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Cluster policy in Europe

A fad of fashion or a genuine policy instrument?

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Abstract

Clusters and clustering have become attractive policy measures, because they are leverage points for action and innovations, not just descriptions of economic realities. Cluster policy is a field where scientists meet the practice; many consultants, including academics, earn well by specialising in cluster development. But what is the motivation behind cluster policies and resources engaged in cluster development? This thesis presents an empirical study responding the question: are cluster policies used to solve real problems in Europe or do they rather represent a fad in fashion? An analysis framework, “the double-I model”, is developed based on previous literature. It was used to analyse large-scale cluster policy information collected during Spring 2007 from European 20 countries. Through the double-I model, it was possible to find differences between countries related to their implementation of cluster policies. The instrumental and institutional approaches to cluster policy implementation seem to be almost equally common in the European countries.

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Preface

A quite a long time ago I was a young business student listening to a lecturer, Professor Havusela (1999) at University of Jyväskylä in Finland talking about the birth of clusters. The Professor had studied regions in Finland and concluded that cluster development requires entrepreneurial atmosphere to could succeed. Willingness and social licence to succeed were important factors in clustering. Creating the entrepreneurial atmosphere should begin so soon as possible, already in day nursery. I was listening to the story excited; captured by that interesting finding. This cultural point of view was then totally new to me - what a brilliant idea: to be able to raise tomorrow's entrepreneurs. The interest towards competitive co-operating was switched on in my head. During these years while I have been practising also those clever thoughts concerning raising the future success stories, young human souls, cluster policy has become a success recipe worldwide. When I was offered an opportunity to participate to a Europe-wide project and use the data gathered in my master thesis, I just couldn't deny.

The process has been very educational – I have learned rather much about cluster policies and maybe more about how to lead myself. With a full booked life it has been a challenge to find time to sit and write down thoughts and findings. However my master grade is now finished and I will use the opportunity here to thank people who have contributed the process towards the finished thesis. My warmest thanks for your critical but always encouraging support, Professor Dr. Jarle Trondal. You guided me towards the goal when I was wandering in the jungle of all theory, almost lost in its lights and shadows. I also wish to thank Mr. Harald Furre from Oxford Research AS Kristiansand, Norway, for offering me an opportunity to get my hands on this European-wide data. My mum and dad, brother and sisters and my friends have not forgotten to encourage me, thank you for your caring! Thank you, my treasures, my dear Valtteri, Ansu and Pinja for lavishing your love, hugs and kisses on me while sitting beside my laptop. Encouragement and awaiting more time together have been continuously present. And last but not at all least I want to thank you, my own dear husband, Dr. Tero, for your love, understanding, encouragement, support and god advice.

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1 Introduction

Clusters and clustering have become attractive policy measures (Benneworth 2002; 2004; Raines 2000; Nauwelaers 2001; Steiner 2002; Benneworth & Charles 2001; Isaksen & Onsager 2004; Altenburg & Meyer-Stamer 1999), because they are leverage points for action and innovations (Nauwelaers 2001; Hotz-Hart 2000; den Hertog, Bergman & Charles 2001; Raines 2002b), not just descriptions of economic realities. The concept of clusters is regarded as one of the critical success factors for reaching the ambitious goal set out by Lisbon European Council in 2000 *“to make Europe the world’s most competitive and dynamic knowledge based economy”* (Ketels 2004, p. 1) in intensifying global competition (Martin & Sunley 2003; Porter 1998; Steinle & Schiele 2002; Benneworth & Charles 2001; Ache 2002).

In the field of cluster policy scientists meet the practice; many consultants, also academic based, earn well by specialising in cluster development (Raines 2002b; Benneworth 2002; Martin & Sunley 2003). But what is the motivation behind cluster policy and resources engaged in cluster development? Does cluster policy represent *“fashion labels”*, that is some wise men, who are telling, what should get done? Or does it represent *“hard targets”* where policy makers independently consider and adopt procedures based on concrete needs of the economy and the firms? (Martin & Sunley 2003, p. 23).

Many articles and books are written in purpose to define and describe cluster policies. Cluster policy has been localised in the field of politics, and many recommendations for successful cluster policy adoption and cluster initiatives are formulated. Most studies have been conceptual studies or empirical case descriptions. This thesis presents an empirical study responding the question which builds upon Martin & Sunley (2003): ***are cluster policies used to solve genuine problems in Europe or do they rather represent a fad in fashion?*** The data comprises large-scale cluster policy information collected during spring 2007 from 20 European countries. The information is about national and regional level cluster programmes, actors, importance and history of cluster policy in each country. The unit of analysis is a state, focusing on which role government has in cluster policy adopting and how cluster policy is implemented. Indicators to uncover differences between countries are cluster-related words or definitions, cluster policy tools and the role of government. Findings from this study, the content analysis, indicate that

there are approximately as many countries which use the instrumental as the institutional approach. A couple of countries represent combination of approaches. Three countries do not have any cluster policy at all, and are therefore analysed separately. The conclusion is that cluster policies are used both as genuine solutions respectively clusters' needs, but almost as much as fashionable labels covering also more general level economical policy applications.

1.1 What is cluster policy?

Cluster policy is a rather recent phenomenon, which, however, has spread quickly all around the western world (Martin & Sunley 2003; Raines 2000) and increasingly in developing countries (Raines 2000). Competitiveness of countries and regions has become the top object of interest among policy makers (Porter 2000b) and therefore policy makers have attracted their interest to clusters, recognising the benefits of clustering (Altenburg & Meyer-Stamer 1999) and the opportunities for collective efficiency. Countries have to master competition in order to attend and enhance welfare. The concept of cluster offers a way to turn around the negative vicious circle which has injured many countries after annulations of several forms of economic protection (Porter 1998). Because the country level competitiveness is a sum of competitiveness and productiveness of economic actors in country, nurturing clusters may increase current productivity and capacity of cluster participants and stimulate local business formation (Porter 2000b).

Cluster policy implementation depends on how clusters are defined (Benneworth & Charles 2001; Raines 2000; Nauwelaers 2001; Steiner 2002). Cluster theory binds together the network theories and competition. A cluster is a phenomenon of agglomeration of firms (Benneworth & Charles 2001) and other associated organisations connected and linked in value chains and the systems of value chains (Porter 1990). Porter defines a cluster as “*geographical concentrations of interconnected companies, specialized suppliers, and service providers, firms in related industries, and associated institutions*” like universities, standard agencies and trade associations (Porter 2000b, p. 253). A cluster is “*a network of production*” ... “*often cross-sectoral, vertical and/or lateral, networks made up of dissimilar and complementary firms around a specific link or knowledge base in value chain*” (den Hertog et al. 1999, p. 5). Cluster dynamics become

stronger by territorial concentration by what Porter calls “*the critical mass*”, which means that sufficiently several actors of value chain should be localised near each other to harvest cost and efficiency advantages by more intensive co-operation and innovations (Porter 1998; 2000b).

There are many concepts and definitions for economic agglomeration and innovation systems (Raines 2000; Nauwelaers 2001; Martin & Sunley 2003; Altenburg & Meyer-Stamer 1999; Malmberg 2004) which however are not extremely diverse. The most cluster definitions include geographical agglomeration of firms, inter-organisational linkages, innovation, specialisation, and competence spillovers and co-operation, which benefit both large and small firms by completing each others (Porter 1998, see also for instance Altenburg & Meyer-Stamer 1999; Ache 2002; Benneworth & Charles 2001; Nauwelaers 2001; Hotz-Hart 2000; Raines 2002).

A cluster is a living unit growing both in depth and breath over time. Drawing cluster boundaries supposes understanding of the nature of competition, linkages, complementarities and spillovers across the most relevant industries and organisations in that particular field. “*The geographical scope of clusters ranges from a region, a state, or even, a single city to span nearby of neighbouring countries. [...] The geographic scope of a cluster relates to the distance over which informational, transactional, incentive, and other efficiencies occur*” (Porter 2000b, p. 16). Clusters change continually: new firms and emerging industries evolve, established industries shrink or decline, local institutions develop and change. Technology and market innovations give rise to new industries by creating new informal and proximate linkages and networks or change markets served. A cluster diminishes risk for distortion of competition and limitation of the intensity of rivalry (Porter 1998; 2000b). Firms in clusters are discovered to be approximately more effective and innovative, having a bigger production capacity compared with firms in isolation (Porter 2000b; Ketels 2004).

Clustering is a market-induced (Gilsing 2001) process whereby interfirm linkages and cluster utilities are built up (Benneworth & Charles 2001) in purpose to promote value-creating opportunities between industries (Benneworth 2002). Clustering should contribute to the “bottom-line” of the participated firms (Gilsing 2001). Especially small and medium-sized firms

are able to grow and upgrade more easily as a result of clustering (Altenburg & Meyer-Stamer 1999).

Many clusters include governmental institutions, trade associations, competence institutions and other collective bodies. Most cluster members are not direct competitors rather than servants of different industry segments. Governmental institutions build up public or quasi-public goods that benefit many linked businesses (Ketels 2004). The examples include specialised training, education, information distribution, research, and technical support. Government can act as a sophisticated customer, broker between different actors in a cluster, or it can use other tools which affect the framework conditions such as competition laws, investments in infrastructure, education or research (Benneworth & Charles 2001; Gilsing 2001; Romanainen 2001). Because cluster members often share many common needs, opportunities, constraints and obstacles of productivity, a cluster provides a form for dialogue among related firms, their suppliers, government and research and educational institutes. The cluster concept can be used to highlight opportunities for coordination, mutual improvement in areas firms share concerns and identifying technologies (Porter 1998; 2000b) and problems which are common to several industries (Romanainen 2001).

Sophistication of how firms compete in a location is strongly affected by quality of business environment. Macro environment and infrastructure such as the road system, laws, tax rates etc., cover all industries. *“Government is able to contribute and catalyse both cluster development and economic development by organising such cluster specific initiatives which influence relevant macro level factors”* (Porter 2000b). Assurance of well-functioning macro level factors is necessary, but not in every case sufficient to boost economy and innovations. The cluster concept can have major influence on boosting up the process of innovation. All existing and emerging clusters can be desirable and potential to contribute prosperity deserving attention of policy makers based on their local economic dominance, strategic importance, leadership and innovation potential (Porter 1998; den Hertog et al. 1999).

By nature clusters emerge on a solid foundation embedded in existing companies, local expertise or special resources (Rosenfeld 2005). The formation of a cluster takes a long time – often

decades (Rosenfeld 2005; Benneworth 2002). Roots of cluster can often be found in one or two successful, entrepreneurial companies with resourceful labour force or development of value chain between large companies. Other roots may be innovative use of competence, access to critical resources and/or infrastructure, or opportunities for commercialisation around sources of new technologies (Rosenfeld 2005). Plenty of clusters have a considerable long history. Competitive advantage seems to be best generated when innovation takes place in established industries and improves positions of those industries (Benneworth 2002). Clusters are a source of new business formation: new clusters emerge often out of existing ones (Porter 1998).

Band on the literature, I will use the following definition for a cluster: *A cluster is informal or formal geographic agglomeration including firms, competence institutions and public organisations involved in same value chain or system of value chain, which are co-operating and competing with each other.*

Because the definition is so common and open, it has been unclear what the “cluster” idea bears for policy makers (Raines 2000; Nauwelaers 2001; Malmberg 2004). Theoretical roots and reality might be at a great distance apart (Nauwelaers 2001; Isaksen & Onsager 2004). For policy-makers, however, clusters represent a new framework to deal with economic and policy development (Raines 2000). Policy makers no longer have ambition to command or direct economic activity. Instead the former rule-makers see themselves now as facilitators. Extensive support for investments, employment and basic research has been compensated by more selective and competence stimulating means (Benneworth 2004).

1.2 Previous cluster policy research

It is the state which sets the rules concerning framework for economic activity (Malmberg 2004; Fligstein 1991). Cluster policy is supposed to fulfil political needs, to integrate existing programmes and to channel government support to technically strategic industries. The actual policy means may be constrained by existing programmes and instruments, while clever and sophisticated users may manipulate the policy environment to the exclusion of less sophisticated

but potentially more dynamic clusters (Bennewort & Charles 2001). Cluster policies are often formed in co-operation among firms and competence institutes (Isaksen & Onsager 2004; Fligstein 1991) by creating frameworks (Porter 2000a) that provide incentives for cluster development (den Hertog et al. 2001)¹. This is made by supporting and generating community and network building (Raines 2000; Nauwelaers 2001; den Hertog et al. 1999; Rosenfeld 1997; Martin & Sunley 2003; den Hertog, et al. 2001, Romanainen 2000) and communication (Rosenfeld 1997), collective marketing (Martin & Sunley 2003), learning (Nauwelaers 2001; Raines 2002), and innovation promotion (Benneworth & Charles 2001; Raines 2002b). Cluster policy is supposed to be firm, business, and industry neutral (compared with pure industry policy), focusing on sectors (Raines 2000), regions, innovation or production systems (den Hertog et al. 2001) or selected networks (Raines 2002b). Cluster policy is expected to affect both clusters and clustering (Raines 2000). Cluster policy should neither subsidy strongly oriented nor directly industries and firms, limit rivalry in the marketplace, ignore small and emerging clusters, or focus only to existing or classic clusters (den Hertog et al 1999; Raines 2002b; Isaksen & Onsager 2004; Malmberg 2004).

But does cluster policy represent “*hard targets*” or “*fashion labels*”? (Martin & Sunley 2003, p. 23). Instead of working clusters, cluster policies might be directed to broad industrial sectors which are immediately and statistically visible. Cluster mapping can fail to find out the connection between intentions, perceptions, statistics, substance and relationships. Therefore clusters may become too heavily abstracted during analysis process used in institutional approach (Martin and Sunley 2003; den Hertog et al. 2001). Cluster analysing techniques in use vary among countries, which can indicate that cluster definitions and concepts vary – and therefore also cluster policies can be supposed to vary among countries (den Hertog et al. 1999). Policy makers seem to be under pressure to find clusters in as many regions as possible for fear to offend regional interests. Cluster strategy is “*a fad, a fairly imprecise and flexible label for differing combinations of measures*”, conclude Martin & Sunley (2003 p. 28) calling cluster concept *brand* and even *myth* (p.29) because of ultimate elasticity and misleading causality of the concept.

¹ There are some other verbs, too, used by different authors when they are discussing about cluster policies. Feser (2005) uses verb “build” clusters, Ketels (2004) “activate” an existing base of companies, which he means is much more effective than investing in cluster creation from scratch.

