

TACTICS

Where the Cluster Winds are Blowing (in Europe)

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15 June 2012

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TO ADDRESS/INSERT:

- Adjust graph in DE national summary (NRW comment)?
- Look into comparison of trends regional vs. national levels and comment on this in the synthesis

INTRODUCTION

Clusters have been used as a policy tool for more than 20 years in Europe. The aim of cluster policies (programmes and other policy actions related to clusters) has not been “the creation of clusters” *per se*, but rather the strengthening of dynamic interaction between cluster constituents and of the conditions that enable innovation and competitiveness. Cluster policies have become a mainstream activity in many regions and countries because cluster initiatives are viewed...

- as an effective tool to mobilise actors, and catalyse dynamic interactions and innovation
- as an efficient way to reach and work with groups of SMEs (and other actors) with similar problems and strategic challenges
- as a relevant source of information for policymaking in general – providing knowledge about how industrial development occurs and what priorities most need to be addressed

Even though cluster policies may be viewed as “mainstream”, there is a constant need to evolve – as the clusters and markets the policies address are in a process of continuous change. And there are a number of areas where cluster policy has evolved – as the trends described in this document will explain.

In the context of the TACTICS project, it was agreed that the final report should include a section on “the changing concept and use of clusters as a policy tool” – describing the current concept of clusters, introducing some of the key issues for policy (at present), and explaining how the “cluster tool” can be used to address these issues. Information was collected from a sample of EU regions/countries that represented one or more of the following: a combination of regional and national perspectives, small countries and large countries, long experience, substantial financial investment in cluster-related programmes, use of the “cluster tool” in different policy areas (e.g. research policy, innovation policy, industrial policy, etc.), or are TACTICS partners. Contact persons for each region/country¹ were responsible for consulting relevant actors in their region/country and drafting a short text that summarizes “where the cluster winds are blowing” in their respective geography.² In addition, a broader ‘call for input’ was launched through the European Cluster Alliance. In total, 27 cases from 17 countries were collected – 13 on the national level and 14 on the regional level. Throughout this document, the intention is that a standard use of “cluster vocabulary” applies (see Glossary of Terms in Appendix II).

The TACTICS team would like to thank all the regions and countries that provided input to this document – resulting in a very interesting summary of trends on the use of clusters as a policy tool.

A. TRENDS IN THE USE OF CLUSTERS AS A POLICY TOOL

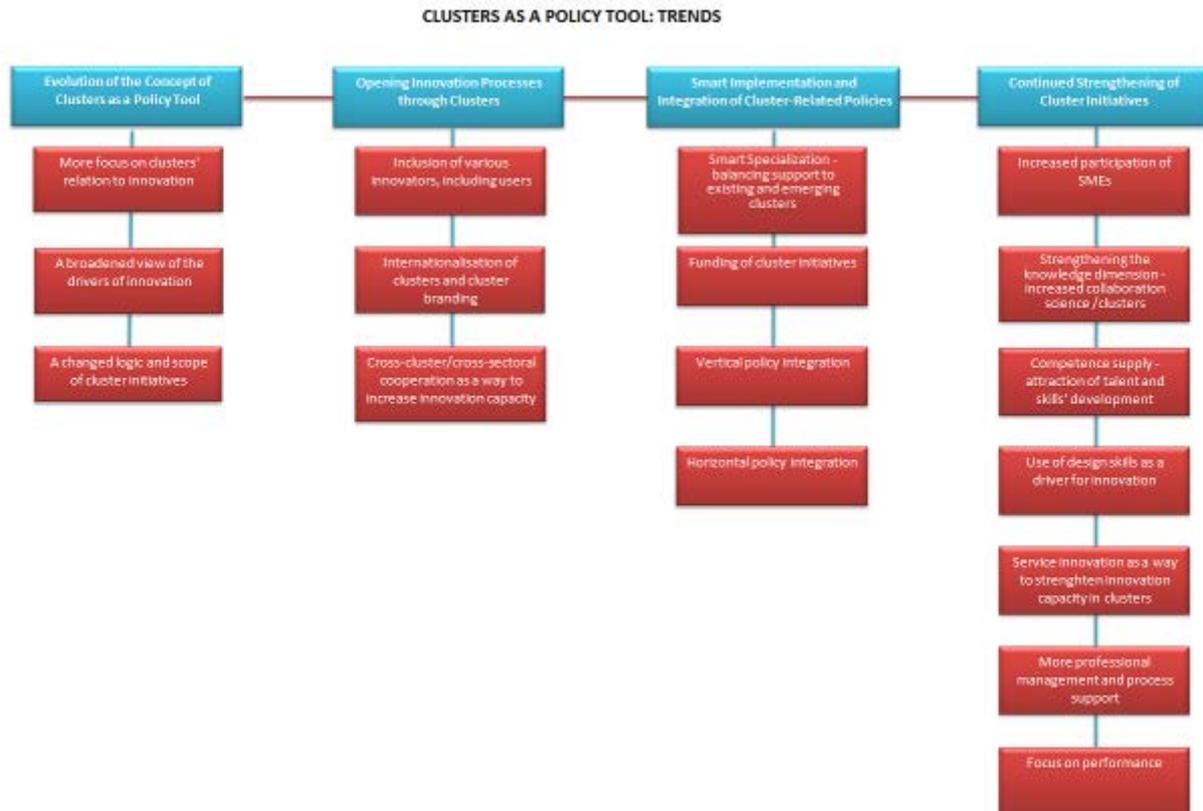
Based on the inputs from policymakers in various regions and countries, this chapter presents a summary of common trends and future focus areas for policy action. Each “trend summary” includes references to specific examples (presented in detail in the next chapter).

The chapter is divided into five sections. Section 1 describes trends pointing to an evolution of the concept of clusters as a policy tool. Section 2 describes how clusters are used to open innovation

¹ See Appendix I for a list of contact persons in European regions/countries

² It was requested that the text should cover three areas: a description of past use of the “cluster tool”, a description of current “key policy issues” and how clusters relate, and any policy implications/recommendations for the future.

processes – accessing new sources of knowledge and collaboration. Section 3 describes the need for smart implementation and integration of cluster-related policies – fostering increased synergies across policy areas and policy levels. Section 4 describes trends focused on the continual strengthening of cluster initiatives. (An overview of the four main trends is presented in the illustration below.)



Finally, Section 5 presents some general conclusions that can be drawn from the input on “cluster winds” in Europe.

1. Evolution of the Concept of Clusters as a Policy Tool

Input provided clearly highlights an evolution of the concept of clusters as a policy tool – from an industry, sectoral and geographically delimited concept, to more of an innovation/systemic, thematic, and geographically broad concept.

1.1 More focus on clusters' relation to innovation

There is an increased focus on how cluster initiatives can support innovation, which in turn is reflected in the reports from the countries and regions.

The regions of Emilia-Romagna and Veneto have the objective of channeling public funds towards projects “with an innovative component”. In the Nordic countries, innovation is prioritised by the national programmes (focused on e.g. strengthening “Innovation Networks” in Denmark and “Regional Innovation Systems” in Sweden).

1.2A broadened view of the drivers of innovation

Global societal challenges can be a driver for innovation. In this context, Germany points out that the high-tech strategy provides clear guidance to tackling global challenges. Wallonia and Sweden also believe that the focus on innovations and knowledge intense industries can address future societal challenges.

Other drivers behind the desire to focus more on innovation include the notion that clusters should be demand driven. Public demand can also stimulate innovation in clusters. In Southern Denmark, the regional authorities have initiated special actions to promote the development of clusters in the region. One of the important actions is to increase the public demand in which the region stimulates the market for cluster-specific goods and services, by acting as a central buyer.

1.3A changed logic and scope of cluster initiatives

More focus on and different drivers of innovation also changes the logic of cluster initiatives. The logic is not necessarily driven by a particular sector or geography, but rather opportunities for collaboration in developing new solutions to different shared challenges. In Finland, it is considered important that there is a changing focus from industry-based clusters to thematic clusters (e.g. from construction to living, from medical to wellbeing and healthy ageing) and to demand driven clusters (e.g. security). Finland also presents actions related to the size and flexibility of cluster initiatives. Finland has the aim to change focus from big clusters to flexible “mini clusters” and innovative ecosystems. As a part of this work, Finland aims to develop new kinds of forms and tools to create these collaborative platforms. Emilia Romagna is describing this shift in logic, as “new models are included in the regional cluster policy, such as companies’ aggregations and innovative networks”. Similar actions are being planned in Poland in the framework of preparation for the new financial perspective of the EU.

The scope of cluster initiatives is also evolving – including innovation support activities such as financing. The Aerospace pole in Toulouse has created an investors group to foster SMEs’ access to private funds.

2 Opening Innovation Processes through Clusters

Related to the evolution of the cluster concept, several trends highlight the use of clusters as platforms to open-up innovation processes – accessing other sources of knowledge and collaboration partners.

2.1 Inclusion of various innovators, including users

Cluster organisations are able to serve as facilitators of neutral platforms for innovation activities – gathering various types of innovators – companies and research organisations, as well as users (consumers, businesses and public users) – and helping them enter sooner in the innovation process. Cluster organizations can facilitate the involvement of users in innovation processes in order to discover new possibilities. Region Skåne refers to “broadening the vision of what innovation is – including a wider range of innovations and innovators”.

2.2 Internationalisation of clusters and cluster branding

International cooperation between countries and their clusters is seen by almost all ‘geographies’ as important for the way forward. The internationalisation approach is divided into three different dimensions. The internationalisation process can be, as expressed in the Hungarian report, regarding the clusters “to promote the internationalisation and cross-border cooperation of Hungarian clusters

and encourage their participation in international projects”. The same approach is also present in the Polish draft of future cluster policy 2014 – 2020. Internationalisation can also concern the activities of SMEs (i.e. exports) or it can be the support of linkages to different research and innovation milieus. As for the internationalisation of clusters, one approach is to, as expressed in the report from Sweden, to “strengthen the linkages with international nodes of knowledge and innovation” and therewith raise the level of participation of “SMEs in collaborative innovation projects”.

Branding is related to internationalisation and location marketing is viewed as a common goal for all cluster initiatives in Germany: “highlighting of individual strengths and potentials and thus also of performance capacities within the respective federal state (global competitive positioning) and the promotion of research institutes and companies based in the state”. In the report by Italy-Veneto, the branding is seen as necessary for internationalisation “cluster branding and marketing is an essential element for setting up a successful cluster internationalisation strategy”.

2.3 Cross-cluster/cross-sectoral cooperation as a way to increase innovation capacity

Cross-cluster cooperation is mentioned by several ‘geographies’ as a mean to increase the innovation capacity. The kids cluster initiative in Catalonia³ represents such an approach – in which policy supported the grouping of companies belonging very different industries (e.g. furniture, publishing, food, healthcare) that shared a common end-user market. It is assumed that cross-cluster collaboration may foster innovative products and this is phrased by Upper Austria as “It can be said that for specific challenges a sectoral approach cannot offer solutions being as good as cross-sectoral ones”. Rhône-Alpes also works with cross-cluster cooperation and believes that cross-cluster cooperation is beneficial for innovation and this cooperation is part of Rhône-Alpes’ current strategic plan for the period 2011-2014. In the Basque report, cross-cluster collaboration is seen as important and there is work on promoting cross-cluster collaboration among clusters and among companies. One of the issues that has been highlighted with regard to future trends within cluster policy in Poland is that new cluster policies should support the development of existing economic specialisations and reinforce the processes of cross-cluster collaboration. This is something that Poland considers will be important when developing dynamic clusters in the country in the future.

3 Smart Implementation and Integration of Cluster-Related Policies

The potential benefits of clusters in their regional environment has increased the prevalence of cluster initiatives and highlighted the necessity of well-developed and balanced cluster policy strategies. Much of the input highlighted a need for smart implementation and smart integration of policies. Smart implementation encompasses a smarter balance between support to existing and emerging clusters, and smarter (and more flexible) funding to clusters over time. Smart integration encompasses both vertical (across policy areas) and horizontal (across policy levels) policy integration.

3.1 Smart Specialization – balancing support to existing and emerging clusters

Smart specialisation is mentioned by a few countries and regions relating to the EU strategies and relating to the need for identifying the competitive niches of innovation and industry. Innovation can also be to develop new clusters (rather than only working with existing ones). It is important to identify the emerging clusters. The region of Värmland works with this model in order to avoid lock-in effects in accustomed patterns. “It is important to secure that the region is not overly

³ See <http://www.kids-cluster.com>

depending upon a limited number of existing industries, in order to avoid path dependencies and lock-in effects hindering innovation and industrial restructuring processes. It is therefore important to support the development of related and new sectors, contributing to a broader industry base for innovation". Both regions in Belgium as well as Denmark and Norway on a national level, believe that a difference between mature and emerging clusters have to be made as these have different needs when it comes to innovation.

3.2 Funding of cluster initiatives

Public funding of cluster activities is a "hot topic" for many of the regions and countries. The need for long-term financial solutions is e.g. expressed in the report from the UK where one of the key learning points include "Funding agreements should run for several years subject to satisfactory performance to allow cluster organisations to plan ahead. Cutting off funding at short notice should be avoided". In the UK report, the triple helix is also suggested to be replaced by a quintuple helix, where access to funding is added as one additional pillar (people/users being the other).

In Norway the financing is suggested to be made more flexible, i.e. "Cluster policies, programmes and financing of clusters should be flexible, so as to be able to accommodate to the individual needs of clusters". And in Sweden, financing of pre-studies and concept development, and phased financing approaches are both recommended.

In the Polish report, the cluster support programmes are suggested to include both direct and indirect support mechanisms that "allow identification of leading clusters, definition of economic and technological specializations, diagnosis of development needs of these clusters and response to those needs in an integrated manner". In the Polish report a more efficient use of resources is also argued for "Another important objective of cluster-based development policy is more efficient allocation of available resources especially financial ones but also other like national R&D infrastructures funded from EU structural funds. This can be achieved through concentration of development resources and investments within clusters which have the greatest potential for building strong economic specialisations"

3.3 Vertical policy integration

Clusters an important tool to strengthen regional development

Cluster policy is seen as an important tool that can strengthen regional development, competitiveness and innovation. This is for example the case in Germany where "network and cluster policies are seen as a means of promoting economic development and structural change as well as of strengthening regional innovation capacities" and in Poland where the most internationally known Polish cluster – the Aviation Valley is located in the least developed region of the country.

The need for increased interaction between levels of governance

Quite a few countries and regions mention the importance of more interaction and coordination between different levels of governance, such as the regional, national and international level.

In the report by Sweden, it is claimed that the current situation calls for innovation policies that enable effective coordination and use of finance between regional, national and EU levels.

Regional clusters and regional cluster policies are seen as an important part in the national innovation strategies

In Finland, cluster policy and the strong local-regional-national synergies create a good basis for the national innovation strategy. This is also the case in Austria, where clusters are a visible instrument

in the innovation policy and where there is a strategic interest in strengthening the role of regional clusters in the national innovation system. Further, the Austrians claim that regional cluster policies should be reflected on the national level. In Denmark, it is expected that cluster policy and cluster development will form an integral part of the innovation strategy in 2012.

The coordination between regional and national level is also a question about division of tasks related to the support of clusters in different ways. In Poland, the division of tasks between national and regional levels is perceived as important. It is assumed that the national level should coordinate policies towards clusters with significant potential for being internationally competitive.

There is also the knowledge dimension – that an increased level of interaction can support policy development where cluster organisations can provide information about the industry climate as such. For instance in England and Wales it is seen as important that cluster organisations can provide a valuable source of information to policy makers and funding bodies on issues such as industries, growing sub-sectors, individual businesses, emerging industries, new technologies and new processes.

EU policy and financing instruments

Better coordination with EU policies and programmes is regarded to be important by many countries and regions. The EU 2020 strategy is mentioned by several countries and the importance of better linkages with the EU as well as better coordination between EU policy instruments supporting the development of clusters. As an example, for the Cluster Platform Austria one strategic aspect of cluster policy is that a key interest for the future is an active involvement of Austrian clusters in strategic strategies and programmes of the European Union. For Finland it will be important to take actions in the following field in order to maintain added value of cluster policy – to establish better links between regional financing instruments (EU structural funds) and innovation financing instruments (national and EU programmes).

3.4 Horizontal policy coordination

One of the cluster winds identified is that several countries and regions emphasize the need for increased policy coordination and better alignment between policies in supporting strong clusters.

Increase the use of the whole innovation system in supporting cluster development

One aspect when it comes to creating good prerequisites for cluster development is to increase the use of the innovation system in supporting the development of clusters. This is an important issue for the future cluster policy now drafted in Poland. Institutions such as incubators, science and technology parks, provide infrastructures appropriate for the development of cluster companies. In the report by Southern Denmark, it is formulated, as “Some of the key challenges is to increase the interaction between actors in the innovation system to support the development of the prioritised clusters”. In Southern Denmark, there have also been investments in the innovation system as a way to promote the development of regional clusters. There has been an establishment of a welfare-technology fund in order to provide companies with access to funding and counselling. In the UK report, it is assumed that “Integration with other business support services can be very effective adding value to the cluster programme and to other support services”. The UK report is also adding that effective integration can take several years.

Coordination of various policies in supporting clusters and cluster development as a way to formulate policy

Several countries and regions express the importance of better coordination between policies. For Norway, one area of further development and particular attention is that cluster development is aligned with innovation policies and with economic policies. This is also very important for Poland,

where “concentration and coordination of various policies is important in the development of strong clusters” – where clusters are perceived as tools utilised to enhance innovation, industrial, regional or other policies of the government. In the Swedish input to cluster winds, it is written that innovation policies need to enable that regional and national agencies working in this field should work in a more coordinated fashion with each other in order to lever these cluster initiatives as strategic research and innovation platforms. The need for better coordination between policies is also formulated by Basque and Catalonia. In the Basque input to this paper, “some of the main challenges is that Cluster policy is only a small part of industrial policy and must be engaged with other policies such as R&D, Innovation policy and internationalisation policy. Without this the effectiveness of the cluster policy will be much lower”. Catalonia sees that there is a need for better coordination between cluster and innovation as well as with internationalisation policies. For Denmark, one important issue that needs to be analysed further is the inclusion of better integration between cluster policy and other policy areas such as research, innovation, education, entrepreneurship, foreign trade, regulation etc.

Both coordination between policies and formulation of policies are important. For the formulation of policy - That Polish clusters should form a basis for formulation of other policies influencing cluster policy seeking synergies in supporting the portfolio of clusters chosen until 2020. Policies mentioned are innovation policy, R&D policy, regional policy, industrial policy, labour market policy, education policy etc.

4. Continued Strengthening of Cluster Initiatives

Finally, policymakers stressed the continued importance of clusters as a policy tool and highlighted a number of trends for policy action aimed at strengthening cluster initiatives.

4.1 Increased participation of SMEs

Some countries and regions put more focus on the participation of different groups of actors within cluster initiatives. One of the identified trends in several countries is to focus more on getting the SMEs on board and on the development of SMEs. Finland indicates that a larger focus on SMEs (rather than large established companies) will enable these companies to grow and direct attention towards industries that have not received so much attention in the past. France is also pursuing this idea, and the French have established special measures in the areas of marketing and finance to improve conditions for SMEs (one such measure is the label called “innovative cluster enterprise” that is awarded to potentially successful SMEs within clusters, and gives them visibility in order to be identified by investors, and then facilitates the contacts between them). Veneto is willing to increase the participation of SMEs by means of introducing in the upcoming legislation a label system which enhances the visibility of clustered SMEs when going international. In Denmark, clusters are considered as a tool to raise innovation capacity among SMEs and industries with large growth potential.

4.2 Strengthening the knowledge dimension – increased collaboration between science and clusters

Many countries and regions perceive the collaboration between companies and academic institutions as important in order to raise the innovation capacity in clusters. In the German report, this is expressed as “Intensification of cooperation between science, research and business in order to generate added value along the entire value chain and to mobilise resources that are not being utilised”. The French authorities have supported more than 1000 collaborative R&D projects since the implementation of the “poles de compétitivité” scheme in 2005, representing 4,9 billion € of public and private R&D investments. In the report by the region of Emilia Romagna, the

collaboration between science and clusters is stressed, and there are two different policy actions being carried out now in order to encourage this collaboration. The first one supports projects carried out by research units of leading firms in the clusters with the scope of developing new enabling technologies and diffusing results to the other firms of the clusters. The second action is more oriented to directly upgrading SMEs in their knowledge dimension. In the region of Värmland, the aim is to consolidate research environments connected to the cluster professorships and to develop connections between research and companies. In Poland, three aviation clusters that represent 95% of the sector already cooperate with the research funding institutions to jointly work on large development projects.

4.3 Competence supply – attraction of talent and skills’ development

In Southern Denmark, the supply of competent people is also seen as crucial for innovation, where the attraction of talent is to be prioritised in future work with clusters. The region of Värmland expresses this connection between talents and clusters. In the report by Värmland, it is expressed that the labour market can stimulate education among certain groups. Furthermore, the report from Värmland also states that a better gender balance in the business sector “can accomplish an improved use of human resources in the region” and that “attracting women to the existing clusters and supporting growing branches that attracts women can do this”. In Northern Ireland, the link to knowledge is expressed as “Improving employability and the level, relevance and use of skills”. In Poland, the aviation cluster is recognising the importance of future supply of skilled-labour in the sector and is engaged in many educational activities (starting with primary education).

4.4 Use of design skills as a driver for innovation

The supply of creatively-skilled people is seen as a driver for innovation. In the report by Emilia Romagna, this is expressed as “involving the sphere of design and creativity in the clusters, or generating new creative clusters;” and “increasing attractiveness for knowledge intensive firms and talents, in order to increase the innovation capacity and the competitiveness of clusters”.

4.5 Service innovation as a way to strengthen innovation capacity in clusters

Service innovation is seen as a means of developing innovation capacity in clusters. In Austria, the collaboration between knowledge intense service companies and SMEs is seen as important for the innovation capacity in clusters: “Knowledge intensive services are seen as important drivers for growth, productivity and know-how in the production sector”. The region of Värmland believes that innovation within services offer the best opportunities for all clusters in the region.

4.6 More professional management and process support

Several geographies believe that the efficiency and effectiveness of clusters can be raised through programme management support and capacity building measures for cluster management. Effective management/leadership includes activities to mobilise and engage various actor groups and anchor cluster initiatives within broader regional strategies. In the report by Wallonia, the management of clusters is discussed in detail and it is assumed that process support for improving cluster management excellence can result in a positive impact on economic growth and new innovative solutions. In Southern Denmark, it is assumed that knowledge and best practise is important in professional management of cluster initiatives. The region has the aim of developing a method for “bench-learning from other regions who have taken a top-down approach to cluster development”.

In general, there is a trend towards more institutionalized and professional cluster organisations – legal entities with the responsibility of implementing the strategy of “their” cluster initiative. The individual performance of cluster organisations is of course an area that is mentioned in most reports. In Germany, the most efficient cluster organisations in the country are invited to apply for the *Kompetenznetze Deutschland Initiative*. The initiative is run by the German Federal Ministry of Economics and Technology (BMWi) and assembles “the most innovative and high-performance technology-oriented networks and clusters”. Once approved, members of the initiative (currently 97) receive a seal of quality and clusters gain access to support and other activities.

4.7 Focus on performance

The importance of excellence

In addition to the *Kompetenznetze Deutschland Initiative* mentioned above, the German Ministry for Education and Research (BFBM) hosts a competition for those clusters that are particularly successful in the area of R&D, where winning clusters are awarded funding. In Hungary an accreditation has been established within the framework of the so called “pole programme”. Here clusters can be approved based on their performance and the programme has incentives for clusters to climb the “accreditation ladder” which contains four different levels. The draft of future Polish cluster policy also mentions an accreditation system to be introduced to select the best clusters in Poland.

