the public investment functioned as a leverage mechanism to attract even larger amounts of private investment in technological capabilities”*. When these public investments ended, so did most of the incentives of the network partners. Though EU legislation is build on the basis of free trade and against the traditional picking-national-champions principle, it is not necessarily true that all forms of public procurement are prohibited, as the example from Finland showed. Among other types, Edler & Georghiou (2007) elaborate on so-called public *pre-commercial* procurement, which might be something for the IFP working group to consider for their cluster policy. For an extensive overview of this type, please refer to Bos & Corvers (2006); for all types, please refer to Edler & Georghiou (2007). In brief, because the businesses targeted for the cluster are still in a pre-commercial phase and because the risk of introducing new technologies is shared between the firm and the public procuring IFP partner, the authors

**Interview with Kim Nedergaard**  
Manager of Midt Vind, Central Denmark

*“If we don’t support our own industry by subsidies or **procurement**, other countries like the UK, US, and China will overrule the Danish industry.”*



explain that legislation such as the WTO General Procurement Agreement (GPA) and the European Directives do not apply. Pre-commercial procurement also holds a large advantage over traditional cluster policy, because its facilitating nature provides participating firms with much more freedom to select and define profitable opportunities and interact with other businesses, which is important for R&D-intensive industries. Most recently, the European Union acknowledged the importance of public procurement in the Europe 2020 Flagship Initiative (2010) as follows (summary as placed on the website of the European Union): "*From 2011, Member States and regions should set aside dedicated budgets for pre-commercial procurements and public procurements of innovative products and services. This should create procurement markets across the EU starting from at least €10 billion a year for innovations that improve the efficiency and quality of public services, while addressing the major societal challenges. The aim should be to achieve innovative procurement markets equivalent to those in the US.*" The following case study elaborates on one of these US procurement markets.

### **Case Study: Clusters and Public Procurement**

The success stories of US clusters and public procurement are most evident in the Aerospace and Defence industries [also see the interview with Jim Davis on this page (Alkema, 2011b)]. These industries in the United States are among the most well established clusters in the world, and their commencing stretches back as far as the second World War (Higgs, 1995). Global multinational producers in the industries, such as Armalite and Boeing, have located most of their production

processes within the US. This might seem surprising at first, since theory on international trade has long argued that global firms tend to allocate (part of) their production to countries where the costs of producing are substantially lower (Krugman et al., 1995). However, an important reason why these MNEs still prefer to locate within the United States and make use of a US labour force originates from the way the US government organized its cluster policy in the past. It applied contractual binding agreements with these businesses, which stated that the US government would act as a long term buyer for these firms (with a guaranteed turnover), if they agreed to make use of the US labour force and buy a substantial amount of their parts from US suppliers. Multibillion

#### **Interview with Jim Davis**

Project manager at Scottish Enterprise in Aberdeen, Scotland

*"The issue of **public procurement** should be taken into account as well. The US and France are good examples. For instance, the aerospace/aircraft industry is strong in the US because of the strong experience in the defence industry."*

dollar industries were created in this way, not only making the participating firms among the most powerful in the world but also contributing substantially to the nation's welfare.

The public procurement as presented here can be linked to the concepts of *Institutional Complementarities* and *Institutional Comparative Advantage* as introduced in an influential paper by Hall and Soskice (2001). Institutional Complementarity implies that different types of institutions could potentially develop complementary institutions with other types of institutions. By doing so, the complementary practices can result in clustering activities of similar institutions. With regards to high-tech industries, Hospers et al. (2009) name several examples of clusters, such as the Italian textile industry, the Swiss watch business, and the Danish furniture industry that have brought about 'new combinations' of technological innovation and kinship. Moreover, with the right institutions, innovations from declining sectors can facilitate the emergence of new industries, as examples from the pop music and art cluster in Manchester, UK and the multimedia cluster in Baden-Württemberg, Germany have shown. Institutional Comparative Advantage adds the role of government to the equation; this institutional body can choose to invest in creating an institutional framework which is highly beneficial for certain types of firms to settle in. Once these firms are situated within this institutional framework, they are able to make use of its beneficiaries. However, if they choose to leave the framework for whatever reason, they risk losing the institutional advantages (Hall & Soskice, 2001). This is important for future implications of the IFP project, as it explains why firms choose not to move their production process to low-wage countries.

### **3.2 Networks and Clusters: Causality or Reverse-Causality**

As mentioned, scholars Boekholt & Thuriaux (1999) identified a causal link between networks and clusters, namely that the former could enhance development of the latter. However, could there also a foundation that networks commence from clusters? And is there a role for government? This theory of causality and reverse-causality in business economical literature has mainly focused on economic growth and financial development (Demetriades & Hussein, 1996), international trade and political conflict/cooperation (Reuveny & Kang, 1996), and economic growth and institutional quality (Chong & Calderón, 2000), but has been relatively unexplored in studies with regards to clusters and networks. Taking the influence of networks on clusters as a causality starting point, Phlippen & Knaap (2007) assume the reverse-causality viewpoint by studying when clusters turn into networks. These authors mainly focus on the European