Most authors agree that cluster development is not, and should not, be purely government-driven, but business-driven (Rosenfeld 2005). One clear exception of unity is presented as the flowchart approach to industrial cluster policy. The approach is in practice almost a mathematical pattern to create new clusters by following three steps. *“The flow of policy implementation is to establish an industrial zone, to invite an anchor company, and to promote its related companies to invest in the industrial zone”* (Kuchiki 2005). Flowchart approach regards creation of clusters as a political task, a government-driven initiative by political actors, not business-driven. However Kuchiki seems to be quite alone with his view of cluster policy.

Cluster policy is attractive in many cases and was introduced while several countries were looking for new forms of industry and growth policies by using innovation and competition policies (Isaksen & Onsager 2004). Political priorities have shifted from macroeconomic issues, which are necessary for competitiveness, toward microeconomic issues, which are required *“to translate macroeconomical achievements into real productive improvements in companies”* (Ketels 2004, p. 1). *“In practice, [the] cluster approach has proven to be a useful framework for developing and applying new forms of governance, moving away from direct intervention towards forms of indirect inducements”* (den Hertog et al. 2001, p. 405). Effectiveness to promote innovation has also contributed the popularity of cluster concept (Benneworth & Charles 2001; Malmberg 2004).

Beside the cluster concept there are other academic concepts very similar with the cluster concept and the borderline between concepts is rather unclear (Isaksen & Onsager 2004; Fischer 2002). The most used concepts are economic agglomeration, industrial districts, innovation systems (Raines 2000; Nauwelaers 2001; Martin & Sunley 2003; Isaksen & Onsager 2004) and networks (Rosenfeld 2005, Steiner 2002). The concept of economic agglomerations, also called *“industrial districts”*, is rather old, presented originally in 1890 by Alfred Marshall. Industrial districts are geographical concentrations of economic activity, in purpose to obtain skilled human capital, cost and innovation advantages as well as competence transfers between actors. An industrial district can include one or many distinct industries; in the latter case industrial district is not so sensitive for conjunctures (Marshall 1920; Rosenfeld 2005; Isaksen & Onsager 2004).

Innovation system (either national NIS or regional RIS) is an institutional structure of an industry system for learning, innovation and development of competence. It resumes forming of organised innovation projects and co-operation between firms and other organisations (Isaksen & Onsager 2004; Fischer 2002). Networks are characterised by independence and interdependence at the same time. Firms are dependent on assets controlled by other partners and networking particularly in innovation activities. Co-operation needs often transaction-specific investments. Management of networks is organised according to strategic interests of the partners and the structures of power involved often formally such as joint ventures, controlled franchising, technology financing or system integration (Vatne & Taylor 2000).

Governments should “*be able to mix and switch between various roles*” (den Hertog et al. 2001, p. 416) based on different needs of each cluster (Gilsing 2001; Isaksen & Onsager 2004; Malmberg 2004). All industries are not affected by the process of clustering (Steinle & Schiele 2002), or even have clustering potential; firms just are located in the same area without any contact with each other (Benneworth 2002). For that reason all clusters identified statistically in one region should not be automatically subjects of policy actions (Raines 2000). Although cluster policy is one tool to support and boost activity of clusters, governments have a range of other tools to encourage firms to closer co-operation. There are countries which prefer deregulation and privatisation rather than direct intervention to boost innovations within clusters creating smooth operating market mechanism increase competitiveness of businesses and then clusters (Benneworth & Charles 2001; Gilsing 2001; Romanainen 2001). However all industries are not affected by the process of clustering (Steinle & Schiele 2002). All agglomerations have no clustering potential, firms might be located in the same area but they do not have any contact with each other (Benneworth 2002). For that reason not even all clusters identified in one region should be subjects of policy actions (Raines 2000).

1.3 Research approach

Building upon Benneworth (2002) I have developed a framework which includes two approaches: instrumental and institutional. I call the resulting model as “*the double-I model*”.

The instrumental approach builds upon economic geographers focusing on clustering processes. Every country and region has a unique cluster blend, selection of clusters and specialisations with different characteristics and the role in the economy (Isaksen & Onsager 2004; Gilsing 2001; den Hertog et al. 2001). Clusters are not seen as purely firms but as a group people who are working within a cluster's organisations, their relationships to each other and exploitation of particular opportunities based on personal relationships. This point of view represents the qualitative advantages of geographical agglomeration presented in agglomeration theory (Benneworth 2002; Marshall 1920). In the instrumental approach focus of analysing is to learn how businesses interact and clusters work (den Hertog et al. 1999). *“Applied cluster analysis must be flexible in approach and avoid methods based on ideal types that reinforce a solely 'cluster finding' mentality “Cluster analysis should be a part of broader strategic planning processes that incorporate substantial private sector involvement and public opinion” (Feser 2005, p.24).* Promoting innovations, engendering collective learning and development of associated club institutions which facilitate clustering behaviour (Benneworth 2002) to develop a competence base for practical actions (see Egeberg 1989) are important objectives in cluster development.

Institutional approach builds on geographical economists setting focus on clusters *“as a phenomenon of agglomeration”* (Benneworth 2002, p. 315). This *“Porterian cluster concept”* is ultimately elastic, and has also been called as *“a cluster myth”* (Martin & Sunley 2003 p. 29). Implementing cluster policy is based on either internal or external press by admitting and adopting a standard solution (Martin & Sunley 2003), a package of functional myths of cluster politics, ceremonially (see Meyer & Rowan 1991). Cluster policy is more talk than genuine activity based on practical needs of clusters. *“..[H]ypocrisy is a fundamental type of behaviour in the political organisation: to talk in a way that satisfies one demand, to decide in a way that satisfies another, and to supply products in a way that satisfies a third”* (Brunsson 2002).

This thesis is structured as follows: chapter 2 presents the research process. Chapter 3 develops a framework and indicators which are used in the data analysis. Chapter 4 presents the results of content analysis of cluster policy summarisations for 20 European countries categorised by indicators. Clustering of countries is made because of noticeable similarities among countries – and to save time and nerves of reader. Individual country presentation was found unreasonable

and unnecessary. In chapter 5 results from the content analysis are discussed in the framework developed in chapter 2 and in the light of previous research, and the contributions of thesis are presented. Conclusions and some proposals for further research are presented in chapter 6.

2 Research process, methods and data

In Autumn 2006 I had an opportunity to use European data which was collected for Europe INNOVA Cluster Mapping Project by a Norwegian project partner. The countries covered are European Union member countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain and United Kingdom. These are supplemented with the two freshest members, Bulgaria and Romania, and four non-member countries Iceland, Israel, Switzerland and Turkey. In the last few years European Union has started big projects to map cluster policies used all over the Europe to gather back ground information and recommendations for common cluster policy formulating in coming years. A project covering the member countries joined in 2004 is driven separately (for more information see EU INNOVA).

The original project plan included cluster policy information from 22 European countries. Local actors were chosen to be used for information gathering, because cluster policy is usually expressed in national language(s) in policy statements, working papers, programmes, arenas etc. which creates a clear barrier to find out information covering most countries in Europe. European Network for Social and Economic Research (ENSR) was used to get a contact with local actors capable to carry out the task. It was through the network contacts to all other countries were build, except Israel. Local actor in Israel was found through the network of the Norwegian project partner.

Cluster policy information was gathered by a questionnaire (see Appendix A) filled by local actors based on common guidelines. The questionnaires were sent out in February 9th, 2007 and collected in during the spring 2007, by June 2007. For this thesis data from 20 countries were analysed. A couple of countries had not finished their local desk research at that time I received

the data. Local actors were subcontractors to Norwegian Europe INNOVA Cluster mapping project partner, they were paid a contractual provision for filling the questionnaires. Questionnaires, called “*Country Reports*” can be found in the web site of European Cluster Observatory, where they are going to be uploaded during the project period (web address can be found in the list of references).

Questionnaires have mostly open questions concerning cluster policy terminology, programmes and responsible actors on national and regional level, overlapping with other policy fields, competitiveness, importance and history of cluster policy in country in question (see Appendix 1). Open questions give an opportunity to use content analysis as the data analysis technique. The challenge has been finding formulations for questions which mean the same to all responders, because the cluster concept does not have a commonly accepted definition (Hirsjärvi, Remes & Sajavaara 2001). Local actors have filtered cluster policy information they have found based on common guidelines and their own comprehension. Backgrounds of local actors concerning their previous competence of cluster policy vary. The local actors were private consultant offices, universities and cluster development agencies. Therefore a local cluster policy expert was requested to check and commentate the reliability and actuality of information gathered. Local actors themselves were responsible for contacting local cluster expert and agreeing the evaluation of gathered policy information. Possible changes proposed by a local cluster expert were made before the answers were delivered to Norwegian project partner.

Answers from countries vary in their length and depth. Totally data is 510 pages, from the shortest answer at 8 pages (Italy) to the longest 68 pages (Finland) being approximately 25.5 pages which is exactly median value, too. Secondary data of this kind has some weaknesses. In spite of common guidelines local actors have made individually decisions what information to gather, how to express the findings of local desk research – and what information was left outside the country report. So information I have in my use for analysing is absorbed by local information gatherers. On the other hand the strength is that by using local people to gather information, it was possible to get information also from countries which otherwise would have been outside.

Research question of this thesis takes another point of view than the project itself had. Hence, I chose to use the content analysis method which let me understand the relevant meaning, the essence, of the responses usable in thesis. Content analysis is used to examine many kinds of data such as printed matters and texts in order to understand what they are meaning to people, which information is carried by them. This kind of understanding of something's content is not possible to obtain by using quantitative or even many qualitative methods (Krippendorff 2004).

The theoretical framework is build up by making a literature review of relevant previous literature in the research areas of clusters, cluster policy, and innovation in economic science added with concepts of institutionalism and instrumentalism from political science. To find relevant literature I have used EBSCO database and library of my university, Google Scholar and reference lists of articles and books. In addition to these findings recommendations for reading from professors have been usable.

The findings in previous research has been theorised in order to develop double-I model for data analysis. Theoretical framework is transmitted to empirical expectations in chapter 2.1.2 and 2.2.2, which can be compared with hypothesis. Further indicators represent the summary of the empirical expectations. Systematic categorising the secondary data by using three indicators, defined in chapter 2.3, makes it possible to find out differences among countries in respect to research question. Findings were collected cross-tabled in respect to countries and indicators to excel table to get an overview of situation. Results are presented classified by indicator in chapter 4 and discussed in chapter 5 on the ground of double-I model to test the usefulness and gather weaknesses of the model (Hirsjärvi et al. 2001).

3 Developing the framework of institutional and instrumental approach – The double-I model

Development the framework of institutional and instrumental cluster policy approaches builds on two discourses presented by Benneworth (2002): *economic geographers*, represented by Martin and Sunley and *geographical economists*, represented by Porter and Krugman. The double-I

model has been developed by theorising on empirical findings from previous cluster policy research. Economic geographers focus on the micro-scale clustering processes such as promoting innovations, engendering collective learning, and the development of associated club institutions (Benneworth 2002; Benneworth & Charles 2001; Feser & Sweeney 2002). Geographical economists set focus on clusters “*as a phenomenon of agglomeration, performing quantitative mapping and econometric analysis without examining micro-scale processes by which advantages are generated*” (Benneworth 2002, p. 315). Martin and Sunley (2003) call this “Porterian” cluster concept as a *brand* and even a *myth* (p.29) by cause of ultimate elasticity and misleading causality of the concept.

Political priorities and interests have shifted from macroeconomic issues, which are necessary conditions for competitiveness, toward microeconomic issues, which are required “*to translate macroeconomical achievements into real productive improvements in companies*” (Ketels 2004, p. 1). Different cluster approaches, which are capable to explain differences between national and regional economies, are very attractive for policy makers (Fisher 2002).

3.1 Instrumental approach to cluster policy

3.1.1 Theoretical background for instrumental cluster policy approach

The starting point for the instrumental approach is that a policy can be chosen. The instrumental cluster policy approach is built on the discussion of economic geographers (Benneworth 2002), focusing on micro-scale analysis of clustering processes. Economic geographers return to original roots of agglomeration theory by Marshall published in 1890 by pointing out complexity of clustering and focusing on both quantitative and qualitative advantages created by spatial concentration of industry as a dynamic process. Quantitative advantages can be calculated in money and are mostly connected to decreasing transaction costs. Qualitative advantages point out social and informal inter-organisational relationships of specialised high skilled labour and other actors, which create an industrial atmosphere; a cradle of innovations (Marshall 1920; Isaksen & Onsager 2004; Feser & Sweeney 2002; den Hertog et al. 1999; Havusela 1999).

The instrumental model is top down by its nature based on the condition of limited rationality. The government is acting as a facilitator and a moderator setting national priorities, formulating a challenging vision, goals and values, and setting up discussion groups between different actors including firms, competence institutes and governmental actors depending on what on each time is seen as possible to gain. The state makes the rules and formulations around cluster policy; it is an active actor on the field (Hertog et al. 1999; Fligstein 1991; Egeberg 1989; Fligstein 1991).

Each country and region has a unique cluster blend, selection of clusters and specialisations with different characteristics and the role of clusters in the economy (Gilsing 2001; den Hertog et al. 2001; Feser 2005; den Hertog et al. 1999). “[T]here is no single model of a competitive localized cluster” (Feser 2005, p. 19), but even under very similar conditions, very different cluster formations are possible (Steiner 2002). This uniqueness of clusters and regions makes it impossible to find standard cluster policy solutions. “*One-size-fits-all*”, “*best practice recommendations*” or “*fixed policy recipes*” are not realistic solutions (den Hertog et al. 2001; Sunley & Martin 2003; Raines 2000). Defining best practices and optimal incentive structures in innovative systems is almost tautological because clusters and cluster policy approaches vary among countries for instance concerning to institutional settings and innovation performance in clusters operating in value chains producing products and services for same end-product markets (den Hertog et al 1999). Working with smaller company groups ensures the continual usefulness of activities founded and encouraged (Benneworth & Charles 2001). The way cluster approach should be translated into practical policy tool is highly cluster-specific (Gilsing 2001; den Hertog et al. 2001). It is shaped by the existing policy system to hit the existing structures (Raines 2000) and long term innovation dynamics (Gilsing 2001; den Hertog et al. 2001). It is important to know in which grade it is sufficient to manipulate decision process by changing cause factors. Inside political administrative context the challenge is not only to find a view over the effects of policy means but also to understand conditions systematically to be able to control the different factors (Egeberg 1989).

Factors affecting to clustering are possible to manage and manipulate (Egeberg 1989). Focus is on clustering factors such as stimulating interactions, promoting innovation, collective learning, common knowledge, and encouraging establishing club institutions which facilitate clustering

behaviour (Benneworth 2002; Benneworth & Charles 2001; Feser & Sweeney 2002) to develop a competence base for practical actions (see Egeberg 1989).