The selection process of clusters has also been a topic in the Northwest of England, where the cluster development was revised in 2006 and a number of sectors were set as priority sectors. Similar processes have also taken place elsewhere in the UK.

Evaluation of cluster performance

The evaluation of clusters is something that seems to become increasingly important for many countries and regions. In the UK report the use of “robust monitoring” evaluation technologies is seen as vital and one of the key learning points for the future development of cluster policies. The evaluation of clusters is also mentioned in the report by Rhône-Alpes, where it is stated that the evaluation must be done on a frequent basis in order to monitor progress of individual clusters.

5. Conclusions

Far from being a narrow and well-defined concept, the cluster concept is now understood as encompassing a broad range of things, for example: open innovation arenas, nodes of international networks, and platforms for addressing societal challenges and meeting public demand. This highlights the reasons behind the prevalent use of the cluster tool, and also the reasons behind the confusion about “what a cluster really is”.

Regardless of how these entities are referred in their local contexts, it is evident that clusters remain central in policy strategies, and that policy objectives of clusters are evolving. Clusters are increasingly being used as vehicles to open-up innovation processes – to users, and to actors in different sectors and new (international) geographies.

This new scope of activities creates challenges – both for policymakers and for cluster initiatives. For policymakers, there is increased pressure to implement and integrate policy measures more efficiently. Regarding policy implementation, there is a need for “smart specialisation” (building on existing areas of strength while also enabling new growth areas to emerge), as well as more long-term, “investment-oriented” methods of financial (and other) support to clusters. Regarding policy integration, there is a need for better vertical linkages (i.e. between local/regional, national and EU

levels) and better horizontal linkages (i.e. between various policy areas and actors within innovation systems).

For cluster initiatives, there is a continued need to strengthen the various functions or activities of the initiative. These range from developing and attracting talent, strengthening collaboration between science and industry, and mobilising SMEs – to developing management capabilities and focusing on performance (in terms of both management and economic impacts).

All of these trends point to a continued prioritisation of the cluster tool, and the continued demand for policy learning and development on this topic.

B. REPORTS FROM DIFFERENT GEOGRAPHIES

1. Austria

1.1 National (contributed by Federal Ministry Economy, Family and Youth)

Past use of the “cluster tool”

Austria was one of the “early movers“ in cluster politics in Europe. Cluster activities started at the regional level in the late 1990s with the foundation of the Automotive Cluster Styria in 1995 and the Automotive Cluster Upper Austria in 1998. Many cluster initiatives in other regions followed in the subsequent years.

Actually there are about 50 clusters and networks in Austria in the main economic and technological fields such as mobility, materials, health and life science, food technology, ICT and mechatronics, environmental technologies, construction, design and many more. Nearly 4.000 Austrian companies with more than 400.000 employees are members of the diverse cluster initiatives.

The Austrian clusters are effective instruments of innovation policy mainly at the regional level. They set various activities to strengthen innovation and the international competitiveness of Austrian companies, especially SMEs, and have built strong networks with research and education institutions. A certain focus is given to the increasingly trans-regional co-operation of clusters and the active involvement in innovation and research programmes of the European Union.

In February 2008, the Federal Ministry of Economy, Family and Youth in Vienna launched the Cluster Platform Austria in order to offer an information and cooperation platform to the many national and federal cluster stakeholders in Austria. With this platform an official strategic and working level for cluster organisations and agencies was created. The core activities of the Cluster Platform Austria are the formation of several working groups and workshops, the annual Austrian cluster conference and common efforts to strengthen to role of regional clusters in the national innovation system. The platform also initiates joint activities and projects and puts a focus on all relevant cluster activities of the European Union.

Description of current key policy issues relating to clusters

Important thematic fields of the Cluster Platform Austria are the following:

- Involvement of regional clusters in the national innovation system
- Research and innovation and the role of clusters
- European cluster policy
- Internationalisation of clusters

- Enforcement of knowledge-intensive services through clusters

Information and communication activities on clusters and cluster relevant issues are another activity of the Cluster Platform Austria.

Clusters have turned out as important instruments especially for regional innovation⁴ policy and SME policy. In the national strategy of the Austrian government for research, technology and innovation¹ clusters are incorporated with their strength to leverage know-how transfer and their ability to stimulate cooperation between academia and business.

Policy implications/recommendations for the future

For the Cluster Platform Austria the following strategic aspects of cluster policy should be consequently developed in the future:

1. The enforcement of co-operation between clusters and research institutions and the enabling of the access of companies, especially SMEs, to research networks are strong points of interest in the national cluster policy. There are many examples of cooperative research as it is pursued through the Austrian competence centers and other instruments. Clusters act as intermediaries between research and companies and may build networks for know-how transfer and applied research.
2. An active involvement of Austrian clusters in strategies and programmes of the European Union is also a key interest of the Cluster Platform. Clusters play an important role in the European strategy „Europe 2020“ in the fields of industrial policy, research policy and regional policy and are seen as drivers for growth and employment and catalysts for energy efficiency and eco-innovation.
3. The internationalisation of clusters is an important issue as they might build effective networks in Europe and at the global level to support the export activities of the cluster companies. Since 2010 the Federal Ministry of Economy, Family and Youth is supporting the international paths of Austrian clusters through a funding programme that encourages clusters to cooperate in their international activities for SMEs.
4. Knowledge intensive services are seen as important drivers for growth, productivity and know-how in the production sector. The Cluster Platform Austria will set a new priority in its activities to reflect the role of clusters to pinpoint the dynamic development and specific competences of knowledge intensive service companies in the different clusters and to enforce the cooperation between producing companies, especially SMEs, and knowledge intensive companies for innovative projects and activities.
5. Clusters are visible instruments of innovation policy in Austria – both at the national and regional level. There is a strategic interest to strengthen the role of regional clusters in the national innovation system. Therefore it is necessary to reach the cluster networks on regional level in order to develop common targets for the national cluster policy. This finally enables that the regional cluster policies are reflected on the national level.

1.2 Upper Austria (contributed by TMG and Clusterland)

Past use of the “cluster tool”

The Upper Austrian Cluster policy is following a consistent and long-term approach. One of the key criteria is that the Upper Austrian Cluster policy has been shaped alongside particular needs

⁴ „Der Weg zum Innovation Leader“ – Strategie der Bundesregierung für Forschung, Technologie und Innovation, März 2011, Wien

fostering the economic development of Upper Austria outlasting legislative periods. Therefore TMG – Upper Austria’s location and innovation agency - was founded in 1992. In addition to its core business areas consisting of Location Marketing, Investor Relations and Innovation & Technology, TMG exercises an important function within Upper Austria’s Innovation Network by designing Upper Austria’s location and innovation policy. Today TMG-Group (TMG with its affiliated companies Clusterland Upper Austria, CATT Technology Management, tech2be Incubator, 15 Technology Centres) forms an effective company group, which offers an extensive range of innovation services.

The first Upper Austrian program “Upper Austria 2000+” was in place from 1998-2003 and focused on 3 strategic areas. Within the strategic area “Research & Development” it was decided to give TMG the mandate for cluster setup in Upper Austria.. In 1998 the first cluster founded: The Automotive Cluster Upper Austria. Up to the end of 2005 TMG set up and managed 5 cluster initiatives in Upper Austria’s areas of economic strength (automotive, plastics, mechatronics, health technology and wood and furniture) and 3 innovation networks in the field of Human Resources, Design & Media and Environmental Technology. In December 2005 it was decided to transfer the Upper Austrian Cluster and Network activities into a separate company the “Clusterland Oberösterreich GmbH” of which TMG holds 61%, the Chamber of Commerce and the Federation of the Austrian Industry both holding 19.5%. The main motivation of this move (which was also accompanied by a steep rise in private financing of Clusterland) was to position the Cluster more closely towards companies and industry.

The second strategic program, called “Innovative Upper Austria 2010“ was in place from 2005-2010, covering five strategic areas. At this point one of these was already solely awarded to cluster and networks. In the course of this funding period in which special emphasis has been put on professionalizing of cluster and network initiatives, Clusterland established different networks. The so called network “environmental technology” has been changed into a cluster by the end of 2009. Today this cluster is called “Environmental Technology” cluster. To be in line with the professionalisation strategy, Clusterland developed a so called matrix strategy, blending sectoral approaches followed by the different clusters with an inter-sectoral strategy followed by the networks. As it turned out, this approach offered added value to the SMEs (the overall majority of cluster- and network members).

Description of current key policy issues relating to clusters

The current strategic economic and research program, called “Innovative Upper Austria 2010plus“ has been in place since 2010 and lasts until 2013. This is fully in line with the funding periods on EU-level which will expire in 2013 as well. “Innovative Upper Austria 2010plus” again covers five strategic areas, one solely dedicated to cluster and networks.

The funding period 2010-2013 puts a lot of emphasis on the topic of internationalisation. This topic is also fully in line with e.g. the internationalisation strategy of DG-Enterprise and Industry on European level. Clusterland is highly involved in European projects, helping its members’ SMEs to internationalize. Just think about the Cluster Collaboration Platform not just offering networking opportunities for clusters within Europe and even beyond (India, Japan, Brazil and the Republic of Korea), but also to its member SMEs.

Besides the crucial topic of increasing internationalisation activities Clusterland identified the need for increasing cross-sectoral collaboration between clusters themselves. It turned out that not just networks but also clusters need to follow a cross-sectoral approach; at least to some extent.

For this purpose special interest groups have been established within Clusterland creating a framework pushing the development of innovative products on a cross-sectoral basis. It can be said

that for specific challenges a sectoral approach cannot offer solutions being as good as cross-sectoral ones. Special interest groups are for instance the WPC-Platform Austria.

Consequently one can conclude that the Upper Austrian Cluster policy in general and Clusterland in particular offers added value to the SMEs. This can be proven by the fact of membership rates, constantly rising. Up to now more than 1800 enterprises are members of the six clusters and three networks and constantly pay their membership fee. Thus “willingness to pay” can be seen as the crucial indicator reflecting the fact that Clusterland – in line with the Upper Austrian Cluster policy – creates added value to SMEs.

Policy implications/recommendations for the future

Due to the long-term orientation and a simple and straight-forward cluster policy, the one-agency-principle and the top-down set-up and bottom-up operations approach, it is expected that clusters will continue to play a vital element in the Upper Austrian innovation policies.

2. Belgium

2.1 Flanders (contributed by IWT)

Clusters are part of the regional innovation strategy but modalities to support cluster creation, cluster organisations and cluster activities need to be revitalised.

Past use of the “cluster tool”

Flanders has a long history in supporting R&D&I based on bottom-up projects from industry and research organisations. This has led to a number of initiatives in a broad range of areas. The regional government did not put forward a specific area for innovation and provided limited incentives for collaboration. Over the last 20 years, in the context of a growth economy this bottom-up approach proved to be effective: Flanders has been on the top regions regarding economic growth.

In the early 2000's Flanders was one of the pioneering regions installing a specific cluster support programme. As described (IWT-study 35 : ICT Clusters in Flanders : Co-operation in Innovation in the New Network Economy Flemish Contribution to the Focus Group on 'Cluster Analysis and Cluster-based Policy' - http://www.iwt.be/sites/default/files/publicaties/iwt_studie35.pdf) collaboration between companies as research centers was promoted in bottom-up collaboration projects. Since the last five years the context has changed : from a growth economy to stable or slightly declining, from a ‘making’ industry to a more knowledge driven economy, from support to mainly research (to produce knowledge) towards supporting innovation (to implement knowledge). Regional government has been looking for a higher return on R&D&I investments and for new ways to achieve this.

Investment in collaborative competence poles has been (since 2005) installed to stimulate collaboration between companies and research organisations. Mainly a bottom-up initiative, this resulted in a broad range of rather small competence poles.

In May 2011 a White Paper ‘New Industrial Policy’ was published. In this White Paper reference to clusters is made in the context of the industrial transformation

A strategy of targeted cluster policy is essential to the industrial transformation in Flanders and is necessary to achieve success. This cluster policy combines renewal and rejuvenation by strengthening and consolidating existing clusters and by identifying and supporting emerging clusters.

In the implementation of this cluster policy, the existing top research organisations will be connected to international competitive industries, lead-plants and lead-companies.

Description of current key policy issues relating to clusters

In the 2011-2012 science and innovation policy letter Flemish Minister of Innovation clusters are presented as part of larger innovation hubs (6 innovation hubs were identified for Flanders: transformation through innovation, eco-innovation, green energy, innovation in care industry, sustainable mobility and logistics, social innovation).

Policy implications/recommendations for the future

Clusters have a role to stimulate networking and collaboration between all stakeholders (industry, research organisations and government). The modalities to detect and support existing and emerging clusters need to be developed in the context of the identified innovation hubs to lead to success for the Flemish companies in the changing economic environment.

2.2 Wallonia (contributed by Public Service of Wallonia)

NOTE: needs to be shortened in final version

Past use of the “cluster tool”

In August 2005, the Government of Wallonia decided to dedicate important budgets to a Priority Action Plan, also called the “Marshall Plan” (2006-2009) which aims at giving a qualitative jump to the economy of the Region. This Plan developed structural reforms under 5 priorities:

- 1) Competitiveness poles policy;
- 2) Stimulation of the creation of activities;
- 3) Reduction of taxes on companies;
- 4) Promotion of research and innovation;
- 5) Improvement of the skills of the workforce;

In 2009, the orientations of the Marshall Plan were confirmed by the new government of Wallonia in a "2.Green" version placing greater emphasis on eco-efficiency and green technologies⁵. Consistent with those strategic orientations, the new industrial policy developed in Wallonia mainly focused on the development of industrial networking through two complementary and linked policies: Competitiveness Poles and clustering.

- 1) The Competitiveness Poles policy: The main objective of this policy is to develop some key growth sectors on the basis of strong partnerships projects between enterprises, research centres and training centres. It aims at implementing leading industrial and technological projects within the 6 sectors considered essential for the regional economy : Life Sciences and health (BIOWIN), the Agri-Food Industry (WAGRALIM), the Aeronautics and space Industry (SKYWING), Mechanical Engineering (MECATECH), Transport & Logistics (LOGISTICS in Wallonia), environmental technologies (GREENWIN). This policy is developed using a top-down approach: To support the Competitiveness poles, the Government has launched, on a regular basis, calls for projects on their behalf. To be selected, Competitiveness poles were required to be composed of a mix of different categories of operators (enterprises, training centers and research centers) and to develop a common and innovative project for their sector with a view to reaching a high level of competitiveness and international visibility. The quality

⁵ <http://economie.wallonie.be/competitiveness/Competitiveness-policy.htm>

assessment of projects is entrusted to the international jury. On the basis of the opinion of the jury, the Government labels the relevant projects and allocates the financial means.

<u>3 OPERATORS CATEGORIES</u>	<u>3 CENTRAL FACTORS</u>
Enterprises	Partnerships
Research units	Setting up of joint innovative projects
Training centers	International visibility

Up to now, 6 calls for projects have been launched by the Government. The 8th call is open and will be closed for June 30th, 2012. As regards the Walloon funding support, the Competitiveness Poles are essentially supported for the achievement of projects of investment, R &D and training in the wake of the competitive positioning strategy they have themselves defined⁶. The animation structure of the Competitiveness Poles are co-financed on a public-private, 50-50%, partnership basis. Twice a year, the support and monitoring Committee meets to assess the leverage effect of Public Cluster Funding.



Marshall Plan 2.Green planned a 388 millions €budget for the period 2009-2014.

Research/training/investment projects	288 000 000 €
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⁶ The various steps of the selection of the project highlight the Public/Private Partnership:

- The management of Competitiveness Poles is assured by industrials and scientists (private leadership). The government is present in the clusters only through the intermediary of observers in charge of verifying that the philosophy of the clusters as defined by the government is implemented.
- Internal calls for projects are launched and selected by an internal jury and the Governance Council of the Competitiveness Pole.
- checking of the eligibility of the projects by the relevant administrations.
- The quality assessment of projects is entrusted to the international jury.
- On the basis of the opinion of the jury, the government labels the relevant projects and allocates the financial means

Sofipole	65 000 000 €
Support to export	20 000 000 €
Foreign investments attractions	15 000 000 €

For more coherence with the European strategic orientation (Internationalisation / Excellence of clusters), each pole recruited a sectoral expert with a view to developing an international promotion strategy for the Competitiveness Pole. This person must improve the cluster strategy.

- 2) The clustering policy: launched in 2001, the objective of this policy is to develop business networks in specific domains, eventually with research operators, and, doing so, to develop a cooperation framework and a stronger economic development within the sector. This policy is developed using a bottom-up approach. Demands coming from existing Enterprises networks are spontaneous. They are the initiators and the drivers of their own development (strategy, actions, ...). The financing of the animation structure amounts to a yearly €160 000 but on a degressive financial support.

In conclusion, the management team of Competitiveness Poles and Clusters is responsible for :

- assuring the animation of the cluster/pole ;
- supporting the emergence of different kinds of projects (research/training/investment) ;
- fostering sharing knowledge and networking between the members;
- promoting SME's development ;
- ensuring international visibility of Wallonia.

These services covered by the Competitiveness Poles and Clusters are largely of common/public interests.

Description of current key policy issues relating to clusters

Wallonia is completely convinced that Competitiveness Poles and Clusters provide fertile environments for companies (in particular SMEs) to thrive.

Nevertheless, Walloon Competitiveness Poles and clusters programmes must address a number of challenges : developing an effective and ambitious industrial strategy (through smart specialisation strategies) which takes into account grand societal challenges, better leveraging of complementary research and innovation assets (through creative linkages, cross-fertilisation, KET) and finally moving from collaborative research projects to a real commercial exploitation of the research results.

Developing a Walloon industrial Smart Specialisation Strategy

Walloon Competitiveness Poles and clusters play an important role within the regional smart specialisation strategy. They have to contribute to innovation and industrial growth of Wallonia.

Walloon Competitiveness poles were selected:

- On the basis of the study of Professor HENRY CAPRON (2005 - Free University of Brussels), sectors in which the Region has a high economic innovative potential were identified. 36 indicators were gathered in 8 main categories: Economic basis (1) and its evolution (2), Technological base (3) and its evolution (4), Scientific base (5) and its evolution (6), the state of the redeployment process (7) and the prospects for the development of the strategic assets (8)
 - ⇒ scientific basis: analysis of regional potentials and development perspectives.

- Moreover, potential projects are analysed by an independent and international Jury of experts. By this way, the strategy of the poles is continuously evaluated and involves a specialisation of certain themes of the key sector (niche markets).

From the policy makers' perspectives, it means that Cluster/Pole initiatives have to be used as a market intelligence tool to detect trends in business models and to reinforce the regional competitiveness in front of globalisation.

The Walloon industrial strategy also must take into account grand societal challenges. In 2009, the orientations of the Marshall Plan were confirmed by the new Government of Wallonia in a "2.green" version placing greater emphasis on eco-efficiency and green technologies. The Sixth Pole in environmental technologies was created in 2011. It's an answer to the societal challenges and new opportunities outlined by the Europe 2020 strategy⁷.

Better leveraging of complementary research and innovation assets (through cross-fertilisation, KET, internationalisation).

Competitiveness Poles and clusters must create a strong research and innovation environment in Wallonia. Cluster initiatives are seen as political tools for implementing well-developed eco-systems (with a focus on SMEs strategic change and business environment improvement), for detecting innovative projects and new innovation methods and for fostering cross-fertilisation among different industries.

Within this framework, Key Enabling Technologies (KET) and ICT can help Walloon Competitiveness and Clusters to develop an industrial cross-sectoral approach and promote interclustering linkages both at local and international level. For developing international linkages, each pole recruited a sectoral expert with a view to developing an international promotion strategy for the Competitiveness Pole.

The Competitiveness poles and clusters policies are complementary and facilitate cross-fertilisation among industrial fields:

Walloon industrial policy > 10 clusters & 6 poles						
Fields	Clusters					Poles
Mobility & Transport	Transport & Logistics					SKYWIN (Aeronautics and Space industry) LOGISTICS in WALLONIA
Environment & Sustainable Development	VAL+ (Solid Waste)	TWEED (Sustainable Energy)	CAP 2020 (Building Energy Efficiency)			GREENWIN (6 th Pole)
Food Health	Clinical research					BIOWIN (Life sciences) WAGRALIM (Agro-industry)
Transversal technologies	ICT	TWIST (Numerical Image, Sound and Text)	MITECH (Micro-technologies)	Photonics	Plastiwin	MECATECH (Mechanical Engineering)

Moving from collaborative research projects to a real commercial exploitation of the research results.

⁷ The next call for project launched by the Walloon government will be dedicated to „green” technologies. It's open to clusters and poles.

The new Walloon Decree relating to Competitiveness poles and clusters is presently under development. More globally, the policy framework is consistently adapted to the new challenges that the clusters and poles are faced with. The next objective of the Walloon strategy is to move from collaborative research projects to a real commercial exploitation of the research results.

Policy implications/recommendations for the future

In order to reach this objective in the future, Walloon Competitiveness and cluster policies highlight the following recommended actions:

- 1) State aid rules must to be updated: there is the need in the state aid framework for R&D&I for better explanations to reduce misinterpretation and explain notably how they can be applied for clusters. The Commission Certificate for Financial Statement must not restrict the participation of smaller clusters but allow the EU funded projects by clusters. We also should draw a distinction between competitive activities and activities of common interest (collective animation of the pole, support to the sharing of knowledge and the networking of the members, promotion of SME development, development of an international visibility, training needs, interclustering, ...) with a long-term scope. The policies related to the poles generate effects only on the long term and, accordingly, need a longer public support, with, as counterpart, objective assessments of the results of each pole and/or cluster. The State aid rules review has to take into account the notions of degressivity and duration reflecting the global reality.
 - ⇒ Channeling RDI through excellence clusters, evaluating cluster excellence, fostering international cluster cooperation and Emerging industries/services.
- 2) Provide “flexible” tools/financing for implementing relevant innovation activities: the tools of policy makers should be flexible regarding what type of support measures cluster organisations choose to use. Within this framework, we should draw a distinction, on the one hand, between technological domains, and on the other hand, between mature and emerging clusters, which need different support for internationalisation and innovation activities.
 - ⇒ Channeling RDI through excellence clusters, fostering international cluster cooperation and Emerging industries/services
- 3) Provide process support for improving cluster management excellence: in order to obtain an increased impact of policies in terms of economic growth and new innovative solutions to the challenges of our societies, we should incite cluster managers to increase activities and technological services for enterprises (in particular SMEs), to foster collaboration between public research and the business sector, to improve commercial exploitation of research. Independent indicators should be developed and cluster programme must provide support for sharing (and transfer of) knowledge and initiating benchmarking.
 - ⇒ Fostering international cluster cooperation, Evaluating cluster excellence, User-Driven innovation involving clusters and Emerging Industries/services, branding and marketing.
- 4) Wallonia awaits the Commission communication on globally competitive clusters and networks. European Commission must support sharing of knowledge, networks and cluster partnerships within an integrated strategy related to Horizon 2020 (Innovation Union flagship), Programme for the Competitiveness and Enterprises and SMEs and the Cohesion policy initiatives. This strategic position is the continuation of the guidelines established during the last Belgian presidency in the Conclusions of the Competitiveness Council of 10

December 2010 (17838/10) : « *the Competitiveness Council UNDERLINES the benefit of smart specialisation strategies and the clustering policies to strengthen industrial competitiveness and innovative performances at the regional, national and EU levels by structuring of efficient innovation systems, stimulating international, cross-border and cross-sectoral cooperation, knowledge transfer, and the developing innovative activities, and INVITES the Commission to reinforce its initiatives and to develop a renewed ambitious strategy in this field, including encouraging a better governance of clusters, while respecting the principle of subsidiarity* ». We also refer to the last Draft Council conclusions on the industrial flagship initiative (November 29th, 2011 – 17851/11): “*Supporting sharing of knowledge, networks and cluster partnerships, including cross-border cooperation, as they offer possibilities for smart specialisation and enhanced business cooperation that could be developed and customised to the particular needs of enterprises in sectors which have significant economic potential; AWAITS the Commission Communication on globally competitive clusters and networks*”.