pharmaceutical industry, which suits the high-tech clusters that the IFP working group wish to target. The hypotheses for which the scholars find significant results imply that (non-)local collaboration tends to be more likely when clusters are small, because clusters with an increasing amount of organizations are likely to experience congestion effects. This observation is contrasting to what policymakers usually aim for, as Coulander (2010) notes that they often wish to target as many businesses as possible simultaneously. Other contradictory results that Phlippen & Knaap (2007) find are related to R&D. In contrast to similar networking practices in the US, local knowledge spillovers from high-tech institutions such as universities are rarely seen in European clusters. Instead, collaboration tends to occur with organizations outside the cluster. This should not be perceived as European cluster policy failing, however, because Desrochers (2000) argues that this is in fact also observed in the US; for example, buyers and suppliers outside Silicon Valley tend to be much more important for this cluster than local counterparts. On a final note, Hospers et al. (2009) state that technological spillovers and other networking events are more likely to occur due to a region's unique practices rather than the best practices of the firms present in that region. These scholars once more mention the examples of Emilia-Romagna and Baden-Württemberg, in which governments provided opportunities for businesses to develop and transfer their knowledge. Again, policies facilitating the development of cluster emergence are preferred over pressing a specific cluster design: "*cluster parties themselves should take care for being good, while government may advertise the success of clusters that have passed the market-test.*" (Hospers et al., 2009, page 13). It is therefore important for the IFP parents to involve the cluster participants in the decision-making process and critically assess when policy intervention is favourable.

#### **4 Recommendations and Concluding Remarks**

The content in this report was set out to accommodate the IFP working group in evaluating their current cluster policy. Clusters as defined by Porter lack a clear definition, which thwarts efforts of local and regional governments to conduct an optimal cluster policy. The main issues in conducting a cluster policy are that identifying 'best practices' in clusters leads to targeting and the convergence of competences, which is detrimental for the creation of innovative technologies and economic growth if policymakers lack the necessary commercial mentality and if this means that competitive advantages become faint.

It is therefore up to the international partners of the IFP to assess if their current cluster policy is not prone to the same pitfalls that have hampered cluster projects set up in the past. An important consideration laid out in this report regards to the adoption of *public procurement*. Coulander (2010) mentioned that an important millstone for the international partners of the IFP to consider this policy tool has been EU legislation against such practices, but several examples mentioned in this paper show that this does not necessarily have to be so. Apart from recent developments in EU regulations providing more opportunities for the use of public procurement, a pre-commercial type as proposed by Edler & Georghiou (2007) and Bos & Corvers (2006) can circumvent most of the remaining legislation. It is important that the opportunities for public procurement are identified, as both the IFP working group and academic literature warn for outside threats coming from the US and especially China, which avoid no policy measures to excel their national champions in foreign markets. In addition, policymakers should look within and outside their clusters for a causal link with networks, and possibly alter their cluster policy accordingly. The most important alteration could be to switch to a more facilitating nature, for which numerous successful examples have been mentioned throughout the report.

On a final note, it should be evident that the effects of globalization may not reap the same success if public procurement is not altered to present day circumstances. A solution is provided by Boekholt & Thuriaux (1999, page 380), who state that "*Cluster policy approaches should, therefore, be open to new developments in technologies and international markets and constantly strive to make companies aware of these international developments*". This report was written to make the IFP working aware of new opportunities to consider in their current cluster policy. By facilitating the emergence of clusters rather than designing them, technological innovations are more likely to come about as well as the desired economic growth.

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## 6 Appendix

### List of Documents (Interviews conducted by Yellie Alkema)

1. Anne Siri Hoiland (General manager of the food cluster in Rogaland NCE Culinology, Norway)

Cluster: food sector

*“The cluster became in the summer of 2007 a Norwegian Centre of Excellence (NCE). This means that Norwegian central government is writing a tender, to which clusters in different parts of the country and different themes can submit. NCE Culinology had very positive results, such as: that it has developed to a mature cluster. The cluster is financially supported by the NCE programme for 50%. The organisation works with a long term strategy and a yearly business plan*

*As an answer to the question what makes a cluster successful Anne Siri would say:*

- *Believe in cooperation*
- *Money is important to manage the process*
- *Work on a general basis: focus on competence/ competitiveness and innovation*
- *Develop a common strategy on that*
- *And don't forget to launch the best products”*

2. Asle Pedersen (Project manager for Virke Regional Innovation

Cluster: ICT

*“A big driving force of the network is the growing ICT business itself. Though it's hard to give facts and figures on the ICT growth rate. This is because ICT is widely spread over several branches of business. VRI gets some financial support to get started. This is important in order to apply for bigger funds. It's important these governmental bodies support their ideas of economical support with money. Organisations should take care of seed money in order to apply for funds and EU money. Still this is making organisations very vulnerable, cause you shouldn't make mistakes. Luckily Norwegian economic policy is not negatively responding to the economic crisis, so the funds are quite reliable.”*

3. Jim Davis (Project manager at Scottish enterprise in Aberdeen, Scotland)

Cluster (sub-types): Oil and Gas, Renewable Resources, CCS and Power Generation

*“Cluster development had until a few years ago a long term policy. Now, driven by financial and economic crises and changing political climate the focus is on the short term and immediate results. Of course it’s not only government who should provide for the cluster development, but also the companies themselves need a long term vision. Cluster support it’s only useful as long as there are market opportunities, as in the offshore wind industry. British government is stimulating this market indirectly. By the way: there is no offshore wind cluster in Scotland at this stage. It’s a number of companies without common goals.*

*The issue of **public procurement** should be taken into account as well. The US and France are good examples. E.g. aerospace industry is strong in the US because of the strong experience in the defence industry.”*

4. H Vogel (Board Advisor, Netherlands)

Cluster: food sector

*“The cluster started as a private initiative, without the support of the government. In a later stage the government provided additional funding to facilitate further growth. Advice for new clusters: Start with champions in the industry. Opinion on cluster policy: Very good! They need to focus on industrial clusters, more than on facilitating individual companies to support innovation. In that case you start already with the frontrunners in the industry and you make use of a collective effort by the industry already initiated. Policy still up to date?: Definitely, especially when it concerns the support of innovation by SME companies. They are regionally organized and at arms lengths of the regional economic policy.”*