



POLICY RECOMMENDATIONS

LESSONS LEARNT FROM NICE

The report on policy recommendations is prepared as part of the NICE project. It consolidates our findings in a concise set of policy recommendations fostering the development of Europe's ICT clusters and industry. As cluster policies are multi-level policies these recommendations address likewise the European, national and regional level.

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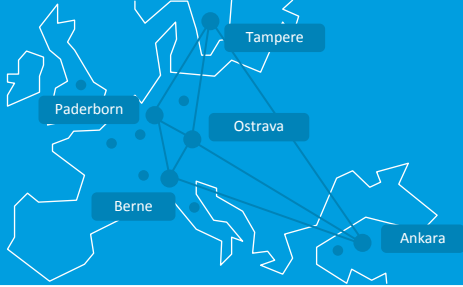
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Executive Summary

During recent years clusters have attracted more and more attention from policymakers in their quest to improve regional competitiveness. Clusters are predominately a market-driven phenomenon. While most successful clusters emanate from self-organised bottom-up processes, market forces or simply by chance, others are inspired and mainly financed through national and regional cluster programmes. In this respect, cluster initiatives aim at activating synergetic potential by initiating self-organisation. Today, cluster and cluster policies stand for efficient, self-organised, spatially-rooted economic processes and for a competitive model which goes beyond cost-cutting and mass production. Clusters have become a key element in tackling the challenges of knowledge society and globalisation in Europe.

Although clusters are not new phenomena, their advantages in boosting countries' and regions' competitiveness has been put under the spotlight and influenced policy thinking. The concept owes its current popularity to various reasons; in the first instance, policymakers are aware that cluster membership can enhance the productivity, innovative capacity and competitive performance of companies. Furthermore, structural changes in the global economy play a role and offer regions the chance to concentrate on their sustainable and qualitative competitive advantages. In addition, the cluster approach offers a starting point for a strategic bundling of the ever decreasing resources of public support. In this context, the cluster approach is regarded by the European Commission as one of the most promising strategic directions for future-oriented structural policy. The development of world-class clusters has now also become an EU policy priority as illustrated recently by the European Commission's Communication on «Powerful clusters: Main drivers of Europe's competitiveness», published in October 2008. Overall, cluster policies have gained momentum.

Cluster concept's popularity



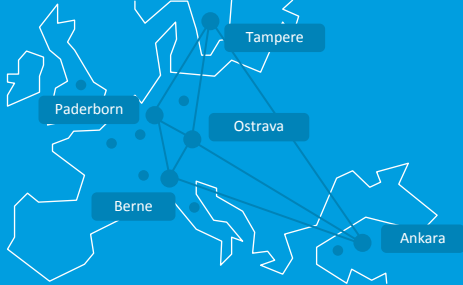
However, cluster policies are hardly an isolated, independent or well-defined discipline. In general, cluster policies embrace all policies that affect the development of clusters, taking into account the synergies and interchanges between these policies. Many policies labelled under different headings (regional, industrial, innovation policy etc.) are in fact cluster policies in the sense that they try to accomplish basic framework conditions favouring an environment conducive to business stakeholders who are cooperating on the local and/or regional level. Although cluster policy approaches differ significantly across Europe, our observations indicate that regional cluster organisations face similar challenges to improve their competitiveness. Furthermore, cluster policies at the different levels cannot be seen as isolated policy measures, but as cross-fertilising instruments. What is needed is a reliable political framework for cluster management and therefore a clear division of labour and responsibilities on the different political levels in order to mobilise the economic and social potential of clusters.

*Cluster policies as multi-level
multi-actor policies*

The idea of a reliable multi-level multi-actor cluster policy is the focus of these policy recommendations. Each level has its specific functions and the related activities and measures need to mesh. It aims at strengthening the strategic and implementation capacity of the different political levels and presents ideas to avoid contradictions and tensions between the actions of the different political levels.

A concise set of policy recommendations has been developed by building on the experience from NICE – Networking ICT Clusters across Europe project, the regional clustering efforts and the exchange in the framework of Europe INNOVA initiative. The guiding principles of our recommendations are the functions and tasks assigned to the different policy levels. This should allow policymakers at all levels to build them into their long-term strategies.

The following areas were identified as crucial to the further shaping of successful cluster policies and management and the enhancement of clusters' and companies' competitiveness: a framework for self-organisation, strategic thinking, professional management, regional division of labour, capacity building, openness, fostering SMEs' innovation capacity, and strategic options and alternatives.



1 A Framework for Self-organisation

The major challenge for a multi-level multi-actor cluster policy approach is to balance self-organised (bottom-up) initiatives and policy-driven (top-down) strategies. This is to say, the frame of reference should be a «two-tier-approach». Cluster initiatives depend on the commitment and active participation of the companies involved. In this respect, cluster management needs a clear and strong focus on self-organisation.

Our recommendations towards cluster management organisation

- Establish a model of cluster management that is appropriate to the needs and expectations of your region and your stakeholders.
- Identify the clusters' needs in relation to context, specificities of the region, including cultural aspects. Implement action agendas that reflect the identified needs of your cluster.

Our recommendations towards national | regional policymakers

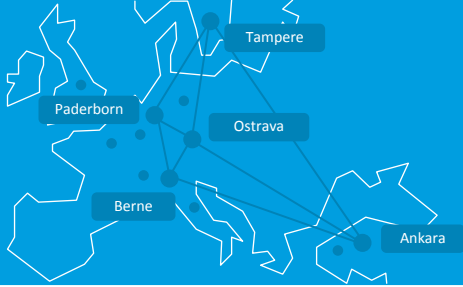
- Provide a framework for cluster development which can facilitate different models of cluster evolution and management. Take into account bottom-up initiatives and follow a two-tier-approach.
- Let the private sector lead; the public sector should only play a catalytic role. Refrain from seeking to «build» new clusters of companies. On the contrary, favour a hands-off approach which strictly limits state intervention.

Our recommendations towards European cluster policies

- Reconsider the competitive framework for networking and co-operation taking into account clusters' specificities.
- Complement regional and national cluster policies by improving the functioning of the internal market (by eliminating factors that hamper knowledge flows and work force mobility) and by harmonising regulations.



Imbalanced top-down and bottom-up cluster initiatives are counterproductive for successful cluster development.



2 Strategic Thinking

Cluster management has to be both strategically and operationally excellent to meet tomorrow's challenges. Doing the right things and doing the things right is a balancing act, and requires a good strategy and efficient operations. Taking into account that cluster development is a long-term process characterised by uncertainty, strategic alignment is essential. Moreover, cluster management acts between the conflicting priorities of cluster members, policymakers and regional stakeholders. The different expectations of the stakeholders carry the risk of conflict between the various interest groups or may generate a work overload, as human and financial resources of cluster organisations are often limited. To avoid unrealistic expectations and conflict of priorities, strategic planning and implementation plays a vital role in cluster management. In the light of clusters' sustainability and competitiveness it is important to not solely define strategies and objectives for cluster, but also to identify companies that are innovative and ambitious to develop new products and services and new business opportunities.



Cluster managers are working so hard to be sure things are done right, that they hardly have time to decide if they are doing the right things.

Our recommendations towards cluster management organisations

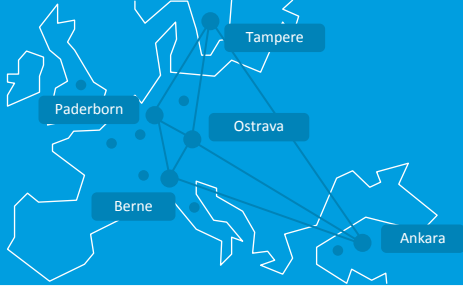
- Define your vision, mission and strategy, and dissect into objectives in compliance with your stakeholders. Be aware of cause-and-effect-relationships between the key objectives of your strategy.
- Concentrate evaluation on clustering processes and trajectory (e.g. role of key actors or events, people mobility, employment growth, firms' displacement and creation) rather than on static measures.

Our recommendations towards national | regional policymakers

- Base public funding on a common understanding and agreement about goals and indicators to measure their achievement. In this context an «agreement on objectives» would be a useful instrument. On the one hand, it encourages cluster organisations and stakeholders to envision their aims, and on the other hand it provides comparable measures for clusters' performance.

Our recommendations towards European cluster policies

- Document and communicate transferable good practice.
- Organise the exchange of experience and practices by supporting the creation of networks of regional clusters.



3 Professional Management

To date, cluster management is neither an established nor a standardized profession. However, there has been a tendency to standardisation occurs particularly in regard to cluster managers' job profiles, which bear surprising resemblance. The results indicate that a repository of common cluster management activities exists. Despite these positive developments, serious bottlenecks in the day-to-day work remain and hinder further professionalization of cluster management. Firstly, networking is not generally accepted as a serious profession with the result that cluster management lacks basic funding. Secondly, successful cluster management is often determined by the reputation and competence of a single cluster manager, and so is the cluster performance. That involves the risk that the cluster might lose its leading figure – its «top seller» – if the cluster manager leaves.



Cluster management often lacks professionalism. Aiming at «world-class» requires continuous advancement and optimisation.

Our recommendations towards cluster management organisations

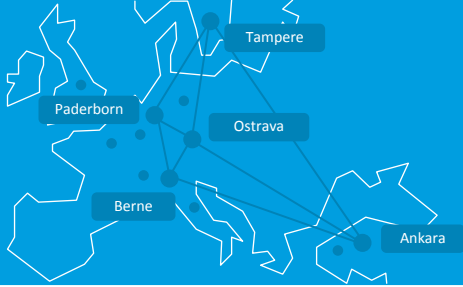
- Use the opportunity to improve your cluster management practice through the exchange of experiences and knowledge with other cluster managers throughout Europe. Get involved in initiatives such as Europe INNOVA, CLOE or TCI. Establish a basis to let such exchange become a continuous dialogue.

Our recommendations towards national | regional policymakers

- Ensure reliable financial and institutional bases for cluster management. Funding should be decline over time to ensure the commitment of members of established clusters whilst minimising the equity financing for evolving clusters.
- Further educational courses for regional and national authorities should also cover cluster aspects in order to lay the ground for future programme development.

Our recommendations toward European cluster policies

- Provide cluster platforms to stimulate international exchange of experiences and knowledge of cluster management which provide space for discussion about common problems and failures, as well as solutions.
- Organise a European school for cluster management and intensify standardisation efforts.



4 Regional Division of Labour

The more established and sophisticated the institutional economic development system, the greater the need for coordination and co-operation. In our understanding, cluster management is an integral part of a decentralised economic development policy. Decentralisation goes hand in hand with a higher degree of horizontal coordination of workforce development (labour market policies) and economic development activities. This requires not only rearranging organisational structures, but a change in the behaviour and culture of government agencies and other partnering organisations. Creating a multi-actor multi-level coherence of strategies and congruent activities means leveraging synergies.

Our recommendations towards cluster management organisations

- Intensify coordination and collaboration with organisations involved in regional economic development and innovation agencies.
- Exploit synergies and complementarities between the different actors to cross-fertilise efforts and thus enhance the efficiency of cluster management.

Our recommendations towards national /regional policymakers

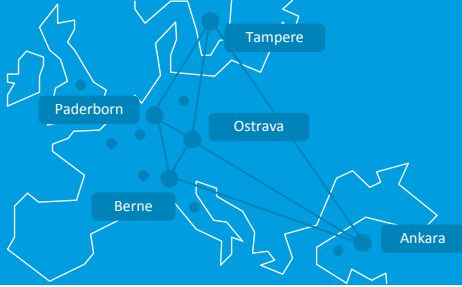
- Functional spaces rather than administrative and regional borders should serve as guiding principle for the development of cluster policies.
- Foster the regional division of labour through decentralisation of national cluster policies and the stimulation of horizontal co-operation to significantly enhance coherence and synergies between different operational agencies and policy measures.
- Intensify the dialogue between cross-cutting policies to strengthen regions and cluster-specific efforts.

Our recommendations towards European cluster policies

- Promote the idea of functional spaces as a framework for cluster activities.
- Broaden the policy dialogue initiated by the European Cluster Alliance by involving not only policymakers, but also programme managers and other organisations in charge of policy implementation to exchange practices in designing cluster policies against the background of a clear division of labour.



The absence of a clear division of labour concerning regional development and cluster-related activities causes tensions and inefficiencies in the regions.



5 Capacity Building

The perception of cluster management varies greatly across Europe. In some countries and regions cluster management is increasingly recognised as a new profession whereas in others it is not. In general, cluster management is a long-term process. Accordingly, appropriate methods and instruments to tackle future challenges will change over time. Continuous learning and capacity building are crucial in adapting cluster management practices to changing framework conditions. Against a background where there is no blue print for successful cluster management or a one-size-fits-all model, handbooks and manuals for cluster management provide a good first orientation, but are by no means enough. What is required is investment in people leading ideally to the provision of better services. One major task is to develop a framework for capacity building.



Cluster management is not generally recognised as new profession and integrated part of the regional innovation system.

Our recommendations towards cluster management organisations

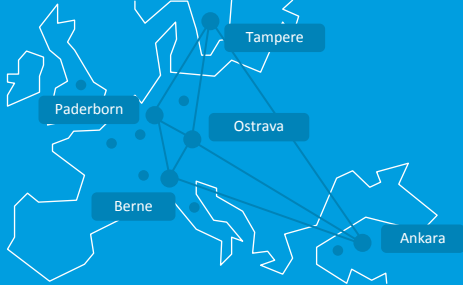
- Organise a systematic, high quality data collection and analysis procedure to provide coherent and reliable information on the development of regional clusters and its management.
- Adopt tools and procedures to continuously improve the professional performance of your cluster management. Join international networks and communities.

Our recommendations towards national | regional policymakers

- Encourage and support activities to compile standards for cluster management in academic as well as in post-graduate courses.

Our recommendations towards European cluster policies

- Organise European cluster forums and academies to support capacity building which could help prepare a quality label for cluster organisations as new supporting forms of innovative SME.
- Support the accomplishment and valorisation of insights gained through initiatives such as Europe INNOVA and Pro INNO Europe.



6 Openness

It is a well-known fact that European regions vary considerably in their capacity to develop knowledge and technology, and at the same time, are competitors as they try to attract money, brains and resources. This is also applicable to clusters. Clusters acting in isolation cannot develop the critical mass that will produce the innovations needed to compete globally and thus, will not reach the stage of «world-class» clusters. Facing the challenges of globalisation merely concentrating on national markets, technology, and research is insufficient. Hence, clusters need to anticipate changes, that is, a shift from a «closed» to an «open and collaborative» innovation paradigm. Through openness clusters not only gain visibility, but also perpetuate knowledge heterogeneity and diversity, two factors crucial for sustainable cluster development.

Our recommendations towards cluster management organisations

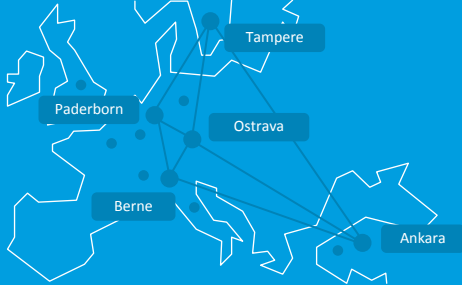
- Develop an attitude of «openness» and integrate it into your strategic programme and activities. Firstly, adopt the role of «boundary spanners» which build a bridge between clusters and non-local actors allowing information to flow into the cluster. Secondly, import clustering experience from other parts of the world into the cluster.
- Organise systematic and high quality co-operation with research institutions, clusters and companies beyond your cluster's and regional boundaries.
- Avoid understanding benchmarking as analysis of other clusters only, but take it as chance to initiate a dialogue which paves the way for future networking.

Our recommendations towards national | regional policymakers

- Avoid administrative lock-ins at regional and national level by allowing cluster organisations to adopt a role as «boundary spanners».
- Anticipate excessively rigid specification in your cluster programs and explicitly encourage changes and modifications in cluster strategies during the course of development in order to allow cluster organisations to adapt strategies to their needs.



Cluster management often focuses exclusively on regional networking; acting as autonomous and isolated island causes lock-in effects and results in decreasing competitiveness.



Our recommendations towards European cluster policies

- Strengthen communication platforms such as Europe INNOVA and Pro INNO Europe for international exchange.
- Facilitate coherence between strategies and infrastructure that will foster knowledge sharing, the improvement of innovation conditions and a higher competitiveness.
- Further the strategic interplay of European, national and regional policies, as it is crucial for dynamic and sustainable development of clusters.

7 Fostering SMEs Innovation Capacity

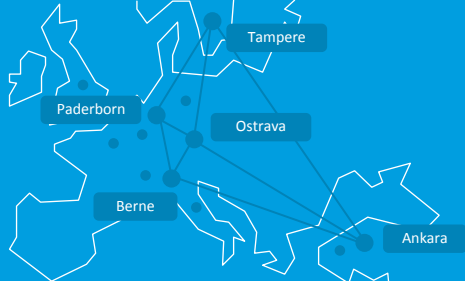
Clusters' openness is closely related to individual companies' dynamic capabilities, defined as their ability to introduce innovations in a relatively stable way over time. Cluster members are connected to other companies and institutions of the cluster through various exchange relations and mutual interdependencies. As a result, the individual companies and their innovative capabilities are affected by the actions and behaviour of other cluster members and, in turn, each individual enterprise and its actions affect the possibilities of other companies to make use of the knowledge. Due to uncertainty and the tacit character of knowledge geographic proximity is especially relevant for knowledge exchange between companies in emergent and growing clusters. In mature clusters, in contrast, outward linkages gain in importance in sustaining companies' innovative capacity. In stable networks, companies' competences will become more similar and knowledge codified leading to a decrease in opportunities for future learning.



The capabilities of enterprises differ within a cluster, with major consequences to their performance. Many SMEs lack absorptive capacity and thus, are not able to unfold their full innovation potential.

Our recommendations towards cluster management organisations

- To develop support mechanisms one must consider the barriers that impede or restrain innovations in SMEs and the drivers that further companies' innovation capacities. Support services should focus on the promotion of managerial skills, further the creation of trans-national networks and bridge the knowledge and financial gap.
- In this context a closer co-operation between incubators and clusters and venture capitalists might be valuable.