3. Czech Republic (contributed by Ministry of Industry and Trade and the National Cluster Association)

Past use of the “cluster tool”

We can define several milestones in the development of clusters in the Czech Republic.

- i. Analysis and awareness building started from the initiative of the Ministry of Industry and Trade and the implementation agency CzechInvest in 2002 with a “Feasibility study to identify industrial groupings in North Moravia for targeted state aid”. The study was to employ the cluster concept to help the reconversion of the Moravian-Silesian Region. This was followed by the first Czech cluster organisation establishment – The Moravian-Silesian Engineering Cluster in 2003 and rounded off by a broad awareness building road show with workshops and trainings. Within this cluster campaign, the first cluster facilitator courses took place in 2004.
- ii. Strategy and implementation: The National Strategy for Cluster Development 2005 – 2008 was adopted by the Czech government in 2005. This document defines the strategic objectives, measures and resources to support cluster development up to 2008. The strategy embedded clusters among the national and regional tools for boosting competitiveness. The strategy pinpointed the main principles for cluster development – helping SMEs to identify opportunities for cooperation in order to remove the traditional barriers of growth, such as access to finance and information technologies, own research and development or launching products to new market; and formation of collaboration networks focused on research and development and innovation leading to new products and processes. The National Cluster Study (statistical survey) of 2006 gathered data and provided assessment of cluster development potential in the regions.
- iii. Programming and support: The support of clusters was first introduced in the Czech Republic in the programming period 2004 – 2006 as part of the Operational Programme Industry and Enterprise managed by the Ministry of Industry and Trade. The programme Clusters provided the backbone for the formation of clusters and especially the establishment of cluster organizations as separate legal entities. The programme was aimed at two phases of cluster development – 1) the mapping of potential cluster initiatives and 2) the initial support for the establishment and further development of the cluster organization. The results were 42 projects in the first phase and 12 of the cluster initiatives succeeded also in the subsequent development phase. Besides the Ministry of Industry and Trade of the CR and CzechInvest, further role was enacted by regions with the inclusion of clusters in strategic regional documents and also

universities, which provided support for the nurturing of clusters and in some cases carried out the mapping and facilitation of cluster organizations development.

Description of current key policy issues relating to clusters

Currently there is no overarching cluster policy, however clusters are recognized as tools for improving cooperation across the triple helix and boosting regional growth in national policy documents like the National Innovation Policy or Regional Development Strategy.

As a result of the cluster development efforts, around 55 cluster organizations have been established in the Czech Republic so far. Formalized conditions for the organizations seeking support are the memberships of at least 15 members (the current average is 30 members, max. reaching 60), at least 60% being SMEs,) inclusion of a university and/or a research institute is also a condition.

From the regional point of view, there were strong showings from several regions (Moravia-Silesia, South Moravia, Liberec, Hradec Kralove regions), whereas other regions have lesser activity reflecting the relative strengths of industrial sectors (lagging behind regions without growth sectors or without non-restructured traditional sectors), but also the presence of strong leadership or management of the cluster formation process.

Strong clusters emerged in processing industries like machinery, precise engineering, technical textiles, plastics, packaging or wood; in various technology areas like environmental technologies, biotechnology, renewables; nanotechnology, ICT; recently also services or creative industries (e.g. in the region Zlin).

The support for clusters continues in the current programming period. The main emphasis of the new programme Cooperation (under the Operational Programme Enterprise and Innovation) is the long-term sustainability of the cluster initiatives. The mapping phase is no longer supported. As has been also the experience in other countries not all the cluster initiatives set up with public support remain active for a longer period of time. The new programme therefore entwined the support for clusters with the support of R&D&I. The supported cluster projects should be based on the cooperation in more areas with the main emphasis on the investment in R&D infrastructure, e.g. setting up of cluster's research centre with common measuring, testing and laboratory equipment, as well as support for collective research projects. Marketing and networking activities are still an integral part of the projects, but should not stand out as the main activity of the cluster organization as these activities can quickly dissipate, whereas the common R&D projects tend to show larger commitment of cluster members and a long term vision. In the two calls of proposals of the programme Cooperation 29 projects have been approved so far. The programme also introduced support for the participation of cluster in transnational research and development projects (e.g. participation in the ERA-NET project Cornet).

Policy implications/recommendations for the future

The support of clusters brings about common deficiencies, above all the difficulty of measuring impacts of the cluster organization or the difficulty of assessing the sustainability or viability of cluster initiatives, where some of the clusters are highly successful, while others are failing. Notwithstanding the above mentioned difficulties, it has been recognized that the most successful innovations and emerging sectors with highest growth potential have an interdisciplinary character. The National Innovation Strategy (NIS) of the Czech Republic from 2011 puts an emphasis on the developed cooperation networks of enterprises, which facilitate the creation of knowledge and capabilities for entrepreneurs across the value chains not only in the high-tech companies, but also in medium tech and low tech companies.

The NIS takes into account that the CR lags behind the most developed economies in the area of cooperation between enterprises even after the cluster development efforts and substantial support from public resources. Any further activities in this area need to be firmly grounded on the impact measurement of the up till now utilized tools and support for boosting cooperation. Thorough analysis needs to dissect the current functional clusters and other forms of collaboration between enterprises. The support needs to take into account that the newly emerging cluster initiatives are hindered by the lack of effective coordination and the lack of high-quality management of the cooperation activities.

The analyses defined by the NIS should above all identify:

- Sustainable clusters and other collaboration platforms (like technology platforms, Knowledge Transfer Partnerships et al) – i.e. clusters capable of providing services and generating income, which however doesn't have to be the main source of financing, so that it can be considered providing tangible benefits.
- Services and activities, which are directly conducive to the cluster members, above all, small and medium enterprises.
- The quality of cluster management, management of human resources and the best way to link them to the sustainability of clusters and other collaboration platforms.
- Further support needs to be more selective and targeted as to the type of supported activities, as well as more demanding impact measurement and eligibility criteria deriving from the past activities and also utilization of public funds.

Clusters should perform the role of innovation drivers in their field. It is preconceived that support to the initial phases of cluster establishment and development including the potential mapping of new cluster initiatives should be concentrated on the regional level. Further support should concentrate on excellent clusters, on collective research projects corresponding with the innovation needs of a larger group of small and medium-sized enterprises in the given industrial sector or technology area and should drive the sector forward to a higher technology level. Strengthening linkages to research programmes in other countries is foreseen (e.g. as a continuation of the current ERA-NET projects), so that individual transnational research projects can be funded by more programme owners from different countries. Further opportunities should be explored and established as a suitable framework for the support of transnational cluster projects.

4. Denmark

4.1 National (contributed by DASTI)

Past use of the "cluster tool"

In Denmark, the Ministry of Research, Innovation and Higher Education is responsible for cluster and network policy. The Danish cluster policy is partly implemented by the Council for Technology and Innovation (DASTI is the secretariat) through the national "Innovation Network Denmark" programme, and partly through the ministry and DASTI. In this respect it should be remembered that Denmark has the size of one region in an EU-context. Thus, cluster policy is very much a national matter in Denmark and cluster initiatives in the five Danish regions is closely coordinated with the national policy.

The Danish Government has decided to develop a new ambitious and comprehensive innovation strategy in 2012. It is expected that cluster policy and cluster development will form an integral part of the new strategy.

Over the past decade focus in cluster policy has been on establishing a national infrastructure of strong innovation networks covering the most important and growth-oriented business sectors and research and technology institutions. In 2008 it was decided to merge the smaller regional oriented networks programmes into one programmes for national networks. Furthermore, the number of clusters and networks with support from these three programmes should be reduced from 37 in 2007 and overlap in the network structure should be avoided. These objectives have effectively been achieved since 2010 and Innovation Networks Denmark and its 22 existing innovation networks have shown excellent performance in terms of raising the innovation capacity of SMEs and enhancing the collaboration between research institutions and industry. In 2010 NetMatch was established in order to support the development of cluster management excellence.

An econometric impact assessment of the Innovation Networks Denmark programme was conducted in 2011. It showed that the programme has a significant positive impact on increasing the innovation capacity of enterprises. The likelihood of becoming innovative increases more than four times for enterprises participating in cluster and network activities compared to similar enterprises not participating in clusters and networks. Moreover, the labour productivity in an average R&D enterprises increases by 9 per cent after participation in a collaboration project with research institutions compared to similar non-collaborating enterprises.

Description of current key policy issues relating to clusters

The overall challenge for the coming years is to further develop real world class clusters within Danish strength areas and at the same time be able to 1) support emerging clusters within sectors with future growth potentials and 2) still use clusters as an efficient tool to raise the innovation capacity of SMEs.

Policy implications/recommendations for the future

In this regard, some of the important issues and areas that need to be further looked into include the following:

1. Closer integration between cluster policy and other policy areas important for the development of world class clusters – such as research, innovation and education policies and programmes, but could also include entrepreneurship, foreign trade, regulation etc. There is also a need to create stronger synergies between the national and regional cluster initiatives.
2. Continuing the development of support mechanisms for the clusters in order to achieve cluster management excellence – in areas such as improving the skills of cluster management (including strategy and branding) and the quality of the business services provided (including internationalisation). DASTI has just extended the contract with the cluster support organisation Netmatch until the beginning of 2014 in order to achieve this. Furthermore, it is expected that the Danish networks will be among the first clusters to apply for the ECEI cluster quality label in order to document their excellence.
3. Maintain a strong focus on inter-collaboration among clusters/networks in order to support new innovation areas and emergent clusters. In this respect, one of the really good experiences of the Danish cluster programme is the support of a mix of vertical (traditionally) clusters and more horizontal innovation networks that works with a specific theme across business sectors. This enhances collaboration and knowledge dissemination between clusters.
4. Ensure a sustainable financing model for clusters – this includes finding the right balance between public and private financing and identifying alternative sources of financing. The

unique flexibility of the public financing for the clusters should be maintained in order to address the specific individual needs.

5. Continuing the strong focus on internationalisation. Within the last two years the Danish innovation networks have experienced a strong growth in their international activities and today all networks have an internationalisation strategy. And thanks to the Danish participation in the Innovation Express initiative almost all networks have established collaboration with clusters from other countries. The international collaboration among clusters should be further explored and expanded in the years to come since the full potential has not yet been exploited.

4.2 Southern Denmark (contributed by REG X⁸)

Past use of the “cluster tool”

In 2007 Denmark had a change of structure in which 14 counties were reduced to 5 administrative regions. Following the new structure the regions became responsible for health care (hospitals), regional development and future growth challenges.

Southern Denmark was one of the first regions in Denmark opting for using the cluster concept as a tool for growing the regional economy. Today the regional authorities are very pro-active in pushing the development the Southern Denmark clusters and sees clusters as a strategic tool for driving innovation, productivity and economic growth.

Cluster-based regional strategy

The first generation of the Southern Denmark regional development strategy came in 2007 and focused on supporting the development of the regions clusters and networks. In total 17 prioritized areas were included in the first strategy, among others food, steel, robotics, mechatronics and tourism. Financial support was mainly given to cluster- and network management, networking activities, capacity building and knowledge sharing and to a lesser extent to innovation- and R&D projects. Financed projects were given funding for to 3-years.

Starting in 2009 a number of factors led to a more focused strategy where the regional authorities took a very pro-active role. Increased consensus across the region on the location of specialization of businesses, which sectors to build on and prioritize, and job-losses due to outsourcing in the traditional sectors (food, transportation and steel) were some of the elements driving the new strategy.

Description of current key policy issues relating to clusters

The regional development strategy for Southern Denmark 2012-2020 focuses on 3 prioritized clusters: Energy, Welfare Technology and Experience economy. Consequently there has been a shift in funding towards more concentrated funding and larger programs with longer funding periods now up to 5 years. Funds will be invested more strategically and (when possible) in accordance with national strategic priorities in order to build a critical cluster R&D base in the region. In addition innovation has become a top-priority in terms of funding new projects under the three prioritized clusters.

Figure 1. Cluster focus in Southern Denmark

Welfare technologies (telemedicine and robotics)
 Energy (Efficiency, leaner energy culture, offshore wind/oil)

⁸ As part of the European TACTICS project, REG X has been asked to provide a short description of the “cluster winds” in the Region of Southern Denmark where REG X is located. The document below described the *cluster-trends* that we have observed in Southern Denmark over the past 5-7 years.

Experience industries (includes tourism and design)

The regional authorities have initiated special actions to promote the development of the regions cluster:

- dialogue with national authorities on influencing the focus and design on national innovation programs to align them to cluster focus areas in Southern Denmark through the national partnership agreements and through⁹ and through STI's Innovation Network Programme¹⁰.
- increased public demand in which the region stimulates the market for cluster specific goods and services, by acting as a central buyer (i.e. in connection with building of a hospital)
- establishment of a welfare-technology fund (75 MIO) to provide companies with access to risk-capital and counseling
- established a program for promoting collaboration between clusters in Southern Denmark and Northern Germany
- support system to guide cluster actors with applications for funding and general advice before and after projects are approved
- increased focus on cluster portfolio management at both regional- and cluster level to monitor progress of cluster initiatives
- documentation of results and contribution to overall growth target of the region through the regional "effect model" which assess the potential effect of a project. Projects with the highest effect are more likely to get funding.
- Co-funded REG X – the Danish Cluster Academy - to provide support to among others the regions clusters through training, networking, etc

Policy implications/recommendations for the future

The cluster winds that have been blowing in Southern Denmark over the 5 past years have been interesting to follow and will undoubtedly be so in the future. Some of the key challenges that we foresee that the regions needs to focus on in the coming years are listed below.

- tighter cooperation between cluster companies and the regional university as well as regional research institutes to support the development of the regions prioritized clusters
- increase interaction between actors in the innovation system to support the development of the prioritized clusters
- smart specialization - more focus on the specialization of the regional clusters and how to communicate this to the outside world as part of the internationalisation of the regions clusters
- attraction of talents (national- and international talents) to prioritized clusters and the innovation system around the clusters
- building new cluster intelligence through customized cluster analysis, benchmarking analysis etc to identify new opportunities and to guide investment in future cluster initiatives
- capacity building for cluster organisation's staff
- benchlearning from other regions who have taken a top-down approach to cluster development

⁹ The national partnership agreements are aimed at securing that the national and regional level are working towards the same goals. The Partnership agreements became effective in 2007 and are negotiated between regional and national authorities on a regular basis.

¹⁰ STI currently finances 22 Innovation networks across Denmark. Financing is among others given to networking activities and promoting collaboration between research institution and companies

5. Finland (contributed by the Ministry of Employment and Economy)

Past use of the “cluster tool”

The Finnish Centre of Expertise Programme CoE (2007-2013) is a combination of cluster policy (particularly the Competence Clusters) and a policy to promote regional competence centres. The CoE programme was originally set up as a region-based operation model aimed at bundling and stimulating expertise in the key regions in Finland. In the first phase (1994-1998) the programme was aimed at the largest urban only. In later phases, less urbanised regions joined the programme. Since the beginning, the Centre of Expertise programme has been firmly based on the exploitation of top-level expertise by supporting cooperation between universities, research centres, technology centres, enterprises and R&D financiers. The current third phase of the programme aims to be more nationally oriented, and having even more international or global perspective. The programme is carried out by 22 centres of expertise, within thirteen topic areas: Cleantech, Digital business, Energy technology, Food Development, Forest Industry Future, HealthBio, Wellbeing, Intelligent Machines, Maritime, Nanotechnology, Tourism and Experience Management and Ubiquitous Computing. These clusters form a national network and cooperation forum fulfilling shared objectives.

A strength of the Finnish CoE Programme is that it has invited CoE proposals from all regions and in its allocation of support. Being accepted in the programme required clearly defined regional strategy and strong regional commitment both in financial and participatory terms. Through promoting specialisation, the programme has helped regions to focus on their strong assets and building a strategy around these assets. Through this kind of a decentralised model, clusters are more likely to fit with regional strengths. Even the programme favours the urban regions that are already strongly represented in research and innovation policies, the programme has provided the opportunity to involve clusters and regions that are less likely to engage in the national science and technology policies.

The added value of the cluster model is a strong local-regional-national synergy in innovation strategy. The cluster approach linking the regional partners both developed and less developed regions is a good direction to utilize the whole innovation potential in the country. The CoE programme is also the major national instrument for promoting smart specialisation.

Description of current key policy issues relating to clusters

In the current period, the focus has moved from regional development to support innovation and internationalisation of businesses, aiming at developing regions into ‘world class’ innovation hubs and helping them to connect with international partners and to attract foreign investments. There is also a strong obligation to support the internationalisation of the competence clusters with the help of e.g. targeted internationalisation programmes and systematic information gathering about market potential. However, tensions arise from the fact that regions are in different stages in their internationalisation process, and thus have unequal prerequisites in building international networks and supporting internationalisation of clusters. For the next phase of clusters, it is important to find the right balance between selecting those centers of expertise and clusters that have the potential to become globally excellent and acknowledged. The current CoE programme mixes multiple objectives and thus has the risk of being neither ‘excellent’ nor an efficient tool for promoting regional strengths or innovation policy targets.

Policy implications/recommendations for the future

Based on lessons learned from cluster initiatives in Finland, the following actions need to be taken into consideration in maintaining added value of cluster policy:

1. Putting increased focus on SMEs and their opportunities to increase their competitiveness as well as potential new growth businesses instead of big companies and those clusters that are already favoured in the mainstream technology and innovation programmes.
2. Changing focus from industry based clusters to thematic clusters (e.g. from construction to living, from wellbeing to aging) and to demand driven clusters (e.g. security).
3. Developing local cross-sectoral innovation platforms that enable fast and agile R&D in open collaborative environment.
4. Changing the focus from big clusters to flexible miniclusters and innovation ecosystems, and developing new kinds of forms and tools to create these collaborative platforms.
5. Promoting activities that enhance innovation activities and R&D at local and international levels in parallel.
6. Strengthening horizontal activities (e.g. internationalisation, service innovation, entrepreneurship activities) to improve cluster specific management functions that provide added value to all clusters and regional centres.
7. Developing platforms and tools for dissemination of weak signals and information on global market potential. Global competition provides the cluster with essential signals about market opportunities, new technologies and new businesses models.
8. Establishing better links between regional financing instruments (EU structural funds) and innovation financing instruments (national and EU programmes).
9. Improvement of innovation capacity in cross-sectoral and thematic efforts.
10. Improvement of global market access. A competitive cluster cannot cooperate in isolation from global markets.

6. France

6.1 National (contributed by the Ministry of Industry)

Past use of the “cluster tool”

Ever since it was launched in 2004, the French policy of the so-called ‘*pôles de compétitivité*’ has played an essential role in the large-scale national strategy aiming to reinforce competitiveness of the French economy by developing innovation and R&D efforts. Evaluated as successful and promising¹¹ regarding both general policy aspects and individual clusters, the first phase was followed by the current ‘phase 2.0’ of the ‘*pôles de compétitivité*’ (2009-2012).

Description of current key policy issues relating to clusters

The following priorities were defined in order to intensify the development of innovation and growth ecosystems:

Continued support of collaborative R&D projects, reinforced by the possibility of deploying structural projects

With more than 1 000 collaborative R&D projects supported by the French authorities, financial support to R&D efforts remains the focal point of the phase 2.0. of the national cluster policy. Moreover, the French authorities have co-financed shared infrastructures via innovation platforms.

Reinforced animation and strategic cluster management

With respect to cluster management, the *pôles de compétitivité* were asked to sign performance contracts, define or update their strategic roadmaps for the next three to five years and develop

¹¹ In 2008, an evaluation conducted by Boston Consulting Group and CM International confirmed that the French cluster policy was a success.

annual action plans defining their priority objectives, as well as quantitative and qualitative indicators. Via government correspondents and coordination committees, the French authorities support and monitor the progress made to achieve those objectives.

Developing innovation and growth ecosystems by a more substantial share of private financing and optimal local synergies

In order to develop activities under this priority axis, a number of ambitious goals were set for the French national cluster policy to evolve further in its second phase, most of which will most probably continue to be relevant beyond 2012:

- Optimal synergies between the three pillars of the knowledge triangle in order to stimulate new collaborative activities and projects;
- A stronger implication of SMEs as regards cluster management and project implementation; Pragmatic and targeted internationalisation activities to obtain new technological partnerships and reach new potentially dynamic markets;
- Anticipation of needs to develop new competences and qualifications for a high-quality human resources management;
- A larger implication of private financing organisations (venture capital, development capital, business angels, banks, etc.);
- Adoption of tools critical for the promotion and the protection of innovation (standardisation, intellectual property, economic intelligence, etc.);
- Reinforcement of local synergies and insertion of clusters in a given territory through incubators, test beds and urban development policies.

Policy implications/recommendations for the future

An independent evaluation of the second phase with regard to both the cluster policy and individual clusters is to take place in 2012. Findings and lessons learned will be processed and analyzed before the launch of a third phase of the policy. They should give more strength to the cluster winds in France with a focus on the following priorities:

- Cluster development being a gradual process, it is necessary to render clusters stronger by keeping the momentum going.

One of the key factors of the French cluster policy lies in its momentum. Since the label of the ‘*pôle de compétitivité*’ has to be earned and then preserved, it compels the clusters to evolve in line with the policy and the individual objectives. The French experience shows that the sustainability of clusters is very closely related to a long-term public support, leading clusters to maturity and, in the very end, autonomy. In such a naturally gradual process, clusters should not be restrained nor compelled to self-financing within short periods of time.

- R&D collaborative projects will remain the focal point of the French cluster policy with a stress on the cooperation between different kinds of actors.

Increased collaboration and constant interaction between companies, research centers and universities are important success factors to be pursued in the future. Hence, R&D collaborative projects will remain at the heart of the national cluster policy.

Moreover, businesses will continue to use clusters to jointly get into priority foreign markets. In 2009, the French Ministry of Economy, Finance and Industry has entrusted Ubifrance with the exercise of helping businesses go abroad via collective actions. With 40 technological partnership

agreements signed in the past two years and 70 more under negotiation, the results can already be defined as encouraging for the future.

- The French authorities will continue to support the development of SMEs within clusters.

SME development will continue to be a priority for the French cluster policy in the future. Since 2010, small and very small businesses, members of the ‘*pôles de compétitivité*’, can for instance apply for and benefit from the label “innovative cluster enterprise”. The label is designed to increase the visibility of small businesses and facilitate their access to finance. The French Ministry of Economy, Finance and Industry and individual clusters have signed dedicated charters by which the French ‘*pôles de compétitivité*’ commit to facilitating contacts between the managers of the labeled companies and investors. A year after its creation, 51 ‘*pôles de compétitivité*’ have signed the charter and 19 funds have been raised for a total of 16 M€

* * *

The strength of the French cluster winds has already had a powerful impact. The upcoming stages of the French cluster policy should cause a French cluster windstorm to rise in the coming years.