Organisational knowledge creation is a complex non-linear interactive process characterised by a continuous and dynamic interaction between tacit and explicit forms of knowledge (Fisher 2002). Actors in clusters interact based on trade and innovation linkages, factor conditions or knowledge flows in common knowledge sharing (den Hertog et al. 2001). Access to information and learning are the most important reasons why companies cluster (Rosenfelt 1996). Information is flowing mostly informally. The dynamics of clusters rise through innovation spillovers, transparent labour markets and tacit knowledge which are transferred through personal interaction in the context of shared experience (Rosenfelt 2005). Personal contacts give people opportunities to behave creatively, to innovate and to learn. *“Clustering helps to form those skills and networks which provide opportunities for innovation and are hence of value to firms”* (Benneworth 2002, pp. 316-317). *“[S]taff in some firms enjoy... speaking to people in universities”* (Benneworth 2002, p. 324) which indicates that natural many-sided curiosity and interest towards also external matters and people among labour is innovation boosting. Therefore highly specialised cluster initiatives can lock unintentionally a region into an industrial specialisation or innovation competency which brings region to a standstill (Feser 2005). All industries are not even affected by the process of clustering (Steinle & Schiele 2002) or cooperation is not fruitful in every case. Then policy can create needless, destructive and costly cooperation concepts (Pentikäinen 2001).

Because cluster policy is a complex policy area focusing on several heterogeneous actors, understanding the natural networking behaviour and incentives for networking of different types of actors is highly necessary starting point for successful public initiatives (Pentikäinen 2001). Clusters are analysed to identify success factors, and furthermore to find the ways how to manage and manipulate these success factors. Goals and values are defined and described in order to be able to evaluate results (Egeberg 1989). Policy makers need sufficient information and competence about regional and national business environments, development barriers and potential, and about effects, limitations and opportunities of policy measures (Isaksen & Onsager 2004). The challenge is *“to identify the ‘embeddedness’ of regional production structures and to*

capture the systemic character of regional innovation systems” (Steiner 2002, p. 211). A general level cluster analysis, for instance quantitative analysis and cluster mapping, is accepted as a very first step in the cluster policy formation process. Quantitative analysis and cluster mapping shall be combined with other, less formal and more qualitative action-oriented methods at cluster level to be able to produce information which is adequate enough to support decision making and actions (den Hertog et al. 2001; Gilsing 2001; Benneworth 2004).

The starting-point of these methodologies is to define a network of suppliers, customers and knowledge-producing institutes, which firms need to be able to innovate successfully (den Hertog et al. 1999). Identification of emerging growth areas and roles that different organisations can play gives valuable information for policy makers (Romanainen 2001). Values and goals are needed to be defined so that evaluation can be made. If results of evaluation are not satisfying and filling the goals, efforts should be made to change the concept so that it fits the values and goals wanted (Egeberg 1989). *“Attention is moving away from simple reporting and description of cluster policy activity to more intensive investigations, if not challenges, about its substance* (Raines 2002b, p. 21).

Results of cluster analysis are used to motivate and facilitate public-private development discussions concerning challenges and goals of existing firms and potential or growing industries in purpose to find agenda of relevant issues to cluster policy (Feser 2005; den Hertog et al. 1999; Sölvell et al. 2003). A cluster policy adaptation is based on clusters’ situation, needs and basis as well as values and goals defined by policy makers on either regional or national level. Policies are tailored to specific clusters (Benneworth & Charles 2001; Isaksen & Onsager 2004). Cluster policy tools are formed focusing on clear positive effects to clustering and economic development rather than on quantifying its impacts (Raines 2000). Policy makers listen to and empower cluster leaders (den Hertog et al. 1999), focus on applying more strategic behaviour in innovation and sustaining the development of social capital (Nauwelaers 2001). *“Cluster policy makers must be able to mix and switch between various roles”* (den Hertog et al. 2001, p. 416; Gilsing 2001) depending on the specific context of each cluster because cluster initiatives have different benefits on different clusters. *“Strategies that are rational for individual organization may not be rational if adopted by large numbers”* (DiMaggio & Powell 1991, p.65).

A government can act as catalyst and initiator, process manager, broker and network connector (Gilsing 2001). Specialised services (Martin & Sunley 2003), specialised information, infrastructure and skills (Raines 2000; see also den Hertog et al. 2001) are provided to meet the special needs of clusters and to cover existing market failures (Feser 2005). A government can respond to market weaknesses uncovered by acting as demanding customer (Isaksen & Onsager 2004; den Hertog et al. 1999). A plenty of arenas and platforms, where different people with different ideas can meet, interact and co-operate, are established to promote innovation initiatives connecting to clusters (Romanainen 2001, see also Benneworth & Charles 2001). Export and international breakthroughs are promoted (Raines 2002). Stimulation of interaction and knowledge change among various actors in systems of innovation increases competence and strategic information overflow (den Hertog et al. 1999). Another form is cluster building to nurture technology-related activities among formally and informally linked firms, universities, other competence institutions and technology training institutions (Feser 2005). Governments are also willing to take risks of cluster building from scratch in spite of that cluster and network policies are uncertain investments that aim at desired future changing networking practices (Pentikäinen 2001).

Cluster policy is not a new or independent policy area, but *“as an innovative combination of existing policy instruments from traditional policy fields”* (Nauwelaers 2001, p. 100) contributing a necessary change. Cluster policies might be closely linked to parts of science and technology policy, including regional development, SME and industrial policy, innovation policy or a combination of these (European Trend Chart 2003; Isaksen & Onsager 2004; Raines 2000; Sölvell et al. 2003). It is used consciously as a policy tool in other policy fields. *“Cluster studies are now the cornerstone of industrial policy making in many countries”* providing *“a possibility to recast the role of private sector, government, trade associations and educational and research institutions and presents business development opportunities of firms all sizes, crossing traditional industry lines”* (den Hertog et al. 1999, p. 11).

Evaluation of a cluster policies is difficult (Raines 2000), but indicates which efforts should be made to change the behaviour, if needed, to fit the values and gain the goals defined (Egeberg

1989). The characteristics to successfully implemented cluster policy are high policy-making competence, highly targeted applications to the needs of the cluster members, which requires a full understanding of market, network and innovation dynamics which must be complemented by well-planned monitoring and evaluation and refinements of policy means, strong local actor(s) and internationally recognised research (Benneworth & Charles 2001; Raines 2000; Pentikäinen 2001; Hauknes 2001).

3.1.2 Empirical expectations based on the instrumental approach

“[C]luster as a paradigm: the view that the cluster concept has produced a radical and permanent shift in policy interventions in economic development” (Raines 2002a, p. 3).

Integrations of cluster policy are assumed to have differences among countries; countries have integrated and adopted cluster policy tailored to a country’s special needs, economic and political environment. In the instrumental approach a government sees itself as an active and independent actor which can choose between cluster policies and define their content and applications.

Focus of cluster policy is especially on creating and encouraging informal social networks and discussions in stead of setting up formal organisations (Marshall 1920; Isaksen & Onsager 2004; Feser & Sweeney 2002; den Hertog et al. 1999; Havusela 1999; Rosenfelt 2005; Benneworth & Charles 2001). Commercialisation of innovations is one important issue which connects firms, competence institutions and government together. Variety of cluster policy means indicates the instrumental approach. Policy means can be used on a national and regional level or both, and vary including different programmes offering financial, educational, advising and other specialised support and services, and arenas making varied-range meeting and cooperation possible (Gilsing 2001; den Hertog et al. 2001; Raines 2000; Benneworth 2002; Isaksen & Onsager 2004; Martin & Sunley 2003; Feser 2005; Benneworth & Charles 2001). Regional cluster development organisations or programmes use common, national cluster programmes added with own local services individually adjusted to hit the very special needs and expectations of both individual firms within cluster as well as each cluster. This creates space for new, creative

solutions and innovations, because institutional models do not set any limitations for cooperation. Commercialisation is one important issue in cooperation within and between clusters.

Cluster policy is top down by nature which means that the government actively prioritises leads and spreads cluster policy all over the country. It is possible to find several roles hold by the government. The government or its representative defines the framework, policy model and applications. This makes it possible to offer individual aid and support to each cluster, the national priorities and challenging vision for the future. The government invites firms to participate in discussion groups and cluster initiatives. Discussions between different actors from firms, competence institutes and governmental representatives give cluster participants opportunities to express their own needs and to get them fulfilled. A governmental actor, national or regional, a cluster programme or an organisation contacts firms and offers participation in projects or clusters.

Evaluation and continual refinement are used to ensure the continuous actuality of the policy means. Evaluation of results of cluster policy is made to check how goals are gained, how individual needs of cluster are filled and what should have been done. Evaluation offers important information how goals can be gained (Raines 2000; Benneworth & Charles 2001; Pentikäinen 2001; Hauknes 2001).

Words used in the context of a cluster might be direct imitation of Porter's cluster concept, because it has been a best-known concept in the field. A country may use the English word cluster, translation to national language and more adapted in national language expressing country's own view of the cluster policy structure and applications.

3.2 Institutional approach to cluster policy

3.2.1 Theoretical background for the institutional cluster policy approach

The starting point of the institutional approach is that a country adopts cluster policy mostly because other countries have it, pressed by outside to choose the fashion in spite of its own needs and demands in purpose to be able to manage instability, and several conflicting values and expectations by actors in national and international environment (Brunsson 2000; 2002). Implementation of cluster policy, based on isomorphism², represents institutional cluster policy approach in my work. Uncertainty, caused by poorly understood organisational technologies or policies, ambiguous goals and symbolic uncertainty created by environment, is powerful encouragement for imitation, modelling on other organisations, regulation and standards (DiMaggio & Powell 1991). Uncertainty and instability challenge policy makers continuously to take new decisions in order to manage the whole. Norms are important (Brunsson 2000).

Rational decision making is time-consuming because every possibility has to be researched. Fashion signals what should be done at particular moment, rule-following logic offers a ready cluster policy concept to be adopted – much time is saved and resources which had to been used to pre-research and forming solution, can be used for other purposes (Brunsson 2000; 2002). A country might adopt cluster policy ritually in purpose to build the reputation of a modern country which is supporting all those good things, namely innovation, business life and entrepreneurship, and that way to legitimate own existence and actions in this policy field (Sölvell et al. 2003; Meyer & Rowan 1991; DiMaggio & Powell 1991). Government is acting as an imitator.

The institutional cluster policy concept is an one-size-fits-all formula (Gilsing 2001; Martin & Sunley 2003; Nauwelaers & Wintjes 2002; den Hertog et al. 2001), very common, successful and professional branding including a set of positive associations and “*an image of high-productivity, knowledge-rich, decentralised, entrepreneurial and socially progressive economy*” (Martin & Sunley 2003, p. 29; Rosenfeld 2005). Clusters have a political charm (Rosenfeld 2005;

² *Isomorphism* means “constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions. [...] Coercive isomorphism results from both formal and informal pressure.” (DiMaggio & Powell 1991, pp.67 and 67).

Benneworth 2004; Steiner 2002). Politicians and decision-makers are often uncomfortable with the hard choices of real politics and eager to set focus on existing strengths instead of creating new activities (Benneworth 2002). Best practices recommendations make implementing easier. *“So the cluster concept turns out to be a nice little backyard capitalism, which is small enough to stay under control, but big enough to ensure regional dynamics”* (Steiner 2002, p. 209).

Institutional approach is more talking than acting, actions and speeches may be inconsistent to each other (Brunsson 2002). It is *ex-post* and bottom up by nature (Benneworth 2002) focusing on existing, statistically uncovered clusters as well as institutions, rules, standards, and structures, being therefore mostly sector-based approach (Raines 2000). The concept doesn't pay attention to what people do on micro level or explain connections between intentions, perceptions, statistics, substance and relationships (Benneworth 2002). The cluster concept is *“a key policy tool”*, imitated generally by Porter's Monitor Consultancy (Benneworth 2002; Martin & Sunley 2003), powerful international development organisations like EC/EU, the OECD, UNIDO (Raines 2000; 2002b; Benneworth 2004), World Bank, UNCTAD and ILO (Altenburg & Meyer-Stamer 1999), smaller policy-maker associations and consultant firms interested in cluster development (Raines 2002b) or neighbour countries as a result of for instance external benchmarking (see also DiMaggio & Powell 1991).

Cluster policy represents a new framework to deal with economic development and development of policies (Raines 2000; Benneworth 2004), a tool for promoting national, regional and local competitiveness, innovation and growth (Martin & Sunley 2003) taking into account needs of local economy (Steiner 2002). Debate about clusters and cluster policies is simplified on the very abstract level (Benneworth 2002; Altenburg & Meyer-Stamer 1999). The cluster policy concept is common and open, there is no strictly definitions what a “cluster” bears with for policy-makers (Raines 2000; Nauwelaers 2001; Isaksen & Onsager 2004; Malmberg 2004). Unclear causality of the cluster concept allows its usage in most situations (Martin & Sunley 2003; Malmberg 2004; Rosenfeld 2005). Policy makers stand rather freely to use the concept as they prefer. Theoretical roots are not so important (Nauwelaers 2001). Government is acting as an intermediate.

The standard package cluster analysis has systemic characters and is made to build legitimacy of cluster policy tools. Cluster analysis uses statistical, econometric and descriptive qualitative methods (den Hertog et al. 1999). Cluster analysis starts by identifying agglomerations of a country statistically³. The agglomerations found are mapped and analyzed, often by using input-output analysis, descriptive case study method, diamond model and econometric analysis (Porter 1990; 1998; Benneworth 2002; Raines 2000; Benneworth & Charles 2001; den Hertog 1999). Cluster analysis concentrates more on external meso level conditions instead of internal micro level conditions within a cluster. Benchmarking of cluster with external internationally important cluster(s) may be made to found and utilise best practice information (Raines (2004). The last step is either the selection of clusters which are going to be the focus of policy formulated (Raines 2004) or upgrading all established and emerging clusters being capable to take a part in different programmes, rather than attempt to create entirely new ones (Porter 1998). Because building or even facilitating innovative cluster from scratch is extraordinary challenging for even developed economies, it bears a big political risk (Feser 2005) which governments are not willing to take.

Based on cluster information gathered by quantitative data and descriptive case studies cluster policy is formulated (Porter 1990; 1998; Benneworth 2002; Raines 2000; Benneworth & Charles 2001). Implementing cluster policy is made by admitting and adopting ceremonially a standard solution (Martin and Sunley 2003), a package of functional myths such of institutionalised programmes, rules, routines and incentives, which are taken granted, supported by public opinion or the force of law (Meyer & Rowan 1991; Galaskiewicz 1991; Fligstein 1999) without any special adaptations to own needs, strengths and weaknesses, possibilities and threats of clusters within country's border. The cluster policy concept by Porter has been institutionalised and become the standard concept in the field, a package of institutional norms, both academically and in practical applications (Rosenfeld 2005; Isaksen and Onsager 2004; Brunsson 2000; DiMaggio & Powell 1991; Benneworth 2004). Porterian cluster policy combines theoretical and practical concepts and simple words and the strategy literature without any special interest to complex discussions about regulation policies (Isaksen and Onsager 2004). The formal structure of cluster

³ Statistical methods might identify broad industrial sectors which are immediately and statistically visible instead of working clusters (Martin & Sunley 2003).

policy reflects the myths of the institutional environment modelled instead of work activities of clusters (based on Meyer & Rowan 1991). Existing policy instruments or combination(s) of existing tools are recalled cluster policy, or direct imitation of cluster policy package from other countries, as a result of for instance external benchmarking (DiMaggio & Powell 1991).