— Develop a framework for mentoring of SMEs by other SMEs, training and graduate programmes.

Our recommendations towards national / regional policymakers

— Develop policies that foster entrepreneurship and account for the improvement of SMEs' intellectual assets management and networking. Redesign innovation policies which address SMEs in their regional context.

Our recommendations towards European cluster policies

— Augment SMEs' involvement in research projects as they can help companies to develop new products and services and improve existing ones.

— Provide technology platforms that will link SMEs with support organisations including government and public sector agencies, professional innovation agencies such as universities and research centres, and investors to enhance SMEs' innovation capacity.

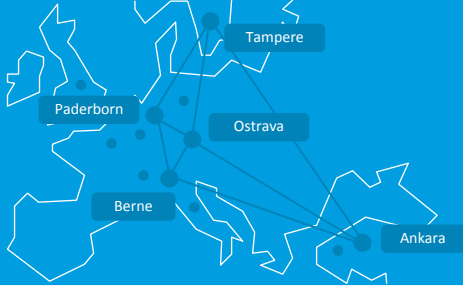
8 *Strategic Options & Alternatives*

The cluster concept has achieved remarkable breakthrough, but its widespread adoption both in Europe and the rest of the world, is as much a challenge as it is a success story. Concerns have emerged recently about the content and quality of some of the cluster initiatives. Given the prevalence of the concept, these concerns could have a significant impact on the value of clusters and their contribution to regional economic development. Not every region in Europe possesses clustering potential. Therefore, cluster policy may not be an appropriate choice for an economic development instrument in any particular region.

In our view, a sophisticated policy framework is required which sets the stage for various innovation strategies. We call such concept «*Innovative Space*». In this concept clusters are one opportunity to stimulate economic development, but alternatives exist which might fit better to regions without clustering potential. The basic idea of our approach is to start with thinking of innovation rather than of regions. The cluster approach illustrates that an open and innovative context or milieu is important. Knowledge sharing and learning, competencies and



Consistent implementation of cluster policies fosters regional disparities, as regions without clustering potential fall behind.

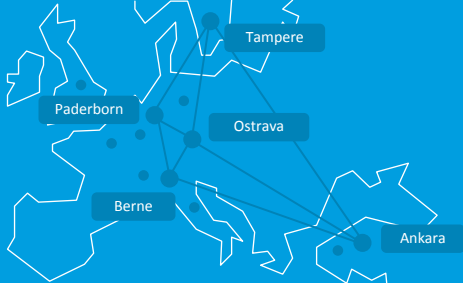


networking, openness and face-to-face-contacts, symbols for innovation such as architecture or success stories, are important assets. Regions without clusters or clustering potential should develop these assets and related strategies to further their innovation capacities rather than trying to imitate successful cluster regions. Quality of life and political processes or culture are examples for other innovation areas. Regions and decision makers need to be aware that different opportunities exist and that the appropriate strategy is a matter of the regional specificities.

To date, little is known about successful innovative regions without clusters. Therefore, we recommend that different approaches to innovative region pathways should be worked out at all policy levels. This requires a broader understanding of innovation which is not limited to economic innovation, but also considers non-economic and non-technological innovations. In accordance with this, funding of regional development should not be limited to clusters.

Introduction





Innovation is a complex phenomenon increasingly characterised as an open process, in which different stakeholders – companies, customers, universities etc. – cooperate beyond their institutional boundaries. It is a precondition to achieve the objectives of the Lisbon strategy. Therefore, the creation of a more innovation friendly environment throughout the EU and the stimulation of innovation is crucial for the setting up an innovative business environment and thus, for the development of high quality, lasting employment and sustainable economic growth.

The results of NICE and other Europe INNOVA projects show that networking and sharing of experience and knowledge supports the process of innovation and that transfer of methodologies, tools and activities can be successfully fostered through co-operation at the European level. Being embedded in a fertile business environment which offers the opportunity to collaborate with research institutions, suppliers, customers and competitors as well as regional authorities located in the same geographical area is crucial for companies, especially small and medium-sized enterprises (SMEs). These nodes within a sector, defined as clusters, are considered as one of the driving forces in innovation processes.

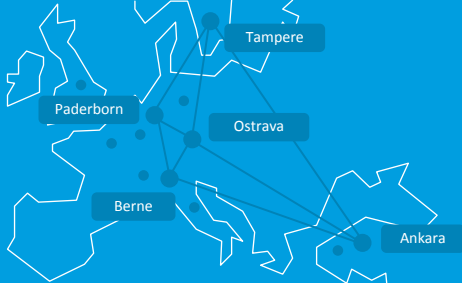
Clusters' role in a broader concept of competitiveness

Clusters provide an accessible network of skills and capabilities, e.g. a business and innovation environment that enables entrepreneurs to transform an idea into marketable products or services thereby having the potential to contribute to the achievement of the Lisbon agenda. Clusters are part of a broader conceptual framework to understand the drivers of regional and national competitiveness.

The character of clusters shows wide variations over regions and sectors: they differ in terms of their stage of development along the cluster life cycle, their structure and institutionalisation as well as in industry-specific conditions.

Despite this diversity, today clusters stand for

- the idea that regions are not inevitable victims of globalisation, but can influence and shape their own fate;



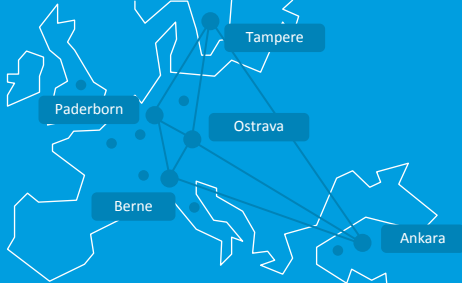
- competitive advantages as a result of knowledge exchange, qualified labour forces and a fertile business environment;
- the experience that networking and co-operation can strengthen the innovative capacity of regions and enterprises, especially SMEs;
- a balance of competition and co-operation which leads to synergies in a catalytic way.

Accordingly, cluster and cluster policies stand for efficient, self-organised, spatially-rooted economic processes and for a competitive model which goes beyond cost-cutting and mass production. Clusters are a key element in tackling the challenges of knowledge society and globalisation in Europe.

Clusters are predominately a market-driven phenomenon. While most successful clusters emanate as a result of self-organised bottom-up processes, by market forces or simply by chance, others are inspired and mainly financed through national and regional cluster programmes. In this respect, cluster initiatives aim at activating synergetic potential by initiating self-organisation.

Although clusters are not new phenomena, their advantages for boosting countries' and regions' competitiveness has been put under the spotlight and has influenced policy thinking. The concept owes its current popularity to various reasons: in the first instance, policymakers are aware that cluster membership can enhance the productivity, innovative capacity and competitive performance of companies. Furthermore, structural changes in the global economy play a role and offer regions the chance to concentrate on their sustainable and qualitative competitive advantages. In addition, the cluster approach offers a starting point for a strategic bundling of the ever decreasing resources of public support. In this context, the cluster approach is regarded by the European Commission as one of the most promising strategic directions for future oriented structural policy. However, due to the fact that the cluster concept is a competition model based on regional competencies it is in danger of «inflationary» usage as all regions proclaim such irrespective real circumstances.

Current popularity of the cluster concept



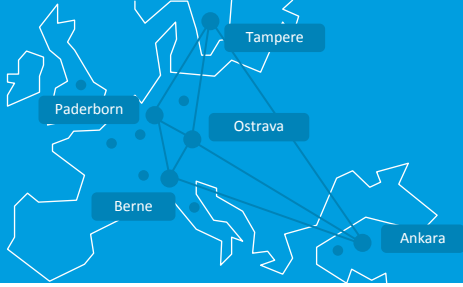
Clusters have become an important concern for policymakers at European, national and regional level and cluster policies have been adopted around the world despite the lack of a common definition of clusters. As a consequence, cluster policies are hardly an isolated, independent and well-defined discipline. In general, cluster policies embrace all policies that affect the development of clusters, taking into account the synergies and interchanges between these policies. It is about stimulating links to the local business environment through public-private dialogues, the definition of joint research needs and co-development between contractors and so on. In many industrial countries the promotion of clusters is a central part of regional, industrial and/or innovation policies. Since the end of the 1990s, industrial and regional policies in particular have become increasingly concentrated on the stimulation of clusters and clustering processes. It should however, be kept in mind that cluster policy is not about creating clusters from scratch but rather putting in place framework conditions which favour cluster development. It often involves fostering interactions between stakeholders based on trade linkages, innovation linkages, knowledge flows and providing specialised infrastructure support. Many policies labelled under different headings (regional, industrial, innovation policy etc.) are in fact cluster policies in the sense that they try to accomplish basic framework conditions favouring an environment conducive to business stakeholders who are cooperating at local and/or regional level.

Cluster policies in Europe – a diverse field of action

Although cluster policy approaches differ significantly across Europe, our observations indicate that regional cluster organisations face similar challenges to improve their competitiveness. Furthermore, cluster policies at the different levels cannot be seen as isolated policy measures, but as cross-fertilising instruments. What is needed is a reliable political framework for cluster management and therefore a clear division of labour and responsibilities at different political levels in order to mobilise the economic and social potential of clusters.

Cluster policies rely on a clear division of labour

The idea of a reliable multi-level multi-actor cluster policy is the focus of these policy recommendations. Each level has its specific functions and the related activities and measures need to mesh. It aims at strengthening the strategic and implementation capacity of the different political levels and presents ideas



to avoid contradictions and tensions between the actions of the different political levels.

In this report we distinguish between policies at three levels: European, national and regional. The *European Commission* sees its key role in the provision of better data on clusters, in convening joint research groups to study Europe-wide cluster-related topics, in supporting regional cluster initiatives through specific programmes, and in supporting the strategic development of clusters towards «world-class» clusters.

Differentiation of political levels

At *national level* there is an increasing recognition of the potential benefits of using a cluster approach. Although national policies are by no means homogenous across Europe, they tend to give impetus and to support cluster respectively cluster management initiatives. In our view, national cluster policymakers are also responsible for the coordination of regional cluster initiatives and the definition of quality criteria.

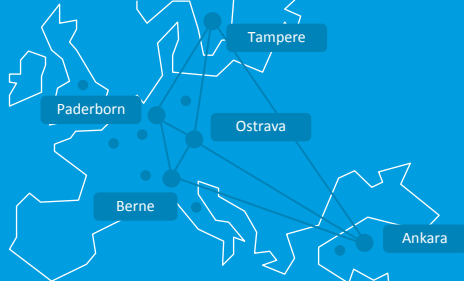
National cluster policies

Since clusters are mainly regional, great effort has been made in recent years to implement cluster policies at *regional level*. The activities undertaken cover issues such as empowerment, leveraging on existing regional assets, promoting a climate of trust and confidence, fostering regional appropriation and identity as well as enhancing smart and interactive connections and knowledge valorisation. In this context we distinguish between the *cluster/ cluster management level*, where local or regional stakeholders cooperate to unfold the innovative potential and to strengthen the regional competitiveness and the *regional context*, which refers to the direct neighbourhood of the clusters (i.e. the companies outside the cluster).

Regional cluster policies

To summarise, across Europe the main players with regard to cluster policies are the national and regional level. While national authorities mainly focus on designing and coordinating cluster policies (general framework, conditions, R&D programmes) regional authorities are in charge of its implementation. As far as the member states are concerned the EU and the local governments have less important influence on cluster development.

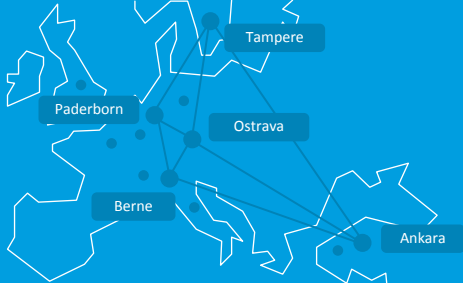
The aim of this report is to consolidate the NICE findings in a concise set of policy recommendations which can then be integrated in policies fostering the



development of Europe’s ICT clusters and industry. As outlined, we strongly promote a clear division of labour between the different policy levels. The guiding principles of our recommendations are the functions and tasks assigned to each policy level (see Table 1). This should allow policymakers at all levels to build them into their long-term strategies.

Table 1: Cluster policies – functions of policy levels

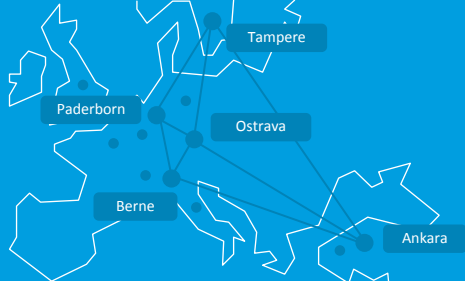
	Cluster Management	Regional Context	National Policies	European Policies
Framework for self-organisation	Active participation of companies involved		Incentives, counter flow principle (top-down and bottom-up)	Competitive environment
Strategic Thinking	Definition of vision, targets taking into account the own strength and weaknesses, BSC	Awareness of the benefits of clustering: cross-clustering, lead users, spillovers	Agreement on objectives	Tools, data
Professional Management	Networking as a profession		Coaching	Trans-national networking, provision of platforms
Division of Labour	Competition and co-operation	Co-operation between regional stakeholders promoting innovation and economic development	Back-office, coordination	
Capacity Building	Benchmarking, self-evaluation, learning graph		Exchange of experience and knowledge, qualification	European Cluster School
Openness	Avoid sectoral and administrative lock-in effects: trans-national co-operation	Avoid administrative lock-ins		Institutional networking
Fostering ICT SMEs Innovation Capabilities	Confidence-building measures; supporting SMEs to go global			Intellectual property rights (IPR); single market
Strategic Options & Alternatives				Innovative spaces



Although, these policy recommendations are largely the result of our experiences in the NICE project, findings from earlier projects and studies have been taken into account. Comprehensive discussions in the Europe INNOVA community and the academic milieu gave further impetus, as well as our longstanding research experiences.

Policy Recommendations





1.1 A Framework for Self-organisation

Imbalanced top-down and bottom-up cluster initiatives are counterproductive for the successful development of clusters.

Problem

Observations & Challenges

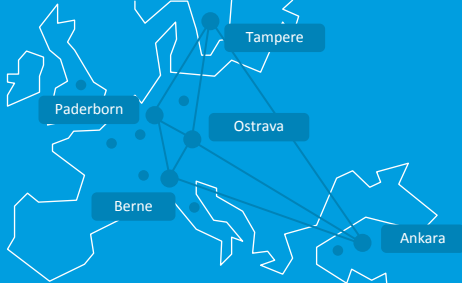
As table 2 shows, clusters differ in terms of their stage of development along the cluster life cycle, their composition, organizational structure and historical roots. Some clusters are networks of SMEs (e.g. ICT cluster Berne), others are organised around anchor companies (e.g. ICT Tampere), whereas some have developed around universities (e.g. ICT Cluster Ostrava, Ankara).

Table 2: NICE – ICT Clusters’ Fact Sheet

	tcbe.ch – IT Cluster Berne	padercluster	ICT-Tampere	Ankara	IT Cluster Ostrava
Foundation	1996	-	1988	-	2006
Development stage	Established	Established	Established	Embryonic	Embryonic
Companies forming the cluster		280		391	420
Number of paying members	191	-	321	-	43
Employees*	110,000	10,000	17,340	n/a	926
Cluster management	Formal (1996)	Informal	Formal (1994)	Informal	Formal (2006)

* Number of persons employed in companies that are member of the cluster

Although many cluster initiatives have emerged spontaneously by self-enforcing processes and without any specific policy support, the role of the public sector in supporting specific cluster-related activities is still considered important, as highlighted by the Innobarometer 2006. While for example, in Berne and to some extent in East-Westphalia Lippe the needs of local companies gave the impetus, whereas in Ostrava and Tampere it was governmental incentives and cluster programmes. Irrespective of their origins,



in most clusters companies and their associations, regional stakeholders including local development agencies and research institutions as well as representatives from federal or central states are involved, though in very different ways.

In addition, a wide range of different government policies with an impact on clusters can be observed across Europe. These policies vary in their degree of scope and ambition. While some policies affect the general business environment, others are cluster-specific.

The major challenge for a multi-level multi-actor cluster policy approach is to balance self-organised (bottom-up) initiatives and policy-driven (top-down) strategies. This is to say, the frame of reference should be a «two-tier-approach». Cluster initiatives depend on the commitment and active participation of the companies involved. In this respect, cluster management needs a clear and strong focus on self-organisation.

Readiness for active self-organisation is a matter of culture both in terms of the sector and the region. As various European surveys indicate companies' cluster propensity is a question of national, regional and business culture. This is especially true for many ICT SMEs which used to act as «lone wolves», and thus are not open for co-operation and networking. Clustering is an option for companies; to ballot this option often requires incentives and public policy support. To this end, top-down initiatives are necessary and useful where there is no tradition of networking. However, top-down policies should be limited to activation and giving impetus.

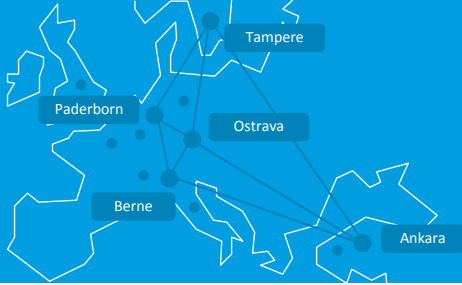
Examples

From time to time, bottom-up and top-down initiatives cause tension; for instance in Paderborn, where a top-down cross-sector cluster – initiated by the federal state of North Rhine-Westphalia – brought together providers and lead users of ICT. While the majority of software companies calls for a stronger sector focus and a network which is entrepreneurially driven, the cluster is focused on the users. Accordingly, the companies did not feel represented by the cluster. Due to the experience of NICE – especially the knowledge exchange during the cluster management workshops – some companies initiated their

Self-organisation in complexity

*Self-organisation readiness –
A question of culture*

*Tensions caused by top-down
measure*



own mini-cluster ITMW e.V. and engaged a part-time cluster manager financed by membership fees. Today, five ICT related networks exist in East-Westphalia Lippe region; as a result of this diverse structure the region is not recognised as ICT region, a fact which is counterproductive for the region's competitive position. A discussion among the various ICT networks and initiatives was recently started with the aim of improving regional division of labour in relation to the marketing of the ICT region, Paderborn. This example shows the dilemma regions might face: Should they follow their local and regional competencies and aim at strengthening these or should they follow the specifications of the North Rhine-Westphalia state government? This is a question of priorities.