6.2 Rhône-Alpes region (contributed by Conseil Regional Rhône-Alpes with Enterprise Rhône-Alpes International)

Past use of the “cluster tool”

Clusters in Rhône-Alpes in brief:

- ▶ 12 Rhône-Alpes Clusters, market centred
- ▶ 13 Competitiveness Clusters (Pôles de Compétitivité) on main economic sector including sectors with high technological intensity
- ▶ Region Rhône-Alpes’s support to clusters : 15 Millions €/ year

Since 2008, the Rhône-Alpes cluster policy has had the objectives of:

- Connecting all groups of players where the Region concentrates a critical mass of players (research, technology, higher education, training and business) to create partnerships and networking based on a common development strategy for each sector
- Supporting SMEs and reinforce their links with majors groups
- Following a broad definition of innovation with action plan around 5 main axis: commercial development, technological innovation, industrial and environmental performance, employment and skills, international development

Support of Region Rhône-Alpes to Clusters and Competitiveness Clusters includes:

- Follow-up and financing of cluster management / team
- Follow-up and financing of collective actions and R&D projects
 - o Networking and communication: for ex. website, newsletter, fair, lobbying...
 - o Commercial Development and marketing: for ex. collective brand
 - o Innovation: for ex. innovation workshop, incubators, collaborative platforms, demonstrators, labelling of R&D projects...
 - o Industrial performance: for ex.: creation of new services, certification, tools for performance analysis...

- Employment and skills: for ex.: skills observatory, collaboration with training centres, specific training, web site for jobs offers...
- International development: for ex.: fairs, missions, inter-clustering...

Description of current key policy issues relating to clusters

The following “key policy issues” related to Clusters have been identified by Rhône-Alpes in the Regional Strategy for Economic Development and Innovation (2011-2015):

- Organizes cross-fertilisation between different disciplinary fields and facilitate strong interactions between Rhône-Alpes Clusters (market approach) and Competitiveness Clusters (technological approach) with the support of the Regional Agency for Innovation and Development (ARDI) that plays a key role in promoting cross-sectoral and transversal topics among clusters
- Conduct an evaluation of regional cluster policy for 2012-2015 (mid-term evaluation in 2013, final evaluation in 2015)
- New axis for collective action plan in Clusters:
 - User-centred innovation: to put users and final beneficiaries at the center of innovation, with tools as livings labs, demonstrators, innovation platforms...
 - Entrepreneurship and financial engineering for SMEs
- Sustainable financing of clusters, with the objective to reach 30% of auto-financing (private resources) by 2015
- Develop and foster inter-clustering at European and International level and international development of SMEs through clusters
- Reinforce actions on training, human resources and skills management as essential but yet not enough developed levers of cluster strategic development

Policy implications/recommendations for the future

At European level, better coordination and clearer definition of cluster policy, as well as more financial incentives to clusters, including on international development is desired.

7. Germany

7.1 National (contributed by VDI-VDE/IT)

Past use of the “cluster tool”

Recent decades have seen a process of globalisation that is unique in history. It is a process that has created global markets through the liberalisation of worldwide trade and finance markets as well as through the enormous progress made in the fields of information and communications technologies.

Location decisions are therefore also being influenced by international factors. This in turn means that locations – municipalities, regions, countries – must enter into direct competition with each other with the consequence that it has become essential that locations are able to make themselves stand out from the competition. It is against this backdrop that it becomes apparent that locations where all participants in the value creation chain within networks and clusters cooperate closely and communicate intensively with each other and where beneficial framework conditions have been created will fare best against global competition in the future.

Worldwide competition has thus made it essential for science and business to find new ways of working together to create innovative products and processes within ever shorter development

cycles. This challenge is faced by all market participants – particularly the providers of public aid. In order to meet these demands at national level, the federal government has defined a cross department national strategy to boost innovative power – the "Hightech-Strategie 2020 für Deutschland" ("High-tech Strategy 2020 for Germany")¹². It is this strategy's declared objective to create lead markets, to further improve the framework conditions for innovations and to strengthen cooperation between science and business. This applies both to broadly effective and SME-specific measures using modular as well as regionally and technologically specific approaches towards encouraging the development of powerful networks and clusters. Generally spoken the German High-tech-Strategy doesn't refer much to cluster and networks nor makes any try to define cluster and networks or differentiate between them.

Although networks and cluster are high on Germany's innovation agenda, there is no dedicated cluster policy on federal level in force. But there are three relevant network and cluster support schemes in place that focus both on the creation of new networks as well as on further strengthening matured ones. The Federal Ministry for Economics and Technology (BMWi) is, on the one hand, supporting the initialisation of small, thematic driven networks with its "Zentrale Innovationsprogramm Mittelstand" (ZIM – "Central Innovation Programme for SMEs") and, on the other, promoting the further development of networks or clusters with its Kompetenznetze Deutschland Initiative. The ZIM is aimed at assisting innovation and competitiveness within small and medium-sized businesses, on a sustained basis so as to facilitate business growth and consequently to the creation and protection of jobs. This support measure comprises three modules – "ZIM-KOOP" (cooperative projects), "ZIM-SOLO" (individual projects) and "ZIM-NEMO" (network projects). ZIM-NEMO focuses on promoting management and organisation services in the development of innovative networks consisting of at least six companies without any limitations in regard to specific fields of technology or industry. The support provided by ZIM-NEMO includes network management

Performances aimed at developing network concepts and at creating sustainable networks (Support Phase 1) and at subsequently implementing these network concepts (Support Phase 2). The networks which predominantly consist of small and medium-sized partners and research institutions from multiple federal states aim at increasing their competitiveness and their supra-regional recognition.

With its Initiative Kompetenznetze Deutschland, the BMWi is also supporting well matured clusters and regional networks to strive for cluster management excellence in order to better contribute on a sustainable and effective basis to innovation in Germany and deliver added value.

With its Spitzencluster Wettbewerb (Leading Edge Competition), the Federal Ministry of Education and Research (BMBF), on the other hand, is promoting clusters having a very high research and innovation potential. This initiative does not focus on improving the cluster management performance rather than aiming to increase the innovation potential of the cluster actors by providing public R&D funding for the actors within the selected clusters. The competition was launched in 2007. By supporting the strategic further development of excellent clusters, it is hoped that regional innovation potentials may be transformed into the sustained creation of added value. A total of three stages of the competition are planned over a period until end of 2011. In each of these stages, a high-ranking independent jury will choose up to five top clusters to be funded with up to 200 million euros over a maximum period of five years. No restrictions have been set in regard to

¹² Note: In August 2006, the "Hightech-Strategie 2020" was the first national fundamental concept to be presented that brings all the major contributors to innovation together in a single idea. The federal cabinet decided on 14 July 2010 to continue developing this successful concept. The general approach's continuity will be preserved but new priorities have also been set with the new "Hightech-Strategie 2020".

specific fields: Those applicants with the best strategies for future markets – on their respective sectors – will be chosen¹³.

Beyond that, Germany's federal structure means that it remains possible to continue to develop regional capacities, resources and infrastructures. That's why the country's 16 Federal states (Bundesländer) are also implementing a range of their own state-specific technology- and innovation-political support programmes and have developed various instruments that take up and promote the specific regions' and states' individual strengths (see Figure 1). When it comes to regional cluster policies and the implementation of specific actions, there act completely independent from the federal government. Once per year, policy makers from the Bundesländer and from BMWi (and BMBF) meet and inform each other about recent developments. But this is only an informal exchange.

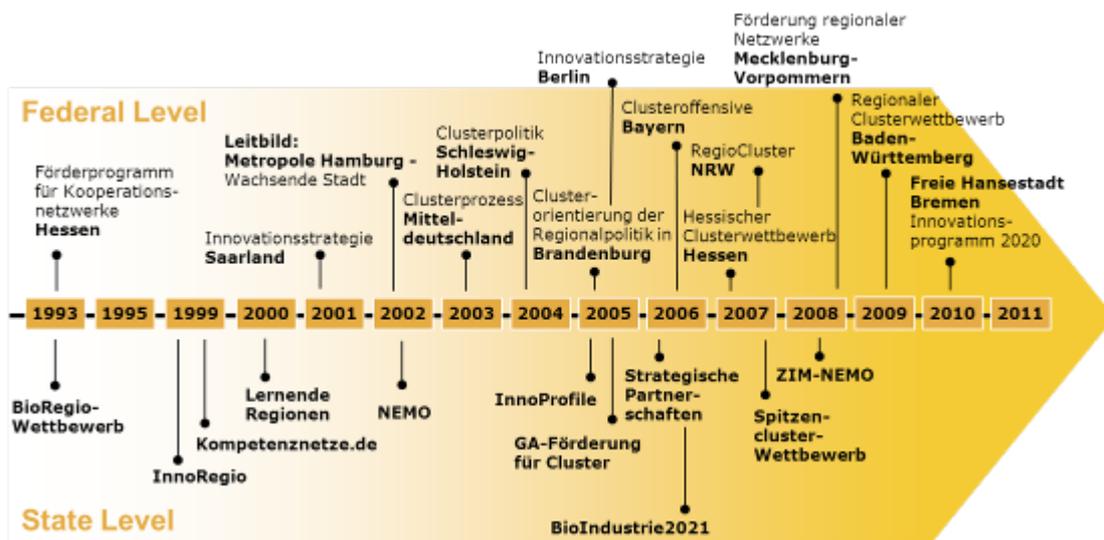


Figure 1: Selected cluster and network support schemes on Federal and Federal state level

The wealth of activities that have over recent decades been undertaken in the federal states has as a result of traditions, regional dependencies and location benefits produced many regional networks structures and even complete clusters – all of which have a significant effect on the respective cultures of science and business and how they are being developed. As a result of the importance of networks and clusters to the strengthening of innovative power, the improvement of the competitive situation and assistance to locations in helping them stand out, these activities have become important instruments in business, technology and innovation policies within many cross district regions and increasingly at national level.

Different concepts and initiatives have been introduced throughout the federal states to secure the future of well-functioning networks and clusters while strengthening them and setting up and consolidating new network and cluster structures. Here, the individual measures differ from the contents of technology, business and innovation policies so that even state-specific cluster concepts and cluster initiatives exist¹⁴.

¹³ Note: For more information, please go to: www.hightech-strategie.de

¹⁴ Buhl, C.; Meier zu Köcker, G: Overview of network and cluster activities by the federal states of Germany, 2010, www.kompetenznetze.de.

The different measures range from (financial) support for regional network initiatives in selected fields of technology, the financing of cluster management within the scope of joint tasks towards "improving the regional business structure", the accompanying simultaneous set-up of network structures and continue with the implementation of sector-specific cluster platforms operating on a state-wide basis to coordinate the competence of networks distributed throughout regions within specific fields of technology and end with the cross-state implementation of larger networks and competence regions (see Figure 2).

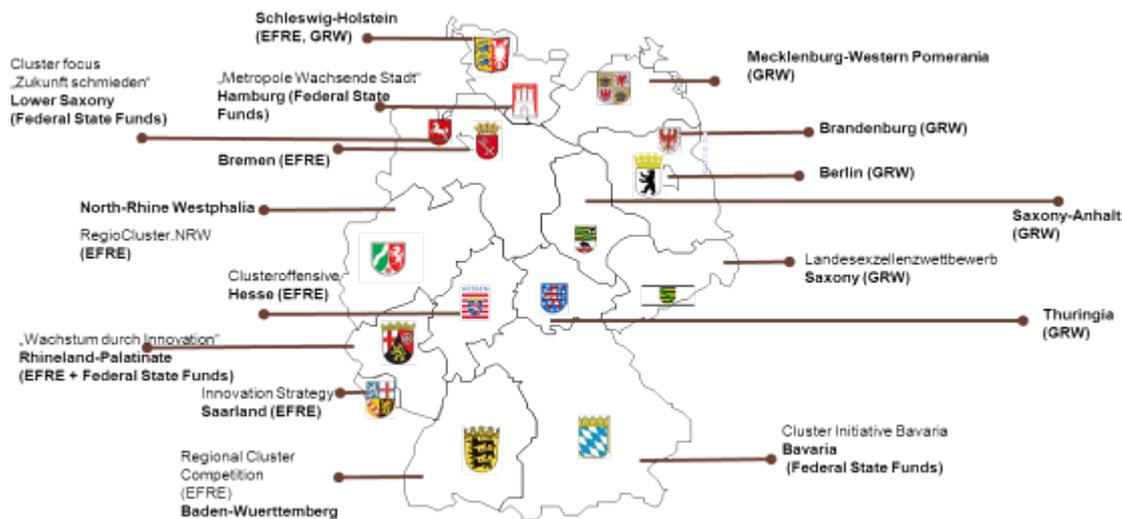


Figure 2: Survey on cluster initiatives for each Federal State in Germany

Description of current key policy issues relating to clusters

As different as the individual measures by the federal states are due to their varying specific strengths, the importance of the respective fields of technology for the development of the states' economies, the existing frameworks and conditions, it is possible to determine overall or common objectives:

- intensification of cooperation between science, research and business in order to generate added value along the entire value creation chain and to mobilise resources that are not being utilised,
- long-term sustained development of competitive and rapidly growing regions,
- location marketing – highlighting of individual strengths and potentials and thus also of performance capacities within the respective federal states (global competitive positioning) and the promotion of own research institutes and companies based in the state,
- creation of incentives for (re)locating research facilities and businesses, increase in training capacities and creating stronger links between qualified skilled staff and the specific region and making it easier to attract skilled workers,
- strengthening of entrepreneurial spirit and the establishment of businesses, network and cluster policies as a measure for enhancing networking between companies to the benefit of regional technical infrastructures, training and further education facilities as well as research and development institutions,
- network and cluster policies as a means of promoting economic development and structural change as well as of aiding regional innovation capacities,

- network and cluster policies as a means of increasing performance capacities and competitiveness within specific federal states as a whole.
- In order to become and to remain competitive in regional competition, it is particularly necessary to strive towards a subject-related development of networks and clusters on the basis of the available technological competencies and resources, which is why the federal states' measures frequently concentrate on previously analysed and consequently selected fields of technology that promise to deliver the greatest economic benefits, that are deemed to be important and pioneering for the respective federal states and in which the network and cluster participants display sufficient potential for development.

In the follow the two main cluster programmes on Federal level are described in brief:

The Initiative Kompetenznetze Deutschland

Under its Kompetenznetze Deutschland Initiative, the Federal Ministry of Economics and Technology (BMWi) assembles the most innovative and high-performance technology-oriented networks and clusters. These clusters are characterised by the intensive activities and cooperation between the parties involved and by their jointly defined aims. Furthermore, they excel as far as their proximity to industries and markets, their regional foundations, their drive and their flexibility are concerned. All these qualities turn the clusters of the Initiative into a core element of performance and competitiveness. In addition, the clusters and their actors represent Germany's concentrated strength in numerous fields of technology and the economy.

Currently 97 clusters from nine innovation sectors and eight innovation regions are currently operating under the Initiative Kompetenznetze Deutschland, covering all essential sectors of high technology. The number of member clusters varies slightly over time, because new clusters are admitted while some clusters merge as a consequence of their common themes or leave the initiative if they cease to meet the quality requirements. Since the Initiative Kompetenznetze Deutschland doesn't spend any funding, it has a comparative small budget, which makes this initiative to be very efficient.

The Leading Edge Competition

The Leading-Edge Cluster competition is intended to take Germany to the top of the league of technologically advanced nations. The Federal Ministry of Education and Research (BMBF) launched the competition in the summer of 2007 under the slogan "Germany's Leading Edge Clusters - more innovation, more growth, more employment". The high-performance clusters formed by industry and academia that enter into strategic partnerships are set to boost Germany's innovative strengths and economic success¹⁵.

The Program contains three rounds of competition some eighteen months apart. In each round of the competition, up to EUR 200 million public funding will be made available to up to five Leading-Edge Clusters over a period no longer than five years (see Figure 3). The funding of Leading-Edge Clusters is based on a common strategy that starts from the respective strengths of each cluster and is aimed at the definition of future development objectives. This supposes involvement of the entire innovation chain, right from the idea through to its commercial exploitation.

Policy implications/recommendations for the future

Both German cluster programs on federal level are under discussion (how to proceed), thus there are no particular policy implications/recommendations at that time.

¹⁵ www.spitzencluster-wettbewerb.de

7.2 Federal state of Baden-Württemberg (contributed by MFG Innovation Agency for ICT and Media)

Past use of the “cluster tool”

Since 2006 the Ministry of Finance and Economics is the key driver for Cluster Policy and streamlines the cluster activities within the state of Baden-Württemberg. The Ministry considers cluster policy a key component of its innovation and economic policy and let's itself be guided by the following targets:

- Boosting the state's economic competitiveness
- Acceleration of innovation processes
- Create a cooperation culture
- Bundle competences and intensify horizontal cooperation
- Development of cross-industry and cross-technology projects and new fields of application
- Development of new products Position Baden-Württemberg as an international economic location

To realise these goals, the Ministry of Finance and Economics has started several cluster supporting activities, some of which are described more in detail below. The focus of all cluster political activities has always been on having SMEs participate in innovation development. In this context, the Baden-Württemberg cluster policy sees itself as a moderator and catalyst rather than a subsidising entity. Thus it follows a bottom up cluster development approach. Furthermore it is dialogue-driven and involves partners and stakeholders in determining and designing cluster political activities from the very beginning. It is firmly intended that all initiatives and activities embedded in cluster policy have a long-term effect on innovations and competitiveness and that these processes will carry on independently.

All in all Baden-Württemberg has a long history in cluster and network development. Apart from the Ministry of Finance and Economics there are a number of further organisations and state-wide networks offer cluster support activities in different areas and sectors. Back in the mid-nineties for example MFG Public Innovation Agency for ICT and Media was one of the first organisations to build and manage networks and cluster initiatives, for example in the field of visual computing and open source software. Today MFG works together with other European cluster partners in the European Cluster Excellence Initiative – Cluster-Excellence.eu – which currently is one of the most important cluster related projects in the EU.

In the Leading-Edge Cluster competition of the German Federal Ministry of Education and Research, Baden-Württemberg cluster initiatives have scored extremely well. Today there are four “Spitzencluster” located in Heidelberg (BioRN and Forum Organic Electronics), Freiburg (MicroTEC Südwest) and Stuttgart (e-mobility south-west). In addition further cluster partners from Baden-Württemberg are involved in two other cross-border-Spitzencluster. These results confirm the path the Ministry of Finance and Economics has been following with its cluster strategy.

Description of current key policy issues relating to clusters

Importance and benefit of state-wide innovation networks

Innovation networks provide a basis for their stakeholders to tackle and overcome challenges of market and technological developments, together with flagship projects. An intensive dialogue and exchange of experiences with supra-regional, state-wide, national and international stakeholders from science, research and organisations ensures that significant trends in the various industries or fields of technology or competence are recognised early and that they can be transferred to the regional clusters and enterprises. There are various activities in this regard for example with MFG

Innovation Agency for ICT and Media and its recently started European Creative Cluster Lab with which MFG intends to develop and test new approaches, instruments and processes for creative cluster management and support Creative Industries SMEs. Other state-wide innovation networks were founded in fields like biotechnology, Microsystems technology, aerospace, optical technologies, IKT. In the last two years state-wide networks were introduced in fibre-based materials, automotive, environmental technologies, mechatronics, manufacturing engineering (“Manufuture BW”), logistics and creative industries supported by EU-Structural Funds.

Regional Cluster Atlas

In order to know which clusters or cluster initiatives there are the Ministry of Finance and Economics has issued a regional Cluster Atlas (printed version and online database). State-wide and regional cluster stakeholders have contributed to it actively. It offers a comprehensive overview of more than 100 regional clusters and cluster initiatives in Baden-Württemberg. That way it seeks to make the cluster landscape transparent for all the stakeholders.

Incentives for regional cluster initiatives

To activate further regional innovation potential, the Ministry of Finance and Economics launched two competitions for strengthening regional clusters in Baden-Württemberg in 2008 and 2010. It is intended to support regional cluster initiatives in building professional cluster managements, to assist them and enable them to work out and implement sustainable concepts. Altogether 56 submissions have been handed in. 22 submissions have been chosen by an independent jury and awarded a prize. About 5 million Euros from the European Structural Funds have been made available for regional cluster initiatives in the period until 2013.

Activating with the cluster forum

Since 2007 the Ministry of Finance and Economics has annually conducted the broad-based Cluster Forum Baden-Württemberg. There, all relevant cluster stakeholders from industry, science and administration can get information on cluster-relevant topics. The ever increasing number of visitors shows the Cluster Forum’s great acceptance – after all it is a communication platform of the cluster scene whose options for personal contact are unmatched. At the cluster marketplace – the associated trade fair – cluster initiatives, innovation platforms and enterprise networks present themselves.

Cluster Dialogue for exchange of information and experiences

In July 2007, the Cluster Dialogue Baden-Württemberg was launched by the Ministry of Finance and Economics – a platform for exchange of information and experiences for state-wide and regional cluster stakeholders. The Cluster Dialogue is a platform for new ideas from the regions, for formulating expectations on cluster policy and immediate exchange of knowledge. In different workgroups, topics such as cluster management, internationalisation and European strategies are dealt with in detail. One central challenge is the European focus of cluster policy and cluster internationalisation. Partners like Steinbeis Europe Centre or regional stakeholders and MFG Public Innovation Agency for ICT and Media supports the Ministry in these ambitions and constitute the main link to Europe- and worldwide cluster relevant programmes such as TCI, the before mentioned European Cluster Excellence Initiative, the European Forum for Clusters in Emerging Industries or TACTICS. Furthermore MFG supports the uptake of recommendations and developments of these projects within the region through the Cluster Dialogue.

Internationalisation of regional clusters – their opportunities

In times of growing globalisation and ever tougher international competition, internationalisation of cluster initiatives and their companies plays an important role. This topic was taken up by the Cluster Dialogue from the very beginning; it was specified by a workgroup of the partners and then taken up through various sponsorship projects. For example with the sponsorship programme

“Internationalisation” which is handled by Baden-Württemberg International (bw-i). Within this programme regional cluster initiatives can make use of “Internationalisation coupons” worth up to Euro 3000. With these, cluster managers can for example participate in market survey trips or cooperation fairs abroad. This gives them the opportunity to contact potential network partners abroad and start a dialogue. But the main target of this topic is, that the cluster initiatives work out an international positioning strategy.

One definite goal of the Ministry of Finance and Economics’ cluster policy is to improve visibility of Baden-Württemberg’s cluster initiatives and of the state-wide networks, at the federal and European level – specifically in the European Cluster Observatory and the European Cluster Collaboration Platform.

Policy implications/recommendations for the future

The further development of the Cluster Policy in Baden-Württemberg is based on an iterative process supported by dialogue and discussions with different relevant organisations and institutions in the state for example through means of the Cluster Dialogue. The tools and activities already in place will remain but will be steadily improved. After various cluster organisations in Baden-Württemberg have been supported in their start-up phase a major focus will be put on the promotion of cluster management quality in Baden-Württemberg cluster initiatives in the coming years. In this regard it is intended to take up the findings of the TACTICS project and especially of the European Cluster Excellence Initiative. Based on the set of indicators for excellent cluster management developed within this initiative the Ministry of Finance and Economics plans to build and establish a cluster quality management label for cluster initiatives in Baden-Württemberg. However the compatibility with European standards will be ensured. This label shall encourage Baden-Württemberg Cluster Initiatives to work even more professionally and to commit to high quality standards. Another objective for the coming year is to establish a Baden-Württemberg wide communication platform for clusters. This platform will offer links to existing social networks and will support the information exchange between cluster initiatives as well as with relevant Ministries in Baden-Württemberg.