Understanding nature of competition and clusters brings out and uncovers the roles a government can take in order to contribute cluster development (Porter 1998; 2000) and encourage competition instead of distorting it (Ketels 2004). A government raises discussions on the official forum in order to encourage companies to raise their aspirations and to move on higher levels of competitive performance (Porter 1998). Intense internal competition among firms, industries or clusters is an important driver for economic development; to support clusters is to support the local economy (Porter 1998; Ache 2002). Concentration and agglomeration together with existing competitive advantage leads to a virtuous cycle of dynamic cluster growth (Benneworth 2002). Location influences firm's choices: which competitive advantages and the types and variety of strategic positions firms can choose and successfully implement.

The government influences the macro environment by limiting, foreclosing or lowering entry barriers to industries with several mandates such as license requirements, limits on access to raw materials, different standards and regulations concerning for instance pollution and safety (Porter 1998; DiMaggio & Powell 1991). Roles of the government include creating favourable conditions for smoothly functioning free markets by establishing stable and predictable cultivated economic and political climate favourable for investment in R&D and knowledge creation, removing institutional mismatches and organisational failures within systems of innovation such as filling up the gap between public knowledge infrastructure and private needs or removing regulations that hinder the process of clustering and innovation (Hertog et al. 1999; Sölvell et al. 2003; Roelandt & den Hertog 1999; den Hertog et al. 2001; Porter 1998). Cluster policy will gain a higher level of innovation (both more and better innovations) and stronger competitiveness of country or region through addressing barriers which prevent clusters to succeed (Porter 1990; 1998; Benneworth 2002; Raines 2000; Benneworth & Charles 2001) weaknesses. These factors preventing success are lack of information concerning needs and supply between actors, lack of demanding and quality conscious customers, lack of teamwork and co-operation and mismatch

between competence institutions and needs of business life (Isaksen & Onsager 2004). Recommended cluster programs, agencies and organisations are founded by regional and national governments. Cluster programmes or organisations define minimal requirements to participants (den Hertog et al. 1999; Isaksen & Onsager 2004; Nauwelaers 2001; Raines 2000; Martin & Sunley 2003).

Especially issues related to creating international competitiveness are important (Isaksen & Onsager 2004). Foreign firms and import are wished welcome instead of recommending the exclusion, because they enhance cluster productivity and externalities contributing directly to investments, competition, employment, efficiency and innovations. Foreign actors are providing needed inputs and upgrading local demand conditions (Porter 1998). Cluster policy is used as marketing tool especially concerning foreign direct investments (FDI) (Raines 2000).

Cluster theories focus on removing barriers to productivity, productivity growth and innovations. Instead of market share, object is to increase dynamic improvements and trade resulting in the better productivity and innovations. Strong, internationally trading industries are not so much prioritised to extern, governmental support as industries serving domestic markets in the smaller scale, “[s]ubsidies and suspension of internal competition should concentrate on scale-sensitive areas, such as R&D and facilities investment” (Porter 1998, p. 248).

Inspections and evaluations are not used, because deviations uncovered undermine legitimacy of actors involved (DiMaggio & Powell 1991).

3.2.2 Empirical expectations based on the institutional approach

“[C]luster as a fad: the belief that the cluster policy adds little to the existing policy framework” (Raines 2002a, p.3).

In the institutional approach the story of cluster policies between countries can be assumed to be rather similar and following mostly the Porterian model. Adoptions of cluster policies have clear

convergences in European countries; same kind of cluster policy fashion can be found in different countries. Policy can't be chosen but imitated.

Policy makers seem to be under pressure to find clusters in as many regions as possible for fear to offend some regional interests (Martin & Sunley 2003). Irrational cultural actors spread institutional fashion; policy does not have roots deep in the practical economic life. Policy-makers will avoid any political risk connected to cluster policy; it should be "politically safe and correct". Policy makers might use cluster policy as marketing tool outward. There are no specialised formulations of the problems cluster policy is meant to solve, only formulations on general level; no rhetoric concerning alternative solutions usable in stead of cluster policy.

Government is imitating package solutions from abroad or some consulting organisation which has almost authority-like position in the field. Cluster policy has general implications; most probably cluster programmes and cluster organisations including packages of financial support, which do not necessary answer to country's special needs and problems (Benneworth 2002; Martin & Sunley 2003; Raines 2000; 2002b; Benneworth 2002). Financial support is quite easy to arrange and do not bear political risks. Other applications might be targeted to macro environment in purpose to stabilise and create a smooth economy. Cluster policy is more talking than acting. Under analysis I will look after words and typical expressions such as "critical mass", "building competitiveness", "innovations", "diamond factors" which indicates institutional approach if expressions are not connected to practical many-sided tool kit. Concepts such as "best practice", "key policy tool", "recommendations", "incentives" and "marketing tool" can also be found in data indicating institutional approach of cluster policy.

Cluster policy is assumed to be bottom up by nature. Initiative for projects, innovations and cluster formations are taken by either individual firm or competence institute or a group of them, not by cluster programme or organisation as in institutional approach. Government is rather inactive in different implications but leaves the activities to business and other organisations connected to different value chains.

Cluster analysing within institutional approach is methodically most likely statistical, econometrical and “*simply presenting limited case studies*” (Steiner 2002, p. 211) focusing more on finding clusters, identifying formal relations between the organisations within a cluster and drawing boundaries around them than studying micro level factors such as social relationships and what people are actual doing.

Word used in the policy context is cluster, directly imitated by Porter. There might be one direct translation in native tongue but no further applications which requires more applying, considering attitude.

3.3 Indicators

Based on empirical expectations I have formed three indicators which are supposed to uncover differences between cluster policies among countries. In the table below these indicators are collected and later used in data analysis in chapter 4.

Cluster-related words and definitions can be expected been many and vary in use in countries where cluster concept has been used instrumentally. Indicator Cluster policy tools include several measures which can be expressed in data. A many-sided toolkit with many different aids and support alternatives tailored individually to each cluster indicates the instrumental cluster policy approach. A simple toolkit with package solutions including mostly financial support indicates the institutional cluster policy approach. Strong Role of government in policy formulation and leadership indicates the instrumental approach while bottom-up approach indicates the institutional cluster policy approach where talking is more common than acting.

Table 1 Criterion of approaches

Indicator	Instrumentalism	Institutionalism
Cluster related words and/or definitions in national language	“Cluster”, direct translation besides one or many own words / concepts in national language(s)	“Cluster” and only one direct translation to national language(s) if any
Cluster policy tools	Many-sided toolkit: financing, research, development and consulting services Combination of measures tailored for each cluster Top-down	Mostly financial programmes Package solution Used as marketing tool outward Bottom-up
Role of government	Innovator, facilitator, even “entrepreneur” More risk-taker	Imitator, intermediate, “bureaucrat” Risk averse

4 Cluster policy data from 20 European countries

4.1 Cluster related words and/or definitions in the national languages

Most countries have reported to have more than only the English word “cluster” added with one translation. Only Iceland, Luxembourg and Turkey have reported this pure situation of one and one: English word “cluster” and one translation in national language(s). Belgium has reported that the word “cluster” is much used both in Dutch and French; there is also one direct translation to French. Cluster definitions used in Belgium are two, one Flemish “*as innovation and production systems operating on a meso-economic level*” and one Walloon “[*t*]he cluster is an organizational approach of the production system set on the initiative of the companies (with, if need be, the participation of research centres) and characterized by: a co-operation framework encompassing related activities, [*and*] the voluntary development between the companies of a

complementary relationship, vertical or horizontal, profit or non-profit, the promotion of a common vision of development” (Michels 2007, p. 1).

Denmark and Romania has “cluster” in common use besides to one longer concept in national language in Romania and one direct translation in Denmark. There are two older concepts in Denmark which are not so regular any more. The government of Romania has defined “cluster” *“as being groups of performers, users and/or beneficiaries, formed with the aim to implement the good practices of EU level in the Romanian environment, in order to increase the economic competitiveness of the economic operators” (Ionescu 2007, p. 2).* *“In Portugal when referring to the economic (regional or industry) cluster, the English word 'cluster' is not translated” (Coimbra 2007, p. 1).* Within professional translations without technical terminology there are some translations used in Portugal of which two is reported.

United Kingdom uses – naturally – the word “cluster”, but has four different cluster definitions in practical use. In Spain *“[c]luster is the word commonly used. However in 2006 the national government launched its first cluster program at the national level, within this program the term cluster is substituted” (Müller 2007, p. 1)* for four concepts in national language. In Austria, Germany and Switzerland the word “cluster” is in common use besides by four definitions with own words in one national language, German.

In Ireland *“[t]he word cluster is frequently used in Irish policy circles though there is no overall accepted definition of what constitutes a cluster. The terms 'clusters' and 'networks' are often used interchangeably”* in spite of that there are *“crucial differences between networks and clusters: networks usually have somewhat restricted membership and a specific set of goals while clusters are open in terms of both membership and goals. Networks can often involve formal contractual arrangements while clusters have none. Clusters have a geographic and usually a sectoral focus while membership of networks does not normally depend on location or sector. A clear overlap occurs in that a great deal of networking takes place in clusters. In general, however, vertical linkages are likely to be more prominent in clusters than networks” (Martin 2007, p. 1).*

In Bulgaria, Finland, Greece and Israel the word “cluster” is not used. Bulgaria has four words or definitions used for cluster - Finland has respectively 10 - of which two are direct translation to national languages. Israel have three quite direct translations while Greece has reported two concepts, both with own words in national language.

France has one direct translation “competitive cluster” used in political and academic discussions while concept used in Italy is “industrial district” translated to Italian. The Netherlands has not responded to the question concerning which word(s) is/are used in the country in the connection of cluster.

4.2 Cluster policy tools

4.2.1 National and regional cluster programmes

Countries which have national cluster programmes, but no regional programmes are Bulgaria, Finland, Luxembourg, Portugal and Romania.

Countries with no national cluster programmes but where clusters and cluster programmes plays an important role in regions are Belgium and Iceland with its “*Growth Agreement*” (Kristinsson 2007, p. 10) application, Italy, Switzerland and Turkey. Government on state level does not have any effect for cluster policy in the country; cluster policy is practised on regional level, partly initiated by regional governments. In Switzerland four of 26 cantons have own independent cluster programmes, while the country does not have any national cluster programmes. In Turkey there are no national cluster programmes but four regional cluster analysis in progress purposing to establish a basement for national cluster programmes and cluster policy progressing in coming years.

Booth national and regional cluster programmes are used in nine countries: Austria, Denmark, France with four national cluster programmes added with 22 regions with “*own complementary scheme*” (Koskas 2007, p. 5), German “*where almost all 16 German Länder (federal states) and a number of local authorities have initiated cluster-based cluster programmes*” (Hauser 2007, p.

2), Greece, which has the “*explicit, well organised, systematic, strategic (with long-term scope) national cluster policy*” (Theofanides 2007, p. 18), Israel, where cluster policy on also national level is defined, the Netherlands, Spain and United Kingdom.

Denmark report explained that the country does not have any national cluster development programme. However Denmark has the same kind of cluster policy application than Finland reported as national cluster programme, which is driven Regional Centres of Technology (RCT) in Denmark and Centres of Expertise (CoE) and TEKES Technology Programmes with regional offices respectively in Finland. “*RCT-programme is a national support-programme which facilitates supports to 13 regional centres of technology (RCT)*“ which “*is cooperation between business, institutes of education, knowledge mediators and other relevant actors within a specifically defined professional and geographical area*” (Schou 2007, p. 6). Finland has not reported any regional cluster programmes, but it has 19 Regional Councils operating as regional development and planning authorities. Danish Regional Growth Forums (RGF) are pure regional applications.

On the regional level the whole set-up is very fresh in Denmark, implemented during 2006-2007. Regions are obligated to “*develop spatial planning aimed directly to business-clusters*” (Schou 2007, p. 5) and to involve local trade and industry, local governments, the labour market parties and the knowledge institutions in the development of growth and environment. “*One of the central tasks of the RGFs is to compile a regional strategy for business development, which is not a specific cluster development plan, but it might contain elements that supports cluster [...] The implementation of the strategy is done by other independent juridical units e.g. cluster organisations, entrepreneurial support organisations, the communal authorities*” (Schou 2007, p. 5-6). There is also “*a private initiative set up by a group of Danish consultants with national expertise on innovation, regional development, clusters etc.*” called REG LAB which “*gathers, develop and communicate methods, ideas and 'best practice'*” within the field. REG LAB has played an important role in the growth of consciousness in recent years in Denmark. “*Centres of Expertise of the CoE Programme are mostly situated in the science parks. In addition, the science parks have cluster programs of their own*” (Aaltonen 2007, p. 61).

A country which does not have either national or regional cluster programmes is Ireland. Ireland has networking initiatives which have partly same kind of characteristics than cluster programmes. In Italy there are no national cluster programmes, no *“legal or administrative entities which deal institutionally with industrial districts”* (Mussati, Pedrana & Postigliola 2007, p. 3). Italy has reported two regional cluster programme directed towards industrial districts offering specialised services, training and know how, not any financial support.

4.2.2 Pure funding or many-sided toolkit?

Eleven countries: Austria, Belgium, Bulgaria, Finland, Greece, Iceland, Luxembourg, Portugal, Romania, Switzerland and United Kingdom have a many-sided toolkit including financing, research, development, education, marketing and consulting services offering specialised support such as answers to concrete questions on technological innovation, list of relevant contacts and information useful in cluster development. The support offered for each cluster is a combination of different programmes, often national cluster programmes, tailored for cluster’s needs by regional cluster organisations. Cluster policy offers *“Financial support, expert work and training as needed”* (Kristinsson 2007, p. 11).

Characteristic for those eleven countries is *“clustering support policy”* (Michels 2007, p. 7) where *“independent assessment”* (Michels 2007, p. 7) is formulated for each cluster, based on *“elaboration of detailed needs analysis for training of the cluster employees; development and delivery of specifically tailored training programmes”* (FED 2007, p. 4). *“Besides financial support (through general incentive system providing grants, zero-interest loans and venture capital to companies, universities, technology, design and training centres and other sector institutions), there are other supporting activities, namely the setting up the collaborative platforms, carrying out dissemination and demonstration events etc”* (Coimbra 2007, p. 6).