A good example for the successful implementation of the two-tier approach is Finland where, under the umbrella of the «centres of excellence» national agencies such as Tekes (National Technology Agency) and regional development agencies such as HERMIA in Tampere, work hand in hand. They collaborate in the formulation and implementation of technology programmes. Local and national politics are also involved. In this spirit, the geographic focus is national with strong regional nodes and benefits aiming at international excellence and networking.

Excellence centres as an example of successful multilevel collaboration

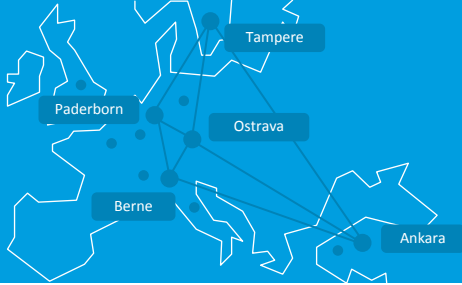
What to do?

Cluster management as well as policymakers need to resolve the dilemma of realistic expectations and responsibilities in the interplay of different policy levels. When doing so, they need to be aware that one size does not fit all. Irrespective of the concrete model of cluster management, the commitment and active participation of companies and regional actors is crucial. National policy should provide the framework to reach such commitment.

Realistic expectations on the interplay of policy levels

In this context, one needs to take into account that companies' activities are not limited to the administrative borders which usually build the framework for clusters. On the contrary, business activities take place in the «relational» space which is defined through interactions with customers, suppliers, networks, and so on. Mind maps could be useful instruments for capturing companies' perceptions of the cluster's real spatial pattern and also for engendering a sense of ownership among the members.

From administrative boundaries to relational spaces



National cluster policies aiming at fostering self-organisation and self-enforcing processes need to accept that regional stakeholders define their own strategies and targets based on regional strengths and settings. Hence, a two-tier-approach which compiles top-down measures and bottom-up initiatives seems most promising. Support measures for sustainable cluster development should primarily induce knowledge exchange and ongoing learning processes leading to unique «localised knowledge capabilities».

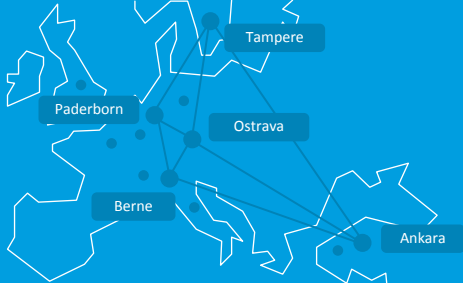
Two-tier approach for national cluster policies

At the regional level, the initiation of public-private partnerships (PPPs) to develop a constructive dialogue, to identify regional development needs and to develop tailored programmes, is crucial. However, the public sector has its own objectives as regards the cluster, which are distinct from those of enterprises and are likely to remain so. To provide a «voice» for the cluster, the management should be formally institutionalised. This would also help to implement cluster policies more effectively, as clusters' visibility will – in the ideal case – create a degree of «self-confidence». Cluster policies need to be designed with a long-term horizon to ensure sustainability.

PPPs as framework for self-organisation

Clusters are today an important part of Europe's economic reality. For the European level it is important to rethink and modify the general competitive framework: While competition law bases on the idea of a single, autonomous company, clusters are grounded on networking and co-operation. Cluster management is in many cases organised as public private partnership; because it concerns funding, it remains open whether networks or cluster agencies participate as private or public organisations; a pivotal question in terms of funding rates.

Contradiction on competition law and clusters



Recommendations

1

Cluster Management

Establish a model of cluster management that is appropriate to the needs and expectations of your region and your stakeholders.

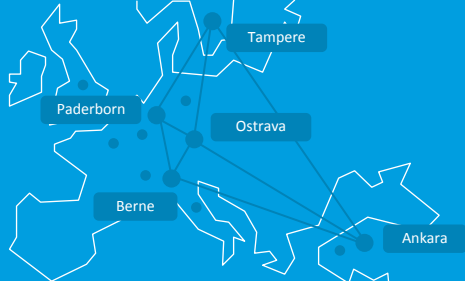
Identify the cluster's needs considering the context, specificities of the region, including cultural aspects, such as attitudes, behavioural norms, communication, and sector characteristics. Implement action agendas that reflect the identified needs of your cluster.

2

National Policies

Provide a framework for cluster development to facilitate different models of cluster evolution and management. Take into account bottom-up initiatives and follow a two-tier-approach.

Let the private sector lead; the public sector should only play a catalytic role. Refrain from seeking to «build» new clusters of companies. Favour hands-off approach which strictly limits state intervention. However, expect to provide some financial support for feasibility, start-up and network-brokerage. Support should be based on clear criteria conditional upon bottom-up entrepreneur-led initiatives with a proven potential for self-sustainability.

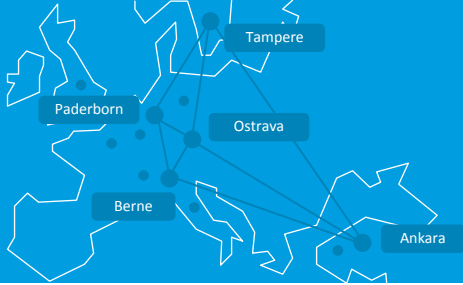


3

Reconsider the competitive framework for networking and co-operation taking into account clusters' specificities.

European Policies

A well functioning internal market offers best conditions to further trans-national co-operation. Accordingly, EU policies should complement regional and national cluster policies through improving the functioning of the internal market by eliminating factors that are hampering knowledge flows, mobility of work forces and by harmonising regulations.



1.2 Strategic Thinking

Cluster managers are working so hard to be sure things are done right, that they hardly have time to decide if they are doing the right things.

Problem

Observations & Challenges

An increasing number of cluster studies pinpoint that cluster organisations are in many cases organised as public private partnerships. The basic idea is to give an impetus for clustering activities and in the long run, to attain companies' commitment to finance cluster management through a relocation of funding from public to private. Public funding, thereby, declines while membership fees rise. Contrary to this ideal model, most cluster agencies rely on public co-funding for a long time and do not reach the stage of self-sustainability.

Public private partnerships: A dilemma for cluster management?

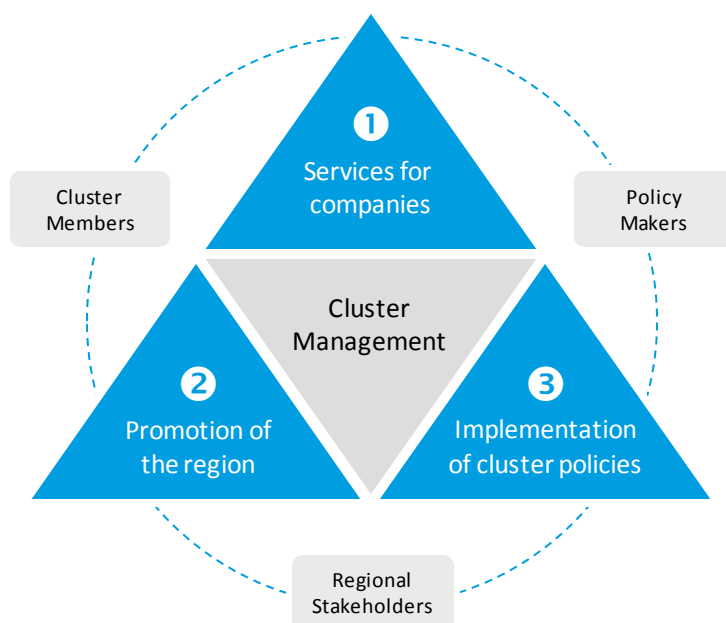
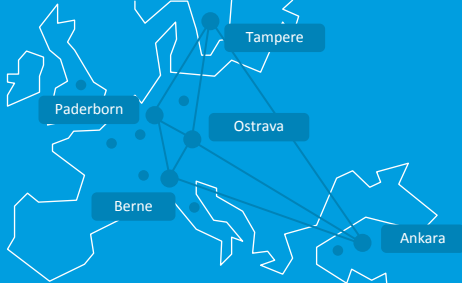


Figure 1: Functional triangle of Cluster Management



As figure 1 illustrates, cluster management acts between the conflicting priorities of cluster members, policymakers and regional stakeholders. For instance, in a case of membership funded cluster management, it is anticipated that the management will provide business-related services, e.g. provision of sector-related information, fund raising, networking, trend scouting and so on. In contrast, regional stakeholders expect cluster organisations to promote the region with activities such as marketing, communication, or acquisition of inward investment. While central state government cluster funds are normally bound to the implementation of innovation or structural policies and the achievement of related policy targets which do not necessarily match the cluster's objectives.

These different expectations bear the risk of conflict between the various interest groups or of producing work overload, as human and financial resources of cluster organisations are often limited. To avoid unrealistic expectations and conflict of priorities, strategic planning and implementation plays a vital role in cluster management.

Due to the growing competitive pressure on regions, cluster managers need to be aware that it is not only the cluster but also the management which requires further improvement. Cluster management has to be both strategically and operationally excellent to meet tomorrow's challenges. Doing the right things and doing the things right is a balancing act, and requires a good strategy and efficient operations. Taking into account that cluster development is a long-term process characterised by uncertainty, strategic alignment is essential. In fact, today we have detailed knowledge on clusters' evolution and the mechanisms behind discrete clusters. But only very little is known about the modalities how to bring potential clusters into being and how to initiate self-enforcing processes. In this regard cluster management is characterised by ongoing learning processes.

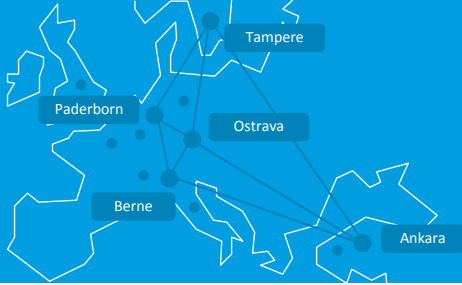
By nature, clusters are embedded in a regional economic structure and milieu as well as in a national innovation system and a global value chain. In the context of cluster programmes, e.g. innovation policies or structural funds, frequently asked questions are: Does the cluster under examination fit into the long-term policy strategy? Are companies' innovation capacities sufficient to reach «world-class» or at least national recognition? What risks are associated

*Cluster management functions
& contradictory expectations*

*Limited resources and high
expectations*

*Cluster management as
ongoing learning processes*

*Two sides of a coin: Public
funding and individual paths*



with a regional economic development strategy that focuses on a limited number of clusters and sectors for the region? These and similar questions need to be taken seriously as the future is characterised by uncertainty and nobody can definitively foresee economic development. Thus, errors and failures go hand in hand with the development of innovation and structural policies. A fortiori, it is important to reduce risks by formulating strategies and operative targets and to adjust these to economic realities if necessary. To this end, monitoring and evaluation of cluster management is a vital element, likewise in cluster management and policies.

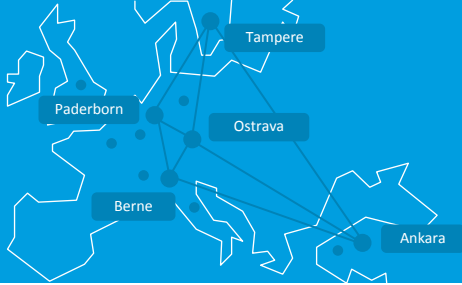
Notwithstanding the importance of monitoring and evaluation of clustering activities, one needs to be aware that it contains a common bias, as cluster-based economic development can be influenced by the concept and process of data collection; especially in relation to concepts based exclusively on quantitative data. For example, if cluster management teams are evaluated against the indicator of «job creation», they will likely work to create any job whether or not they fit in the cluster. If they are not rewarded for creating networks and fostering internationalisation, these important elements of cluster-based economic development are not likely a priority. A poorly designed performance measurement structure can have perverse results. Hence, performance measurement systems need to match, as do the aspired policy and cluster goals.

Indicators influence cluster management activities

Examples

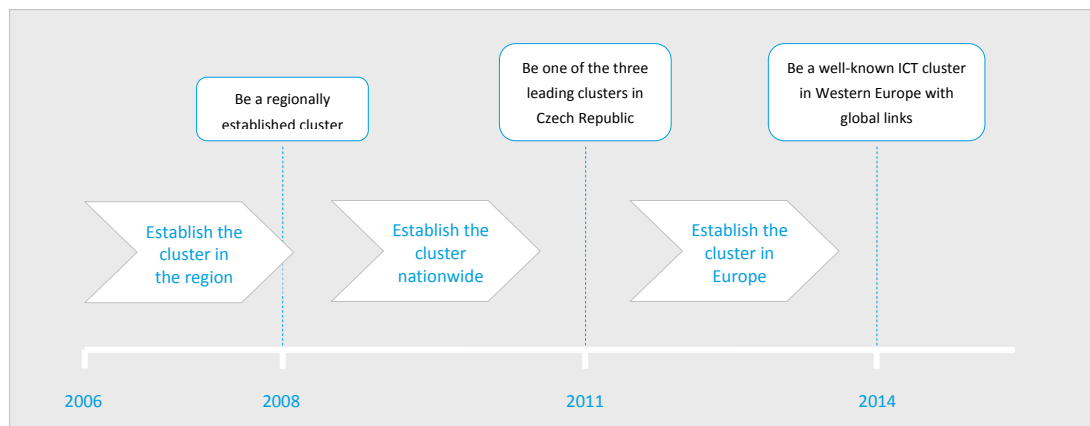
Based on the idea that instruments applied in strategic management could also be applicable for cluster management, the Balance Scorecard (BSC) was tested in a 2-day workshop with IT Cluster Ostrava. The outcomes of this workshop (see appendix 1) indicate that the principals of the scorecard concept are qualified to target the challenges of strategic cluster management. Not only does the BSC take into consideration financial factors, it provides a basis for determining other important factors that influence the achievement of the cluster management vision. The design process helps to transform often vague and multiple objectives into an actionable strategy. It also allows cluster management organisations to keep track of several issues such as quality of service, budget, operations and learning processes. Certainly, one of the major challenges is to involve the stakeholders' right from the beginning and to

BSC as starting point for strategic cluster management



develop a strategy that reflects clusters' complexity. In certain terms, the discussion about the cluster strategy itself was the most important result on the way to improve the strategic orientation of Ostrava's cluster management.

Figure 2: Vision of IT Cluster Ostrava

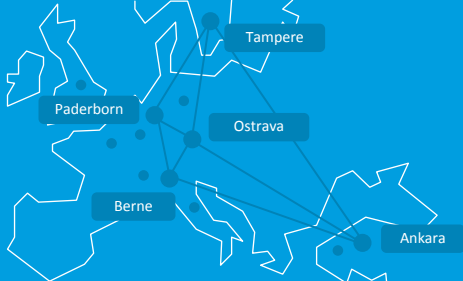


Another example is West Midlands ICT cluster which established «Innovation Clubs» in 2007 to promote market-driven interaction between the private sector and higher education institutions, and to encourage innovation in the cluster. Each club was provided with a budget of £6k, to be used with discretion to establish research and innovation links between research institutions and the private sector. A first evaluation of the clubs was conducted in July 2008. The results confirm the usability of the concept to strengthen the innovation capacity, and the competitiveness of the cluster. However, it was noted that the «Innovation Club» model is stronger if activities are not only driven from the institutions, but are also pushed by market demand.

Further cluster's competitiveness by «Innovation Clubs»

Scottish Enterprise, the main development agency of the regional government in Scotland and an early adopter of clusters as policy instrument, adapted a cluster review process in 2005 to better understand not only the current strengths, but also the potential future impact and growth of clusters. The agency works with industry, government and other stakeholders to develop an overall vision and strategy for the identified sectors with potential for significant global growth. Key drivers for evaluation are the measure of growth of these key sectors and the identification of the agency's role in stimulating and supporting such growth. The evaluation covers the three broad areas:

The Scottish example



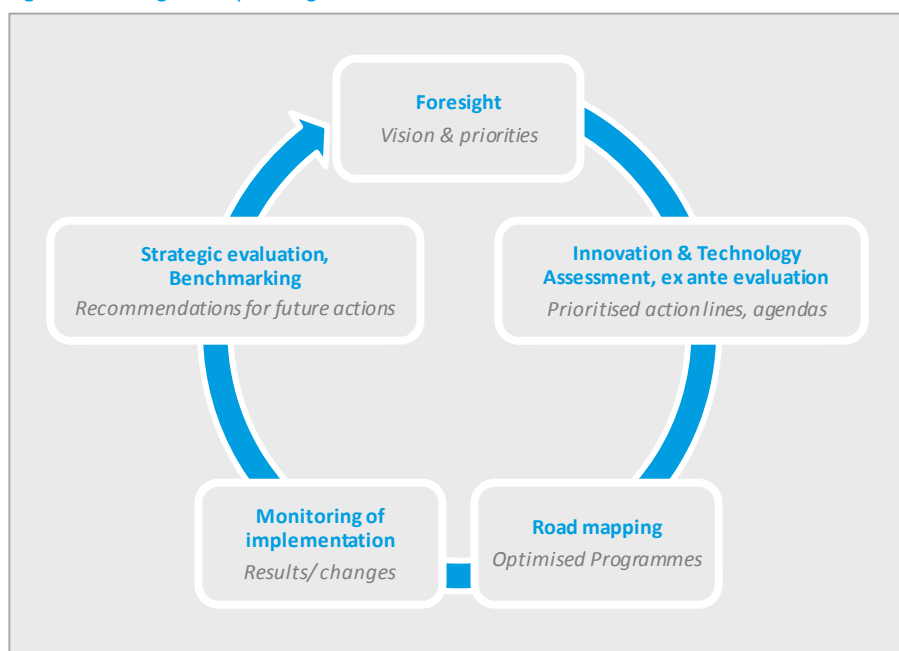
«Impact on company base», to capture the difference made to the businesses within the clusters, «Impact on the research base», to capture the influence on research investments within the clusters, and «Impact on the cluster and the broader business environment» to capture the wider impacts on the clusters and improvements in the broader business environment (e.g. ability to access funding, market position, networks evolved).