8. Hungary (contributed by Richter)

Past use of the “cluster tool”

From year 2000 scattered programs were available for clusters but there has been no consistent cluster development policy. Before the start of the Pole Program we could count 48 organisations or co-operations that called themselves clusters but with no real projects or no joint goals.

Major problems for clustering were:

- the general lack of trust and confidence among business actors,
- existing and successful business co-operations could not count on stable policies,
- mixed experience and result of cluster support programs,
- no consistent national policy on clustering.

When we were thinking about a national cluster development policy in 2007, it was important to form it as a consistent and stable part of the economic development policy. The main challenges of the Hungarian economy were:

- imbalance of the tradable and non-tradable sectors (overweight of non-tradable sectors),
- decreasing export and competitiveness,

- growth rate lags behind potential rate,
- low and stagnating level of employment,
- integration in the European Economic Area, which determines the development path of the Hungarian economy in the next 10-15 years.

The adequate responses for the above mentioned questions had to be given. Learning from foreign practices we identified three major areas that should fit together to have consistent economic development: development of macro and business environment, cluster development, and innovation policy.

The summary of the Pole Programme

The Hungarian Pole Programme was a complex economic development programme which was strongly built on the Pole cities in Hungary. The Pole cities are basically the regional capitals of the 7 Hungarian regions, the biggest towns in Hungary. It is important to note that Budapest and the Central Hungarian region has a very big share of the Hungarian GDP and R&D potential, therefore the Pole Programme aimed at a balanced and levelled economic growth in all regions of Hungary.

From one hand the Pole Programme meant the development of the business environment focusing on the Pole cities. The aim was to develop R&D and innovation infrastructure, improve the facilities of higher education institutes. Potential beneficiaries were companies, municipalities, universities or R&D institutes because we strongly believed in the Triple Helix model.

From the other hand the Pole Programme meant the cluster development, where support was targeted to motivate the cooperation of companies, clusters. We had worked out a four stage model to support clusters. Our objective was to have 5-10 successful pole innovation clusters by 2013-2015 that have a significant market share in their respective market in Europe.

These clusters should have strong and live international relations with foreign business and academia and should contribute substantially to the competitiveness of the Hungarian economy.

It is important to mention that the framework of the Hungarian Pole Program was the National Strategic Reference Framework, the New Hungary Development Plan for 2007-2013 financed from Structural Funds and the Cohesion Fund. The Pole Programme was basically a coordination mechanism among the various operational programs of the New Hungary Development Plan. So it built on all those operational programs that are concerned directly or indirectly with economic development and infrastructure development of higher education institutions.

Total financial sources of the Programme building on the concerned operational programs reached 1500 million euros (1.5 billion euros) in the seven-year-long time span between 2007-2013.

Cluster development in the Pole Programme

The Hungarian cluster development policy was realised in the Pole Programme.

In cluster development the Pole Programme Office (“PPO”) had worked out a four stage model to support clusters. At first the PPO wanted to give support for start-up initiatives to start co-operation and to set up and operate a management organisation. The subsidy for the projects was relatively low at this stage as compared to the other stages but it was sufficient for a two-year-long project focusing on cluster management.

The second step was the developing cluster stage. Besides giving support to cluster management the focus was more on joint investments of cluster members with support reaching 0.8 million euros. These first two stages of the model were financed from the Regional OPs.

After the second stage there was an accreditation. The accreditation was a call that gave the cluster the right to move further up in the model. Having the accreditation title did not mean any financial

support but it brought special rights for the cluster to apply for certain dedicated sources and earning plus points in various calls.

So the third stage was the level of accredited clusters. There the PPO already focused on joint innovation investments of clusters. It is important to note that the PPO supported only joint innovation investments not just joint investments, thus it was a real must to have innovation element in the projects. Support for projects could reach 6 million euros at this level.

The highest stage was the pole innovation clusters. This level would have been open only for those clusters that were successful in accreditation. The entry criteria for the 4th level was finally not issued. At this level we intended to give support to joint R&D projects of cluster members and clusters up to 17 million euros.

The third stage of the model was financed from the Economic Development OP and the fourth one would have been financed from the Economic Development OP as well.

Hungarian Cluster Accreditation

The accreditation system was in fact a measurement of cluster performance and not the measurement of cluster management. Although the PPO had certain expectations for cluster managers to comply with if they would like to go for the subsidies in the Pole Programme, it was found that the PPO had developed a good system in the area of measuring cluster performance and of qualifying clusters in Hungary.

The aim of the accreditation has been to select clusters that are able to reach significant international and domestic performance and are export-oriented and innovative and produce high added value. The accreditation has been a rigorous evaluation system. The accreditation certificate has been valid for 2 years, after that it needs to be renewed. The accreditation certificate entitles the clusters for advantages in many calls for proposals for example at the Economic Development Operational Programme.

Lessons learned:

- During the concept making of the Pole Program we had examined a lot of foreign country examples including France, Ireland, Finland etc. We had found that no previous foreign experience could be put one-in-one into the Hungarian circumstances. It is always worth rather picking the best practice elements that fit to the prevailing conditions and creating the own model.
- The implementation of the Pole Programme needed a complex management, therefore the PPO and the Strategic Steering Committee were the key factors. The Pole Programme Office and the Strategic Steering Committee assured that the regional and the national activities should complement to each other. The principles of the Pole Programme did not change, the PPO aimed at maintaining stability but paid attention to economic changes.
- In order to achieve this aim the PPO had to have a fluent communication with all partners, with the clusters, the SME's, the universities, research institutions, chambers of commerce, municipalities and at least but not last with the governmental institutions.
- In each pole city Pole Co-ordination Body had been set up in order to facilitate better information flow related to the investments. On the one hand, they were a forum to harmonise the developments, to filter overlaps and to find synergies of the R&D infrastructure developments and on the other hand, with respect to the economic development objective of the Programme, the coordination body was a linkage between the two pillars of the Programme, i.e. the favourable business environment of the pole cities and the companies operating in clusters.

- The Pole Programme focused only on those clusters, which activities were of high value added, export-oriented and innovative. Developing clusters is a long-term project and the first results after years of work and investment could have been expected. It was clear that Hungary will probably never have such an amount of direct subsidies. The Pole Programme offered them subsidies and with this opportunity the clusters could have not only private money but public money too and with this help they could reach the results faster. But the Pole Programme Office really needed to avoid grant dependency and rent seeking and to find a balance between financial and non-financial tools too.

Description of current key policy issues relating to clusters

In January 2011 a new overall long-term economic development strategy, the New Széchenyi Plan was announced in Hungary. Cluster development policy became part of the New Széchenyi Plan and the former cluster development model underwent some changes in order to align with the new strategy.

In the framework of the New Széchenyi Plan, new calls for application were launched in January 2011 in the Regional Operational Programmes supporting the start-up and developing stages of clusters.

As the third stage, the accreditation system of innovative clusters was also re-launched:

- The call for Accredited Innovation Cluster title was announced again in June 2011 in line with the objectives of the New Széchenyi Plan.
- The Accreditation Committee including governmental decision makers was re-formed.
- Key elements of modification: more emphasis on job creation and collaboration among members was given.
- In the framework of Hungary's Economic Development Operational Programme there has been grant programmes also available for accredited clusters (Support for complex technological innovation of accredited clusters' member companies, Support for the joint technological innovation of Accredited Innovation Clusters).

In line with the simplification of the implementation system, Hungarian Pole Programme Office underwent organisational changes, too. Since April 2011 it has become the part of her mother company, MAG - Hungarian Economic Development Centre. A division which is called Cluster Development Office was set up within the organisation of MAG and it took over the tasks from Pole Programme Office.

The duties of Cluster Development Office are the following:

- participation in the development and implementation of the national cluster policy,
- cooperation with the concerned governmental organisations,
- forming and deepening co-operations, regular consultation with clusters,
- taking actively part in international co-operations: ECA, CE, SEE, CIP, etc.,
- complex management of the Cluster Accreditation process,
- participation in the strategic planning of the cluster related calls,
- making cluster analyses and reports.

Policy implications/recommendations for the future

In the forthcoming period the Hungarian cluster policy faces the following main challenges:

- launching the fourth stage of our cluster development system for the most mature cluster co-operations,

- promoting the internationalisation and cross-border cooperation of Hungarian clusters and encourage their participation in international projects,
- strengthening and supporting cluster managers' activities by improving their excellence.

9. Italy

9.1 Emilia-Romagna (contributed by Economic Development Emilia Romagna Region)

Past use of the “cluster tool”

Cluster development policies have a long story in Emilia-Romagna. I can summarize three main phases.

1. Waking up

The Emilia-Romagna Region gave start to its cluster policy at the end of the 70's, under inspiration of Italian analysts of the industrial districts phenomenon (Becattini and Brusco) and of Sabel and Piore vision of the “second Industrial Divide”, as it appeared that such spontaneous phenomenon actually became relevant in the region.

At that time, the approach took into consideration the mix of social and economic factors leading to strong geographical concentration of some industries and to extreme fragmentation of production units into small and micro firms, linked together by formal networks, but also by informal and continuously changing webs along the value chain.

On the base of this analytical framework, the Region agreed that the crucial aspect to reinforce such local systems and to stimulate their attitude to innovation was to work on external economies and on their improvement: on one side, improving the quality and availability of local infrastructure; on the other side, improving the quality of local immaterial factors, through technical training, technical information, critical business services, local identity.

For reinforcing this second type of external economies, the Region, thanks to its development agency (ERVET) settled up a number of technical service centers within the main industrial districts. The most famous are: CITER for the textile district of Carpi, CESMA for the agricultural machines district of Reggio Emilia, and so on.

The main tasks of such technical service centers were to provide: technology information and demonstration for innovation, business and marketing information, specific training initiatives, specific services like quality certification, testing, prototyping and design, etc. The centers were normally organised in the form of public-private consortia participated by ERVET, local authorities of the districts, business organisations and firms. The president was chosen among the entrepreneurs of the associated firms.

This policy gave good results during the 80s and the beginning of 90s in order to support the primary evolution of first generation entrepreneurs.

2. Structural change

After that period it clearly appeared that: 1) the vision of local industrial districts was to narrow in order to understand the complexity of the regional industrial system and it appears that a cluster approach a la Porter, based on the interaction of complementary sectors in vertical and horizontal sense was more appropriated to elaborate the adequate regional response to global competition; 2) the local market of such centers was too limited for inducing their specialisation and qualification; 3) the more dynamic firms emerged in the clusters (medium sized firms) became faster than centers in adopting and applying new technologies; 4) new sources of knowledge emerged from the private

service sector and from Internet; 5) the new challenge was that of developing a knowledge based regional economy, starting from specialised industries, but involving Universities and research centers.

On the base of this new vision, in the 90s and first years of 2000, the Emilia-Romagna region changed its policy strategy.

For one decade the region adopted an approach based on horizontal policies aimed at favoring structural change in the firms organisation, technology level and behavior to face the global market, through subsidies for technology innovation, management innovation, internationalisation. It favored an increasing opening of clusters at various levels, an evolution of firms toward the medium size, and an increasing need of knowledge services. This general structural transformation affected the various regional clusters that became dominated by highly specialised and innovative firms, strongly export oriented.

3. Towards the knowledge dimension

At the beginning of 2000 years, the Region approved a new law concerning industrial research, innovation and technology transfer. This law had the primary scope to make firms and research centers (even from Universities) co-operate and exchange knowledge. It gave the possibility to support R&D projects carried out by firms (especially SMEs), with the involvement of newly graduates and in collaboration with a research center. At the same time, the Region started to build up a new regional network of research laboratories generated by Universities, other public research bodies and public-private consortia, specialised in specific technologies, oriented to develop applied research for industry and able to manage technology transfer.

Such laboratories have been grouped into 6 regional technological platforms (engineering and materials, life sciences, energy & environment, food, sustainable building, ICT), self-ruled through their steering committees and matching technological needs of the various clusters with several possible schemes:: collaborative research, technology advice, testing and use of laboratories, licensing, exchange of personnel, technical training.

To reinforce this attempt of matching clusters with technology competences, more recently, the region activated again cluster oriented actions; two policy actions with the scope of reinforcing the knowledge dimension of clusters are being carried out at the moment.

The first one (2010) is giving support to projects carried out by research units of leading firms (even if large firms) in the clusters, with the scope of developing new enabling technologies and diffusing results to the other firms of the clusters. 36 relevant projects have been co-financed. To give an idea of the dimension of this action it is enough to say that almost 300 new researchers have been employed by firms or indirectly by research centers, thanks to such projects.

The second action (2011) is more oriented to directly upgrade SMEs in their knowledge dimension. Considering 16 different clusters, 16 clusters oriented programs have been approved. In each cluster program a program manager has to: a) organize an activity to help firms in developing adequate methodologies for knowledge management, design management and open innovation, and b) organize formal research networks on specific items coherent with the cluster core competences, but aimed to promote a significant technology advancement or a product/market diversification. Such SME networks within the 16 clusters will involve newly graduated researchers supported by the research staff of the companies, a network manager and a scientific tutor. In total, within the 16 clusters, 93 research networks are foreseen. This means at least 300 companies and the involvement of 300 new researchers.

Description of current key policy issues relating to clusters and implications for the future

In the next future, the Region will reinforce this orientation towards the transformation of clusters from a manufacturing dimension into a concrete knowledge dimension. New policy actions probably will be:

- involving the sphere of design and creativity in the clusters, or generating new creative clusters;
- increasing attractiveness for knowledge intensive firms and talents, in order to increase the innovation capacity and the competitiveness of clusters.

In general, regional clusters should represent the main subsystems of a regional open, dynamic and attractive ecosystem of innovation.

9.2 Veneto (contributed by Veneto Innovazione)

Past use of the “cluster tool”

The entrepreneurial tissue of the Veneto Region is featured by the preponderance of SMEs and micro-companies. The “industrial cluster” model, developed before a Regional act was drafted, was associated to the traditional manufacturing production since the beginning; the local companies spontaneously gathered to exchange information, suggestions and business opportunities, thus building a network of collaborations and suppliers and developing a sense of identity.

With the Regional Law n.8/2003, modified with law no. 5/2006¹⁶, the Veneto Region introduced the definition of “productive cluster”, merging the legacy of traditional clusters with the willingness of local actors and SMEs to work together for the development of the territory. Law 8/2003 served as an important innovation laboratory for regional policies. It introduced for the first time a series of values and operational practices that activate strategic aggregation mechanisms, facilitate bottom-up collaboration between local development promoters and foster the mobilisation and concentration of resources on common development projects.

Thus, the regional law promotes a new concept of cluster, not related solely to consolidated manufacturing specialisations (historical concept of district), but offering new opportunities for creating or supporting industrial clusters as an expression of the natural vocation of specific areas (clusters as projects). The law requires productive clusters to be grounded on “development pacts” according to a bottom-up approach. The development pact is at the core of the permanent cooperation network, and it represents the common development strategy of the cluster, officially recognised by the Region. Moreover, the aggregation process and the emergence of new clusters is promoted by the regional law and the role of the cluster representative has been established, without explicitly opting for a structured cluster organisation.

¹⁶ The beneficiaries of the regional law 5/2006 are districts, metadistricts and supply chain or sector aggregations. They consist of enterprises operating in the regional area; local bodies; autonomous functional entities; trade associations envisaged by the regional conciliation forum; public and private authorities and associations, consortia, foundations, special firms, semi-public companies and cooperatives operating in the field of promotion, innovation and research for the purpose of developing the production system; public and private institutions recognised and operating in the field of education and professional training. These parties firstly share a district development agreement that defines the strategies and plans of action considered necessary for the development of the district over a three-year period. In order to activate a cluster development pact, at least 100 companies and 1.000 employees have to subscribe it. This is followed on the part of the Regional government by the procedure for recognition of the district, after which the allocation of resources for the organisation of projects that concretely implement the cluster development agreement is governed by specific tenders. The regional law of Veneto grants projects with maximum 40% of the eligible costs of the selected operations. Therefore the dedicated office (Department for Industry and Craft) manages the regional funds for the co-financing of project proposals presented by groups of enterprises belonging to a cluster on the basis of annual applications.

Description of current key policy issues relating to clusters

A turning point is expected after approval of the forthcoming Regional Law on clusters. A new demand-driven approach will complement the traditional bottom-up approach. A spontaneous waning of the territorial element, the rise of a demand-driven and cross-sectorial approach, and the creation of networks including companies and actors which belong to the whole value chain, has been observed. As a consequence, while *traditional clusters* continue to exist, new models are included in the regional cluster policy: *company aggregations and innovative networks*.

The regional level supports the development of aggregations and networks as a mean to

- Collectively represent the actors involved at international level and to conquer new markets,
- Promote the internationalisation of SMEs,
- Stimulate innovation of process and product in SMEs.

The provision of three different models for gathering SMEs embraces the perceived need for flexibility from the perspective of companies: the aim is to let them decide which is the best organisational model to achieve their scope jointly. In particular, traditional clusters are historical aggregations which maintain a territorial and manufacturing vocation. They will be accorded a cluster label to support their promotion at national and international level. Company aggregations will serve the purpose to submit projects aimed to increase their competitiveness, via the set up of temporary associations. Finally, the innovative networks are flexible tools for gathering actors coming from different productive sectors and willing to promote themselves at local and international level.

Policy implications/recommendations for the future

From the previous premises, some considerations can be drawn:

1. Internationalisation of clusters is relevant as it boosts the openness of SMEs. *Financing targeted activities on internationalisation* is needed to support SMEs expanding their network of contacts and go global (TF1 Fostering International Cluster Cooperation).
2. *Keep supporting clusters in adopting a common brand identity* to promote themselves abroad. Cluster branding and marketing is an essential element for setting up a successful cluster internationalisation strategy (TF1 Fostering International Cluster Cooperation; TF4 Supporting Cluster Marketing and Branding). .
3. Considering financial resources are going to be limited in the near future, a public authority is expected to *legitimate the cluster to do something instead of to get something*. This implies that legitimisation is helpful to apply for other sources of funding (i.e. public and private funding). The Region contributes to building the credibility of a cluster/network of companies by acknowledging a “quality” label, according to established indicators (TF1 Fostering International Cluster Cooperation; TF4 Supporting Cluster Marketing and Branding).
4. *Companies are encouraged to choose which governance model fits their collaboration strategy*. The cluster governance model cannot be decided according to a top-down approach. Nonetheless, establishing a minimum set of requirements for the cluster governance is viewed as a good way to ensure a recognisable and legitimate interlocutor is identified (TF5 Evaluating Cluster Excellence).
5. *Funding has to be channelled towards innovative projects*. The idea is that only good projects with an innovation component, coming from eligible clusters/aggregations/networks, can be co-

funded. The core of the evaluation process concerns the quality of the project proposal, instead of focusing on the formal requirements the applicant has to comply with. A panel of experts has to be given a concrete decisional power in the evaluation process (TF2 Channelling RDI Funding through Excellent Clusters).

10. Netherlands (contributed by the Ministry of Economic Affairs, Agriculture and Innovation)

Past use of the “cluster tool”

The Netherlands started its national cluster policy in 2006 with the ‘Innovation in Dialogue’ approach. Although we determined our top sectors already in the ‘80’s, we introduced a specific cluster policy on a national level only in 2006. With the Innovation in Dialogue approach, a sector specific innovation policy was introduced.

Programmatic innovation policy seems to be successful, but impact is hard to measure

The programmatic approach is apparently successful in enhancing innovation policy’, is the main conclusion of a mid-term review conducted at the beginning of 2009. ‘The improvement in competitive strength and solutions to the bottlenecks are still difficult to measure.’ Yet the evaluators observe an increased level of strategic co-operation in innovation, an intensification of private investments and recommend good lessons are to be learnt from one another. The main challenge for the coming years is to make broader valorisation perceptible and to adopt the innovations, especially among (small and medium-sized) enterprises which up to now had not had any intensive involvement in the programmes.

Many international players joined during the course of the programmes. The increased level of collaboration with the regions has further reinforced the network’s innovative strength. These are important factors of success for the programmatic approach.

Description of current key policy issues relating to clusters

Renewed industry policies established in the year 2011

The Netherlands is a prosperous country – prosperity that is largely owed to our entrepreneurial spirit, our business acumen and our ability to innovate. Social and (financial) economic challenges on the national and international level call for policy that gives our innovative power and entrepreneurial spirit more scope. That is why the government put a new enterprise policy in motion in February of 2011: the Top Sector policy. The starting point is that the government will not steer using rules and subsidies, but that Dutch companies will be given room to do business, invest, innovate and export. The new policy involves (1) fewer subsidies in exchange for lower taxes, (2) fewer and less complicated rules, (3) broader access to corporate financing, (4) better utilisation of the knowledge infrastructure by the business sector and (5) a better alignment of the tax system, education and diplomacy with the needs of the business sector. The government asked entrepreneurs and researchers of nine top sectors of the Dutch economy to make proposals for strengthening Dutch competitiveness. The nine top sectors are Chemistry, Creative Industry, Energy, High tech Systems & Materials, Life Sciences & health, Agro & Food, Logistics, Horticulture, Water and in addition to the nine top sectors, a top team has also been set up for the cross-sector of head offices.

Policy implications/recommendations for the future

Capitalise on existing strengths

In order to capitalise on and expand this excellent starting position internationally, Dutch businesses must innovate permanently. The Netherlands has a world-class knowledge base. The government brings businesses and knowledge institutes together to utilise the opportunities created by the economic and societal challenges. The business sector has the ambition of substantially increase its expenditures on knowledge and innovation; and knowledge institutes have the ambition of better orienting research towards the top sectors.

Better integration of regional and national policies

Strong regional clusters contribute significantly to the prosperity of the Netherlands and make it very appealing for foreign companies to establish themselves in the Netherlands. The central government and the regions can intensify the effect of the top sector approach by joining forces.

Local and regional authorities are better positioned than the central government to assess what regional clusters need for a competitive business sector. The permanent commitment of local and regional authorities to the top sectors is therefore necessary to facilitate the business sector maximally.

The government is happy with the contribution that regions seem to be willing to make to the new enterprise policy. Gelderland (€100 million), Limburg (€55 million), Overijssel (€250 million) and Zuid-Holland (€40 million) have all made additional funds available for the top sectors. The policy agendas of the south-eastern Netherlands (Brainport 2020) and the Northern Wing of the Randstad agglomeration also further strengthen competitiveness.

The national approach links to EC policies

Efforts are made to align the top sector policy with Horizon 2020 program of the European Commission, although the Dutch policies are more focused on competitiveness, while the EU-approach is more dedicated towards societal challenges. Based on cases in different sectors and based on experiences in the innovation programmes we observed that knowledge created in the private sector is very useful to meet societal challenges and the other way around: firms may generate value added solving societal challenges. Various top sectors recognise the opportunities in combining competitive needs and societal challenges and also recognise the opportunities in linking industry policies on a national and a European level. Several firms and knowledge institutes are keen to be part of international consortia. For example top sector High Tech Systems & Materials has a proposed private contribution of 40% earmarked for participation in international R&D programs.

11. Norway (contributed by Innovation Norway)

Past use of the “cluster tool”

There are currently two national cluster programmes in Norway. The Arena programme, and the Norwegian Centres of Expertise (NCE) programme. The two programmes are a result of a development starting in the 1990s with the launch of business network programmes – via regional innovation system – to the first cluster programme, The *Arena programme* was established in 2002. Arena supported a number of network-based regional initiatives, testing out ways of enhancing industry-university linkages. By 2005 the Arena was developed into a more structured approach, adopting cluster theories, models and cluster supporting tools. The NCE programme was launched in 2006 targeting knowledge based clusters with world class ambitions recognised not only in their respective regions but also at the national and international level.