Cluster organisation *“seeks connection with other grow-regions in Europe through exchange of experience and knowledge and direct contacts with economic actors and policymakers”* (Michels

2007, p. 3) and arranges “*match-making events in order to establish clusters and networks and to allow companies to find partners*” (Michels 2007, p. 8). Cluster policies offer “[*a*]id to common clusters’ activities [*and*] [*a*]id for individual cluster member” (FED 2007, p. 4), “*different aid to projects depending on the cluster at hand*” (Mas 2007, p. 25) “*The aims and benefits are to share know-how and competencies, create synergies, foster cooperation among companies from different sectors, to share risks and costs associated with new or developing technologies*” (Reding 2007, p. 6).

Italy and Turkey do not offer financial support in cluster programmes but offer other business related services as needed such as “*training, information and consultancy*” (Eraslan 2007, p. 4), “*training and know-how*” (Mussati et al. 2007, p. 4) and “*its [regional cluster programme] skills as a service for the project*” (Mussati et al. 2007, p. 6).

Creating industrial atmosphere is important in Finland, Israel and United Kingdom. “[*T*]he securing of the knowledge creation and utilisation processes and structures, paying more attention to R&D and education, creating a more innovation and technology friendly atmosphere and reaching for internationalisation and the more comprehensive understanding of global economic changes” (Aaltonen 2007, p. 59). “*The main objective of the programme is to create a culture and environment within which Northern Ireland will prosper by using its knowledge, skills, and capacity to innovate*” (Mas 2007, p. 11).

Own activity and responsibility of participating firms is emphasized in many countries, reported in Luxembourg, Belgium and Finland. “*The success of the cluster is dependent upon the continuous input by participating companies and their commitment to the projects, the exchange of ideas and the regular communication of their needs and capabilities*” (Reding 2007, p. 4) representing “*a view to durability, the cluster should become to the utmost 'self-supporting' from a financial point of view. At the end of the launching stage, the public support turns into a sliding-scale one*” (Michels 2007, p. 7). “*TEKES acts also as a catalyst for private R&D funding, since the involvement in the TEKES projects necessitates own financial involvement of the company*” (Aaltonen 2007, p. 5).

There are seven countries which have reported offering mostly financial support as an objective of cluster programmes are Denmark, France (on national level, regional programmes are not reported), Germany, Ireland in network policies, Israel, the Netherlands and Spain. The reported French national cluster programmes include mostly financial support. *“The aim of a competitiveness cluster is to concentrate at the same location, the talent incorporated within public and private research units, teaching facilities and the expertise of business enterprises, in order to establish working relationships which develop a cooperation environment and promote partnerships, to work on new projects, resulting in innovative advances, economic efficiency and job creation, and which should enable those players involved to attain leading positions in their field”* (Koskas 2007, p. 6). But here is one remark important, France has left 22 regional cluster programmes, *“which all have their own complementary schemes”* (Koskas 2007, p. 5), unreported, so any total picture of French cluster policy is impossible to draw. Analysis is based on reported information.

In Denmark most regional programmes have rather general objectives listed as tasks such as *“better cooperation with R&D institutions, creation of commercial networks and improvement of ability to attract high-qualified labour and specialists”* (Schou 2007, p. 15). Some programmes have a tool kit consisting of *“[t]raining, marketing and guidance”* (Schou 2007, p. 20) besides of financing. German the most of national and regional programmes are about funding, one national programme offers also marketing support, a common platform for information exchange between networks on thematic topics and personal consultancy of each network during the bi-annual evaluation process.

The Netherlands has developed a package solution as cluster programme tool. *“The renewal [of innovation instruments] consists of creating two main features: - Basic package [... and] Programme-based package”* (Jansen 2007, p. 27).

Internationalisation and attracting foreign direct investments (FDI) are mentioned as objectives in countries Belgium, Bulgaria, German and United Kingdom. In Belgium government *“enhances Flanders position as the gateway to Europe for inward investors. The agency identifies, informs, advises and supports overseas enterprises by establishing production and research facilities,*

contact centers, headquarters, logistics operations and the like” (Michels 2007, p. 3). While in Bulgaria *“development of clusters [is seen] as a factor for attracting of direct foreign investments in particular sectors along with concessions and public-private partnerships and the development of industrial zones / parks”* (FED 2007, p. 12). *“UK Trade and Investment (UKINVEST) is the national agency responsible for attracting FDI. UKINVEST uses clusters as a marketing tool to attract FDI in specific sectors from abroad”* (Mas 2007, p. 45).

Denmark has formed formal requirements for cluster programme participant because *“not all business clusters have guaranteed positive prospects for the future, and not all places should be basing their foundation of living on existing clusters”* (Schou 2007, p. 5). German selects the clusters which will be offered support from cluster programmes, *“strengthening the strongest”* (Hauser 2007, p. 21) focusing on critical mass and competition as catalyst.

“Evaluation provides information and understanding on the dynamics of research and development practice and the factors contributing to its success or failure” (Aaltonen 2007, p. 23). Austria, German and Greece have reported to have either evaluation system or made some evaluation to check the direction and effects of cluster policy tools used in practice.

4.3 Role of government

All countries have reported that at least one ministry or governmental department and several agencies connected to ministries have responsible for cluster policy, and are initiators behind the most cluster programmes. *“Denmark has three main ministries, which are responsible for the formulation of cluster policies at national level”* (Schou 2007, p. 4), but not one ministry is initiative taker of cluster programme on national level, but regional authorities are initiative takers behind regional programmes. Finland has a wide scale of governmental representatives, beginning from Parliament and the Cabinet through ministries to sector specific research institutes which are responsible for designing and implementing cluster policy. *“The Regional Development Act (602/2002) sets the guidelines, goals and division of responsibilities in implementing the regional development policy”* (Aaltonen 2007, p. 5).

“Engaging the private sector is always the biggest task to tackle and during that process one needs to involve ‘the right people’ or business leaders” (Kristinsson 2007, p. 12). Exceptions concerning cluster policy implementations here are Ireland which has reported to have network policy, Italy which does have policy to promote industrial areas and Switzerland which does not have any cluster policy in national political order, but economic policy, business promotion and innovation policy, which, however, affect to cluster development in the country as well. In Switzerland four of 26 cantons have own interdependent cluster programmes, while country does not have any national cluster policy

Countries which have defined cluster policy implicitly on national level are Bulgaria, France, Greece Israel, Luxembourg and Spain with *“development of policies for encouragement the groupings of firms in clusters based on territorial and sectoral principle”* (FED 2007, p. 2). *“We find explicit cluster policy in the Government Program 2005-2008”* (Ionescu 2007, p. 13). *“The main objectives of the Austrian companies, especially SMEs, by supporting co-operation, innovation, technology and technology transfer. There is also special objective to support the formation and emergence of centres of excellence”* (Enichlmair & Oberholzner 2007, p. 21) France has national level decision to support clusters which supported by regional level. *“[T]he French government has decided to grant an official label and to support competitiveness clusters, including 16 which already have, or will have a global vocation”* (Koskas 2007, p. 3).

There is no clearly defined, explicit formulation for cluster policy per se on national level in Austria, Belgium, Denmark, Finland, Romania, Switzerland and Turkey. *“At national level cluster policy is not very high in agenda”* (Schou 2007, p. 23). *“At the national level there is no explicit cluster policy (measure), however, there are several strategic national policy guidelines regarding economic growth, innovation and employment implicitly including cluster policy (measures) [...] At the regional level, cluster policy (measures) is more prominent and explicit”* (Enichlmair & Oberholzner 2007, p. 16). *“Cluster policy is not mentioned as such in the national science, technology and innovation strategy, but it is implied in it”* (Aaltonen 2007, p. 58). There is no legislation concerning cluster policy, or explicit cluster policy definitions, but it can be found implicitly in government programmes, other official documents and some laws.

4.3.1 Government as innovator and facilitator

In countries Bulgaria, Finland, Israel, Luxembourg, Portugal, Romania and Switzerland cluster policy is used as a tool, as an *“integrant part [of] all governmental policies”* (Ionescu 2007, p. 25) such as innovation, network, regional, SME, enterprise development, economic development, science and research, education and technology policies. *“The cluster policy is seen as an instrument to improve competitive advantage and to achieve synergies between public and private research”* (Reding 2007, p. 11). *“At the regional level cluster policy is pursued more in an ad-hoc manner rather than through formal programmes. Nevertheless, the regional ad-hoc cluster strategy may utilise national programmes when developing single clusters”* (Enichlmair & Oberholzner 2007, p. 16). *The Government acknowledged clusters as an instrument for fast economic growth and started applying measures for their promotion”* (FED 2007, p. 9). *“Clusters are considered as important by 2 of the Government’s ministries that have developed policies and programmes to this respect”* (Bahat & Bahat 2007, p. 25).

Clusters are considered as a tool to promote local and regional economic development, as instruments to facilitate innovations. *“The cluster policy is considered as a tool for the improvement of the competitiveness of Bulgarian business, and in particular –of SME* (FED 2007, p. 9).

Even entrepreneurial holding of government for cluster policy was reported in Portugal. Cluster programmes are direct under governmental power, which creates also political turbulence around cluster policy. President of AFIA, the industrial association of component manufacturers in Portugal, argues: *“It would seem normal to me that we were asked about our opinion on a project, its objectives and possible benefits, instead of the decision being made by some “enlightened” person that, after 2 or 3 years, leaves office because the government was replaced”* (Coimbra 2007, p. 4).

“There is an increasing awareness of clusters; however, decision-makers do not realize the importance of the issue” (Eraslan 2007, p. 8). *“Lack of common understanding and needs of cluster initiatives (by practitioners, policymakers and cross-ministries)”* (Kristinsson 2007, p.

15). *“What is needed is full support by policy- and decision-makers to upgrade current situations”* (Kristinsson 2007, p. 15). As main obstacle for cluster policy adoption is reported *“late awareness among decision makers and Government bureaucracy, as well as the difficulty to convince firms to “cooperate while competing””* (Bahat & Bahat 2007, p. 27). Creating *“innovation and technology friendly atmosphere”* is also mentioned as an objective (Aaltonen 2007, p.).

“Since long, economic clusters attracted the attention of government agencies having specifically in mind to foster the creation of new clusters and to support the development of existing ones” (Coimbra 2007, p. 11). *“Obviously, a change of attitude in the perception of clusters and the importance they have in the economy is to be remarked in the last few years; their importance grew very fast, unto they became integrant part of all the governmental policies”* (Ionescu 2007, p. 25). *“The current situation is still evolving and in the case of Iceland, we have only just begun to explore what possibilities and opportunities exist”* (Kristinsson 2007, p. 15). *“At the level of the Länder, programmes fostering network structures between science and industry have been implemented since 1980s [...] the federal government started its first cluster programmes in the mid-1990s. But only in the last two or three years the Länder started to use the term “cluster policy””* (Hauser 2007, p. 13).

“National focus were starting up during the 1990’s – today is has shift to a regional focus” (Schou 2007, p. 28). *“The newest 'trend' in innovation policy seems to be moving more towards national focus away from strong regional emphasis. The vast number of regional projects seems to include a lot of overlapping and lack of cooperation and knowledge transfer”* (Aaltonen 2007, p. 60).

4.3.2 Government as imitator and intermediate

Countries which have reported clear imitation are Iceland, the Netherlands and Turkey. As models are seen EU, neighbour and other countries, which have useful and functioning solutions for cluster policy implementing. *“There is an EU tender about forming national cluster policy. This project will be very helpful for the formation of national cluster policy”* (Eraslan 2007, p.

10). *“Good examples and case studies are close (as in the Nordic countries) so there is no reason not to learn from others”* (Kristinsson 2007, p. 15). *“The fore mentioned Innovatieplatform (Innovation Platform) could bear the title “cluster council. The platform was formed in the course of the election round of 2003, when stakeholders from business, education, knowledge institutions and societal organisations together pleaded for a boost innovation in the Netherlands. [...] The Innovatieplatform has been designed after TEKES, the main public funding organisation for research and development in Finland”* (Jansen 2007, p. 32).

Countries which have reported some kind of modelling are Bulgaria and United Kingdom which has benchmarked own cluster policy applications against other EU members, and United Kingdom also against OECD standards. Denmark has used an acknowledged expert as consult in cluster policy formulation, Iceland refers to Porter, as also Ireland besides of Ffowcs-William, a respected, travelling expert from New Zealand educating countries for cluster development based on Porter's cluster concept (Cluster Navigators 2007). Spain has direct contact to Porter indicating many impulses. United Kingdom was connected to Porter concerning cluster mapping made in country in 2000. *“The Steering Group worked in consortium with Trends Business Research to provide the first UK Cluster Mapping project, ‘A mapping of cluster activity in titled the UK Business Clusters in he UK: First Assessment’, published in February 2001. The report followed Porter on clusters and developed a systemic national map of cluster activity after discussion in the regions and industry directorates in DTI”* (Mas 2007, p. 49). *“[T]he most recent general assessment was a UK DTI paper titles Competitiveness: moving to the next stage, published in 2003. The paper, written in cooperation with Michael Porter, points that the UK's success in raising prosperity has been due to its strength in science and engineering, its supportive market framework, and its improved macroeconomic environment”* (Mas 2007, p. 50).

Some countries are reported to follow or target different goals mostly set by EU. Austria has Barcelona targets, Finland and Romania have Lisbon strategy to take into considering in cluster policy implementing.

Spain, Turkey and United Kingdom have been mapping to identify and label clusters in order to select clusters to be targets for policy applications. United Kingdom has finished a cluster

mapping project *“the first UK-wide systematic study of existing clusters. This formed part of the strategy of the UK Clusters Policy Steering Group to identify barriers to cluster development and recommend appropriate new policy initiatives to Cabinet”* (Mas 2007, p. 7). United Kingdom has best practice distribution in cluster programme.

4.3.3 Government as a risk-taker

Austria, Belgium, Denmark, Finland and Germany promote cluster building from scratch. A cluster programme *“organizes match-making events in order to establish clusters and networks and to allow companies to find partners”* (Michels 2007, p. 8). *“[E]xchange of information and experiences in cluster building, best practices and lessons learned”* (Hauser 2007, p. 3). *“today’s cluster policy stretches across a much broader field of implementation: 1) It pushes forward the creation of new clusters [...] 2) It helps to strengthen already existing clusters, which are in an emerging or saturated stadium [...] 3) Concerning the emerging/saturated clusters the policy also promotes linkages between clusters of the same sector located in different federal states or countries”* (Enichlmair & Oberholzner 2007, p. 24).