What to do?

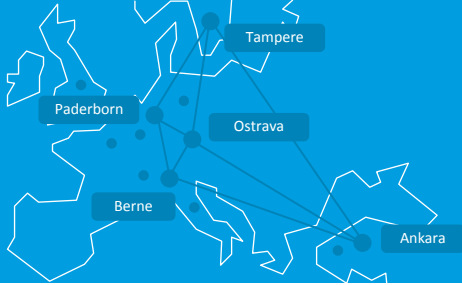
To lay the ground for strategy development cluster initiatives should start with a self-assessment of strengths and weaknesses, opportunities and threats. If procurable, important stakeholders should participate in such process. However, one needs to bear in mind that a strategy is «only» a frame of reference which might need adjustments as economic conditions change. Apart from that, the provision of a reliable framework for cluster management activities calls for a broad acceptance of the cluster strategy.

Self-assessment as origin for strategy development

Figure 3: Strategic Policy Intelligence



Source: Hafner-Zimmermann (2008)



Whilst defining a common vision and strategy based upon mutual trust and personal strategic linkages among the regional actors is prerequisite, implementation of «Strategic Policy Intelligence» tools (see figure 3) plays an important role as regards cluster policies. Ideally, such tools provide policy decision-makers with comprehensive, objective, politically unbiased and forward-looking information.

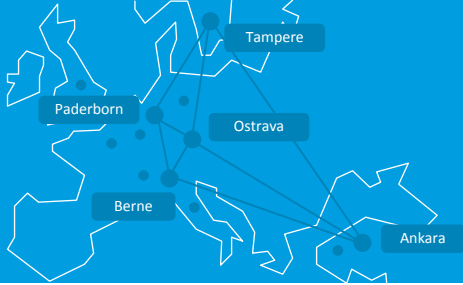
Strategic Policy Intelligence in cluster policies

In the light of clusters' sustainability and competitiveness it is important to not solely define visions, strategies and objectives for cluster, but also to identify companies – in the case of ICT clusters mainly SMEs – that are innovative and ambitious to develop new products and services and new business opportunities. This is of course an extremely difficult task. Accordingly, cluster management needs to take some decisions with respect to the definition and identification of innovative SMEs with high growth potential, and the development of mechanisms and tools for their involvement in the cluster.

Innovative SMEs with high growth potential – key success factor for clusters

Although strategic orientation is important for any type of cluster management, in the case of public funded cluster management it is prevalent. Concerning the latter, objectives and indicators for cluster initiatives are often deducted from the approval for funding. However, one should start cluster initiatives with a strategy workshop followed by the specification of goals and performance indicators. The application of instruments for strategic management is rather new for cluster organisations. So far, only few cluster-specific instruments for strategy development exist. Furthermore, tools need to be applicable to the complex structure of clusters which are characterised by networking and interactions varying in intensity and quality. To this end, a repository of tools applied in practice would be useful.

Strategy and performance measures should not follow funding rational



Recommendations

1

Cluster Management

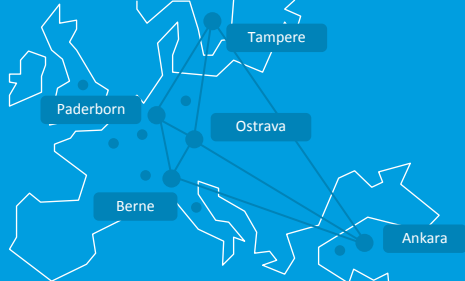
Start your cluster initiative with a strategic workshop involving the relevant stakeholders. Define your vision, mission and strategy, and dissect into objectives in compliance with your stakeholders. Understand the defined objectives as building blocks, components or activities which make up your whole strategy. Be aware of cause-and-effect-relationships between the key objectives of your strategy. Clearly distinguish between cluster management and cluster performance and related measures.

Concentrate evaluation on clustering processes and trajectory (e.g. role of key actors or events, people mobility, employment growth, firms' displacement and creation) rather than on static measures. Focus evaluation on immaterial flows (e.g. innovations, technology licensing, managerial skills, entrepreneurial skills) rather than on material flows.

2

National Policies

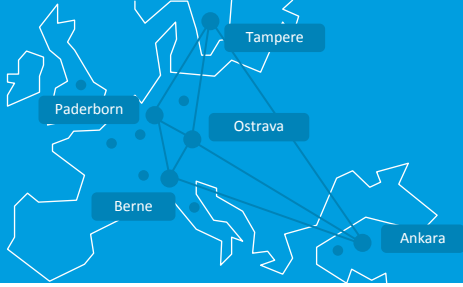
Base public funding on a common understanding and agreement of goals and indicators to measure their achievement. In this context an «agreement on objectives» would be a useful instrument. On the one hand, it encourages cluster organisations and stakeholders to envision their aims, and on the other hand it provides comparable measures for clusters' performance.



3

European Policies

Document and communicate transferable good practice. Organise the exchange of experience and practice by supporting the creation of networks of regional clusters. Develop and/or provide tools and instruments to foster strategic policy thinking.



1.3 Professional Management

*Cluster management often lacks professionalism.
Aiming at «world-class» requires continuous
advancement and optimisation.*

Problem

Observations & Challenges

Strategic management requires professional implementation. Accordingly, professional management is crucial for taking a step forward in successful and sustainable cluster management. To date, cluster management is neither an established nor a standardised profession. The European Commission is quite aware of this fact and, is expected to direct its future clustering activities in this direction.

The questioning of 100 cluster managers across Europe, as well as the results of NICE shed light on the current state of cluster management. The results can be summarised as follows:

*Status quo in cluster
management*

- An organisational shift from the single cluster manager to a cluster management team occurs (Figure 3).
- In the 1990s, when the first wave of cluster initiatives and programmes was launched, the majority of cluster managers had an administrative background. Today, the majority is from either economist or engineer background and has worked in the private sector or in technology management (Figure 4).
- There has been a tendency to standardisation particularly in regard to cluster managers' job profiles, which bear surprising resemblance (as is shown in Figure 5). The results indicate that a repository of common cluster management activities exists.

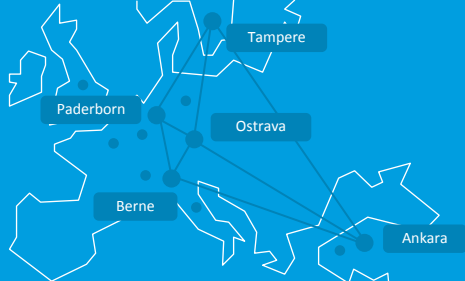


Figure 4: Number of full-time employees

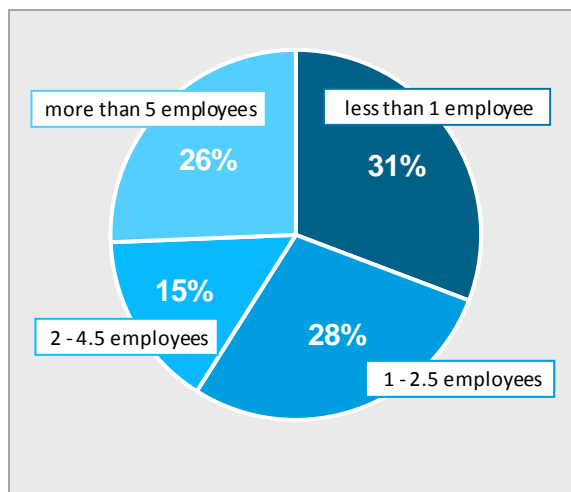


Figure 5: Cluster managers' educational background

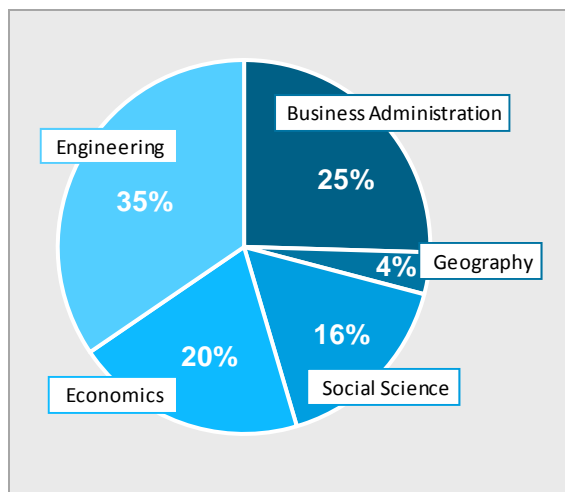
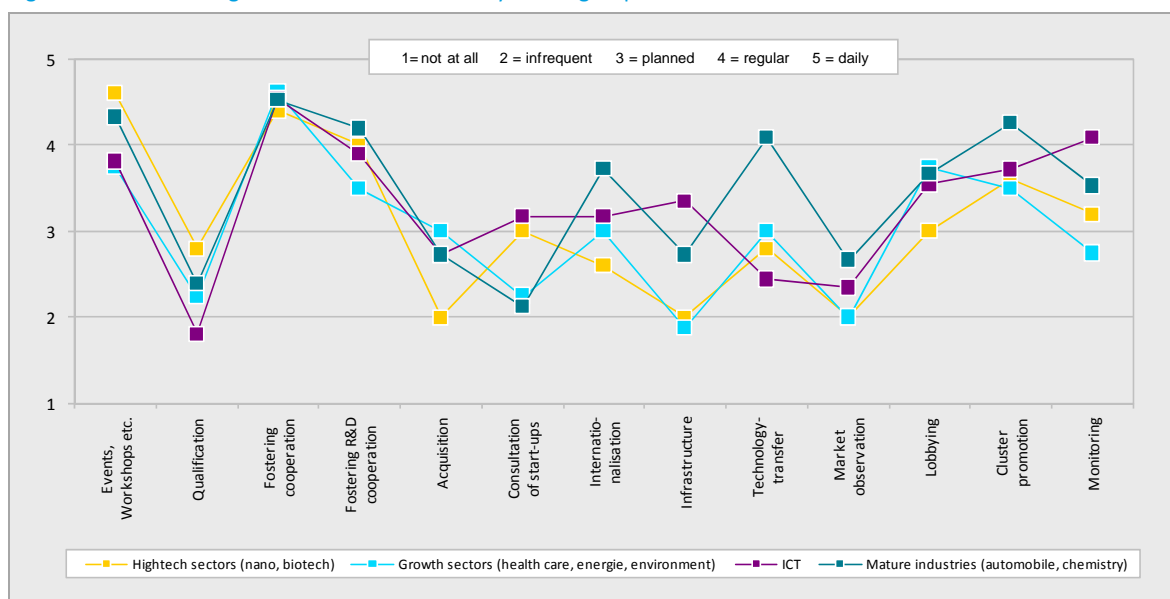
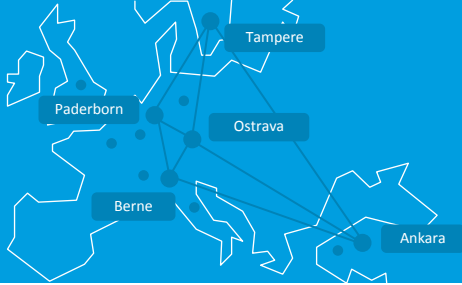


Figure 6: Cluster management fields of activities by sector group



As a result of informal processes such as dense communication and networking, rather than of formal standardisation, a common understanding of cluster management has evolved over the last ten years.



The major elements and steps in this process can be summarised as follows:

- A growing number of well-documented good practices are available across Europe. However, critical reflections on problems and failures remain rare.
- A multitude of handbooks, manuals and white books for cluster management are available.
- There is a key group of cluster managers who have attained a high reputation not only in their regions, but also in Europe. They stand for professional, yet different, cluster management practices.
- Cluster policies are becoming part and parcel in a growing number of national and European policy and innovation programmes.
- Regional, national and international conferences promote learning and exchange in cluster management.
- The density of interactions between cluster managers across Europe is increasing.

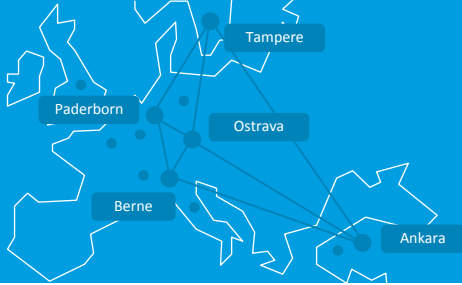
Networking facilitates standardisation in cluster management

Despite these positive developments, serious bottlenecks in the day-to-day work remain and hinder further professionalisation of cluster management.

Shortfalls & bottlenecks

Firstly, networking is not generally accepted as a serious profession with the result that cluster management lacks basic funding. Many politicians argue that networking can be done along the way and that there is no need to fund such activities. But networking requires time, leadership, reliability, sector-related knowledge (see Appendix II for a «Knowledge map of Cluster Management») and engagement. Further on, networking needs redundancies and cannot be measured by the direct outcomes of single activities. Therefore, successful networking depends on solid basic funding and clear priorities.

Secondly, cluster managers need to fulfil manifold functions. They are in charge of fostering collaboration and developing technology projects, and are responsible for marketing and public relations. These functions are usually taken care



of by a single cluster manager. Accordingly, successful cluster management is often determined by the reputation and competence of a single cluster manager, as is the cluster performance. This involves the risk that the cluster might lose its leading figure – its «top seller» – if the cluster manager leaves. To avoid this cluster management needs a stronger institutional base where a team rather than a single person, fulfils the various functions.

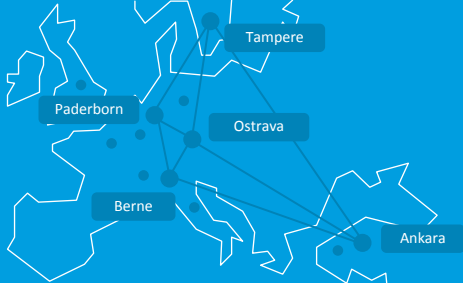
Examples

An example for the programmatic institutionalisation of cluster management – especially with regard to emerging clusters – is the «Operational Programme Industry and Enterprise 2004-2006» (OPIE) with its cluster measure launched by the Ministry for Trade and Industry, Czech Republic implemented by CzechInvest. Aid is provided in the form of grants for projects in two phases. Firstly, to search for and identify companies for clusters, up to a maximum of 75% of eligible costs. And secondly, to set up and develop clusters and cluster management organisations, with the maximum level of eligible costs covered by a declining grant (75%, 65% and 55%) for three years starting with the project launch. During the funding period the cluster must demonstrate self-sustainability through joint projects among the cluster members. The «Operational Programme Enterprise and Innovation 2007-2013» represents in this context a continuation of one of the priorities of the OPIE 2004-2006.

«IT Cluster Mitteldeutschland» is a good example of the allocation of cluster management tasks to a wider group of persons responsible. The cluster understands its sphere of activities as process and has established a number of task forces which work on defined thematic areas, such as «Apprenticeship, Qualification & Recruitment», «Finances in ICT, Promotion of Innovation & Venture Capital», «Marketing, Promotion & Image Building», «ICT Projects», and «ICT as cross-cutting Cluster». These thematic areas reflect the cluster management's functions and are chaired by company representatives. A similar approach is applied by tcbe.ch – ICT Cluster Bern and other clusters across Europe.

*Operational Programmes
Czech Republic*

*Task forces as instrument to
allocate the work*



What to do?

Cluster initiatives need to be taken seriously right from the start. Cluster management cannot be done «along the way». It needs an appropriate institutional framework as well as a discrete organisational and professional approach. For example, regional development agencies in charge of cluster management run the risk of agitating local (administrative) and functional (economic) activities which might lead to tensions and inefficiencies. Networking and capacity building are crucial for the further improvement of professional cluster management. Available resources and expectations need to be balanced. Regional and national funding programmes should not only finance projects, but also basic activities such as networking, in order to lay the ground for clusters' future development and self-sustainability.

Facilitate coherence between strategies, resources and cluster management

In practical terms cluster management requires a firm institutionalised basis and a professional internal and external division of labour. In theoretical terms we need to improve understanding of:

Broaden the theoretical and practical knowledge base

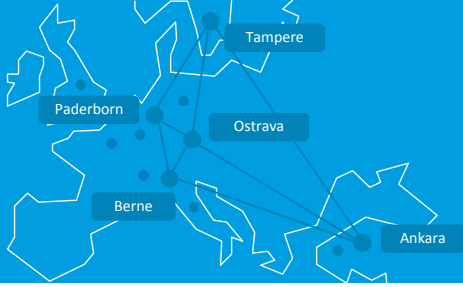
- The reasons for the failure of cluster initiatives,
- Process of networking and self-organisation,
- Potential tensions associated with cluster management, and
- The interplay between political and economical spaces.

Recommendations

1

Cluster
Management

Use the opportunity to improve your cluster management practice through the exchange of experiences and knowledge with other cluster managers throughout Europe. Get involved in initiatives such as Europe INNOVA, CLOE or TCI. Establish a basis to let such exchange become a continuous dialogue.



2

National Policies

Regional and national policies measures need to ensure a reliable financial and institutional basis for cluster management. Funding should decline over time to ensure the commitment of members of established clusters whilst minimising the equity financing for evolving clusters.

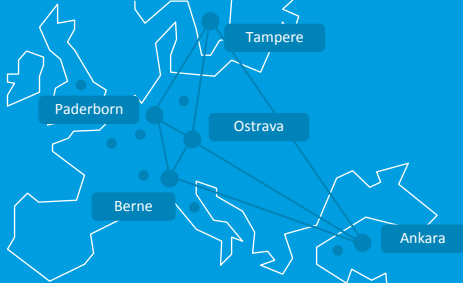
Further educational courses for regional and national authorities should also cover cluster aspects in order to lay the ground for future programme development.