Thus the Norwegian cluster policy is based on a combination of:

- Support to the strongest, most dynamic and internationally oriented clusters (world class)
- Support to a wide range of collaboration-based initiatives; “emerging clusters”. Some of these might have a potential for developing a strong position in their fields.

Both programmes are jointly developed by the three main innovation agencies in Norway; Innovation Norway, the Research Council of Norway and SIVA (the Industrial Development Corporation of Norway). Arena and NCE is part of a system of programmes and schemes operated by the three innovation agencies with a general purpose of linking industry and R&D/education and create better environments for innovation and entrepreneurship (triple helix). A report prepared to the Ministry of Trade and Industry in 2011 by Econ Pöyry highlights the increased public support to clusters and networks by showing the growth in number of programs available to support their development from 3 in 2003 to 12 in 2010. The public expenditure has during this same period grown from 70 million NOK to 582 million NOK.

The programmes are funded by the Ministry of Trade and Industry (NHD) and Ministry of Local Government and Regional Development (KRD). Regional innovation policies has been a driver in the development of both programmes, combined with a comprehensive innovation policy. Both programmes are national, supporting regional clusters based on national competition. They are both based on a bottom- up approach with a clear ownership of the strategies and development of the cluster lying within the industry / business community.

The programmes provides co-funding (maximum 50 %) of the cluster activities. The core activity in the cluster initiative is facilitating the joint processes among the participants within the cluster as well as building linkages to external resources. The funding is provided to facilitate basic cluster processes, creating meeting places, facilitate cluster development, strategy development, analyses, learning processes, profiling and communication and development of new ideas.

There is a close follow-up and guidance from the national programme management to each individual cluster, with frequent dialogues, cluster manager fora, thematic workshops, courses and seminars.

In addition Innovation Norway has regional offices in each of Norway’s 19 counties. The clusters have their own dedicated person on their respective Innovation Norway office that are supporting the cluster management in the cluster development as well as guiding to better be able to make use of other financial schemes offered at the regional, national and EU level.

Arena supports cluster initiatives for 3-5 years. Annual funding: 2 mill NOK Portfolio 2011: 22 cluster initiatives.

NCE supports cluster initiatives for up to 10 years (3 contract periods) Annual funding: 5 mill NOK. Portfolio 2011: 12 cluster initiatives.

Description of current key policy issues relating to clusters

The two cluster programmes are recognised as important policy tools – at regional as well as national level, and receives a stable funding from the Ministries. There is growing focus on how to increase the clusters’ impact on innovation, as well as an ongoing development on how to increase the focus on linking clusters through trans-sectorial- as well as trans-national collaboration.

The internationalisation processes of clusters have received increased attention as the clusters and cluster programmes have developed. The importance of strategic choices of partners internationally both at program and cluster level has been found to be a key success factor. Innovation Norway has

offices in more than 30 key markets, where special advisers can be used as a door opener as well as a source of market intelligence for the clusters.

Cluster development, and thus cluster policy, is an ongoing learning process, the experiences gathered through the cluster programmes, as well as the highly valuable experiences and input from the clusters themselves, are important to cultivate to constantly refine cluster- and innovation policies as such. Continuous monitoring, evaluation and adjustment of cluster policies should be conducted, so as to be up to date and efficient as tools for industry development, innovation and competitiveness.

Policy implications/recommendations for the future

According to the experiences from the work with clusters in Norway, and the results of a recent evaluation of the NCE and Arena programme the main areas of further development and particular attention are:

- Cluster programmes should, at all times, be aligned with overall innovation and economic policies.
- More emphasis should be put on innovation activities in the clusters, innovation policies should be better adapted to accommodate joint projects and network based innovation.
- Cluster policies, programmes, and financing of clusters should be flexible, so as to be able to accommodate the individual needs of clusters.
- Internationalisation of the individual clusters, as well as at the cluster programme level, needs continuous and increased attention.
- An increased focus should be put on developing better tools and support for excellent cluster management.

12. Poland (contributed by PARP the Ministry of Economy)

Past use of the “cluster tool”

Support for cluster development in Poland started under the first programming period of EU structural funds (2004-2006) and has been continued ever since to include both EU co-funded measures as well as policy actions financed from the national budget.

A diagnosis of Polish clusters performed by the Polish Agency for Enterprise Development (PARP) in 2010 revealed a need for laying out a vision of cluster development until 2020 and designing support mechanisms/instruments in order to stimulate innovative growth and enhance competitiveness of Polish enterprises.

Description of current key policy issues relating to clusters

Following up on this diagnosis, PARP has recently launched a project aimed at supporting new and better coordinated approach to cluster policy in Poland.

The initiative, which started earlier this year (2011), forms a part of the bigger technical assistance project called “Polish clusters and cluster policy” co-funded from the ESF under the operational programme. A Polish Cluster Policy Group, chaired by the deputy minister of economy, has been established, to initiate a dialog between organisations and institutions involved in cluster policy development in Poland on national and regional levels while also taking into account current EC policies as well as good practices from other EU member states.

It is assumed that a tangible outcome of the project in a form of report with policy guidelines and recommendations, scheduled for the second half of 2012, will be used for planning the next financial perspective (2014-2020).

Policy implications/recommendations for the future

Based on the outcomes achieved so far under the ongoing project, the following issues have to be highlighted with regard to trends of future cluster policy in Poland¹⁷:

1. Agreed vision of Polish clusters until 2020 should form a basis for formulation of other policies influencing cluster development like innovation policy, R&D policy, regional policy, industrial policy, labour market policy, education policy, etc. There is no need for a separate cluster policy but cluster concept should be used under other policies, instruments and institutions with the objective of seeking synergies in supporting portfolio of selected key clusters.
2. New cluster policy (or rather cluster-based development policy) should stimulate structural renewal and upgrade of Polish economy supporting development of existing economic specialisations and reinforcing the processes of cross-fertilisation and identifying new areas of growth. In consequence it leads to development of dynamic clusters which can be drivers of regional competitiveness.
3. A hybrid model of cluster development is preferred combining bottom-up processes of cluster initiatives' development with top-down selection of excellent clusters which have potential for being competitive in a global scale.
4. It is believed that, similar to international practice, the selection of key Polish clusters should be performed through competition mechanisms that assume accreditation of best clusters according to agreed criteria with critical mass being a major criterion represented inter alia by number of firms, particular economic parameters (export), certain comparative advantage or R&D potential. Another essential condition is to have a record of cluster initiative's operations and a representation, although cluster policy framework might also support emergence of cluster organisations through preparatory grants. Main tasks within the selection phase would be to build partnership, agree development strategy within cluster actors and decide on specific actions and projects as well as fields of technology and innovation important for cluster development. The accreditation system can stimulate cluster initiatives within the existing agglomerations of enterprises and supporting institutions, as well as preparing development strategies.
5. Cluster support programmes should include both direct and indirect support mechanisms that allow to identify leading clusters, define economic and technological specialisations, diagnose development needs of these clusters and respond to those needs in an integrated manner (by co-ordinated support for implementation of projects/activities defined by cluster actors). Cluster programme should also help qualify credible and effective cluster organisations providing structured and reliable information for potential foreign partners which will in turn facilitate transnational collaboration.
6. Another important objective of cluster-based development policy is more efficient allocation of available resources especially financial ones but also other like national R&D infrastructures funded from EU structural funds. This can be achieved through concentration of development

¹⁷ Based on the documentation and information related to the Polish Cluster Policy Group, available on the following website http://www.pi.gov.pl/Klustry/chapter_95482.asp

resources and investments within clusters which have the greatest potential for building strong economic specialisations. For that purpose the cluster-based development policy should include mechanisms that allow direct allocation of various forms of public funding already available both on the national and regional levels to members of selected clusters and cluster organisations for the purpose of funding portfolios of projects and activities defined by members of these clusters.

7. New cluster based policy should involve the aspect of improving cluster specific framework conditions as the development of a particular cluster is not determined only by potential of companies operating within the agglomeration, but depends also on the quality of framework conditions and availability of specialised external resources. It is of vital importance that educational institutions supply human resources with proper qualifications and competences whereas universities and research centres generate knowledge and are prepared to co-operate with cluster companies which can use this knowledge to innovate.
8. There is a need for coordination and task delegation between national and regional levels where key clusters would get support on national level while their earlier development stages would be supported by regional measures. National level would coordinate policy towards clusters of significant potential for being internationally competitive, no matter whether regional or interregional, especially those driven by R&D spending available at national level or benefiting from export support measures. On the other hand, clusters of regional or local significance would be supported within appropriate administration structures – mainly by regional authorities responsible for developing and implementing regional development strategies and operational programs.
9. Concentration and co-ordination of various policies and public instruments (e.g. expenditure for infrastructure, R&D or education) around the selected and accredited key clusters (economic specialisations) is needed for better allocation of public funding (incl. R&D). Agglomerations (clusters) show greater potential for development and can create strong economic specialisations of the country and particular regions (policy should also mobilise private investments within these agglomerations). Investing limited public resources in agglomerations of enterprises is more effective and brings more external effects than more horizontal and dispersed allocation. Concentration of resources helps building a critical mass necessary to compete globally and it also mobilizes real cluster initiatives.
10. Institutions such as incubators, science and technology parks, special economic zones etc., provide infrastructures appropriate for development of cluster companies and co-operation between industry and science. Potential of companies managing special economic zones can be used for animation of local cluster initiatives.
11. The policy should also provide for reinforcing interactions, co-operation, trust, dialogue and co-ordination within agglomerations and supporting organisations. This can be achieved by stimulation of cluster initiatives and capacity building of cluster organisations (mostly on the regional level).

13. North Portugal (contributed by ADRAVE-Regional Development Agency and the University of Minho)

Past use of the “cluster tool”

Clusters activities in Portugal were firstly discussed at an economic and political level in the 1990's. After, only in 2001, the clusters theme was again at the spotlight due to the PROINOV programme.

The PROINOV programme assumed a transversal innovation policy, being directly coordinated by the Prime Minister office.

In 2005, the National Action Programme for Growth and Employment, for the period of 2005-2008, was presented by the Portuguese Government. One of the goals of this programme was to establish partnerships and clusters dynamics to strengthen internationalisation and competitiveness of Portuguese companies. The main actions of the programme were: (i) to increase the business cooperation; (ii) to redirect the opportunities of public acquisitions to the integration of national companies in consortium and in chains of international value; (iii) to renew the *Dynamo Programme*; (iv) to reinforce the Tourism making more attractive and competitive the Portuguese touristic products. In the same year, the Portuguese Government adopted the Technological Plan, to support business growth and business competitiveness strategies based on knowledge, technology and innovation.

In this context, the Portuguese Operational Competitiveness Programme - COMPETE was implemented as part of the National Strategic Reference Framework for 2007-2013. The COMPETE Management Authority is responsible for manage and execute the programme and to establish formal Competitiveness Poles (recognised clusters at specific business and industrial sectors connected with R&D national networks institution). That strategy intends the creation of innovative partnerships and human assets necessary to obtain international visibility and diffusion. Thus in July 2009 were signed the recognition contracts of 19 clusters within the Collective Efficiency Strategies framework.

In Portugal there are two different typologies of clusters: the *Competitiveness and Technology Poles*, with a strong potential to internationalisation and to compete with the best positioned clusters in the world; and *Other Clusters*, that will have sector and geographical relations as the key for the regional development.

According to that classification, out of the 19 contracts signed, 11 are classified as Competitiveness and Technology Poles, and 8 as Other Clusters.

Description of current key policy issues relating to clusters

The strategy promoted by the COMPETE Management Authority define several goals. One of the aims is to enhance the selectivity and the concentration purposes on policies. So, the following priorities have been established:

- Support the production of knowledge and the technological development;
- Promote incentives to shift the specialisation profile and business models;
- Provide financial engineering instruments and chaired venture capital for innovation;
- Launch integrated interventions for public cost reductions;
- Adopt collective action for business development;
- Encourage the development of an Information Society;
- Create networks and infrastructures to support regional competitiveness and to adopt integrated policies of economic growth in the less competitive territories;
- Develop innovative actions.

In order to strength the competitiveness of the Portuguese economy in a global market context, the improvement of the following dimensions is assumed as strategic: innovation, scientific and technological development, internationalisation, entrepreneurship and modernisation of public administration. Also, in order to obtain best results in concentration and selectivity, the following actions was defined:

- Investments in activities that result in economic effects and territorial qualification;

- Selectivity in the financial investments and development actions, that satisfy the production efficiency goals and the effectiveness in physical and financial realization;
- Economic viability and financial sustainability of the actions;
- Increase public-private partnerships;
- Stimulation of cooperative networking.

The COMPETE objectives for the clusters policies are:

- Strategic approach - to develop a strategic vision that accounts for the challenges of the future, that is market-oriented and generates effectiveness and efficiency gains;
- International competitiveness – to internationalise national and regional companies, products and technologies, in order to increase exports and market shares, to improve the national technological parity, and to encourage productivity and creating high-skilled employment;
- Structural projects - to develop structural projects with significant national impact, that can provide the support needed for development of new products and solutions, the requalification of traditional industries and the generation of new future-oriented business;
- Investment in R&D and Innovation – to develop research and technological development projects that will lead to increase the added value of national products and their exports; simultaneously, this investment will promote a high level of cooperation between the institutions of the National Innovation System;
- Cooperation between actors – to stimulate and promote collective projects - joint projects and cooperation projects involving companies and support bodies - which will introduce new approaches based on creativity and innovation and which will focus on multiplying and sharing the results created by the junction of different areas of knowledge.

Policy implications/recommendations for the future

In order to connect business and R&D institutions and clusters policies, allowing a transfer of knowledge and the possibility of entering in the critical mass of innovative companies, the Portuguese commitment had encouraged the creation of products and innovative projects. Portugal exhibits high rates in the use of intellectual property rights above the EU average. However, especially in the case of patents, the growth rate is still too small to ensure a fast approach to the EU level.

The number of the Portuguese SMEs introducing product or process innovations and introducing marketing or organisational innovations has increased in the last years. Nevertheless, the current situation can be a reflection of the low innovation in SMEs until recent years in comparison to other countries and the recent focus on innovation in companies tries to overcome this debility. Programmes that target the development of innovation in companies by the development of new products, services and processes of production and by stimulating the skill-intensive entrepreneurship and innovative investments projects, like COMPETE, must continue to be implemented.

To future developments of clusters in Portugal, the COMPETE promotes 4 operational instruments:

- Systems of incentives for business investments – provide direct financial supports to encourage the innovation and the economic competitiveness, usually refundable or associated with achievement bonuses;
- Financial engineering mechanisms - promotion of financing solutions of own capital of the companies (venture capital) or debt capital (financing, interest subsidy, guaranties, etc);
- Support to collective actions - indirect supports to economy, by promoting the collective competitiveness factors. Projects must be promoted by public institutions or by private non-profit entities, which results cannot be subjected to private appropriation; instead, they must

be subjected to disclosure, dissemination or public display, ensuring universal access. This may involve target companies, which must be in significant number and independent of each other and should not receive any direct financial support;

- Support for public actions - support to public administration projects as part of qualification procedures in order to enhance the efficiency of the public administration and the activity of public entities with specific responsibilities in infrastructural endowment of the territory. This instrument can be considered as an indirect support to companies, by providing services or other forms of scientific, technological and training assistance.

14. Slovenia (contributed by the Faculty of Economics at the University of Ljubljana)

Past use of the “cluster tool”

Public support to cluster development in Slovenia started with the introduction of a new concept of industrial policy promoting entrepreneurship and competitiveness. Its objective was to speed up adaptation of Slovenian companies to the latest technological, managerial and organisational advances and to foster the development of organisational structures and institutions enhancing national productive capabilities. This new policy – “Entrepreneurship and Competitiveness Policy” - was introduced by the Ministry of the Economy in 1999 and carried out till 2004.

One of the policy objectives was to stimulate the development of industrial organisation that would support the development of systems that enable faster dissemination of knowledge within the economy and to foster accumulation of knowledge that would translate itself into innovation manifested in new products, services and new technological process or technology. This was the reason why the new industrial policy started to support the development of clusters. Hence, public support to cluster development in Slovenia was not a tool to increase productivity of SMEs but a tool to increase innovation potential of the economy.

In the period 2000-2004 cluster development was facilitated by, first, initiating a comprehensive research for identification of potential clusters, second, initiating specific policy measures to promote basic enterprise networking and cooperation, third, initiating a training program to improve knowledge on clustering and to develop a network of cluster promoters, facilitators and managers and lastly - initiating a pilot project of a potential cluster development by inviting groups of enterprises along with knowledge support institutions which could qualify as a potential cluster nucleus. Cluster development in Slovenia followed a bottom up approach. Clusters were not defined by government policy, on the contrary, companies themselves decided to form a cluster by responding to a government tender. The government acted as a passive agent of change. It did not replace market mechanism or private initiative by "picking the winners". Public funding support to cluster organisations/managers was planned to be no longer than 4 years to avoid path dependency on public money as the main motivation for their existence.

The most important result of the cluster initiative was triggering of a very crucial change in »business psychology“. Before the ministry introduced the concept of clustering and started to support cluster development, Slovenian enterprises were not inclined to network spontaneously. Due to the positive results of networking between cluster companies, it became evident that progress is faster due to cooperation and that cooperation can bring results only in a trustful environment. The results of clustering have been seen in the development of new organisational forms, the specialisation and productivity of individual companies and in increased investment in research and development, the consequence of which has been to make the whole system more competitive.

The 2005-2006 period can be considered as the time when the basic principles underlying the policy stayed the same as set up by the previous government, however the direct support to cluster organisations was terminated. Financing for the potential cluster development programs has ceased. In spite of this, clusters continued to emerge: between 2004 and 2006 the number of clusters increased from 17 to 28 clusters; however, their number decreased to 11 by 2011.

Description of current key policy issues relating to clusters

Currently, clusters are not singled out as a strategically important policy tool. Clustering is considered as one of the forms of innovative groups. The latter are defined in the programme as groups of independent companies – innovative companies in early stages of operation of small, medium-sized and large enterprises and public research organisations – operating in a particular industry or region and formed for promoting innovative activities. Other forms of innovative groups include technological platforms and technological networks, for example. The way of financing and the priorities of financing have changed in comparison to the 1999-2004 period. Cluster organisations themselves cannot be financed anymore, only the companies that are co-operating can. And even though the instruments supporting co-operation are available, not even a single joint R&D investment project that was co-financed in 2008 and 2009 included clusters, for example. However, cluster companies were also during this period eligible to apply to public tenders in respect to innovation and research and in EU programmes.

Clusters became the driving force in initiating technology platforms. Cluster companies were mostly the ones that responded to the government tender in 2009 for the formation of centres of excellence as an upgraded system that would push the development of key knowledge further in the key technology areas. The government also decided to support the development of competence centres to foster cooperation among enterprises for the purpose of commercialisation of commonly developed new knowledge and became significant members of competence centres. All these show that cluster companies are more ready to adopt new innovative organisational forms compared to others. The Slovenian automotive cluster ACS, for example, was able to assure through the dialogue with different ministries a special credit line for this industry in 2009 in order to help cluster companies to overcome the severe credit crunch due to the financial crisis, demonstrating that clusters are a natural platform for a dialog between public authority and private sector for policy action needed on a short run.

Besides these positive lessons, some shortcomings were also identified. The horizontal approach in forming clusters was too weak. It focused too much on branches of one sector. This of course is not the best ground for the development of new industries, due to a lack of cross-fertilisation of knowledge between different sectors.

Many clusters become “locked-in”, devoting much energy to fostering cooperation between the actors within the cluster. Also, competition between companies in a cluster was too low. Both factors significantly decreased innovation potential of clusters and dynamism within the cluster branching out from existing technologies into new emerging ones and hindered entrepreneurial activity in the sense of new companies’ formation.

Financial support was in most cases the most important driver for cluster formation. This partly explains why the number of clusters has decreased over time (there were of course other objective reasons such as: lack of trust, lack of expected results, changes in external economic conditions, regulations, etc.)

Policy implications/recommendations for the future

To increase the impact of existing clusters on economic growth as well as to increase the performance of cluster companies with respect to innovation and new knowledge creation there is a need for improvements in the key dimensions of framework conditions that provide an overall

supportive environment for clusters to emerge and to flourish. At the same time there is a need that cluster companies increase their efforts in developing unique irreversible productive capabilities and to establish links with other clusters within and beyond the EU borders, either for commercial purposes or for sharing the knowledge and developing new capabilities. Without these, clusters cannot be very effective and cannot deliver results in line with policy objectives and expectations. Both are necessary conditions in order for clusters to increase their competitive advantages internationally.

It is expected that clusters as a policy tool will again rise in importance due to the newly proposed guidelines¹⁸ for industrial policy for 2014-2020. The focus of the proposal is to combine horizontal measures with measures directed to key sectors with highest competitive potential and within these sectors on groups of companies which are positioned in the global value chains or have the potential for this. Some of existing clusters represent such groups, for example, automotive cluster, information and technology network/cluster, tool making, process engineering cluster, new material, and precision processes clusters. If these new guidelines will become operational, it is expected that clusters will again become an important policy tool for increasing competitiveness and knowledge based economic development. And further, in this case, it is expected that the policymakers will take on board the final recommendations of the European Cluster Policy Group (September 2010)¹⁹, when designing the new cluster efforts in Slovenia.

15. Spain

While some cluster initiative funding schemes exist at national level (e.g. AEI programme in the Ministry of Industry, currently under revision), cluster initiatives and other economic development issues are within the competence of different regions. While it is certain that the strongest and longest-term cluster programmes are those of the Basque Country and Catalonia, cluster-related activities are also prevalent in other Spanish regions (e.g. Galicia, Balearic Islands, Castilla y Leo, Andalusia, Navarra, etc.).

15.1 Basque (contributed by the Basque Government)

Past use of the “cluster tool”

Since Michael Porter, The Harvard Business School Professor, released *The Competitive Advantage of Nations* in 1990, cluster analysis and also cluster initiatives have spread all over the world. We hear about cluster here and there and we can see cluster based programmes in almost every region because it is clear that this “holistic” approach has a lot of advantages for policy makers. But when we talk about cluster policy, we are not always talking about the same issue, even though if we agree with the concept and definition, the approach, the goals, the supporting schemes are not always similar, and in some cases there are important differences.

So to know where cluster winds are blowing is important to know where was our initial starting point, and where we want to go, because only knowing those things we shall be able to understand where the wind is carrying us, as Schopenhauer said, “*There is no favourable wind for the man who does not know where he goes*”.

The Basque Country is a small country with an important manufacturing industry, although, as in all western countries, there have been a continuous decreasing in the percentage of the GDP of the

¹⁸ The author was one of the experts of the high group of the Ministry for Development (August 2011-November 2011) preparing the guidelines for adjusting current industrial policy according to the EU's new industrial policy approach.

¹⁹ Full ECPG report is available on the PRO INNO Europe website.

industry, in our region this percentage is still very important and that is, among other reasons, thanks to the industrial policy developed by the different Basque Governments. This industrial specialisation is the basis of our economy.

The Basque Country Cluster Policy began in the early 90s. The Basque Government asked Professor Porter to map the Basque clusters and then promoted the beginning of several Cluster Initiatives. The first two Cluster Associations were set up in 1992. After that, a further nine Cluster Associations were created using a top-down approach. The stability of this policy since the beginning has let the different Basque Cluster Associations reach maturity and also the recognition by their memberships of the added value of these associations.