Department of Trade and Industry (DTI) in United Kingdom has expressed cluster policy as *“to generate stable conditions that foster the development of clusters, but not to artificially create them”* (Mas 2007, p. 2). German upgrades the existing clusters, not creates new ones.

4.3.4 Private activity

In Israel there are two regional cluster programmes which are initiated by a private persons, both by entrepreneurs and philanthropists. These programmes are *“Start Up Jerusalem”* (SUJ), board headed by Michael Porter, and Industrial Parks, which promotes *“establishing industrial parks in peripheral regions, in which star-up firms receive administrative & logistic support”* (Bahat & Bahat, p. 14). SUJ is formed as non-profit organisation to promote economic development and job creation in Jerusalem. *“The programme initiates and operates its own plans, in co-ordination*

with the cluster's members (such as web-site to promote cultural institutions in Jerusalem etc.). No financial support is given to the participating firms by SUJ” (Bahat & Bahat 2007, p. 13).

4.3.5 Lacking cluster policy

“A cluster policy would come close to industrial policy and Switzerland explicitly does not follow any industrial policy” (Bergmann & Weber 2007, p. 2). “[T]here has been no explicit cluster policy though a number of clusters have developed as a result of national enterprise development policy implementation” (Martin 2007, p. 15). “[C]luster policy' or 'cluster programmes' as a vehicle of active economic development is not a primary policy issue. There a Swiss cantons who promote cluster institutions [...], but this is more like an additional measure so ensure economic wealth. It is broadly accepted in Swiss politics that a sound and attractive business environment is a better way of supporting business than too much government support and programmes” (Bergmann & Weber 2007, p. 17). “Economic policy in Switzerland can be characterized as being liberal and non-interventionist [...]: There is no industrial policy, there is no explicit cluster policy at the national level and there is also perception that there is no need for a specific cluster policy. It is a fact that a number of industries in Switzerland are highly geographically centred (life science sector in Basel, financial industry in Zürich, watch and precision industry in the Swiss Jura Arc etc.). These industries exhibit the characteristics of clusters. However, these industries have developed without explicit government support” (Bergmann & Weber 2007, p. 21).

“Italian districts were created without help programmes or help locally on behalf of the central government. They have developed at different times in different ways in different productive sectors in which they are specialized” (Mussati et al.2007, p. 3). Italy has two regional cluster programmes to promote industrial districts offering training, knowledge, start-up services such as research actions, technical transfers and the application of monitoring, prevention, reduction of natural risks and environmental planning directed to the sector of “Earth Observations” (Mussati et al. 2007, p. 4-6). “The system of organization of production is characterized by: capability to achieve high specializing levels, which guarantee a high grade of competence and efficiency; quick and easy access to the whole range of specializing of the productive chain; availability of

elevated local technical competence; a highly qualified workforce; an industrial atmosphere which permits a rapid diffusion of ideas; an effective mix of co-operation and competition; well educated entrepreneurial activities; a context of consent with a vast number and ample varieties of institutes of support for economic activity” (Mussati et al. 2007, p. 6).

“[C]ertain fields of economic policy, business promotion and innovation policy also affect cluster development” (Bergmann & Weber 2007, p. 2) and “[s]ome Canton actively support Cluster initiatives, partly only in an more idealistic way, partly also by giving financial support to cluster initiatives” (Bergmann & Weber 2007, p. 3). “Though a number of enterprise development policy documents have referred to the importance of cluster there has been virtually no explicit articulation of how a cluster policy should be developed or implemented” (Martin 2007, p. 17).

4.4 Summary of data

Results of the content analysis are collected below in table 2.

The analysis is made stipulated concerning to countries’ which has reported not to have cluster policy applications. Switzerland has a few regional cluster policy applications. Ireland has network policy and Italy a few applications targeted to its industrial districts. Some remarks are important to make. Italy (*) has no cluster policy but a few programmes targeted to promote industrial districts or zones. Analysis is made by seeing existing Italian policy. Ireland (**) has no cluster policy but network policy; the analysis is made by seeing the existing policy. Switzerland (***) has no cluster policy but only four cluster programmes driven by regional governments. The analysis is made by using information about existing policy.

Table 2 Summary of results in instrumental and institutional framework

Indicator	Instrumentalism	Institutionalism
<p>Cluster related words and/or definitions in national language</p>	<p>Austria Bulgaria Finland France ~ Germany Greece Israel Italy* Romania Switzerland*** United Kingdom</p>	<p>Belgium Denmark France~ Iceland Ireland** Luxembourg Portugal Spain Turkey</p>
<p>Cluster policy tools</p>	<p>Austria Belgium Bulgaria Finland Greece Iceland Italy* Luxembourg Portugal Romania Switzerland*** Turkey United Kingdom~</p>	<p>Denmark France Germany Israel Ireland** The Netherlands Spain United Kingdom~</p>
<p>Role of government</p>	<p>Austria Bulgaria Finland France Greece Israel Ireland** Italy* Luxembourg Portugal Romania</p>	<p>Belgium Denmark Germany Iceland The Netherlands Spain Switzerland*** Turkey United Kingdom</p>

In the table 3 are results form content analysis collected by indicator for each country. The most results are not clear instrumental or institutional approach.

Table 3 Categorisation of countries

	Words / definitions	Cluster policy tools	Roles of government	Total
Austria	Instrumental	Instrumental	Instrumental	Instrumental
Belgium	Institutional	Instrumental	Institutional	Institutional
Bulgaria	Instrumental	Instrumental	Instrumental	Instrumental
Denmark	Institutional	Institutional	Institutional	Institutional
Finland	Instrumental	Instrumental	Instrumental	Instrumental
France	both	Institutional (on national level)	Instrumental	both
Germany	Instrumental	Institutional	Institutional	Institutional
Greece	Instrumental	Instrumental	Instrumental	Instrumental
Iceland	Institutional	Instrumental	Institutional	Institutional
Ireland**	Institutional	Institutional	Instrumental	Institutional
Israel	Instrumental	Institutional	Instrumental	Instrumental
Italy*	Instrumental	Instrumental	Instrumental	Instrumental
Luxembourg	Institutional	Instrumental	Instrumental	Instrumental
The Netherlands	--	Institutional	Institutional	Institutional
Portugal	Institutional	Instrumental	Instrumental	Instrumental
Romania	Instrumental	Instrumental	Instrumental	Instrumental
Spain	Institutional	Institutional	Institutional	Institutional
Switzerland***	Instrumental	Instrumental	Institutional	Instrumental
Turkey	Institutional	Instrumental	Institutional	Institutional
United Kingdom	Instrumental	both	Institutional	both

5 Discussion

5.1 Countries representing the instrumental approach

Eight countries represent the instrumental approach to cluster policy. Austria, Bulgaria, Finland, Greece, Israel, Luxembourg, Portugal and Romania have cluster policy adoptions which fit the indicators of instrumental approach presented in the chapter 2.1.2. Summary of findings is presented below in table 3.

These countries have explicitly studied which are the factors the state can influence through policy applications. Cluster policy was consciously chosen as an instrument and implemented based on the observed needs. Nurturing a country's economy, competitiveness, innovation and competence building are issues addressed by all these countries. Cluster policies have a wide focus; from the single firms to clusters and megaclusters including many clusters. Cluster organisation representatives visit firms regularly, which indicates good and near relationships between the practice and the support organisations and detailed studies on the cluster level create good knowledge of the needs of the firms and clusters in question. Creation of an industrial, innovation-oriented and technology-friendly atmosphere is one objective in many countries representing the instrumental approach.

Cluster policies in those eight countries are top-down by nature, meaning that the government is an active player which formulates visions, defines the content of policy and adapts solutions customised to the needs. Governments have initiated cluster programmes implemented both on the national and the regional level. Initiative for cooperation, innovation, or cluster building come mostly from governmental cluster organisations, but initiatives from firms or competence institutions are also possible. Practical cluster policy actors are often regional organisations, located near firms and competence institutes knowing the private and public actors, micro environment of region as well as end-markets in which the firms operate.

Only Bulgaria, Greece, Luxembourg and Romania have an explicitly defined, official cluster policy. Bulgaria has no national or regional cluster programmes financed by the government but several projects are directed to cluster development. Austria, Finland, Portugal and Romania have no explicit, independent cluster policy but the cluster concept is implicitly included in many fields of policy-making. Cluster policy is used consciously to ensure competitiveness by economic, innovation and knowledge promotion, besides other policy means relevant for cluster development such as tax incentives, incentives for investments, regional, research or educational policy means such as investment in industrial, scientific and technological parks. Cluster policy applications are more on the national level in Finland, Luxembourg, Portugal and Romania. They have a few national cluster programmes which are coordinating regional offices, which in turn offer toolkits tailored to each cluster. Regional organisations and programmes are close to each cluster including firms, competence institutes and governmental representatives. This local expertise of clusters has been used to tailor the most suitable and supporting combination of means for each cluster. Regional cluster organisations use national cluster programmes creatively in purpose to respond the perceived needs of each cluster.

Toolkits are many-sided including such means as tailored financial support, technical assistance, and consultancy and training. The means available for clusters include, for instance, access to financing either through low-interest loans or grants, networking and knowledge transfers through seminars and workshops, arenas for discussions and publications, training, managerial and professional advice and consulting, project administration and infrastructure such as office rooms in science parks with IT-support, research and aid for commercialisation.

Firms' own responsibility and activity are important factors. The structure of some cluster programmes can be a little institutional and characterised especially by the shifting political power: Cluster programmes managed directly by ministries may create turbulence in practical cluster policy applications. Applications and the importance of the whole policy are can shift radically when people in charge are shifted. Luxembourg is a rather small country with only one national cluster policy programme but is has much the same targets to match firms and competence institutions mostly by offering individual support for projects, networking and access

to information. Attitude against political risk concerning cluster building is more risk taker among countries. Cluster building is included in toolkit to fit the most needs of the clusters.

Countries representing the instrumental approach and of them especially countries, such as Bulgaria and Romania, the two newest EU-member countries, seem to be very aware of the active role of government. One explanation can be the new trend, as Aaltonen (2007) argued, that attention is emphasised on the national level cluster policy applications instead for the more traditional regional level. Another explanation can be that these countries have faced the necessity to boost the economy to survive, and they have chosen cluster policy as a genuine tool for development.

Countries categorised to instrumental approach, except Luxembourg, Portugal and Romania, have several words in national language which are actively used in practice. Luxembourg, Portugal and Romania have only one or two own words or concepts, but most often they use the word cluster, as is also in Portugal in practice. This could be a weak indicator of the institutional approach. Romania uses the word cluster but slightly differently from the others.

5.2 Countries representing the institutional approach

Cluster policies in Belgium, Denmark, Germany, Iceland, the Netherlands, Spain and Turkey fill the characteristics defined in chapter 2.2.2 and therefore represent the institutional approach. The summary of findings is presented below in table 5.

Cluster policy has rather general applications, and governments do play no active role in policy formulation. However all countries have reported to have either one or more ministries in charge, they have initiated cluster programmes, but programmes are very similar to each other within the country, and among countries representing institutional approach. Indicators for modelling and imitating are seen in cluster policy structures of most countries.

Denmark represents fully institutional characteristics in spite of that it has a cluster policy structure which can be used also instrumentally being close to the Finnish model. The Danish cluster policy concept is only recently implemented and this might affect results of this analysis.

Cluster policy tools are financial, which can also be explained by the freshness of concept. It is not impossible that Denmark might have modelled their cluster policy structure based on Finland, which has applied its model existed longer. Cluster policy is a very new policy area also in Iceland and Turkey. Imitating and benchmarking is reported. Models have been searched in the European Union guidelines for the cluster policy formulation process and in neighbouring or other interesting countries. However, freshness and imitating do not correlate through the whole data. For instance, Bulgaria and Romania have rather well-defined cluster policies. The EU membership candidature might explain some of the well-finished formulation. The candidate countries can be assumed to become even more conscious concerning their economical development than more stagnated countries.

Belgium represents the institutional approach, maybe partly because it is a federal state, where relevant cluster policy applications are on the regional level. Instead of their national or regional programmes some main agencies act as formal driving forces for cluster development, which is called “*clustering support policy*” (Michels 2007, p. 7). These agencies act as catalysts offering support in accordance to “*independent assessment of each cluster*” (Michels 2007, p. 7) by using the bottom-up principle. Their cluster policy application, which support offers a wide toolkit indicates strongly towards instrumental approach. Means included in the toolkit are besides financial support advice, support to internationalisation process both for Flemish and foreign firms, which are interested in to establish in Belgium, and several services concerning innovation. Lack of an own cluster definition, lack of governmental responsibility and imitation indicates institutional approach.

Common to countries within the institutional approach have financial support as package solution, partly also tax reductions to clusters are offered. Rather general, very “Porterian-like” definitions for clusters and objectives of cluster policies are characteristics.

Cluster policy is not necessary an independent policy area in these countries. Cluster policy is however explicit on either the national or the regional level practising general applications in purpose to generate clusters. Cluster policies focus mostly on existing and emerging clusters, relatively much also on embryonic clusters, in a few cases declining clusters. However, three of

nine countries representing institutional approach, Belgium, Denmark and Germany, have reported that they support cluster building from scratch. This finding which does not fit exactly in the model where cluster building was seen as a high risk activity. Institutional countries were assumed to be risk averse, not preferring activities which bear remarkable political risk.

Belgium, German and United Kingdom use cluster policy as a marketing tool or a key policy tool to promote especially foreign direct investments. Other countries except Germany have no words or concepts for cluster in their according to national language but uses most either the word cluster according according to (Porterian definition, or one direct translation.

An interesting finding was private initiatives in Israel, where two and the only regional cluster programmes are initiated by private persons, facilitators. The literature does not include this kind of solution, but the thought can be found for instance in the education concept of Cluster Navigators. Ffowcs-Williams travels around the globe to bring out, within other themes, the idea of individual cluster facilitator (Cluster Navigators).

5.3 Countries representing combination of institutional and instrumental approaches

Third alternative which is highly probably to be found in data analysis is combination of the two approaches, institutional and instrumental approach concerning implementing of cluster policy. “[C]luster as a catalyst: where the cluster approach is seen to tweak existing policies and can inspire and channel new developments in policy rather than defining them” (Raines 2002a, p. 3). If findings are indicating towards both approaches, combination is probably explanation.

France and United Kingdom represent countries which have indicators for combination of institutional and instrumental approach. Findings are presented below in table 5.

Content of most national cluster programmes in United Kingdom are, however, very convergent with most countries including many national and regional programmes with financing package as almost only tool. Cluster policy means indicate mostly institutional approach. However some

national cluster programmes offer also other means besides financial such as advice, innovation, and technology transfers, when the need arises.