3

European Policies

Provide a framework, e.g. cluster platforms, to stimulate international exchange of experiences and knowledge of cluster management. Such platforms should not be limited to showcasing, but provide space for discussion about common problems and failures, as well as solutions.

Organise a European school for cluster management and intensify standardisation efforts.



1.4 Regional Division of Labour

The absence of a clear division of labour concerning regional development and cluster-related activities causes tensions and inefficiencies in the regions.

Problem

Observations & Challenges

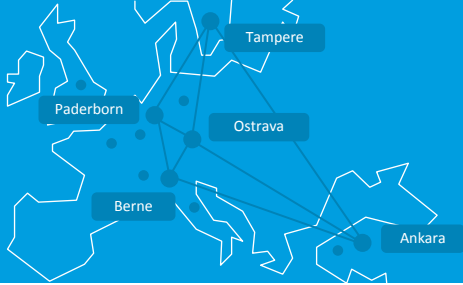
Cluster management lacks a clear division of labour as regards policy and organisational issues. Concerning the former, tensions result from the basic concept of cluster policies. In contrast to earlier approaches of structural policies which focused on adjustment between regions, cluster promotion ideally builds upon and activates existing growth potential which requires the pre-existence of regionally concentrated companies, other organisations and linkages in the target sector. That is, some prioritisation and selection is generally necessary. Accordingly, respective measures mainly aim at enriching and strengthening the promising features of clusters, helping to unfold them. The notion of clusters may cause tensions if companies outside the cluster feel neglected; most notably if positive clustering effects for the whole regional economy are considered unlikely.

Adjustment vs. growth policies

Therefore, regional cluster initiatives have to demonstrate their value for the whole economy. Cross-clustering, co-operation between cluster members and lead users, clear and realistic objectives are instruments for cluster management to gain visibility and acceptance in the region. And thus, further the harmonisation of basic regional development and clustering objectives.

As was outlined earlier in this report, a multitude of activities are assigned to cluster managers ranging from fostering co-operation, organising events and workshops, cluster promotion, support of university-company co-operation and lobbying. These «basic» activities are conducted by most cluster management organisations. Other functions and activities (e.g. internationalisation, technology transfer, acquisition etc.) are determined by the sector as well as the regional respectively national context.

Assignment of duties to regional stakeholders



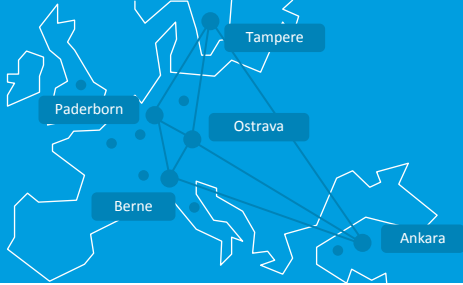
The extent to which the aforementioned activities are assigned to cluster management depends on the regional institutional system of economic development. For example,

- Internationalisation is often promoted and supported by national or federal authorities,
- Technology issues are handled by academic transfer agencies and foresight activities for instance by the chambers of commerce,
- Acquisition is often a key function of local or regional economic development agencies,
- Consulting start-ups is done by business angels or incubators, and
- Qualification is often assigned to educational institutions.

The more established and sophisticated the institutional economic development system, the greater the need for co-ordination and co-operation. In our understanding cluster management is an integral part of a decentralised economic development policy. Forasmuch, decentralisation goes hand in hand with a higher degree of horizontal coordination of workforce development (labour market policies) and economic development activities. This requires not only rearranging organisational structures, but a change in the behaviour and culture of government agencies and other partnering organisations. Creating a multi-actor multi-level coherence of strategies and congruent activities means leveraging synergies.

In this context, cluster management functions on the one hand as specific activity for selected sectors and/or technologies, and on the other hand as co-ordination unit. To fulfil these functions and to prevent tensions attention needs to be given to a framework which combines cluster strategies, strategies of individual enterprises and regional development strategies including labour market, industrial and innovation policies.

*Cluster management as
element of a decentralised
economic development policy*



Examples

A good example for horizontal co-ordination and co-operation is the region Berne. innoBE AG, which is jointly owned by the Berne University, the University of Applied Sciences Berne and regional companies unifies incubation, innovation consultation and cluster management under one umbrella. This allows close co-ordination of clustering activities and other business services. These efficient structures are subsidised by the administrative council which members amongst others are the regional development agency, company representatives and the chamber of industry and commerce. Each cluster has its own cluster office and cluster manager. Through the clear division of labour between the single units and regional actors the economic development activities can be geared most effectively.

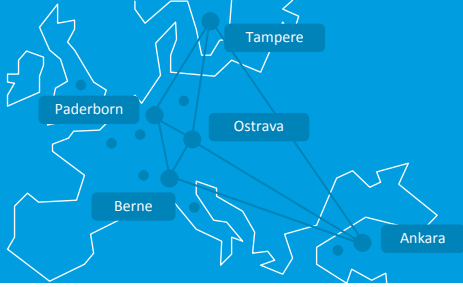
innoBE AG as example for an institutionalised division of labour

In East-Westphalia Lippe, coordination processes between the regional actors are not institutionalised, but take place in a working committee of eight cluster and network managers, representatives of the local development agencies, universities, and local authorities responsible for labour market policies. Aiming at the optimised division of labour among the regional actors key topic of the working committee is cross-cluster management.

A working committee as coordination unit

What to do?

Strengthening the ties between cluster management and other regional actors involved in economic development or innovation programmes is the first step towards a regional division of labour. However, to institutionalise responsibilities they need to be assigned to organisations and people and continuous flow of information needs to be ensured. This again requires information on the activities carried out by the single regional actors. Mapping these activities and their linkages could be a starting point for reaching consensus. Such analysis facilitates the refinement of cluster management activities and functional gaps become visible. Furthermore, in understanding cluster management as a systemic process, the aforementioned analysis is important in highlighting the functions and activities which are weak in the system.



In addition, regional actors need to be aware that it is difficult to predict when cluster promotion shows impact. The pressure to demonstrate immediate results can lead cluster management to give up its role as facilitator of cluster development and shift the focus more on advancing the cluster initiative than the underlying cluster itself, thereby emphasising process achievements at the express of economic impact. Creating working groups, facilitating co-operation, and forming effective cluster organisations should be the ultimate objective of all regional actors.

Recommendations

1

Intensify coordination and collaboration with organisations involved in regional economic development and innovation agencies.

Cluster Management

Exploit synergies and complementarities between the different actors to cross-fertilise efforts and thus enhance the efficiency of cluster management.

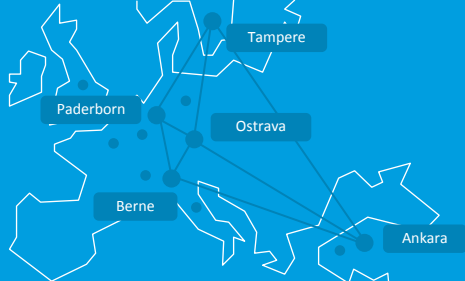
2

Functional spaces rather than administrative or regional boundaries should serve as guiding principle for the development of cluster policies.

National Policies

Foster the regional division of labour through decentralisation of national cluster policies and the stimulation of horizontal co-operation to significantly enhance coherence and synergies between different operational agencies and policy measures.

Where required and useful, provide back-office functions and complement local and regional cluster initiatives. Intensify the dialogue between cross-cutting policies to strengthen regions and cluster-specific efforts.

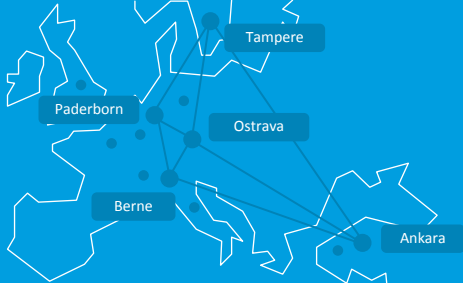


3

European Policies

Motivate and strengthen the division of labour at all policy levels. Promote the idea of functional spaces as a framework for cluster activities.

Broaden the policy dialogue initiated by the European Cluster Alliance by involving not only policymakers, but also programme managers and other organisations in charge of policy implementation to exchange practices in designing cluster policies against the background of a clear division of labour.



1.5 Capacity Building

Cluster management is not generally recognised as a new profession and integrated part of the regional innovation system.

Problem

Observations & Challenges

The perception of cluster management varies greatly across Europe. In some countries and regions cluster management is increasingly recognised as a new profession whereas in others it is not. In general, cluster management is a long-term process. It is assumed that appropriate methods and instruments for tackling future challenges will change over time. Continuous learning and capacity building are crucial in adapting cluster management practices to changing framework conditions. Against this background no blue print for successful cluster management or one-size-fits-all model exists. Handbooks and manuals for cluster management provide a good first orientation, but are by no means enough. What is required is investment in people leading ideally to the provision of better services – that is capacity building. So far, there is precious little information about what works and what does not in relation to building capacity in cluster management.

Cluster management as ongoing learning process

Capacity building in cluster management is closely related to strategic capacities and thus, to the need to overcome mostly short-term orientation by recognising the strategic relevance of longer-term perspectives and collaboration (see chapter 2.2 and 2.3). Self-assessment methods and instruments, such as monitoring, benchmarking and evaluation, are key elements of learning processes. However, they are seldom adapted to the needs of cluster management. For instance, sophisticated monitoring concepts are suitable for collecting wide-ranging forms of data, but the strategic intention of data collection and analysis often remains unclear. Therefore, one needs to understand what exactly cluster management is and in what context it is embedded (see figure 7).

Self-assessment lays the ground for learning processes

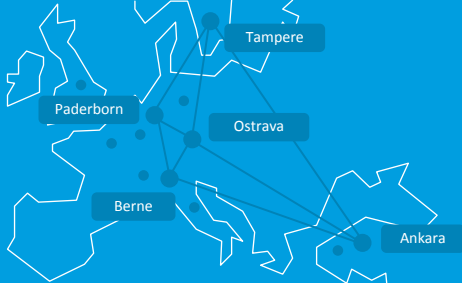
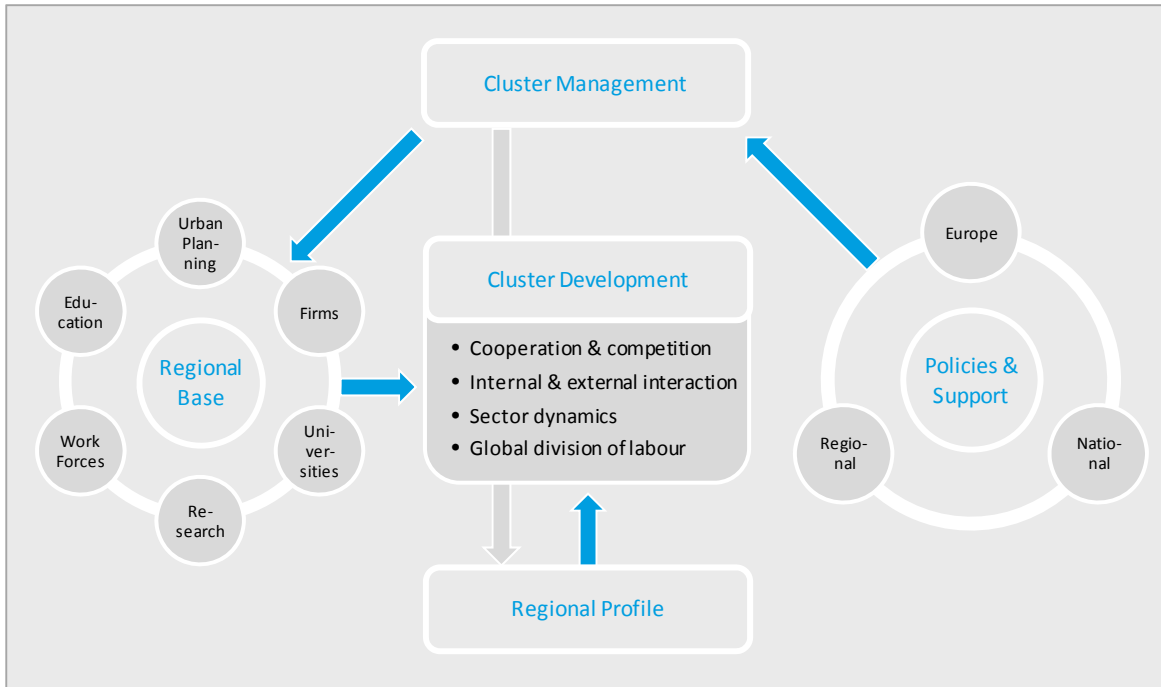


Figure 7: Driving forces in cluster management

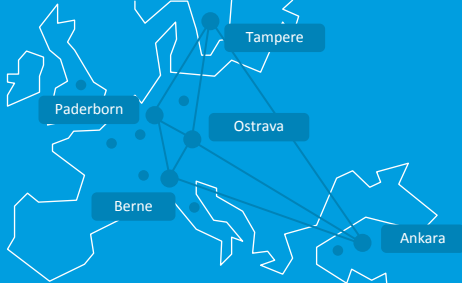


Cluster development is a dynamic evolutionary process. It is driven by competition and co-operation («co-opetition»). It is associated with technological and sectoral trends, depends on global economic developments as well as on single company strategies. Sustainable success of cluster development relies substantially on the concerted actions of many different actors. In this context cluster management refers to a concerted regional economic development strategy, which supports clustering efforts. Cluster management cannot determine companies' strategies, nor can it influence cluster development directly. In fact, cluster management supports cluster development only indirectly; for example, through activities which consolidate the interactions of the cluster members and other regional stakeholders.

Cluster management rational

Monitoring systems that focus on economic performance data, especially innovation data are useful in understanding clusters' dynamics and position in the global value chain. However, no direct and very weak indirect links to cluster management exist. Measurement of cluster management performance requires the definition of indicators which are related to outcomes that cluster management can influence directly. This again is a question of strategy and

Necessity for cluster-specific performance measures



deduced strategic objectives. The problem is even more prevalent in co-financed central state programmes as programme objectives may diverge and in the worst case are contradictory. Aligning programme-related and regional strategies is crucial to measure cluster management performance.

Evaluation perceived as regional learning process comprises the following key elements: *Connectedness* refers to visibility at national and international level. *Responsiveness* stands for openness to extraneous ideas. *Contextualisation* relates to the adjustment of good practice in regional framework conditions before adaption.

Evaluation as learning process

In certain terms, capacity building results from learning-by-doing, exchange of knowledge and experiences, and corresponding advanced vocational training offers. Beyond this, research is necessary to further capacity building in cluster management, especially with regard to the following issues:

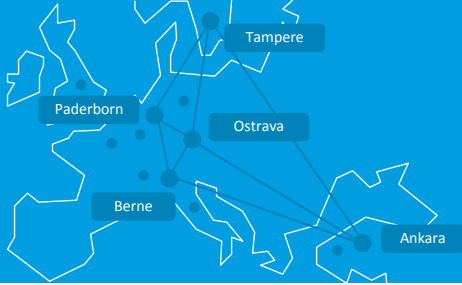
Research as basis to further capacity building

- Causes for failure of cluster initiatives,
- Substantiation of the knowledge base through comparative theoretical and empirical analysis and evaluation,
- A deeper understanding of networking and self-organisation in the framework of clusters,
- A better appreciation of the interplay of competition and co-operation within clusters,
- An open discussion about the conflict in the context of cluster management, and last but not least,
- A well-grounded understanding of the political dimension of clusters.

Examples

The outcomes of the NICE project illustrate the variety of monitoring and evaluation mechanisms applied in the regions. They range from learning graph methods to benchmarking, evaluation and frequent monitoring of companies' development. Concerning the latter, METU Tech in Ankara, Turkey is a good

Monitoring and evaluation practices in the NICE clusters



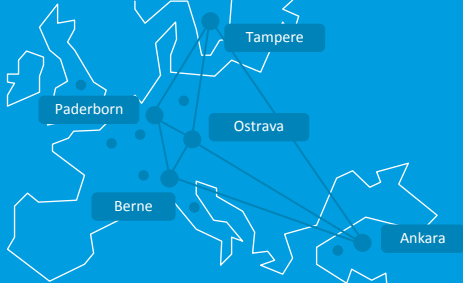
example for an institutionalised continuous monitoring of companies activities. Contextual background of the monitoring activities in Ankara is the objective target of “[...] *being a competitive ICT cluster in a global economy*”. At current stage 160 ICT companies are being monitored in order to measure their economic performance and thus, identify hints for required cluster management actions or services to further develop the single company. Accordingly, the monitoring activities are related to the cluster but not the cluster management. The legal background of the monitoring is the Turkish law 4691 which forces companies located in science parks to provide the required data. More precisely, each cluster member has to provide a quarterly activity report which covers different performance indicators, where each subtitle of the overall categories has a specific weight. These indicators are «Co-operation with university, other companies, government» (weight: 45%), «Financial measures» (weight: 30%), «Competition» referring to technological excellence, IPR and standards (weight: 20%), and «Promotion» in terms of contributions to the cluster (weight: 5%).

Another example is West Midlands ICT cluster; here the ICT Cluster Opportunity Group (COG) is responsible for the agreement of strategic priorities and their annual review as well as the review of the project portfolio in the cluster. Furthermore, the COG is responsible for the preparation of a three year plan for the development of the cluster and the approval of the annual cluster activities and outcomes report prepared by Cluster Execution Group. The COG works closely with the regional development agency Advantage West Midlands to improve the competitiveness of the cluster companies.