Since the beginning, there has been no change in the main goals and supporting schemes, but we have done a great effort, above all in 2000, improving our management procedures and the efficiency and efficacy of our programmes, and also trying to adapt them to the different Strategic Plans of the Department of Industry, Innovation, Commerce and Tourism.

In recent years we have tried to extend the policy to other sectors and we have begun the Pre-cluster Policy. However, now the approach is bottom-up. The experience of Cluster Associations is well known in the region, so we offer other Sectoral Associations the opportunity to adopt a cluster approach. The candidates have to pass an assessment which has a minimum requirement and those who pass this point compete for the available budget. The candidates themselves apply for recognition.

Description of current key policy issues relating to clusters

Nowadays we are working in boosting the inter-cluster collaboration as we think it is important to try to make a framework in which inter-cluster collaboration can be promoted, not only among clusters but among companies as well. We realize the difficulty of this objective but we think that this collaboration can enrich all the organisations and fuel new projects.

In the last years we also have launched a specific programme to provide clusters with Strategic Observatories for the Technological Surveillance and Competitiveness Intelligence tasks, as we think that it is important that every cluster association develops this tool according with their own strategic plan to provide strategic information to take their strategic decisions.

Policy implications/recommendations for the future

Taking into account our experience, success and failures those are some of the main challenges for Cluster Policy we think we have to consider for the future:

1. Mission of the Cluster Policy: Improving the competitiveness of Basque companies through cooperation.

Although in our opinion the mission of the Cluster Policy has not changed and it must be to maintain and increase the competitiveness facing (tackling) the strategic challenges through cooperation, it is important to find an adequate balance between this main objective and other strategic issues that cluster associations can consider as a result of the decisions of the different participants involved in the cluster.

2. Where are the limits of Cluster Initiatives?

Everywhere and at every level we can see cluster initiatives launched by local, regional and national agencies. Is it possible to find synergies or those initiatives can compete among them, making more difficult the access to the funding, and devaluating the impact of the cluster policy as a result of, sometimes, a very limited scope?

3. The new fields of Cluster policy.

The main objective is the same but the market, the world is changing. The internationalisation of the cluster and the increasing of the participation of small and medium enterprises in cluster associations are some of questions that cluster associations must consider in the next years.

4. Cluster Policy and Industrial Policy.

Cluster policy is only a small part of the industrial policy and must be engaged with others policies and tools of the this policy (R+D Policy, Innovation Policy, Internationalisation Policy,...) because without a general competitiveness strategic plan of the whole region, the effectiveness of the cluster policy and its impact will be much lower.

5. Financing and impact indicators

Since the beginning we decided to set up for cluster associations a stable financing scheme based on projects. But it is always necessary to consider new funding schemes and design new impact indicators to measure the effects of this policy.

6. For the Long Run.

There are intangible and tangible results of the cluster policy but most of them are in the long run, so, the commitment of the administrations involved and a close relation among all the agents involved is a key issue, and it is important as well to have a stable and balanced industrial policy as a basement for cluster, companies and cluster associations.

15.2 Catalonia (contributed by Generalitat de Catalunya)

Past use of the “cluster tool”

Catalonia started its cluster policy in 1993 with an approach focused on “micro-clusters” i.e. in designing and implementing competitiveness reinforcement initiatives centred on existing territorial clusters narrowly defined (knitwear, motorcycle, leather tanning, etc.). Initiatives mainly focused on addressing the main strategic challenges of a particularly industry and were strongly driven by the public sector (Department of Industry) with a more modest involvement of other triple helix actors. Projects outputs were mainly in the sphere of “soft skills” improvement with a particular emphasis in SMEs strategic change and business environment improvement. With very few exceptions, cluster initiatives were not institutionalised and cluster management was carried out mainly by the public side.

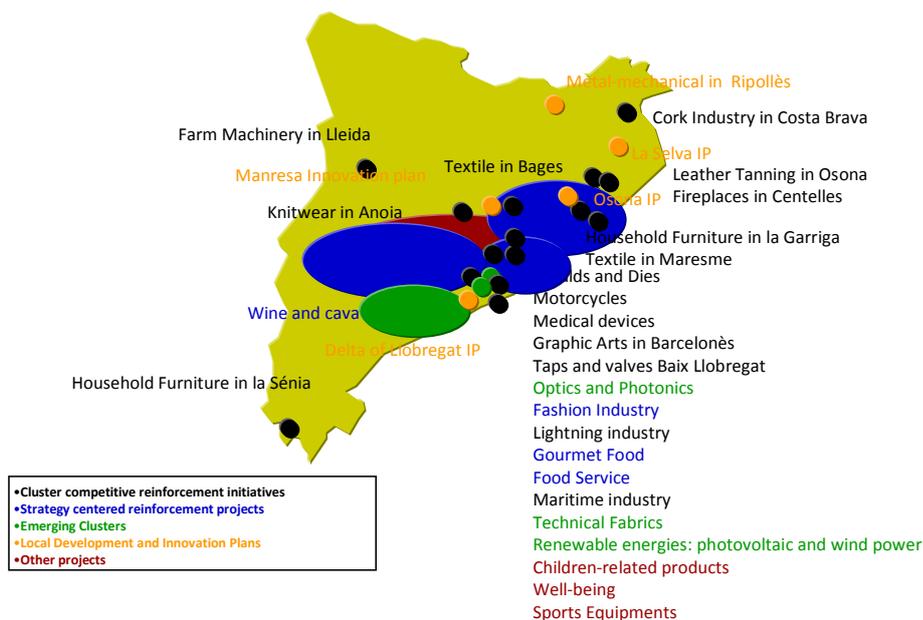
By the mid-2000’s, new important adjustments started to be introduced, the changes mostly stemming both from external and internal factors. Firstly, cluster initiatives started to take into account the major ongoing transformations in the industrial fabric with a progressive off-shoring of manufacturing and a growing importance of other activities often in the field of services or supporting and related industries. Another exogenous driver of change was suggested by the European Commission’s communication on *World class clusters*. Its content paved the way for the implementation of a new pattern for cluster projects in Catalonia. It soon became clear the opportunity to institutionalize cluster initiatives and to improve and professionalize its management.

But other changes were propelled from the inside. The scope of cluster-based competitiveness reinforcement initiatives underwent radical changes. Clusters became therefore a more flexible concept identifiable with a way of working with companies (and especially SMEs) rather than a geographic concentration of firms in a particular industry. This also implied working on projects with a more cross-sectoral focus (e.g. home equipment instead of home furniture or lightning) and weaker territorial roots.

Internal changes were mainly driven by the consideration that sustainable and modern cluster competitiveness reinforcement initiatives should be endowed with the following attributes: private

leadership, professional management and an institutional framework able to give stability to the initiative and allow a temporary and limited co-financing²⁰.

The main criterion to define a cluster stopped being limited to only considering either the industry or a technology to enlarged to include a common end-market (kids related products, sport activities), a strategy (gourmet food) or other elements or concepts (well-being).



Competitiveness reinforcement initiatives at cluster and industry level (2005-2010)

²⁰ The current supporting scheme for new generation cluster initiative include a 3 years co-financing of a cluster organization created and leaded by a core group of private companies and other actors following a mapping and competitiveness analysis process started by the Administration. The co-financing of the structural expenses cover up to 75% of costs with a maximum of 75.000€ in the first year, 50% with a maximum of 50.000€ for the second year and 25% with a maximum of 25.000€ in the third year. In the 4th year the cluster organization is supposed to be totally self-financed.

Type of project	Example	Scope	Objectives
Local cluster competitiveness reinforcement initiatives	Sanitary taps Baix Llobregat Cork industry in Costa Brava	One or more counties	Cluster competitiveness reinforcement by promoting strategic change and horizontal cooperation initiatives
Strategy-focused clusters	Transformation of textile industry: branding and retail Growing strategies in food industry	Variable	Identify emerging winning strategies inside a cluster or sector and prepare a "taylor-made" and innovative support scheme
Incipient and emerging clusters	Optics and photonics Photovoltaic	Variable	Identify potential and incipient clusters and fostering their development
Local competitiveness reinforcement	Ripolles county development plan Osona innovation plan	City or county	Screening of main economic activities and existing clusters to define cluster-based initiatives
Other competitiveness reinforcement initiatives	Well-being Kid-related products	Variable	Competitiveness reinforcement initiative of a group of companies group by alternative criteria (ex. market, concept, etc.)

Source: OPI – Generalitat de Catalunya, 2009

Types of competitiveness reinforcement initiatives

Description of current key policy issues relating to clusters

Currently and from the policy makers' perspective, cluster initiatives are seen as vehicles; tools for achieving different objectives. They constitute a way of maintaining a constructive and pro-active dialogue with companies, especially SMEs. Besides they represent an instrument to detect innovative projects both at individual as well as at collaborative level in the field of pre-competitive activities. Finally, they are seen as a system to promote "interclustering" linkages both at local and international levels, a source of non technological innovation and an instrument for cross-fertilisation among once separated industries.

Cluster initiatives will be used more and more as a market intelligence tool to detect trends in business models and to fine-tune other more visible and better-structured programmes and actions in competitiveness reinforcement and regional development efforts.

Policy implications/recommendations for the future

In order to achieve the next degree of maturity, Catalan cluster policy faces some important challenges:

- Rationalizing and concentrating the large amount of cluster initiatives initiated in the past, not only by the regional authorities (responsible for the initiation and launching of the majority of cluster initiatives) but also by a number of other local agents like municipalities, private actors, etc, especially in the past 3-4 years.
- Better coordinating cluster policies with other horizontal mainstream policies such as internationalisation and innovation in order to optimize resources.
- Identifying a robust evaluation methodology able to consolidate cluster policy and to protect it against continuous changes due to political changes.

16. Sweden

16.1 National (contributed by VINNOVA²¹)

Past use of the “cluster tool”

Over the past decade in Sweden, clusters have been viewed as vehicles to develop more effective regional innovation systems – engaging research organisations, companies and other actors in collaborative efforts to strengthen innovative capacity and increase innovative outputs. Cluster programmes and other cluster-related policy activities have focused both on developing ‘soft’ skills²² and delivering ‘hard’ outputs²³.

At VINNOVA, the VINNVÄXT programme focuses on strengthening regional innovation systems by providing a grant of up to 10MSEK (approximately 1MEUR) per year for 10 years, with matching support (financial or in-kind) from the regional level – resulting in an annual budget of at least 20MSEK per cluster initiative. “Winning” cluster initiatives must establish a governance structure to receive and manage the funds. In general, this governance structure is comprised of a non-profit association (the “cluster organisation”) with a small secretariat and board, and an associated company (where funds are managed). Funding is approved for three-year periods, and continued funding is contingent upon a positive evaluation of progress. It is required that at least 50% of annual budgets must be used for applied R&D projects.

Description of current key policy issues relating to clusters

The current situation calls for innovation policies that enable (among other things): increased focus on addressing grand societal challenges; effective coordination and use of financing between regional, national and EU levels; better leveraging of complementary research and innovation assets (through creative linkages, cross-fertilisation and “smart specialisation” strategies); strengthened linkages with international nodes of knowledge and innovation; and higher participation of SMEs in collaborative innovation projects.

Clusters (or rather cluster initiatives) are one type of strong research and innovation environment. These strong research and innovation environments are not just an end goal in themselves, but also a means to reach other goals. Strong cluster initiatives around Sweden should be viewed as platforms through which various policies related to innovation and industrial growth can be implemented. They are well-developed eco-systems where SMEs can be engaged in concrete innovation projects. They are “testbeds” where experimentation with new innovation methods and cross-fertilisation between sectors/research fields can flourish. They are ‘local’ nodes from which global linkages can be developed. They are experienced with driving complex innovation processes aimed at addressing long-term solutions. As such, cluster initiatives should be targeted channels for implementation of challenge-driven innovation ‘partnerships’ and other relevant innovation programmes. In addition, the process facilitation/orchestration skills that have been a focus of the VINNVÄXT programme should be further developed as an important component of challenge-driven (and other complex) innovation ‘partnerships’.

Whereas the regional level is closest to the actor groups and best suited to lead the task of developing cluster initiatives (and other strong research and innovation environments), the national

²¹ With colleagues at VINNOVA and Tillväxtverket (the Swedish Agency for Economic and Regional Growth)

²² mobilisation of actor groups, facilitation of collaborative innovation processes, engaging and gaining commitment of regional leaders, communication and development of new network linkages ‘with the outside’, etc.

²³ innovations, new companies/jobs, and increased competitiveness

level needs to support these efforts²⁴. Regional and national agencies working in this field should work in a more coordinated fashion with each other in order to lever these cluster initiatives as strategic research and innovation platforms.

Policy implications/recommendations for the future

Based on these lessons and perspectives from working with cluster initiatives in Sweden, the following actions have been highlighted:

1. Put increased focus on the leadership of the cluster initiative – both the management and board of directors. Strong leadership is needed to ensure mobilisation and engagement of actors (particularly SMEs), anchoring with regional politicians/policymakers, relevance of activities, and results. (related to TACTICS TF5: Evaluating Cluster Excellence)
2. Continue to provide process support (including international benchmarking and other types of analysis) to cluster initiatives (and other R&I environments). Process support was an important component of the VINNVÄXT programme, and many agencies (in Sweden and elsewhere) have experienced many benefits²⁵ from gathering managers of various cluster initiatives. Future process support activities should support testing of new (demand-led) innovation methods, and help establish common monitoring/evaluation frameworks. In Sweden, such process support activities could be led through REGLAB. (related to TACTICS TF1,3,5&6: International Cluster Cooperation, User-Driven Innovation involving Clusters, Evaluating Cluster Excellence and Emerging Industries/Services)
3. Provide financing for pre-studies and concept development. In an effort to maintain dynamism, cluster initiatives increasingly seek knowledge inputs and collaboration partners outside of their region/country. These types of activities are viewed as more risky, as less is known about actors, markets and potential results. Governmental financing of pre-studies and concept development would help decrease the risk and encourage such renewing/developmental activities. (related to TACTICS TF2&6: Channeling RDI funding through clusters and Emerging Industries/Services)
4. Incentivize continued development of cluster initiatives (and other R&I environments) through phased, competitive financing approaches. The phased approach for selecting and financing “winners” in VINNVÄXT *Early Stages*²⁶ is viewed as a successful way to encourage continuous renewal and an investment orientation. Lower amounts of financing are provided for short periods to develop concepts in early stages; and larger amounts of financing are provided for longer periods to those cluster initiatives/R&I environments with good project ideas. (related to TACTICS TF2,5&6: Channeling RDI funding through clusters, Evaluating Cluster Excellence and Emerging Industries/Services)
5. Provide “flexible” financing that cluster initiatives can use to implement relevant innovation activities. One of the unique and quite successful aspects of the VINNVÄXT programme was

²⁴ by being actively involved in strategic dialogue; by providing contextual analysis, ‘stamps’ of legitimacy, ‘in-roads’ to collaborative innovation projects both within and outside of Sweden; and by helping to secure long-term financing streams (for cluster initiatives/platforms that are willing to develop their organisation/activities by collaborating with others...those with DYNAMIC innovation activities in their cluster)

²⁵ In addition to development of cluster management/orchestration skills, process support activities have led to cross-fertilisation between geographies and sectors, have helped to inspire/push cluster initiatives to try new modes of operating, and have helped ensure continuous renewal.

²⁶ A similar approach was used in VINNOVA’s recent *Challenge-Driven Innovation* call.

the “flexible budget” for research and innovation activities²⁷. In effect, VINNOVA has channeled R&I funding through these cluster initiatives...allowing them to prioritize research and innovation activities that they deem most relevant. This has resulted in “mini innovation programmes” like BIO-X, implemented by Uppsala BIO. (related to TACTICS TF2: Channeling RDI funding through clusters)

16.2 Region Skåne (contributed by Näringsliv Skåne)

Past use of the “cluster tool”

Within the Skåne/Øresund region there are currently seven cluster initiatives working to strengthen the competitiveness of companies in the region in particular: Skåne Food Innovation Network, Mobile Heights, Media Evolutions, Sustainable Business Hub, Packbridge, Training Regions and Medicon Valley Alliance.

The theoretical cluster model has, translated into policy, in the form of investments in cluster initiatives focused on companies’ value chain and on one industry. The objective has been to increase competitiveness in a number of companies in a region by strengthening their relationships within the region, primarily with other companies and possibly with various research and educational institutions. This has been achieved by reducing the costs of labor, technological development, production etc. Geographical proximity together with the opportunity to meet regularly has helped to create trust between the parties, which has facilitated cooperation.

Based on this policy model, the cluster initiatives in Skåne have successfully supported companies in Skåne for a long time in their efforts to become more competitive. This is evident, for example, in an increase in the number of members in the initiative. However, the changed conditions for long-term competitiveness indicate the need for a change in policy, which supports the development of innovations to a greater degree than in the past, and, which is in line with the new understanding of the innovation process, i.e. more cross-sectoral and open for more parties – since this is the key to long-term growth.

Description of current key policy issues relating to clusters

One thing that is clear is that there has been an increasing internationalization of industry, which has been driven by general technological development as well as by political deregulation. Today it is significantly easier to relocate parts of the production to another country to reduce costs, or to cooperate with other companies or universities with specialist expertise in order to develop new services and goods. This development has led to an increased accessibility to new markets outside of the companies’ geographical home markets. Traditionally, it has primarily been large multinational companies which have demonstrated this ability, with large laboratories and test facilities within their own organizations. The new products, services, processes and business models were often developed within the company – a task often led by a development department. Companies have, traditionally, had contact with other companies and universities, however this has largely been characterized by “business-to-business” contacts. The process of innovation was seen as a linear process. However, knowledge dissemination is happening increasingly quickly, and the number of institutes of technology has increased. This means that not only the large, multinational companies have access to company specific knowledge, but also sub-contractors and consumers.

We can draw the conclusion that the process of how innovations are developed is changing. In turn, this changes the rules of the game within the economy, where opportunities are now opening up for

²⁷ Cluster initiatives had to use 50% of VINNOVA financing for research and innovation projects – of their own choosing.

different companies than before to be competitive and meet the new demands of the market. For companies to be able to develop new products and services they now have to make use of both internally and externally developed ideas; a company can no longer completely rely on its own R&D department for new ideas. The trends are moving towards a more open innovation arena.

Through regional, national and international cooperation, Skåne will develop into an attractive international innovation environment in the areas where we have the best conditions for creating strong attraction. The foundation of the strategy is substantial investment in reinforcing Skåne's innovation culture – a culture which grows out of the creativity, openness and diversity that we can see in Skåne today. To achieve the vision, the following six strategies have been developed:

1. Develop systemic leadership – leadership that builds on purposeful cooperation between the players in Skåne as regards innovation
2. Broaden the vision of what innovation is – including a wider range of innovations and innovators
3. Streamline the support structure for innovation – avoid unnecessary overlap and, instead, create the basis for good cooperation
4. Develop new innovative areas and creative environments – promote innovation work that takes place in the boundaries between different industries to utilize unexpected opportunities
5. Develop international cooperation – develop and safeguard international contacts that support innovation work in Skåne
6. Strengthen innovation capacity in our existing industry and public-sector activities – utilise the potential that already exists in the region in the private and public sectors.

A new vision and objectives with additional focus on innovation have been developed for cluster initiatives in Skåne, in line with the new innovation strategy. By developing into *open innovation arenas*, they constitute an important tool for implementing the innovation strategy in Skåne and achieving the vision of being Europe's most innovative region in 2020. These open innovation arenas should, based on the mobilization of the region's resources, attract both national and international resources from outside the region to a greater extent. This will create long-term, sustainable conditions for innovative ability and competitiveness. This requires clearer **international positioning and profiling, as well as increased participation in international platforms**. Long-term competitiveness requires that the open innovation arenas connect with other innovation arenas around the world, and together form the basis for joint innovation platforms.

Skåne is working on a vision towards creating leading open innovation arenas in Europe. In order to do this we need to develop certain objectives that can function as milestones to check off along the way. Future innovations are increasingly expected to be developed by companies which are able to combine external and internal knowledge. Therefore, it is important to develop policy initiatives that support development of this ability. Inspired by the new knowledge that is emerging on open innovation processes, it is proposed that existing cluster initiatives are developed in the direction of what we have chosen to call open innovation arenas.

By introducing the term open innovation arenas, the increasing significance of innovation for sustainable growth comes into focus. The innovation strategy in Skåne is based on creativity, openness and diversity. This is in line with, and an important component in, the overall innovation strategy. Developing into open innovation arenas means opening up organizations to more and broader segments of interested parties to ensure continual flow of different types of knowledge. In general, research into regional innovation policy shows that no model fits all regions or initiatives, the same conclusion probably applies to the development of open innovation arenas. At the same time, it is important that we see that work with open innovations requires a new approach to developing innovations.

Policy implications/recommendations for the future

The open innovation arenas of the future must work actively to support the internationalization of companies. This due to the fact that companies emphasize that regional and even national boundaries are not relevant today. The cluster initiatives in Skåne are already working to develop their international contacts. More intensive work is required to form strategic alliances in order to link external resources to future open innovation arenas and the region. It is about linking up with groups of players to provide increased external financing for the initiative. It is about actively seeking collaborations for challenge-driven innovation that make it possible to handle global social challenges. Creating conditions in order to increase the exchange and “unexpected” meetings between different skill areas is an important part of strengthening innovation and renewal in Skåne.

To develop the world-leading knowledge and skills that will be needed to achieve the vision of being an internationally attractive innovation environment, all players in Skåne with the task of promoting innovation must contribute to wider knowledge of the surrounding world. For the open innovation arenas, this means keeping up-to-date with the latest trends within their respective profile areas, for example regarding market and technological developments.

The vision and strategy for development of open innovation arenas will be seen as a sub-strategy for the overall innovation strategy for Skåne. The intention is also that it will function as a framework for existing cluster initiatives to relate to in developing open innovation arenas up to 2020.

16.3 Region Värmland (contributed by Region Värmland)

The Swedish region Värmland is three hours by road or rail to the west of Stockholm and to the east of Oslo. The region has a population of 273,000 and the capital city Karlstad a population of 85,000.

The development organisation Region Värmland has during the last decade used cluster policies as an integrated part of regional development. During this process, a strong collaboration between actors and a relatively clear division of responsibilities has developed.

Värmland has a good national as well as international reputation for its cluster work in the spirit of Triple Helix. To remain in the forefront, Värmland is now developing a new cluster strategy.

Past use of the “cluster tool”

Cluster initiatives have been formed in paper technology (The Paper Province, TPP), ICT (Compare), packaging (The Packaging Arena, TPA) and steel and engineering (Steel & Engineering S&E) (more recently smaller initiatives have been taken in areas as tourism (Visit Värmland), local food (Nordic Innovation Food Arena) and wellness and care) with links forming between clusters. They are strongly company-driven – most were initiated by industry – and are based on the companies’ need for mutual expansion efforts. The initiatives serve as a platform in which companies meet and cooperate across borders with public players and with the academic world.

The cluster organisations represent some 300 companies with approximately 30.000 employees which is about 30% of the workforce in Värmland. This generates a critical mass and provides a good opportunity to design development projects that have a significant impact on the region’s economic activity. The overall turnover in these companies is about 3 billion Euros a year.

The cluster initiatives as they are today began to take shape in the late 1990s. Both The Paper Province – TPP (pulp and paper technology including machinery) and Compare (ICT) were established at the initiative of regional companies, in order to support collaboration between the business sector and public actors.

The basic mission of all cluster initiatives in the region is to support innovation and entrepreneurship, business development, industry-related R&D, as well as training and competence provision in Värmland.