Because in United Kingdom English is home tongue I chose to see how cluster is defined in United Kingdom. There are four different definitions of cluster actively used which indicates more towards instrumental approach than institutional approach. France has an own cluster concept, which was not to find from other countries “Competitive cluster”. This concept can be seen as a more developed cluster concept.

5.4 Countries without a cluster policy

One finding was that Ireland, Italy and Switzerland have no explicit cluster policies or any cluster programmes on the national or regional levels, except a few regional cluster programmes in Switzerland. These countries have reported some regional programmes to represent cluster programme, but these are targeted either to other purposes or used purely as tools for other policies. Strictly seen, Ireland and Italy have no cluster programmes at any level, because theoretically there might be a difference between the concepts of clusters, networks and industrial districts. The reported cluster programmes are more like umbrella organisations of cluster organisations, often financed by clusters themselves added with some financing from the regional governments. Time horizon of cluster programmes can also be very limited, which does not indicate long-term policy thinking behind the programme implementations. Ireland has used some network programmes which have mostly cooperated between firms and competence institutes in common with general cluster programmes. However, these network programmes are more formal by nature than cluster programmes and have a shorter time horizon According to the literature, these do not equal with “genuine” cluster programmes per se.

There are *industrial agglomerations* in Ireland and Switzerland and “*industrial districts*” as Italy calls its own agglomerations, which exhibit characteristics of clusters. These clusters have been developed without any governmental support, often throughout decades. Exemplary Italian industrial zones were created in 1970s, legally recognised in 1991. The law assigned regions to

identify industrial districts and opened possibilities for local governments to support financially innovation projects among companies.

All these countries share a strong instrumental flavour especially concerning the role of the government. Ireland scores on institutionalism because it does not have its own word for a cluster and network policy tools are rather financial by accentuated. Lack of other expressions is not very surprising considering that the country does not have cluster policy at all. Policy makers in Ireland, Italy and Switzerland are well aware of cluster concept, but until now decided not to use it as a policy application. Policy makers in Ireland have started discussion around the cluster and network concepts, probably in order to develop new political solution. However, there are some factors in Irish economic structure and political discussion which make the policy makers to hesitate. These confusing factors are especially the big number of multinational firms which Porter has systematically excluded of his studies (Martin 2007) and unclearness of cluster definition. Policy-makers in Switzerland are satisfied with present political applications and do not see any need for cluster policies the national level. Regions in Switzerland are independent to choose own policy tools.

These countries have chosen consciously not to have the cluster perspective in their national policies. They do not see the importance of promoting some special economic activities, but emphasize creating well smoothing economic structures, where firms have good conditions to survive, develop and innovate – and agglomerate. These countries seem to have the instrumental approach to their economic policy in general.

5.5 Evaluation of model

One contribution in this thesis is the model with institutional and instrumental approaches which were built upon the previous research. The model assumed an implicit supposition that every country has a cluster policy, either it is institutional and imitated or instrumental and adapted. The model did not take into account that cluster policy might not exist in every country's political present.

The weakness with model such as double-I is that it can let uncovered interesting findings because model fixes issues of interests.

Previous assumptions about political risks as an issue in the government indicator did not match with the data. Institutional countries were assumed to be risk averse and not to prefer activities which bear remarkable political risk. However, three of nine countries which seemed to represent the institutional approach reported that they support cluster building from scratch. So the risk issue is not unambiguous to distinguish the two approaches and can be considered to be excluded from the characteristic indicators. On the other hand risk is implied in characteristics such as innovator, facilitator, even “entrepreneur” – all those words implicitly bear the nature of insecurity. Developing new innovations is seldom free for risks. Imitating, modelling, intermediating bears much smaller implicit risk, because policies and applications have already been tested somewhere. The challenge here, however, is how well the model fits the conditions of modelling country. Using cluster policy as a marketing tool indicated rather institutional approach, only one country representing instrumental approach reported respectively.

Previous assumptions of importance of evaluation did not match with the data. Evaluations were reported by very few countries. Countries reported represent instrumental and institutional approaches without any systematic.

Previous assumptions of cluster policy as marketing tool match rather well with the data. With only one exception other countries represent institutional approach.

6 Conclusions and further research

In most countries the cluster concept was introduced already in 1990s but because of shifts in political power cluster policy had gained less attention. However, in past two years, the concept has made a comeback to politics. Discussions and consciousness has spread also to countries which have not used the cluster concept before in the policy context.

A theoretical contribution of this thesis is the qualitative double-I model, developed upon previous research. Moreover, the study presents a large scale overview of the issue; the most previous writings have been case studies, cluster mapping with statistical methods or conceptual literature reviews. The double-I model is a step towards studying convergences and divergences concerning the actual cluster policy implementations. Through the double-I model, it was possible to find found differences among countries, related to their use of cluster policies. The analysis could divide the countries into the representatives of the instrumental and institutional approaches.

One contribution is also to find out that all countries did not fit in the model, which indicates that further theoretical developments of the field of cluster policy are needed.

The instrumental and institutional approaches seem to be almost as common in European countries. Eight of the 20 countries, were interpreted to represent the instrumental approach whereas seven countries represent the institutional approach. Two countries have fit indicators from both approaches, whereas three countries have no cluster policy, but are using other policies instead. Both tool and fashion are represented.

It does not seem to be any correlation between instrumental or institutional approach and freshness of cluster policy concept in the country. The two newest EU members Bulgaria and Romania have both well-defined cluster policy concepts fitting special local needs of cluster, whereas Iceland, where cluster policy is also new policy field, has policy applications offering the same package for all clusters. German has had its cluster policy applications on regional level since 1980s and on national level since 1995. Still it offers mainly “package” solutions. The analysis left an impression that the countries representing the instrumental approach have set much work to study, plan and develop the practical policy concepts. Such policies seem to be based on both research and reality.

One explanation might be the structure of country. In decentralised power structures the decisions are made more on regional than national level. In these cases the government of the state is not as

active part than in countries which are more centralised. Another explanation might be cultural. Culture defines the accepted and therefore natural ways to act, support and develop different concepts, and might differ considerably within Europe. However to confirm those ideas would require further research.

Another avenue for further research is to deepen the analysis on the stories of cluster policies to find out whole histories and therefore processes how cluster policies have been formulated. Another issue of interest would be to analyse the effects of cluster policy in a couple of countries for instance by using longitudinal analysis to find out if cluster policy is functioning as hoped or if the risks will be realised in the form of failed economic structures or destructive cooperation concepts.

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APPENDIX A QUESTIONNAIRE “SHOPPING LIST”



Cluster mapping project

Guide for information gathering

1. Introduction

The process

The purpose of collection information from 22 European countries on cluster development is to give the client (DG Enterprise) and other stakeholders an overview of cluster policies and cluster organisations in Europe. The information from each country (the country report) will be summarised in a report. Based on the information also a synthesis report describing the trends will be written. The information gathering in the 22 countries will take place in February and March 2007. The synthesis report will be finished in September 2007.

The country report

The country report form will be a questionnaire subcontractor fills based on information gathered locally by desk research. The questionnaire is included as part 2 of this document. Based on this information, subcontractors should be able to start gathering information. Oxford Research is considering also developing a more specific questionnaire more of the multiple choice-type to help us summarizing the information from the 22 countries. If we chose to do so, it will be based on the information you now collect and you will receive it in due time before the end of March when the information gathering is supposed to be finished.

The subcontractors experience with cluster policies vary. To avoid discussions with the Commission and National Governments when the report is presented, we therefore would like that each sub-contractor get their draft country report commented by a cluster expert in their country. We would like all subcontractors to start identifying such a person.

The Task: Assessment of national cluster policies (WP4)

Subcontractors are expected to carry out the pertinent desk research for each country policy in the adequate in-country assessment. These guidelines are to ensure the comprehension of the information collected and to define the project’s framework and key concepts i.e. cluster policies.

The task of subcontractor is to identify and document policies with a clear impact on cluster development in the 22 countries and to produce documents profiling key institutions and policies affecting cluster development by

- 1) Mapping policies affecting cluster development**
- 2) Mapping key institutions affecting cluster development**

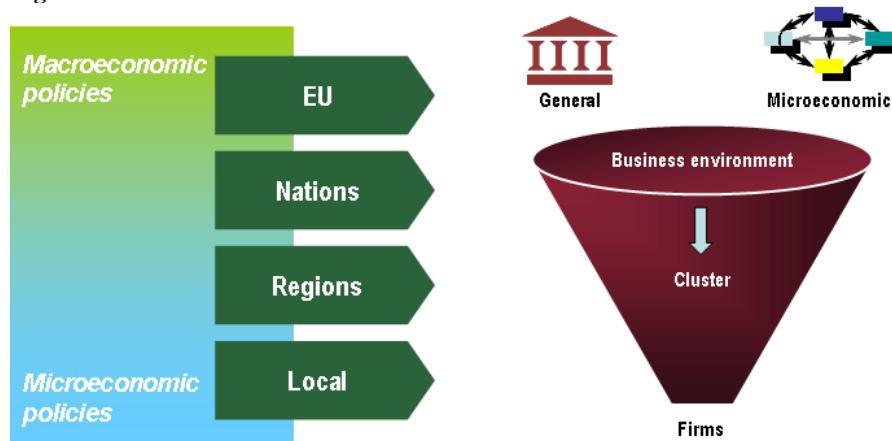
Cluster policies may be defined and implemented at different geographical levels⁴:

- Super-national (i.e. Europe)
- Cross-national level (between neighbouring countries)
- National
- Regional
- Local

The focus in this project is on the **national and regional level**. The local level (i.e. municipalities) can be left out. The cross-national level should be briefly included.

Project's theoretical framework⁵

Figure 1 Business environment



The General Context

The general context for business is similar for all firms within the nation or region, and includes four main pillars: History and culture, geographical position, general institutions and legal frameworks, and finally the macroeconomic context (e.g. currency regime, fiscal policy, inflation levels).

⁴ Reve 2006.

⁵ The theoretical framework of the project is based on the project plan *Europe INNOVA Cluster Mapping* (June, 2006) prepared by Stockholm School of Economics, The Cluster Competitiveness Group S.A., Foundation Sophia Antipolis and Oxford Research AS.

Every region and nation has its particular history and cultural roots, the first pillar, which will impact the evolution of local industries, the level of demand sophistication and particular demand segments, the quality and special foci of education and research, the level of trust and business networks, the degree of rivalry and so on.

The second pillar involves the geographical position. Geographical position of a nation will have an impact on the level and quality of flows of trade, capital, technology and labour that local firms can access and derive benefits from.

The general institutional and legal setting forms a backbone of market economy, ownership rights and so on in a nation. This third pillar has a critical impact on the willingness of the business community to make long-term investments, especially in non-physical assets such as knowledge and skills. It is also important for the institutional capacity of a nation or region to organise effective collaboration among companies and between companies and the public sector.

Finally, macroeconomic stability, such as exchange rate movements will impact the overall business climate of a nation's firms. High volatility in GDP growth as well as high inflation tend to have a negative impact on long-term investments, especially those requiring high initial capital outlays. Unsustainable fiscal policies can create the expectation of future tax hikes and other government policies deemed necessary to return public finances into a balance.

The Microeconomic Business Environment

The microeconomic business environment involves four broad aspects, some of which are more general to the nation and others more particular to the individual cluster, such as automotive, pulp and paper, financial services, pharmaceuticals and so on.

The four aspects of the microeconomic business environment, the so-called diamond model, include the quality and level of specialisation of factor (input) conditions.

- Factor conditions include the physical infrastructure (communication etc.), financial markets and education and research (e.g. quality of primary and secondary education, university specialisation).
- Demand conditions involve demand segmentation, degree of sophistication and whether local demand anticipates global demand.
- The context for firm strategy and rivalry decides the level and general climate of competition and what types of strategies that will be pursued by local firms.
- Finally, the presence of suppliers and firms in related fields of technology, and the degree of cluster interaction and networking, will shape the microeconomic business environment.

Clusters

A core element defining the quality of the microeconomic business environment is the presence of clusters.

A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. Because of the

proximity among them⁶ – both in terms of geography and of activities – cluster constituents enjoy the economic benefits of several types of positive location-specific externalities. These externalities include, for example, access to specialised human resources and suppliers, knowledge spillovers, pressure for higher performance in head-to-head competition, and learning from the close interaction with specialised customers and suppliers.

Clusters are important because they create tangible economic benefits. The benefits of a cluster come in three dimensions:⁷

1. First, companies can operate with a higher level of efficiency, drawing on more specialised assets and suppliers with shorter reaction times than they could in isolation.
2. Second, companies and research institutions can achieve higher levels of innovation.⁸ Knowledge spillovers and the close interaction with customers and other companies create more new ideas and provide intense pressure to innovate while the cluster environment lowers the cost of experimenting.
3. Third, the level of business formation tends to be higher in clusters. Start-ups are more reliant on external suppliers and partners, all of which they find in a cluster. Clusters also reduce the cost of failure, as entrepreneurs can fall back on local employment opportunities in the many other companies in the same field.

Individual regional clusters differ by their specialisation in a particular stage of the value chain, their degree of international competitiveness, by their focus on specific geographic areas, or by targeting selected customer needs or market segments. Cluster evolution is impacted by all four pillars in the general business environment as well as the cluster-specific microeconomic business environment conditions.

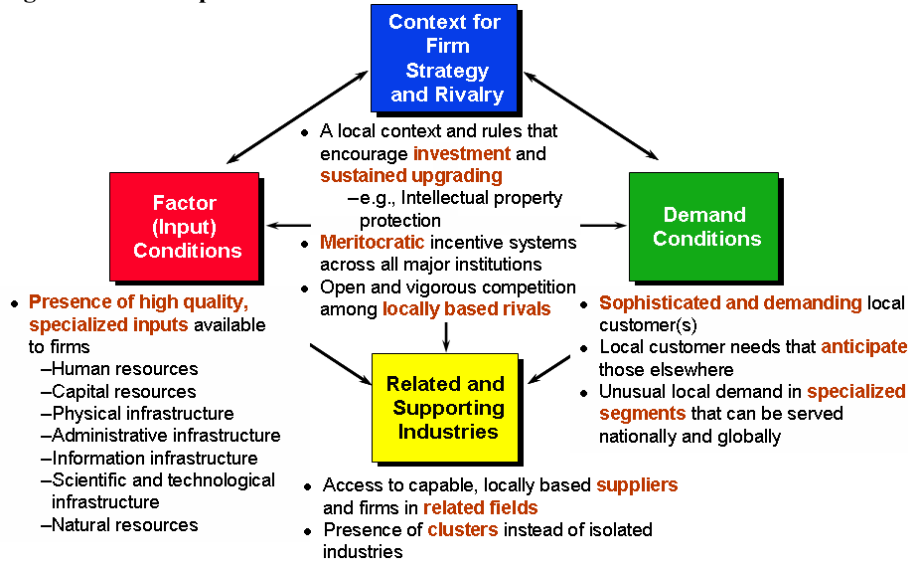
The factors affecting cluster and the up-grading mechanisms created in clusters can be described in this model:

⁶ Europe INNOVA Cluster Mapping project plan (June, 2006), for further reading Nauwelaers: Path-dependency and the role of institutions in cluster policy generation (2001) published in the book *Cluster policies – Cluster development* ed. by Åke Mariussen. Nordregio Report 2001:2.