West Midlands ICT Cluster

Similar to Scottish Enterprise, the region Värmland in Sweden follows a holistic approach as regards monitoring and evaluation by not only assessing the performance of single clusters but of all regional clusters and measuring the impacts the cluster activities have on companies’ development. It is the first county in Sweden to systematically measure and assess the results of cluster initiatives across all the relevant stakeholders (business community, public sector and university) at regional level. In 2005 the Värmland Administrative Board and NUTEK (the Swedish Agency for Economic and Regional Growth) took the initiative of measuring how cluster initiatives effect company development in order to find out what growth effects are achieved by investing

*Region Värmland, Sweden –
A holistic approach*



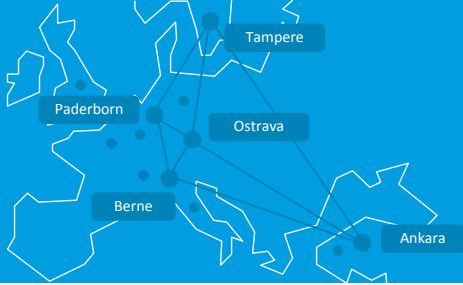
public funds, and if investments are made in the right direction. 2008 was the third year that 315 companies active in the 5 regional clusters, representing approximately 30,000 employees, were interviewed about the development and growth oriented collaboration. The purpose of the measurement at company level was to receive concrete information on what sort of benefits the companies identified from the cluster process. The results of the survey show a number of positive effects for growth and competitiveness, industry-related research and competence development and were presented at both the regional level as well as to the respective cluster initiatives.

What to do?

As figure 8 illustrates, capacity building in cluster management is not limited to the improvement of the functions at the bottom of the pyramid, for example human resources or organisational structures. In fact, the greatest gains are expected when cluster management engages in capacity building efforts in the higher levels (e.g. strategy). Moreover, cluster organisations as elements of a decentralised economic development system, need to be aware that capacity building cannot be undertaken in isolation; policy makers and cluster members should be involved and external expertise utilised.

Cluster conferences are largely dominated by success stories. Although formerly helpful in the sense of getting started and raising awareness, today formats are required which focus on exchange of experience, standardisation, performance and quality criteria. Especially the latter aspect should be paid more attention to, as the usage of the cluster concept shows first inflationary tendencies in Europe's regions. Summer schools and academies could be the place for exchange of experience and capacity building.

Although or precisely because cultural and political backgrounds vary, international networking facilitates learning and capacity building. But just networking is not sufficient. What is needed is the transfer of individual learning in organisational capacity building. Thus, it is necessary to accomplish the lessons learnt by individuals into the organisational knowledge and let them become part of the organisational culture.



One of the major tasks is to develop a framework for capacity building.

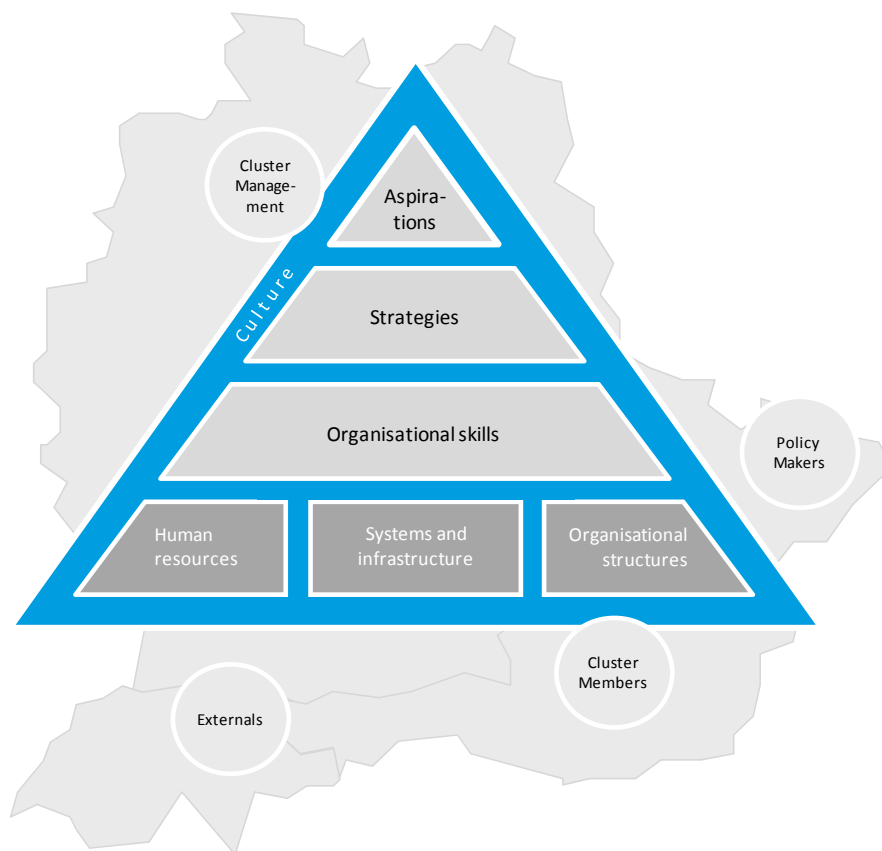


Figure 8: A framework for capacity building

Aspirations: Cluster managements vision, mission, and strategic goals, which collectively articulate its common sense of purpose and direction

Strategy: A coherent set of actions and measures aimed at fulfilling the strategic goals

Organisational skills: The sum of organisational capabilities, including performance measurement, planning and external relationship building

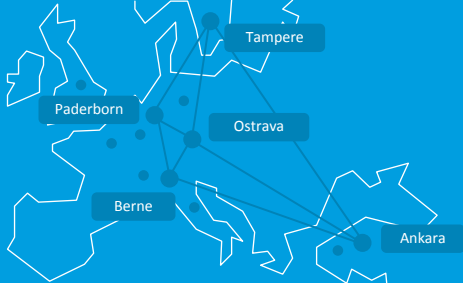
Human resources: Collective capabilities, experiences of staff, members etc.

Systems & infrastructure: The organisations decision making, knowledge management and administrative systems

Organisational structure: Combination of governance, organisational design, inter-functional coordination that shapes the legal and management structure

Culture: The connective element that binds together the cluster, including shared values and practices, norms and the management's orientation towards performance

(Source: Based on McKinsey)



Recommendations

1

Cluster Management

Organise a systematic, high quality data collection and analysis procedure to provide coherent and reliable information on the development of regional clusters and its cluster management. Design the evaluation as a cooperative process that involves cluster members, relevant research institutions and administrative bodies.

Adopt tools and procedures to continuously improve the professional performance of your cluster management. Join international networks and communities.

2

National Policies

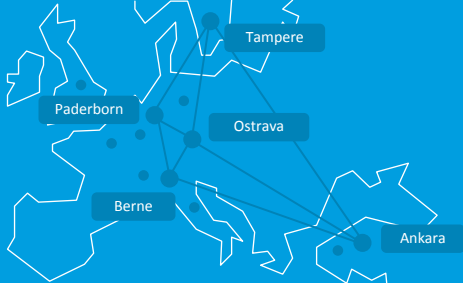
Encourage and support activities to compile standards for cluster management in academic as well as in post-graduate courses.

3

European Policies

Organise European cluster forums and academies to support capacity building which could help prepare a quality label for cluster organisations as new supporting forms of innovative SME.

Develop new, interactive and discursive formats for European conferences. Support the accomplishment and valorisation of insights gained through initiatives such as Europe INNOVA and Pro INNO Europe.



1.6 Openness

At present cluster management often focuses exclusively on regional networking; acting as an autonomous and isolated island causes lock-in effects and results in decreasing competitiveness.

Problem

Observations & Challenges

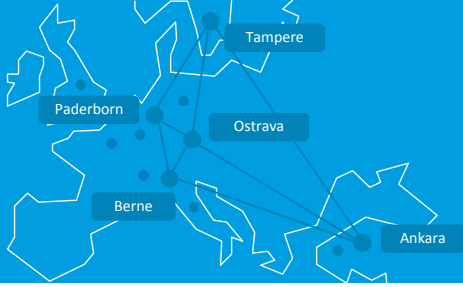
It is a well-known fact that European regions vary considerably in their capacity to develop knowledge and technology, and at the same time, are competitors in trying to attract money, brains and resources. This is also applicable to clusters. Clusters acting in isolation cannot develop the critical mass that will produce the innovations needed to compete globally and thus, will not reach the stage of «world-class» clusters. Facing the challenges of globalisation merely concentrating on national markets, technology, and research is insufficient. Hence, clusters need to anticipate changes, that is, a shift from a «closed» to an «open and collaborative» innovation paradigm. Such shift is crucial as clusters are only nodes in the global «space of flows» - of money, information, and physical streams - emerging within a «network society», and landing into the urban space triggering multiple cultural, political, economic, societal, and spatial transformations. Ignoring this fact may cause lock-in effects which in turn result in decreasing competitiveness.

Acting in isolation limits competitiveness

Cluster openness can be characterised by three dimensions:

Dimensions of openness

- The *organisational* dimension refers to openness for links and impulses from the outside (e.g. other regions, organisations);
- The *time* dimension relates to openness for new trends and future developments;
- The *thematic* dimension is advert to openness for companies which are not cluster members through their sector affiliation, but can contribute to the clusters' performance through their innovation capacity.



The office of «Networks of Competence», Germany (Kompetenznetze Deutschland) has analysed the strategies clusters choose on their paths towards internationalisation and the hampering factors they face. They questioned 91 clusters from 10 different countries. Asked for their motivation for trans-national co-operation the top 4 answers were:

- Consolidation of the clusters worldwide leading position and strengthening the global market position;
- Access to target markets at early stage;
- Access to know-how or technologies not available at the home markets;
- Exchange of information and experience at an international level.

Reasons for internationalisation through networking

These results underpin the experience in NICE and of various other studies covering this topic. However, the study also finds that only 10% of the clusters have detailed plans or strategies available on how to internationalise. On the contrary, internationalisation activities are, to a large extent, based on individual one to one contacts. Among others the main barriers are (1) a lack of mutual trust between partners, (2) competition or conflicting interests between the partners, (3) a lack of financing, and (4) a lack of time or capacity.

Barriers to internationalisation

History shows to be an important influencing factor. While bottom-up cluster initiatives tend to be highly engaged in international networks, political clusters and hub-and-spoke clusters are less internationalised. As regards the field of operation mobility and life science clusters tend to be more internationalised than others. On a scale ranging from 0 (not internationalised) to 7 (highly internationalised) the latter are positioned between 5 and 6. ICT clusters, in contrast, score only slightly above 3.

Clusters' history and field of operation matter

Furthermore, a mismatch between the instruments applied for internationalisation as those regarded most effective became apparent (see Table 3).

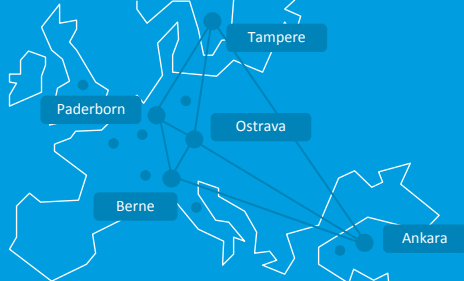


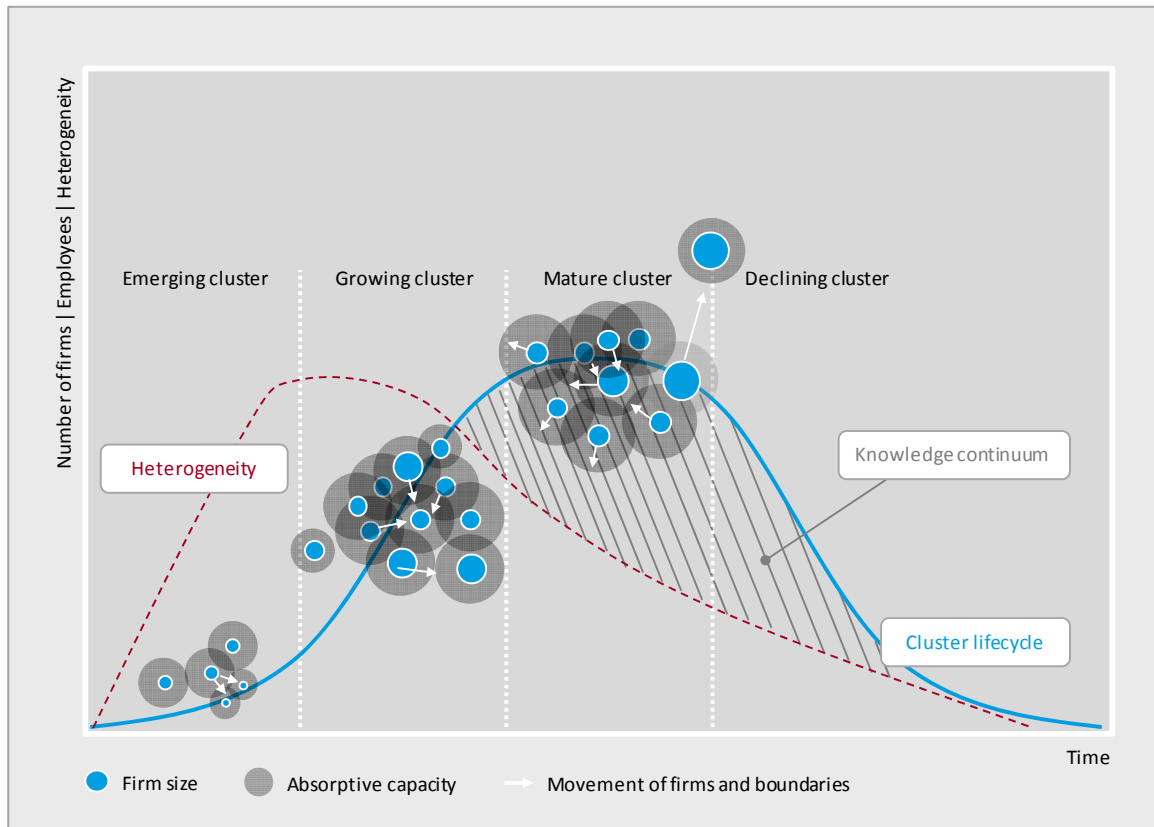
Table 3: Instruments for cluster internationalisation

Instruments applied		Instruments regarded most successful	
1	Participation in official delegations	1	Measures aimed at attracting
2	Information on research trends in foreign countries	2	Measures aimed at enhancing SMEs internationalisation competencies
3	Establishing contact points abroad	3	Measures aimed at attracting foreign students
4	Participation in international matchmaking	4	Establishing contact point abroad
5	Market information concerning prioritised foreign markets	5	Support packages for foreign enterprises
6	Identification of missing links in the value chain, search for complementary partners	6	Membership in international organisations
		7	International attractive public support for foreign investment
		8	Information on international research trends
		9	Attraction of contract research from foreign countries
		10	Acquisition of R&D centres of large international companies

Moreover, the role of geographical proximity is often overvalued. It is implicitly assumed that knowledge stemming from non-local sources is of inferior importance to companies' competitiveness. This fact might be true for emerging clusters but not for clusters in subsequent development phases. Different studies indicate that the diversity and heterogeneity of knowledge within a cluster is its foundation of development. As figure 9 illustrates this heterogeneity is high in the early stage of cluster development as new companies enter the cluster and decreases during the course of the lifecycle as companies' competencies are made accessible through dense and established interactions. Accordingly, clusters' openness is crucial to ensure knowledge heterogeneity by bringing new knowledge in the cluster.

Diversity and heterogeneity of knowledge as driving forces of cluster development

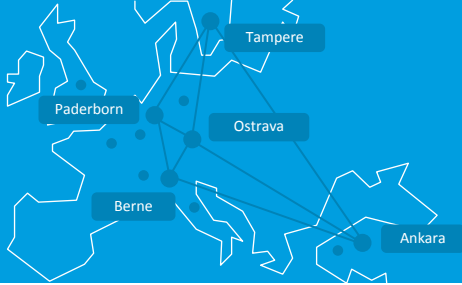
Figure 9: Cluster lifecycle & Knowledge heterogeneity



Source: IAT and Menzel/Fornahl (2007)

But not only clusters need to internationalise, so do the companies in the clusters. However, the experiences in NICE illustrate that internationalisation activities are often regarded as the most difficult task in SMEs expansion strategies. Difficulties concern likewise regulations and the ability to evaluate the counterpart, and cultural distinctions are often insurmountable obstacles when entering new foreign markets. Among others, two factors are decisive for successful internationalisation of SMEs: the ability to acquire experiential knowledge and the utilisation of business network connections to forge such knowledge. Ideally, cluster management could function as a «boundary spanners» for companies.

Internationalisation of SMEs



Acting in isolation with an exclusively regional focus bears the risk of lock-in effects which, in the worst case may result in a cluster's decline. Through openness, clusters not only gain visibility but also perpetuate knowledge heterogeneity and diversity, two factors crucial for sustainable cluster development.

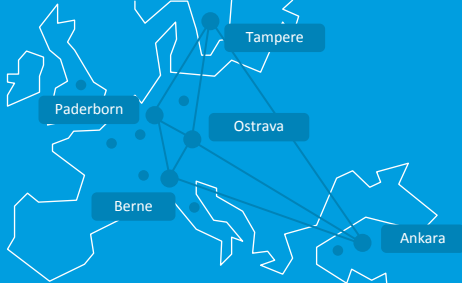
Example

In the Finnish mini-cluster «Finnish Centre for Ubiquitous Computing» (CUBIQ), open co-operation is an integral part of the cluster's strategic programme and it has developed an operations model which requires wide national co-operation between different enterprises and organisations in main markets. The potential for transnational cross-cluster collaboration is not solely recognised by CUBIQ but also by the Ubiquitous Computing Cluster Programme. As CUBIQ is still in its early development stage, at the moment the main target is to create the «story» for the network to tighten its thematic focus and to build the network by attracting and securing new paying members. An internationalisation strategy is currently being prepared for the national ubiquitous computing cluster. Again, this is a relatively new development for the cluster and its activities on an international level are expected to bring more results in 2009. The Finnish industry can use the Ubiquitous Computing Cluster Programme's framework to access key foreign markets and international networks in which to build new business partnerships and strive for further business growth.