The Paper Province, TPP

Over time, TPP has increased company participation and become increasingly integrated in regional innovation policy. They established the Packaging Greenhouse (TPG) as a facility for research, testing or demonstration, and the platform Energy Square, as a project to increase energy efficiency. As a consequence of this initiative, collaboration with Karlstad University on energy efficiency has increased and a professorship in this research area was prioritized for co-funding by Region Värmland as one of new professorships.

The region has developed into one of the world leading concentrations of competence in pulp and paper. In 2007, TPP became one of the 16 “Top European Clusters in High Innovation regions” by the European Cluster Observatory, and in 2010, they were appointed “A European world class cluster” as one of the 100 best clusters of the world.

The Packaging Arena

TPA launched the idea of the packaging value star – a cross sector collaboration between for example the pulp and paper industry, process technology, printed materials, digitalization, graphics and design²⁸. These competencies can be combined in various ways for innovation.

The Packaging Media lab was formed in close co-operation with the Service Science Centre at Karlstad University. There consumer reactions to new packaging solutions can be tracked. Actors such as researchers in consumer behaviour, cardboard and packaging producers, food producers and designers use the facility.

Steel & Engineering

With a long tradition of mining the *steel and engineering sector* has always been important in the industry. Over 150 companies within the steel and machining industry make the region one of the leaders of its kind in Europe. A resource for problem solving and innovation is The Material and Construction Centre at Karlstad University.

Compare

Compare IT is a cluster with industrial IT and telecommunications as a base. The mission was to strengthen the image of the regional ICT sector, to attract competence to the region, and to create a meeting place for people. Today, the cluster firms, range from large international groups to small family businesses. A key resource for regional innovation is Compare Testlab, providing a test site for business and researchers from Karlstad University. The last two, three years the companies have successfully entered the rapidly growing Oslo-market.

Karlstad University

Over time, Karlstad University increased collaboration with Region Värmland and the cluster initiatives, has resulted in several joint initiatives, e.g. new programs to attract, retain and train researchers, cross-sector R&D-projects and the establishment of regional test facilities for researchers and business representatives. In a memorandum of understanding, Karlstad University and Region Värmland had agreed up on co-financing ten professorships in sectors prioritised primarily by the regional industry through the different cluster organisations.

²⁸ www.packagingarena.com

The Grants and Innovation office is an important node for co-operation between the clusters and the university. The strongest research environment at Karlstad University, Centre for Service Science, (Centrum för Tjänsterforskning) CTF is a resource for all clusters. With CTF as a research base, an institute for applied and industry-based research was established in 2012 in Karlstad by SP Sveriges tekniska institut. However, the incentives for individual researchers to participate in cooperation in terms of national funding and academic merits are rather limited due to the national research funding system.

EU and national policies for cluster development

The EU policy concept of smart specialization has more or less been practiced by the region over the last decade by implementing a cluster policy framework, supporting specialization and sustainable growth in sectors of regional importance.

Description of current key policy issues relating to clusters (including recommendations for the future)

In 2011, processes were initiated to develop a new cluster strategy, 'The Värmland model 2.0' and a Memorandum of Understanding between the cluster organizations, Region Värmland and Karlstad University, that could later make up the basis for formulating a regional innovation strategy, the new regional development program and the ERDF programs for EU's next program period. The recommendations below originate from a number of development processes in the region and are currently discussed in the work forming the new cluster strategy.

Funding and long term strategies

- Cluster Organisations need to go from a short term funding that the regional, national and ERDF funding system so far offered in to a long-term, stable funding base linked to a robust system of evaluation and learning.
- Clusters need to strengthen their strategic work by formulating desirable positions they want to take on the national and international arena.

Research and innovation

- Service Innovations are most promising opportunities for all clusters in the region especially by co-operating with the Centre for Service Science at Karlstad University and the new service research institute.
- Consolidate research environments connected to the cluster professorships and develop connections of the research to the companies.
- Further develop research projects through Karlstad University to engage with EU research agenda.
- Develop academic culture in the direction of co-operation and co-production of new knowledge.

Horizontal (regional) integration

- The already existing and well established cross cluster cooperation need to be further developed as well as the interdisciplinary cooperation for cluster development and innovation at Karlstad University.
- Clusters need to organize a common platform for the performance of services that each of the organizations are too small to do. Examples of services include: support for strategic branches, competence for EU applications from research programs, profiling the region in an industrial perspective and coordination of the competence platform Technology.

- A better gender balance in the business sector can accomplish an improved use of human resources in the region. Attracting women to the existing clusters and supporting growing branches that attracts women can do this.
- Build a dialogue between creative sectors and the existing clusters.
- Strengthen integration of cultural issues and the fostering of creative entrepreneurs (fashion, film, art, drama, music, museums)
- It is important to secure that the region is not overly depending upon a limited number of existing industries, in order to avoid path dependence and lock-in effects hindering innovation and industrial restructuring processes. It is therefore important to support the development of related and new sectors, contributing to a broader industry base for innovation.

Vertical (internationalization and local engagement) integration

- Internationalise the Regional Innovations System
- Strengthen cooperation with Norway and especially the dynamic Oslo region.
- Develop a strategic work for foreign direct investment in order to attract businesses that complements and strengthens the clusters.
- Develop strategic alignments with EU policy instruments – Cohesion policy, ‘smart specialisation’.
- Increase internationalization in order to connect the region to global knowledge networks, including by strengthening capacity to participate in EU research programs.
- Build regional intelligence.
- Joined up place marketing.
- There is still more to do for the cluster organizations in order to strengthen the local connections to municipalities and local firms.

Competence development and supply

- Develop a human capability plan to strengthen the connection between education and the clusters, especially through an entrepreneurship agenda
- To provide the relevant competence to the labour market it is also important to stimulate higher education in certain groups, particularly among young males.
- Develop consistency between National policy in regional development and higher education and Region Värmland’s approach based on innovation, human capability, dialogue and collaboration, internationalisation and university/ region engagement.

17. United Kingdom

17.1 National (contributed by Manchester Metropolitan University)

Past use of the “cluster tool”

In the UK, cluster development has been used by Scottish Enterprise since 1996 as a key element of their economic development policies for Scotland. Clusters were initially identified by the UK Department of Trade & Industry (DTI) as an important area of economic development in the December 1998 Competitiveness White Paper. DTI carried out a study of Biotechnology and

subsequently a high-level Clusters Policy Steering Group led by Lord Sainsbury was set to identify barriers to cluster development and recommend appropriate new policy initiatives to Cabinet. This group, along with a cross-Whitehall officials' group, ran until early 2003.

When the English Regional Development Agencies (RDA) were set up in 1999, DTI encouraged them to create cluster development policies for the key sectors in their regions. All RDAs did this and DTI subsequently devolved responsibility for the delivery of cluster development to the RDAs as it was felt that such policies work best at the regional rather than the national level. The Welsh Assembly Government and the authorities in Northern Ireland have also created cluster development policies for their key sectors. Following UK government reorganisations, DTI became Business Enterprise and Regulatory Reform (BERR) and later became Business Innovation and Skills (BIS).

In 2009 the Business Support Simplification Process, led by BERR and involving most Government departments and the RDAs, significantly rationalised and reduced the number of public sector products and programmes available to businesses in England. Three of the thirty BSSP “Solutions for Business” products were particularly relevant to cluster development. The Business Collaboration Networks product specifically covered cluster development at the regional level.

The UK Manufacturing Strategy (September 2008) included the proposal to introduce a Cluster Mark for clusters in manufacturing industries in England. Four Cluster Marks were awarded in March 2010 to the Humber Seafood Cluster, Bionow (from the Northwest region), North West Aerospace Alliance and Cambridge Biotechnology Cluster.

The cluster development specialists from the RDAs and the devolved administrations along with representatives from BIS, met quarterly as the Cluster and Sector Liaison Group (CSLG). In addition several of the Regional Cluster Organisations in the Northwest meet their counterparts in other UK regions on a regular basis.

Regional Cluster Policies and Programmes

Priorities for cluster development have been determined by the Regional Economic Strategy (RES) for each English region. The RES was produced by the RDA on behalf of region with a team of partners. The English Regions do not and have not had any form of regional government. Each RES was reviewed and rewritten every three years. Several regions had problems with the term “clusters”. Partners considered clusters to be vague, difficult to measure and evaluate. Some RDAs, eg EMDA, SWRDA, therefore dropped cluster development as a policy and established Innovation Networks (iNets) instead.

In the Northwest the main delivery model has been a Regional Cluster Organisation (RCO) for each sector, which is an independent not for profit company limited by guarantee. The RCO has its own Board which is mainly from the private sector. Funding to deliver the core cluster development programme was provided by NWDA through an Annual Monitoring Agreement (AMA) which was renewed on a three year basis with annual reviews. The exceptions to this model were; Biomedical where Bionow, the RCO, operated entirely within NWDA, and Financial & Professional Services where the programme was delivered by two sub-regional organisations and CallNorthWest.

A major review of the Northwest cluster development programme was completed in 2006 by CSES. The review developed a series of criteria to be used to identify sectors for which the cluster development programme would be appropriate and these were used in the 2006 RES.

- Significant in terms of regional GVA
- Significant in terms of GVA per FTE
- Sub-sectors with Global growth potential
- Internationally tradeable

- Strong cross-sector potential
- Amenable to intervention
- Nationally/Regionally significant

The Northwest priority sectors were revised in the 2003 RES and again in the 2006 RES. The cluster development programme of around £4m (€4.6m) per year focused on the priority sectors in the 2006 RES and the specific RCOs:

- Biomedical (Bionow)
- Energy & Environmental Technologies (Envirolink NW)
- Advanced Engineering & Materials (Chemicals, Aerospace, Automotive and Advanced Flexible Materials) (Chemicals NW, NW Aerospace Alliance, NW Automotive Alliance, NWTexNet)
- Food & Drink (Food NW)
- Digital & Creative Industries (Vision+Media)
- Financial & Professional Services (ProManchester, Professionaliverpool, CallNorthWest)

A key aspect of cluster development (and iNets) as supported by RDAs was the integration with other economic development programmes targeted at the regional priority sectors, eg in the Northwest programme supported by NWDA

- Business Link advisors providing information, diagnostic and brokerage (IDB) services to SMEs had a hot desk arrangement with the RCOs
- RCOs worked closely with inward investment team to secure FDI projects
- RCOs hosted trade advisors from UKTI and jointly organised targeted Meet the Buyer events etc
- RCOs participated and in some cases chaired the Sector Skills Productivity Alliances set up by the skills team to identify the training needs of businesses
- RCOs worked with NW Science Council to write NW Science Strategy for priority science and technology sectors
- RCOs were encouraged to identify projects, eg for demonstrators, pilot plants, centres of excellence etc, but not necessarily to lead the projects

Advantage WestMidlands identified 12 clusters, and set up business-led Cluster Opportunity Groups to develop action plans for businesses to increase market share through collaboration, supply-chain development, product development and improved planning. The clusters were: Aerospace, Automotive, Building Technologies, Environmental Technologies, Food & Drink, ICT, Interiors & Lifestyle, Medical Technologies, Rail, Screen Image & Sound, Specialist Business & Professional Services, and Tourism & Leisure.

Yorkshire Forward identified 5 priority sectors: advanced engineering & materials, digital & new media, environmental technologies, food & drink, and healthcare technologies, especially pharmaceuticals and medical devices. The team which looked after these sectors worked alongside 'champions' for each sector, liaising closely with industry to evaluate the business needs of each sector. A range of other industries were also considered to be significantly important to the regional economy.

ONE NorthEast had a highly focused cluster development programme closely linked to their centres of technology, eg Centre for Process Innovation (CPI), National Renewable Energy Centre (NaReC), Centre of Excellence for Life Sciences (CELS).

EEDA focused on Life Sciences & Health Care, ICT and Renewable Energy. There was particular emphasis on the importance of science parks and research intensive clusters.

SEEDA provided funding support for seven sector consortia, independent companies governed by senior business people: Aerospace & Defence (Farnborough Aerospace Consortium), Marine (Marine South East), Construction (South East Centre for the Built Environment), Environmental Technologies (Envirobusiness South East), Health Technologies (South East Health Technologies Alliance), Digital Content (South East Media Network), Security (Security Innovation & Technology Consortium).

SWRDA established iNets in each of the five priority sectors: Aerospace, Biomedical & biotechnology, Creative industries, Environmental technologies, microelectronics. There was also existing cluster organisations such as the West of England Aerospace Forum. Other prominent sectors in the South West of England include: advanced engineering, food and drink, marine, nano & micro technologies and financial services

In addition, the three RDAs in the North of England NWDA, Yorkshire Forward and ONE NorthEast collaborated for over six years in the Northern Way initiative. This developed and funded collaborative projects across the three northern regions on a variety of themes including cluster development and innovation. There were also collaborations between the two Midlands RDAs, AWM and EMDA, e.g. funding the Midlands Aerospace Alliance.

Description of current key policy issues relating to clusters

Current UK Government Policies – from May 2010

All the English RDAs are to be abolished in March 2012. Most RDA cluster development programmes have already ended. The BSSP portfolio has been reviewed and significantly reduced. The Business Collaboration Networks product, i.e. cluster development, will not be supported in future. Local Economic Partnerships (LEPs) have been set up. These mainly cover NUTS2 regions.

A Regional Growth Fund has been launched but this contains significantly less funding than was previously available from the RDAs.

The cluster development programmes in Scotland and Northern Ireland continue to be funded and delivered as these are not affected by the closure of the English RDAs. Cluster Development activities in Wales are currently under review by the Welsh Assembly Government.

However, in December 2011 a new UK Innovation Strategy was launched which specifically mentions the importance of innovation clusters and the use of cluster development. The Technology Strategy Board will extend the Launchpad programme for cluster development, and three new schemes will be funded in 2012.

Future of RCOs, iNets etc

All of the RCOs which were part of the NWDA Cluster Development Programme have decided to continue to operate even though their income has been significantly reduced. Bionow has been set up as an independent not for profit company limited by guarantee with an office in Manchester. The RCOs now:

- Receive no core funding from RDAs, LEPs or UK Government
- Core funding comes from a mix of; membership, sponsorship, member services etc
- Some RCOs are continuing to receive ERDF funding for specific projects covering non-core activities

- Some RCOs have implemented Governance changes, eg Chemicals NW is now part of the national Chemical Industries Association, Vision+Media is to be part of Creative England.

The RCOs and iNets in the other English Regions are in a similar position to those in the Northwest region. The experiences of the RCOs and iNets over the next few years will provide an interesting case study on how such organisations can survive with no public funding for their core activities, and on which core cluster development services will continue to be delivered.

Policy implications/recommendations for the future

Key Learning Points

- Cluster development is a long-term process. Consideration has to be given to the life-cycles of the cluster and the cluster organisation when determining levels of funding and other support. The concept of market failure in the provision of cluster development services to SMEs is important and suggests that some level of public funding for cluster organisations will always be needed.
- Cluster development needs effective partnerships between different types of organisations which have an interest in the cluster. The concept of the Triple Helix should be replaced by the Quintuple Helix by adding People / Users and Access to Finance to the three pillars of Businesses, Academia and the Public Sector.
- Integration with other business support services can be very effective by adding value to the cluster development programme and to the other support services. Achieving effective integration can take several years.
- Funding for cluster development can provide considerable leverage through its influence on other funding, eg other projects to support the businesses in the cluster, other RDA programmes, Structural funds, private sector funding.
- Funding agreements should run for several years subject to satisfactory performance to allow cluster organisations to plan ahead. Cutting off funding at short notice should be avoided.
- It is vitally important to explain to partners and stakeholders the terminology used in cluster development and the degree of focus of the activities of the cluster organisations. Terms such as “cluster”, “tool” and “platform” may not be understood, or could be misunderstood, and the use of labels such as “food & drink” or “biotechnology” may imply that the cluster organisation is providing services to a large number of businesses rather than providing a focussed service to businesses with significant growth potential. It is also important to measure and communicate the benefits of cluster development, which requires the use of robust monitoring and evaluation methodologies.
- Cluster organisations should provide a valuable source of information to policy makers and funding bodies on: industries, growth sub-sectors, individual businesses, emerging industries, new technologies and new processes. In particular cluster organisations can support the development of Smart Specialisation Strategies and help to identify emerging industries.
- The skills of the cluster managers in the cluster organisations need to be fit for purpose. In addition to basic cluster management skills other specific skills may be required, eg internationalisation, project management, funding scheme management etc.

17.2 Northern Ireland (contributed by Invest Northern Ireland)

Past use of the “cluster tool”

The Collaborative Network Programme (CNP) has been in operation in Northern Ireland since 2008. It is a bottom up approach to collaboration with an open call to business-led networks to approach Invest NI for support. It is funded under de minimis and is provided primarily to Northern based SMEs although non-Northern Ireland based organisations can participate in the network.

The Collaborative Network Programme (CNP) acts to facilitate collaborative networks of companies to work collectively to address:

- Emerging markets
- Emerging technologies
- Gain market share/penetration
- Develop new business models
- Share resources to reduce costs
 - Human
 - Logistics
 - Intellectual

The programme is managed by Invest Northern Ireland (a non departmental agency of the regional government’s Department for Enterprise Trade and Investment). The CNP provides grant support to collaborative networks to support a facilitator who will act as a:

- Project manager
- Foresight agent
- Manager of expectations among the network members

A strategy/policy review undertaken as part of the economic appraisal of the CNP in 2011 suggests that encouraging collaborative networking activities is a key EU, UK and NI policy objective and sits firmly within the current corporate objectives of both DETI and Invest NI. The programme is seen as one which promotes and develops an open innovation methodology and as such a key enabler for the delivery of the MATRIX agenda. It delivers a “bottom-up” approach to cluster development rather than the traditional European “top-down” as the NI solution is seen as more appropriate to an SME-led economy.

Description of current key policy issues relating to clusters

Agencies and Departments of the regional government are working with recently created networks such as Digital Circle and Global Maritime Alliance to develop government policy in respect of communications and planning policies. The networks are providing advice and opinion based on business requirements which is helping to shape policy. Other collaborative networks such as NI Digital 2020 were established as direct response to stated government policy; in this instance with regard to telecoms strategy for NI.

Policy implications/recommendations for the future

In response to the recommendations made in the Independent Review of Economic Policy (IREP), the Northern Ireland (NI) Executive issued (January 2011) a proposed framework for an Economic Strategy for Northern Ireland. In order to achieve its objectives of rebalancing and re-building the NI economy, the Executive see encouraging exports and supporting firms to access to larger and more sophisticated markets as key to delivering against these objectives.

In order to deliver the longer term priority of the Executive, five inter-dependent strategic themes have been developed

- Stimulating innovation, R&D and creativity
 - With Initiatives aimed at increased collaboration between businesses, higher and further education institutions and the public sector
- Improving employability and the level, relevance and use of skills
- Competing in the global economy
 - Strengthen and develop its connections to the wider global economy
- Encouraging business growth
 - initiatives aimed at exploiting market opportunities in emerging sectors
- Developing our economic infrastructure

The NI MATRIX Panel (an industry-led grouping focussed on near, medium & long term niche markets matched against the unique capabilities of the NI private sector & academia) identified 5 key recommendations to develop the innovation ecosystem in NI and address the challenges facing NI, with the first of these being: *“Industry led communities should be formed engaging business, academia and government to address global market opportunities by exploiting the science and technology capabilities in Northern Ireland.”*

In its response to the first NI MATRIX report, the NI Government expressed its support towards the emerging recommendations and the contribution of collaborative networking activities to the future development of the NI economy by stating that:

It is encouraging to note Northern Ireland has already made some considerable strides in this area through the Invest NI Collaborative Network Programme and this provides a platform to take this to the next level.”

The CNP will make calls for expressions of interest for those collaborative networks which have the capability to address those key thematic areas identified in the MATRIX reports:

- Life & Health Sciences
- Agri-Food
- Advanced Materials
- ICT
- Advanced Engineering (Including Transport)

Appendix I: Contact Information for European Contributors

EU region/country	Contact Person(s) and Email address
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Appendix II: Glossary of Key Terms²⁹

Cluster

“A cluster is a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities”. (Michael E. Porter, *On Competition*, Harvard Business Press, 1998, p.215)

Cluster members or constituents

Cluster members or better “constituents” (since to be part you do not need to sign a membership) *“include end product or service companies; suppliers of specialized inputs, components, machinery, and services; financial institutions; and firms in related industries. Clusters also often include firms in downstream industries (that is, channels or customers); producers of complementary products; specialized infrastructure providers; government and other institutions providing specialized training, education, information, research and technical support (such as universities, think tanks, vocational training providers); and standard setting agencies. Government agencies that significantly influence a cluster can be considered part of it. Finally, many clusters include trade associations and other collective private sector bodies that support cluster members.”* (Michael E. Porter, *On Competition*, Harvard Business Press, 1998, p.215-216)

Cluster Initiative

“Cluster initiative: an organised effort to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community”. (Örjan Sölvell, Göran Lindqvist and Christian Ketels, *The Cluster Initiative Greenbook*, Vinnova/TCI, 2003, p.

Cluster Initiative Participant

“Businesses and other innovation stakeholders involved in cluster initiatives” (extracted from EC Communication: *Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy- SEC(2008) 2637*, 17 October 2008, p.7)

Cluster Organisation

“Cluster initiatives are increasingly managed by specialised institutions, known as cluster organisations, which take various forms, ranging from non-profit associations, through public agencies to companies.” (EC Communication: *Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy- SEC(2008) 2637* } 17 October 2008, p.8). A Cluster Organisation does not necessarily have members, but it provides services to the cluster initiative participants.

Note: Cluster organisations have different names in different countries, eg. compétitivité pôles, centres of expertise, innovation networks and competence networks etc.

Cluster Association and Cluster Association Members

A non-profit association legally formed by members *“businesses and other innovation stakeholders involved in cluster initiatives”* (concluded from definitions above).

²⁹ Extracts from the Glossary of the “Cluster Internationalisation Handbook” (version 30/8/11), produced in cooperation with the European Cluster Excellence Initiative

Statistical clusters

“Regional agglomerations of co-located industries and services”. (EC Communication: Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy- {SEC(2008) 2637}, 17 October 2008, p.3)

Cluster Development

The cluster development process encompasses a range of organised efforts aimed at increasing the *growth and competitiveness* of the organisations in the cluster. Efforts are usually based on an evaluation of the cluster’s strengths and capabilities (a mapping exercise), from which a vision for the cluster is formulated and objectives articulated. Targets and actions plans specific to individual clusters are developed. Results are then monitored and evaluated.

Cluster Manager

The Cluster Manager is the head of a Cluster Organisation. The term can also refer to all senior members of staff in a Cluster Organisation.

Cluster Members

Cluster Members are the Businesses, universities, policy makers, other public sector organisations and other private sector organisations which actively participate in a Cluster Initiative. They may pay a membership fee to the Cluster Organisation.

International

Activities shared between countries. Often refers to activities with countries outside Europe.

Memorandum of Understanding (MoU)

A MoU is a document that describes the general principles of an agreement between parties, but does not amount to a substantive contract.

Platform

A platform is a set of principles or plan by which activities can happen.

AND / OR

A platform is a place or forum for discussion.

Sector

A sector is an agglomeration of business activities into generally recognised individual industries which is used to quantify and analyse official industry data. This official data is based on Industry Classification codes eg the Standard Industrial Classification (SIC) code in the UK, which do not easily relate to modern business clusters.

Tool

Something used in the performance of an operation; an instrument: *“Modern democracies have the fiscal and monetary tools . . . to end chronic slumps and galloping inflations”* (Paul A. Samuelson).

Transnational

Activities shared between countries with common borders