⁷ See Porter: Clusters and the new economics of competition (1998) *Harvard Business Review*. Nov-Dec.

⁸ Because of the critical importance of innovation for advanced economies ‘innovation clusters’ have become a particularly popular topic. See Polt: Policy Case Study Austria (2001) prepared for OECD Focus Group “Innovative Networks”; and Monitor Company, Council on Competitiveness/Michael Porter: Clusters of Innovation: Regional Foundations of US Competitiveness (2001). Presentation in National Cluster of Innovation Meeting in Washington D.C. December 13th.

Figure 2 Cluster specific diamond



Source: Michael E. Porter

Strong regional clusters are the result of a strong cluster-specific diamond involving:

- Intense local rivalry involving battles of prestige and “feuds,” stimulating continuous upgrading creating a foundation for a more advanced and diverse supplier base.
- Dynamic competition emanating from the entry of new firms, including spin-offs from larger incumbents.
- Intense cooperation organised through various institutions for collaboration such as professional organisations, chambers of commerce, cluster organisations, etc. Clusters also exhibit intense informal interaction based on personal networks.
- Access to increasingly specialised and advanced factors of production (human capital, financial capital, and infrastructure) and for many clusters, linkages with universities and public and private research institutions.
- Linkages to related industries, sharing pools of talent and new technological advancements.
- Proximity to sophisticated and demanding buyers

Thus, dynamic clusters are not primarily characterised by advantages of scale but rather by a capacity for perpetual innovation and upgrading of goods and services, and by a process of increasing specialisation and upgrading of human capital and other factors.

Leading clusters are characterised by an "upward spiral" where incumbent firms gain from, and add to, local spillovers. However, spill-over effects have to be created; they do not necessarily arise because industries are co-located in a region. Spillovers are partly driven by the general business environment and partly by policy initiatives.

A full account of clusters includes, in addition to linked firms and industries, also specialised financial actors (e.g. business angel networks in certain clusters), academic institutions (e.g.

research laboratories, education programs), governmental authorities, and hybrid organisations (institutions for collaboration, IFC) focusing on cluster competitiveness. Public-private cluster initiatives⁹ are prevalent today and include specialised training programs, commercial cooperation (e.g. export cooperation), technical cooperation, etc.

Cluster policy

The large majority of all clusters we currently observe have developed without the help of any designated policies intended to create them. Given the mounting evidence that such clusters make a positive contribution to regional performance where they exist, pressure is increasing, however, to design policies that can foster the development of clusters or increase their economic benefits.

For this study, we define cluster policies as policies that fall into one of the following three categories.

- *Cluster development policies directed at creating, mobilizing, or strengthening a particular cluster*, e.g. a national funding competition for the best life science cluster strategies
- *Cluster leveraging policies that use a cluster lens to increase the efficiency of a specific instrument*, e.g. an R&D subsidy provided only to companies in regional clusters where the subsidy is likely to incur spill-over effects beyond the recipient firm
- *Cluster facilitating policies directed the elements of the microeconomic business environment to increase the likelihood of clusters to emerge*, e.g. regional or competition policies that remove barriers for competition between locations

Policies falling into the first category are traditionally at the core of what researchers have looked at. We want to cover them as well, but want to add a perspective on the two other categories as well.

In order to understand ‘policies’ better, we will use three different terms:

1. *Policy*; Often, governments set out their strategic intentions in a specific document, a policy (or white paper). This document does not have to define specific tools, allocate funding, or create responsibilities. But it does set the political objectives and present the motivation of why specific activities in the direction described are deemed important. An example is the Swedish National Innovation Strategy
2. *Programme*; To move from intent to real action, governments then design specific programs, in Sweden for example Vinnväxt, that allocate funding, create organizational responsibilities, and define specific conditions under which funding can be made available
3. *Implementing agency*; Each programme will be the responsibility of a government agency or ministry, in the Swedish case VINNOVA, to implement the programme. The programme might be their main activity, or it could be a small part of their overall responsibilities.

⁹ See Sölvell/Lindqvist/Ketels, *The Cluster Initiative Greenbook* (2003) Bromma tryck. Stockholm.

We are interested in all three dimensions. Only by understanding them all can we give an accurate picture of how policies are shaped and implemented.

Please answer within the boxes but feel free to use as much space for your answers as required.

2.0 Your personal details
Country covered:
Surname:
First name:
Organisation:
Telephone:
Email:

The mapping starts at the implementation level, where programmes are specifically conducted to promote cluster development. We then move on to the policy level. In most cases it is helpful to know the source(s) you have used. Feel free to report web addresses of any useful internet resources.

Terminology

In each country there will be one or possibly several **terms** or **phrases** used to describe clusters. In some cases, different terms represent “competing” perspectives on clusters and, as perspectives change over time, one term may gradually replace another.

2.1 Terminology
What term(s)/phrases do you use for a cluster in your country? Are there previous word(s)/term(s) which are becoming less frequently used? Please state the word(s)/term(s) used both in your national language(s) and give an English translation.
National language(s):
English translation:

Cluster development programmes and cluster organisations

In many countries, there are **programmes** set up specifically to promote cluster development. Such programmes can be carried out by existing **actors** (for example a government agency), or new actors can be set up to run them. Often, one of the purposes of such programmes is to help initiate **cluster organisations**, that is, the programme provides financing or otherwise promotes the formation of cluster-specific organisations, typically in some form of public-private partnership. A country can have many (even hundreds) of such cluster-level organisations in operation. We want you to identify both cluster agencies and cluster programmes at national and regional level.

2.2.1 Agencies for cluster policy implementation

Which are the main ministry departments, agency or other government organisation responsible for the implementation of cluster policy at a national level in your country? What is the name and main lines in its set-up? (Please explain more detailed in boxes below)

Source:

Do these organisations have cluster development as its only task and if yes when and why was the organisation founded?

Source:

Does one ore more regional organisation/agency work with cluster development in your country? If yes, describe its set up and main strategies (Please explain more detailed in boxes below)

Source:

Do these organisations have cluster development as its only task and if so when and why was the organisation founded?

Source:

2.2.2 National cluster programmes

Are there national programmes for cluster development in your country? If yes, can you describe the programme(s)? (For each programme we want you to give information about all applicable of the below mentioned elements.)

For each programme:

- Programme name:
- Financing:
 - Source of programme financing (ministries, EU structural funds, regional budgets, etc):
 - Budget:
 - Time horizon:
- Actor:
 - Programme initiator (who started it?) :
 - Carried out by which actor?:
 - Was the actor formed for this purpose, and if so, when? :
 - Does the actor have other tasks apart from this programme?:
 - Organisational set up at programme and project level:
- Scope and target:
 - Geographic coverage:
 - Policy focus (please see the table at p. 17 from the OECD report in the end of this document and relate your comments to this)
 - Are clusters in a certain stage of the lifecycle targeted (embryonic, emerging, mature, declining)?
- Programme contents:
 - What - give a short description:
 - Activities - what are the prioritised areas?:
 - Ambitions/goals:
 - Target group:

2.2.2 National cluster programmes

- Is there a particular focus on SMEs?
- Level of R&D involvement:
- What does the programme offer the projects? (i.e. financial support, training):
- Do the programme have any cross-country/interregional activity?:
- Process:
 - Based on applications or appointments?:
 - Top down or bottom-up approach in selection of clusters to support?:
 - Main elements in applications if that is used:
- Evaluation:
 - Results so far/conclusions from evaluations:
 - Planned future:

Source:

2.2.3 Regional cluster programmes

Are there regional programmes for cluster development in your country? If yes, can you describe the programme(s)? (For each programme we want you to give information about all applicable of the below mentioned elements, but less detail is needed than for programmes on the national level.)

For each programme:

- Programme name:
- Financing:
 - Source of programme financing (ministries, EU structural funds, regional budgets, etc):
 - Budget:
 - Time horizon:
- Actor:
 - Programme initiator (who started it?) :
 - Carried out by which actor?:
 - Was the actor formed for this purpose, and if so, when? :
 - Does the actor have other tasks apart from this programme?:
 - Organisational set up at programme and project level:
- Scope and target:
 - Geographic coverage:
 - Policy focus (please see the table at p. 17 "policy trends" at the end of this document and relate your comments to this)
 - Are clusters in a certain stage of the lifecycle targeted (embryonic, emerging, mature, declining)?
- Programme contents:
 - What - give a short description:
 - Activities - what are the prioritised areas?:
 - Ambitions/goals:
 - Target group:
 - Is there a particular focus on SMEs?
 - Level of R&D involvement:
 - What does the programme offer the projects? (i.e. financial support, training):
 - Do the programme have any cross-country/interregional activity?:
 - Process:
 - Based on applications or appointments?:
 - Top down or bottom-up approach in selection of clusters to support?:
 - Main elements in applications if that is used:
 - Evaluation:
 - Results so far/conclusions from evaluations:
 - Planned future:

2.2.3 Regional cluster programmes

Source:

2.2.4 Cluster organisations

Which organisations on the cluster level are there in your country? A preliminary list will be supplied by us in a few days, and we ask you to supplement with additional organisations. Only some basic information is needed for each cluster organisation.

For each cluster organisation

- Organisation name:
- Industry focus:
- Regional focus:
- Contact person (for example, manager of chairman):
- Web site (if any):
- If applicable, formed through which cluster programme:

Source:

In your country there may be one or a few cluster programmes which are considered to be particularly significant or successful and are often referred to when cluster policies are discussed.

2.2.5 Successful cluster programmes

Please identify one or a few successful cluster programmes in your country and tell the story (briefly) in what ways they are successful and the reasons attributed to their success.

Source:

Cluster policies

Above the level of agencies and programmes is the policy level. On the policy level, plans and strategies are developed in the form of policy documents, directives and legislation, rather than concrete programmes and organisations.

There may be one overarching policy for clusters, a “cluster policy”, outlining specifically how cluster development should be pursued. In addition, clusters may form a framework in a long range of policy fields. Primarily, this is often the case in three key areas: innovation and technology policies, regional economic development policy, and entrepreneurship/SME policy. However, it can also occur in many other policy areas.

2.3.1 Overarching cluster policy

How important is “cluster policy” at the national and regional level in your country (i.e. are there any explicit cluster policy measures that have been introduced nationally or regionally)?- Please explain

Source:

Have there been published policy papers on national level, public and/or official studies and reports i.e. white papers where the cluster approach is as part of innovation policy?

___yes

2.3.1 Overarching cluster policy
no
If yes, please summarize the main points of these studies / reports?
Source:
What is the main aim of the state in the design of any cluster policy? For example: is it to address wider policy issues such as regional economic development or employment growth, or to support focused objectives associated with particular industry or technology area (such as biotechnology, IT etc.)?
Source:
Since when has cluster policy been used?
Source:
Has the development of your country's cluster policy been associated with a particular individual/political party/research institution?
Source:

For these three policy areas, we ask you to report the main characteristics of policy, regardless of whether or not clusters are used as a framework.

2.3.2 Clusters as framework in three key policy areas
For each of these three areas, what is the main policy orientation, the nature of its main programmes, and the structure of its key implementing agencies? What role do clusters play as a framework in that policy area in your country?
Innovation and technology policy (technology parks, incubators, needs-driven R&D, IPR, standards, etc.)
Source:
Regional economic development policy
Source:
Entrepreneurship and SME policy
Source:

For the following policy areas, you only need to report any findings where clusters are used as a framework.

2.3.3 Clusters as framework in various policy areas
What role do clusters play as a framework in the following policy areas in your country?
Business network policy
Source:
FDI attraction policy
Source:
Export promotion policy

2.3.3 Clusters as framework in various policy areas
What role do clusters play as a framework in the following policy areas in your country?
Source:
Sectoral industry policy
Source:
Science and education policy (labour training, management development, commercialisation, etc.)
Source:
Competition and market integration
Source:
Any other policy field?
Source:

Cluster or competitiveness councils

In some countries, councils have been set up to promote a dialogue about clusters and competitiveness. Often, these councils have representatives from the government sector as well as from the academic world and the business community.

2.4 Cluster or competitiveness councils
Is there a cluster or competitiveness council in your country? If so, when was it formed, who is represented in it, how does it operate, and what impact has it had on policy?
Source:

Other policy issues

Later on in this project, we will take a further look at cluster-related issues in each country. It would be useful to know about any other issues that have an impact on clusters in your country. Such issues could be, for example, any macro economic policies that may be relevant for clusters (tax regimes, etc), or if any general evaluation has been made about the country's competitiveness and barriers to competitiveness.

2.5 Other policy issues
Are there any other policy issues you think could be relevant for the development of clusters in your country?
Source:
Compared to the current situation described in the previous sections, has the

2.5 Other policy issues
orientation of cluster policy shifted over time? Has cluster policy gone through shifting phases?
Source:
What have been the major obstacles to the process of building cluster policy? (Obstacles may include conflicts with other policies, organisational battles over "ownership" of cluster policy, lack of commitment due to changes of government, etc.)
Source:
How is cluster policy treated in the policy/academic debate?
Source:
Has there been any general assessment of competitiveness or barriers to competitiveness in your country?
Source:
Are there any other remarks you would like to make?

Policy trends

Policy Stream	Old Approach	New Approach	Cluster Programme Focus
Regional policy	Redistribution from leading to lagging regions	Building competitive regions by bringing local actors and assets together	Target or often include lagging regions Focus on smaller firms as opposed to larger firms, if not explicitly than <i>de facto</i> Broad approach to sector and innovation targets Emphasis on engagement of actors
Science and technology policy	Financing of individual, single sector projects in basic research	Financing of collaborative research involving networks with industry and links with commercialisation	Usually high technology focus Both take advantage of and reinforce the spatial impacts of R&D investment Promote collaborative R&D instruments to support commercialisation Include both large and small firms; can emphasise support for spin-off start ups
Industrial and enterprise policy	Subsidies to firms; national champions	Supporting common needs of firm groups and technology absorption (especially SMEs)	Programmes often adopt one of the following approaches: Target the "drivers" of national growth Support industries undergoing transition and thus shedding jobs Help small firms overcome obstacles to technology absorption and growth Create competitive advantages to attract inward investment and brand for exports

Source: OECD review of national cluster policies: why are they popular, again?, June 2006