CUBIQ – bridging the gap between local and global markets

Another example is tcbe.ch - ICT cluster Berne which utilises the concept of cluster excursions combined with visits of high level facilities such as IBM or Nokia research centre to open roots for co-operation beyond the cluster's boundaries. Cluster excursions as a support mechanism to foster SMEs' internationalisation activities have been applied for three years now. The basic idea is to organise thematic cluster excursions open to all cluster members. For example, in 2006 the cluster management organised an excursion to «Greater London» with the thematic focus on future trends in telecommunications. Site visits to Tyco Integrated Systems and the research lab Adastral Park of British Telecom as well as a dinner with representatives of the Suffolk Chamber of Commerce offered the cluster members the opportunity to intensify business

tcbe.ch - ICT cluster Berne – Cluster excursions



contacts. The event was organised in co-operation with UK Trade & Investment and the British embassy in Berne. These activities are complemented by periodical series of lectures dealing with the topic of internationalisation (e.g. «Internationalisation and co-operation in Europe: Between the contradictory contexts of policies, people, culture and new markets»).

What to do?

Clusters and companies alike need to co-operate across regional and national borders, develop strategies for internationalisation and pursue them consequently, to stay competitive. Only through open co-operation can clusters achieve continued progress and keep pace with global trends thus unfolding their full potential. Hence, one needs to avoid organising clusters and cluster management as a closed shop.

At a certain stage in development, clusters need to consider widening their links and resource to other international institutions and clusters. A starting point would be the identification of clusters and research institutions outside the region which could be partnered with thus bolstering their proposition. Clusters should not feel restricted in engaging with large enterprises within or beyond the region in order to facilitate knowledge transfer activities and generate business opportunities.

As regards «openness», the challenge is to overcome natural barriers and risks associated with such a strategy. Out of region corporate partnerships do carry a potential risk of SME relocation; however this needs to be counterbalanced with the possibility of long-term cluster growth through strategic national and international partnerships. By setting up a co-operation framework to provide SMEs with an «experimentation space», cluster organisations can reduce such risks. Furthermore, one should examine how external sources complement, integrate and substitute local intra-cluster networks.

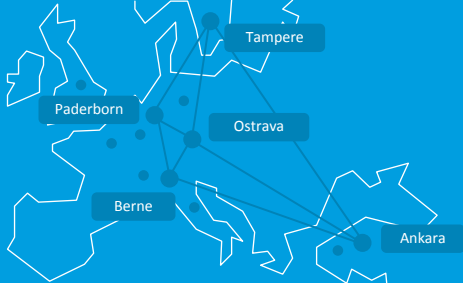
Against the background that cluster management is often regionally funded, one has to raise awareness for the need of openness and demonstrate that in the long run this furthers cluster dynamics and is therefore beneficial to the regional economy as a whole.

Open co-operation as strategic element

Widening links to ensure knowledge heterogeneity

Towards a co-operation framework

Raise awareness



Recommendations

1

Cluster Management

Develop an attitude of «openness» and integrate it into your strategic programme and activities. Firstly, adopt the role of «boundary spanners» which build a bridge between clusters and non-local actors allowing information to flow into the cluster. Secondly, import clustering experience from other parts of the world into the cluster.

Organise systematic and high quality co-operation with research institutions, clusters and companies beyond your cluster's and regions boundaries. Organise international cluster conferences, excursions and matchmaking events. Let one or two competent actors from abroad become member(s) of your cluster board.

Avoid understanding benchmarking as analysis of other clusters only, but take it as chance to initiate a dialogue which paves the way for future networking.

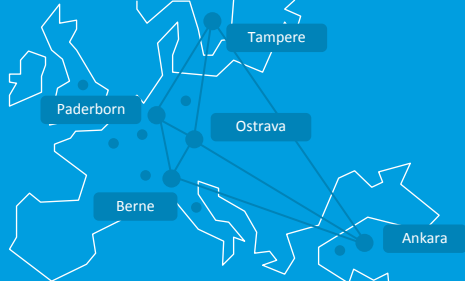
2

National Policies

Take better into account the trans-national dimension of clusters within the EU and beyond.

Avoid administrative lock-ins at regional and national level by allowing cluster organisations to adopt a role as «boundary spanners».

Anticipate excessively rigid specification in your cluster programs and explicitly encourage changes and modifications in cluster strategies during the course of development in order to allow cluster organisations to fit strategies to their needs.



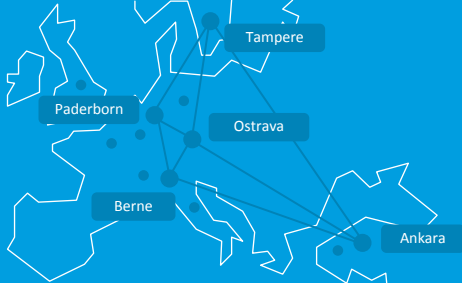
3

European Policies

Strengthen communication platforms such as Europe INNOVA and Pro INNO Europe for international exchange.

Facilitate coherence between strategies and infrastructure that will foster knowledge sharing, the improvement of innovation conditions and a higher competitiveness.

Further the strategic interplay of European, national and regional policies, as it is crucial for dynamic and sustainable development of clusters.



1.7 Fostering ICT SMEs innovation capacity

The capabilities of enterprises differ within a cluster, with major consequences to their performance. Many SMEs lack absorptive capacity and thus, are not able to unfold their full innovation potential.

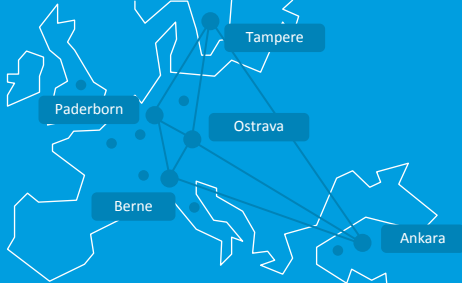
Problem

Observations & Challenges

Today the ICT sector is characterised by convergence across platforms, services and national borders. Despite this convergence, a lack of coherence in the way legislation is implemented has led to a fragmentation of the European ICT market, with companies often effectively prevented from implementing EU-wide market strategies. Traditional vertical market structures are evolving towards horizontal layers of content creation, service provision, delivery and consumption.

In this new environment innovation as a key driver for the future competitiveness of European ICT companies and it seldom occurs in a nutshell. To date, innovation is characterised as a complex set of interactions of companies, universities and research centres, markets and society. Moreover, innovation dynamics are not only supplier-driven, but also customer-driven. Concepts such as «Open Innovation» take into account that in a world of widely distributed knowledge companies cannot afford to rely entirely on their own research, but should instead interact with other agents and communities to exchange ideas. Consumer participation (i.e. lead users) and open collaboration are gaining in importance and foster innovation. More than ever, SMEs depend on networks, formal and informal linkages in and beyond their home region to unfold their full innovation potential. Not at least, ICT companies need more reliable regulations for intellectual property rights (IPR) in the context of collaborative product/service development and related processes within and beyond cluster boundaries.

Continuous innovation requires networks



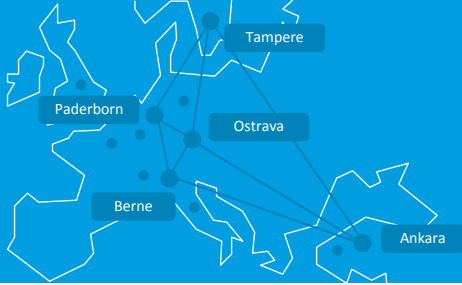
Accordingly, clusters' openness is closely related to individual companies' dynamic capabilities understood as their ability to introduce innovations in a relatively stable way over time. Cluster members are connected to other companies and institutions of the cluster through various exchange relations and mutual interdependencies. As a result, the individual companies and their innovative capabilities are affected by the actions and behaviour of other cluster members and, in turn, each individual enterprise and its actions affect the possibilities of other companies to make use of the knowledge.

As regards this reciprocal effect SMEs' absorptive capacity, defined as their ability to absorb, understand and exploit external knowledge, plays an important role and influences their innovative capacity. External knowledge, obtained through cluster-related linkages, provides stimuli for a company to change its focus and to reconfigure its resource base in order to keep up with competition. Enterprises that are able to change their network position may create a competitive advantage over other companies. A fixed position in the cluster might lead to diminishing newness of obtainable information and knowledge. In the course of cluster evolution the variety across companies is likely to decrease through long-lasting relationships between the cluster members. This in turn carries the risk of lock-in effects which again might result in a decay of innovation dynamics. Enterprises with a strong knowledge base and superior dynamic capabilities to create new products and services, and successful commercialisation strategies are attractive partners to link to. This, in turn, stimulates the further improvement of their capabilities which makes them even more attractive. Accordingly, it is assumed that companies' capabilities and clusters co-evolve. However, enterprises with less advanced capabilities might not have any interesting knowledge to offer for others, and thus, might not be attractive for co-operation.

Cluster organisations need to be aware of that fact, as the difference in absorptive capacity between companies determines the extent to which they can learn from each other and hence, the probability of co-operation. Moreover, members with inferior absorptive capacities run danger of remaining isolated from the clusters' knowledge base. Therefore, a major task of cluster organisation is to further companies' innovative capacities through networking and to balance the number of companies with superior and inferior absorptive capacities.

Absorptive capacity as success factor

Absorptive capacity determines probability of co-operation



Due to uncertainty and the tacit character of knowledge geographic proximity is especially relevant for knowledge exchange between companies in emergent and growing clusters. However, in mature clusters outward linkages are gaining in importance in sustaining companies' innovative capacity. In stable networks, companies' competences will become more similar and knowledge codified leading to a decrease in opportunities for future learning. Furthermore, companies might get locked in established ways of thinking and innovative activity may decline.

As was outlined earlier in this report, internationalisation is central to avoid lock-ins and to further companies' innovation capacities. As was highlighted in the final report «Supporting the internationalisation of SMEs» by the Expert Group the overall objective of SMEs' internationalisation is growth. However, other drivers to internationalisation are “[...] access to know-how and technology, increased efficiency and economics of scale, increased competence by entering difficult markets, exploiting advantage of leading edge technology, which are closely related to innovation.” The main factors hindering SMEs' internationalisation are related to three areas:

1. Insufficient managerial time and/or skills required for internationalisation
2. Lack of financial resources
3. Lack of knowledge of foreign markets, which is mostly a consequence of the previous two aspects

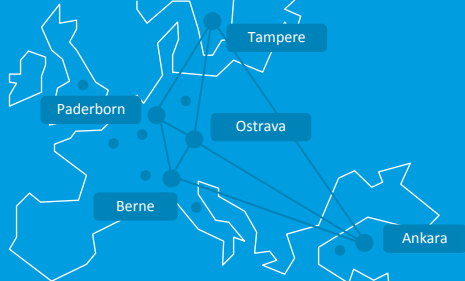
Accordingly, successful and sustainable internationalisation requires a related strategy and the acquisition of the necessary capacities, abilities and resources prior to the first step of internationalisation. Management skills and long-term availability of human resources in order to develop an internationalisation strategy without compromising the day-to-day business is crucial.

Example

Based on our experiences in NICE, international business matchmaking is a suitable instrument to support SMEs in their internationalisation activities and to bring new knowledge into the cluster. Getting involved in a trans-national

Hindering factor in SMEs' internationalisation efforts

Matchmaking as instrument to further SMEs innovative capacity



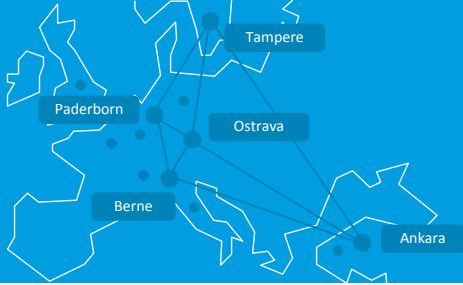
entrepreneurial dialogue to exchange ideas, and to discuss technological and market trends offers the opportunity to enter new paths of thinking and thus, fosters SMEs' innovation capacity. As the following figure illustrates the matchmaking concept combines company presentations with site visits and pre-arranged one-2-one meetings.



Figure 10: Business Matchmaking Framework

Participating companies welcomed the open and honest atmosphere during the matchmaking events which paved the way for future joint business activities. A good example in relation to innovation is a joint project between STAGEx, a Paderborn-based business solution provider and AXSionics AG, a Berne-based secure e-access solution provider. The co-operation objectives can be summarised as follows: STAGEx delivers web-based databases for business case management. In times of online fraud caused by identity theft, e-security is a major selling argument. Thus, STAGEx was searching for security solutions which could be integrated in their business case management system. Such

The case of product integration



solutions had to combine specific criteria, such as transmission speed and practicability at an affordable price with maximum security. In return, AXSionis was seeking a business application for their e-security solution in which the advantages of their biometric passport system could be presented to clients. Both partners benefit from the co-operation. The «new» integrated solution is highly interesting to STAGEx customers because the integration of biometric authentication and web-based business case management is unique. In turn, AXSionics can now demonstrate its biometric passport under real time conditions. Through the joint development project both partners were able to strengthen their individual brands and thus, their competitive advantage.

What to do?

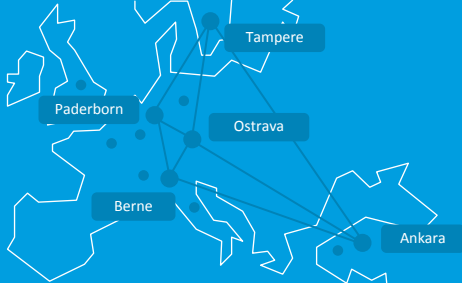
A cluster's impact on regional economic development is largely determined by the innovation capacity of its members. In turn, the ability to acquire and use knowledge – the absorptive capacity – is fundamental to SMEs' innovative capacity.

Although cluster management organisations cannot directly influence their members innovation capacities they can develop support mechanisms and services which might positively impact companies' capacities. These services could also be employed in relation to capacity building and in access to foreign markets. For example, the quality and intensity of network interactions within and beyond the cluster, with customers, distributors and suppliers and research organisations is typically associated with better performance. Accordingly, cluster management organisations should support SMEs to strengthen these links through matchmaking, cross-clustering and in their role as «boundary spanners».

In addition, companies' innovation capacity can be improved by highly qualified workforces. Cluster management organisations need to be aware that clusters in Europe cannot rely merely on the natural forces of agglomeration to attract talent and other assets to foster SMEs' innovations capacities. However, by creating stronger linkages with clusters which offer complementary strength, clusters might be able to compensate for some of these disadvantages. Furthermore, cluster co-operation can contribute to the implementation of a

*Support SMEs to further
knowledge exchange*

*Attracting talent to foster
SMEs innovation capacity*



shared vision of research agendas in Europe. This in turn, will improve the innovation capacity as many SMEs are not able to invest in basic research necessary for standardisation.

Additionally, as intellectual assets, such as human, relational and structural capital, are critical to the success of innovation, it is important that companies are able to distribute and maintain the newly generated knowledge within the company. This is associated with the pivotal question of how SMEs manage their intellectual assets. Although the use of formal intellectual property protection is in general rather low among SMEs, and especially in the ICT sector, these companies make use of many different types of informal protection methods such as confidentiality, trade secret, task division or rotation, and so on. These practices are not sufficient within their current state and need further improvement. By establishing a co-operation framework – as was outlined in the previous chapter – the risk of misused intellectual assets can be reduced.

Intellectual property rights

Recommendations

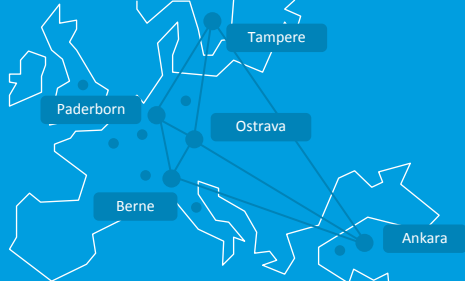
1

Cluster Management

To develop support mechanisms one must consider the barriers that impede or restrain innovations in SMEs and the drivers that further companies' innovation capacities. Support services should focus on promoting managerial skills, furthering the creation of trans-national networks and bridging the knowledge and financial gap.

In this context a closer co-operation between incubators and clusters and venture capitalists might be valuable. Clusters, for example, can offer access to knowledge, lead users etc., and to innovative SMEs with high growth potential. Moreover, incubators could utilise cluster member's expertise as regards markets and technology trends, in their daily work with new ventures and spin-offs.

Develop a framework for mentoring of SMEs by other SMEs, training and graduate programmes.



2

National Policies

Develop policies that foster entrepreneurship, because innovation performance and entrepreneurship are positive correlated.

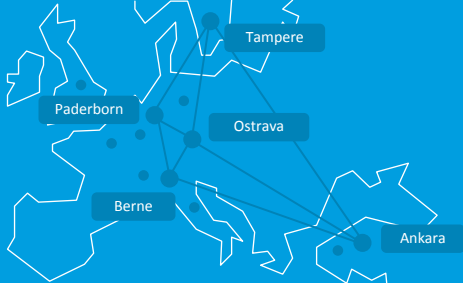
New policies need to be developed that account for the improvement of SMEs' intellectual assets management and networking. Redesign innovation policies which address SMEs in their regional context.

3

European Policies

Augment SMEs' involvement in research projects as they can help companies to develop new product and services and improve existing ones.

Provide technology platforms that will link SMEs with support organisations including government and public sector agencies, professional innovation agencies such as universities and research centres, and investors who are able to enhance SMEs' innovation capacity.



1.8 Strategic Options & Alternatives

Consistent implementation of cluster policies fosters regional disparities, as regions without clustering potential fall behind.

Problem

Clusters are a key element in sustaining Europe's innovation dynamics. The concept offers a realistic chance to strengthen the innovative capacity of companies and regions, and to renew the European industrial system in a dynamic and innovative manner. Although many regions in Europe make use of the concept, the spread of clusters in space does not occur naturally. On the contrary, clusters are concentrations of economic functions and competencies, clusters, and are innovative nodes in a global economy. The cluster concept has achieved remarkable breakthrough, but its widespread adoption both in Europe and the rest of the world, is as much a challenge as it is a success story. Concerns have emerged recently about the content and quality of some of the cluster initiatives. Given the prevalence of the concept, these concerns could have a significant impact on the value of clusters and their contribution to regional economic development.

Not every region in Europe possesses clustering potential. Therefore, cluster policy may not be an appropriate choice for an economic development instrument in any particular region. This prompts the question, how can regions without clusters stimulate the economic development necessary to achieve a competitive advantage?

In our view, a sophisticated policy framework is required which sets the stage for various innovation strategies. We call such concept «Innovative Space» (see figure 11). In this concept clusters are one opportunity to stimulate economic development, but alternatives exist which might fit better to regions without clustering potential.

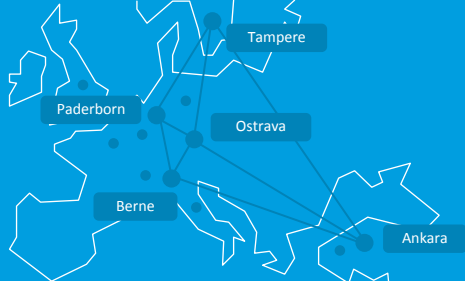
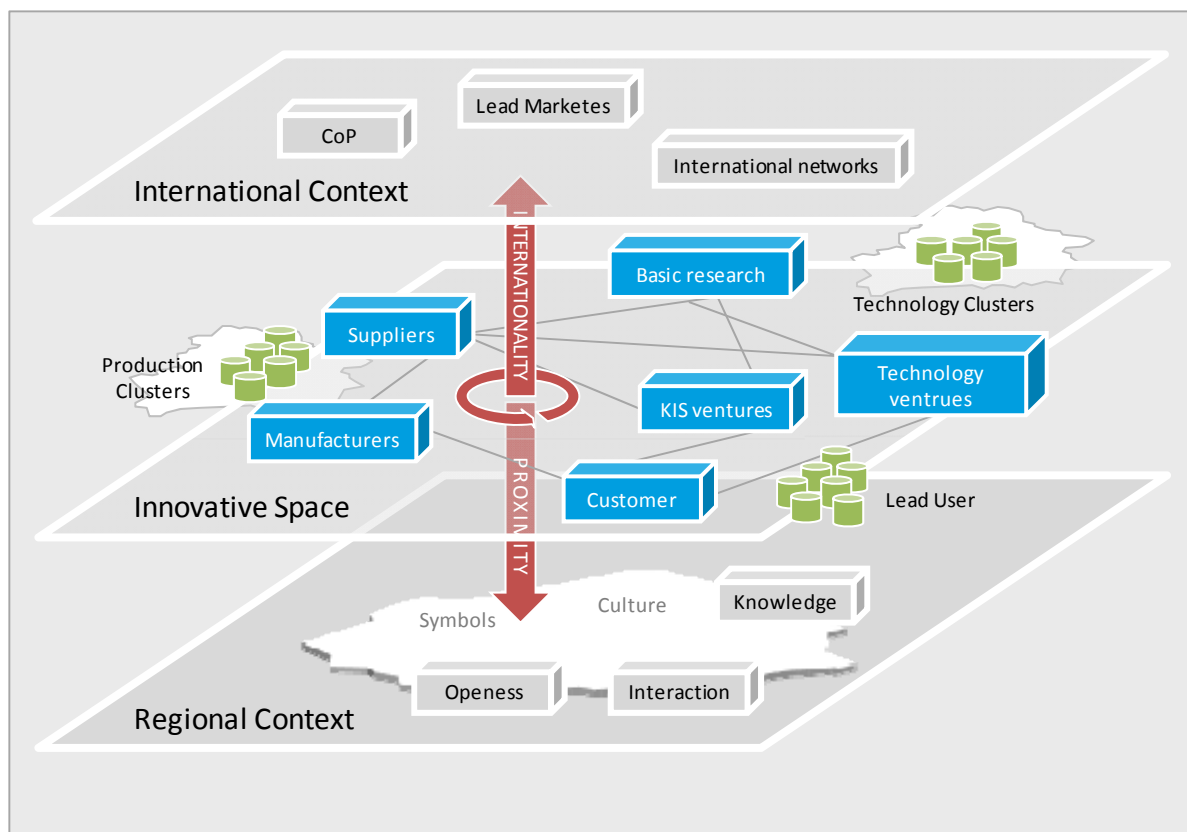
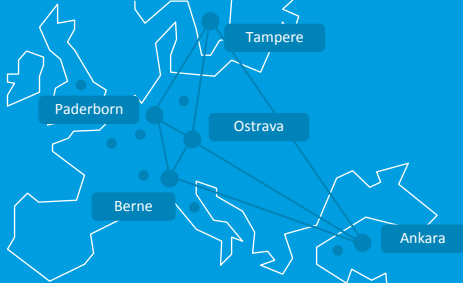


Figure 11: Innovative Spaces



The basic idea of our approach is to start with thinking of innovation rather than of regions. This offers regions more options in finding their position in an innovative and competitive Europe. Of course, in some regions one may find clusters (e.g. technology, service or production clusters) or even «world-class» clusters, which function as seed beds of innovation. Other innovation hubs can evolve in regions which function as lead users for innovation, especially in the fields of environmental and infrastructure innovation.



Overall, four important factors can be identified which influence regions' innovativeness:

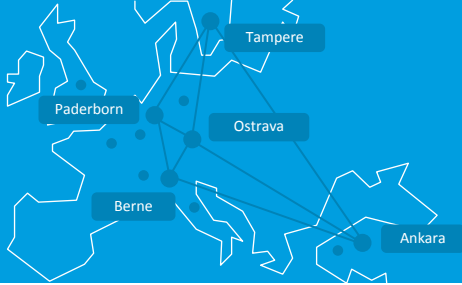
- The technical and business competencies existing in a region;
- The region's socio-cultural context which facilitates learning, and thereby innovations;
- The region's dependency on sectors with relatively high reliance on tacit knowledge and/or the degree to which regional actors trust each other;
- The ability of public-private actors to coordinate networks and assets towards innovative activities.

As was outlined in this report, openness and innovation are closely related in today's networked world. This applies likewise to cluster regions and those without. The cluster approach illustrates that an open and innovative context or milieu is important. Knowledge sharing and learning, competencies and networking, openness and face-to-face-contacts, symbols for innovation such as architecture or success stories, are important assets. Regions without clusters or clustering potential should develop these assets and related strategies to further their innovation capacities rather than trying to imitate successful cluster regions. Quality of life and political processes or culture are examples for other innovation areas. Regions and decision makers need to be aware that different opportunities exist and that the appropriate strategy is a matter of the regional specificities.

To date, little is known about successful innovative regions without clusters. Therefore, we recommend that different approaches to innovative region pathways should be worked out at all policy levels. This requires a broader understanding of innovation which is not limited to economic innovation, but also considers non-economic and non-technological innovations. In accordance with this, funding of regional development should not be limited to clusters.

Conclusions





In conclusion, clusters are important drivers of innovation and contribute to the competitiveness and sustainable development of European industry and services, and boost the economic development of EU regions. However, to make clusters a viable instrument for regional development we do not need more, but better cluster policies. These policies need to take into account regional distinctions and provide leeway for alternative strategies to fully unfold the competitiveness of regions and companies through improved innovation capacities. Regarding the way ahead we identified three main challenges:

1___ *A European Cluster Policy Framework*

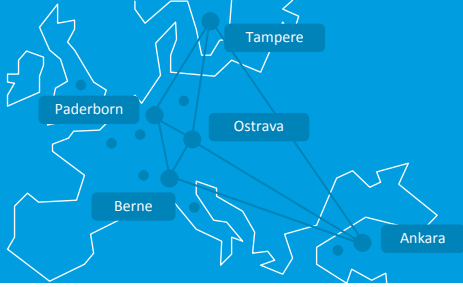
To further improve cluster policies in Europe which aims at a higher level of efficiency, policy dialogue as well as policy design and implementation, need to be intensified. A joint European cluster policy framework, which combines growth and cohesion objectives, takes into account regional distinctions and promotes a clear division of labour between different policy levels could serve as a reliable frame of reference for future cluster policy design and implementation.

2___ *Excellence*

As has been outlined in this report, there is not a general lack of clusters in Europe but there is a lack of globally competitive that is, excellent clusters. Aiming at «world-class» clusters requires quality criteria in relation to interactions, scope and impact, and standardisation in cluster management. Both, standardisation and quality criteria require further improvement.

3___ *Valorisation*

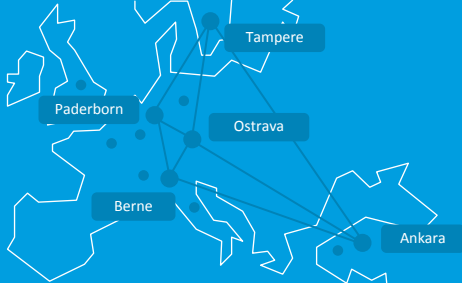
Overall, the significant efforts undertaken by the Commission with initiatives such as Europe INNOVA and Pro INNO Europe have resulted in good progress in promoting clusters' trans-national co-operation and to awareness rising in less advanced cluster regions. In order to prevent excessive investments or duplication of cluster management practice and instruments, a better valorisation of the insights gained and the tools developed is required. This calls for a European



information service on clusters which not only captures clusters and cluster organisation, but also business opportunities related to clustering and international networking. Regional decision makers should not try to imitate other regions, but should combine the information available from such platforms with existing, cumulated cluster know-how in the region, in order to create new possibilities for advanced cluster concepts.

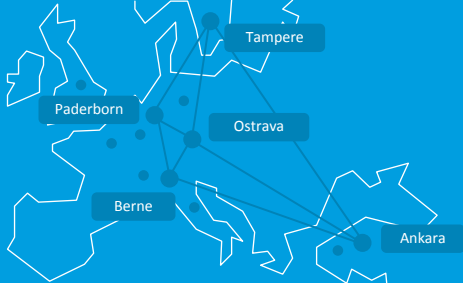
As the experiences in NICE and other Europe INNOVA projects have show, commitment and enthusiasm of the partners involved provided opportunities to develop common initiatives, and to contribute to the opening of new routes for trans-national cluster co-operation and entrepreneurial networking. Addressing the aforementioned challenges will further this positive development. This requires however, an acceptance of global thinking by policymakers, cluster managers and entrepreneurs.

*Global thinking, a prerequisite
for excellent clusters*



References

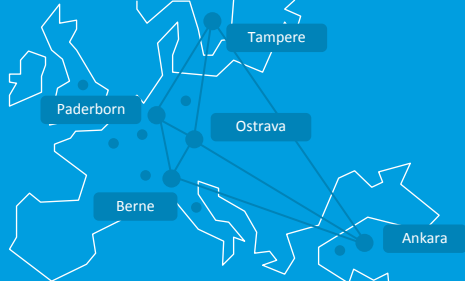
- European Commission (2007a):** Supporting the internationalisation of SMEs. European Commission, Enterprise and Industry Directorate-General, Final Report of the Expert Group, December 2007.
- European Commission (2007b):** Innovation Clusters in Europe: A statistical analysis and overview of current policy support. Europe INNOVA / Pro INNO Europe paper No 5, Directorate-General Enterprise and Industry Report.
- European Commission (2006a):** Creating an Innovative Europe. Report of the Independent Expert Group on R&D and innovation appointed following the Hampton Court Summit and chaired by Mr. Esko Aho (EUR 22005), January 2006, Luxembourg: Office for Official Publications of the European Communities.
- European Commission (2006b):** 2006 Innobarometer on Cluster's Role in facilitating Innovation in Europe. Analytic Report, July 2006, Flash Eurobarometer 187 – The Gallup Organization, survey requested by the Directorate-General for Enterprise and Industry.
- Hafner-Zimmermann, S. (2008):** Strategic Policy Intelligence for Regional Decision Making. The European Foresight Monitoring Network, Foresight Brief No. 122.
- Menzel, M.-P./ Fornahl, D. (2007):** Cluster Life Cycles – Dimensions and Rationales of Cluster Development. Jena Economic Research Papers No. 2007 – 076.
- McKinsey (2001):** Effective Capacity Building in Nonprofit Organizations. Report prepared for Venture Philanthropy Partners.
- OECD (2006):** Final background report on the OECD-APEC joint project on «Removing barriers to SMEs access to international markets», OECD-APEC Global Conference, 6-8 November 2006, Athens, Greece.
- Reding, V. (2006):** ICT are new opportunities for social inclusion, participation, business, growth and jobs in the EU and China; speech held at the China Europe International Business School (CEIBS), Shanghai, 16th January 2006.
- Rehfeld, D. (2007):** Theoretische Fundierung und Grenzen der Ausgestaltung einer wachstumsorientierten Clusterpolitik. In: Pohle, Hans (Hrsg.): Netzwerke und Cluster - neue Chancen für Regionen. Rostock: Univ., Wirtschafts- und sozialwissenschaftliche Fakten, 97-136
- Sölvell, O. (2008):** Clusters – Balancing Evolutionary and Constructive Forces. Stockholm: Ivory Tower Publishing, www.cluster-research.org
- ter Wal, A./ Boschma, R. A. (2007):** Co-evolution of firms, industries and networks in space. Papers in Evolutionary Economic Geography, No. 07.07



[Terstriep, J. \(2008\)](#): Cluster Management – Status Quo & Perspektiven. In: Institut Arbeit und Technik, Jahrbuch 2007, 60-70.

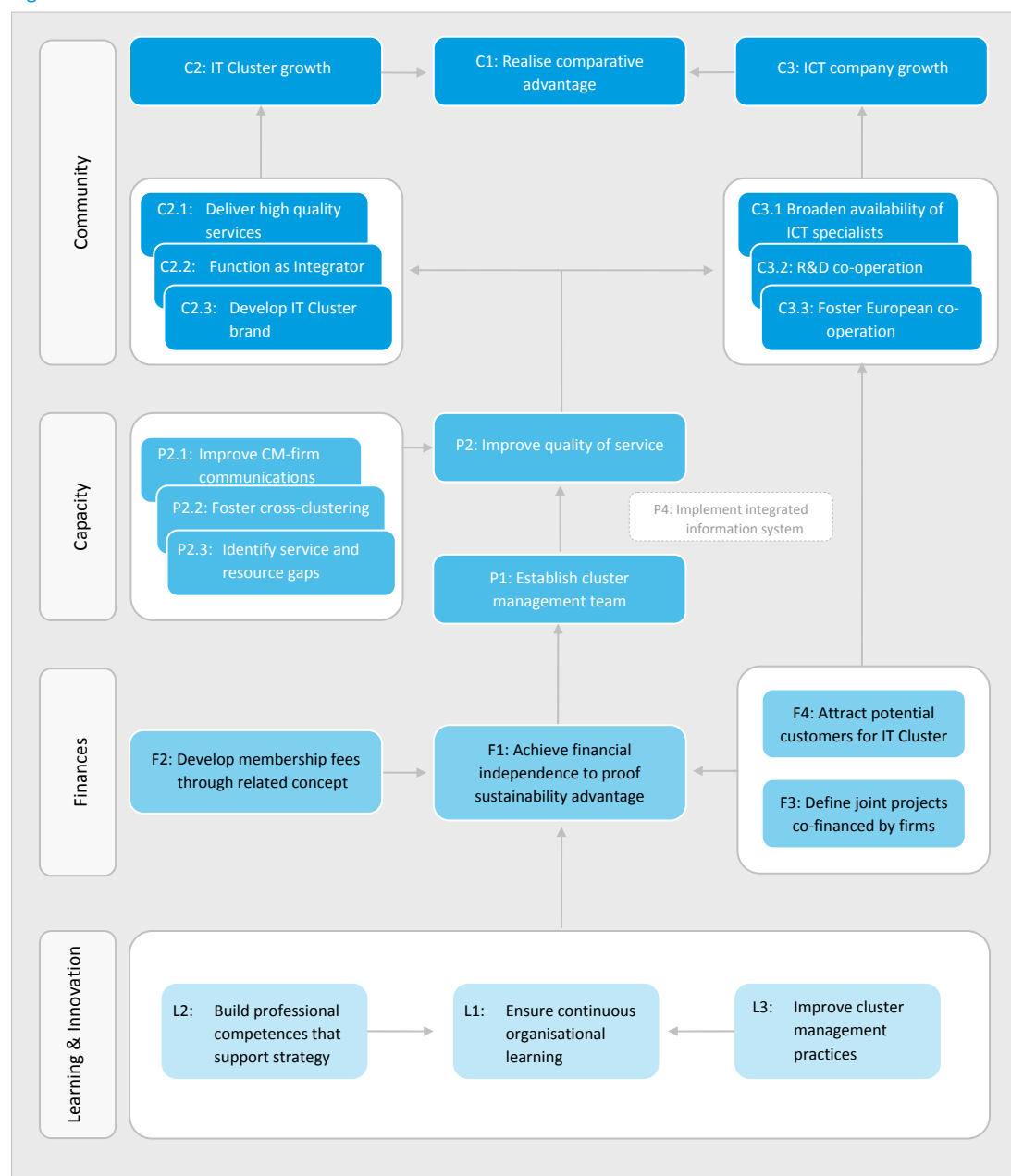
[Terstriep, J. \(2007\)](#): Balance Scorecard – Measuring Cluster Management Performance. Project report prepared for the European Commission, Directorate-General Enterprise and Industry.

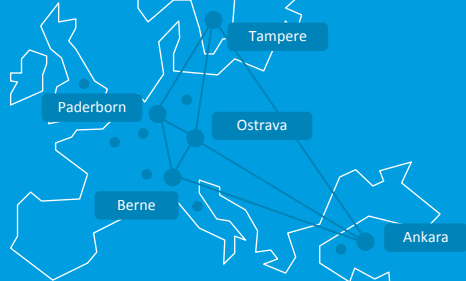
[Terstriep, J. \(2006\)](#): Comparative Cluster Analysis: Five ICT Regions in Europe. Project report prepared for the European Commission, Directorate-General Enterprise and Industry.



Appendix I – Balanced Scorecard

Figure 12: Balanced Scorecard IT Cluster Ostrava





Appendix II – The Knowledge Map of Cluster Management

