



WHITE PAPER

**THE EMERGING OF EUROPEAN
WORLD-CLASS CLUSTERS**

***“We are here for a common endeavour, not to
negotiate for our own benefit, but to try to find
our benefit in the common benefit of all”***

Jean Monnet

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The two thousand European clusters are highly heterogeneous. Some of them can be described as ecosystems, that is, as geographic concentrations of businesses and research centres in a particular field of activity – we may call these "area clusters". They have the ability to generate innovation and need to be monitored by the higher end of the value chain (infrastructures, cooperation tools, financial tools, etc.). The others are more like alliances of businesses and research centres coordinated by a management team, with the goal to set up a complete value chain in a growth market – they may be called "power clusters". They have the capacity to work out and implement a strategic vision and need to be monitored by the lower end of the chain, i.e. by the market and customer services.

The emergence of world-class European clusters lies in the art of reconciling and superimposing these two approaches so as to meet challenges appearing on a global scale.

EXECUTIVE
SUMMARY**Three key challenges**

- Stepping onto the world stage

Considering that globalisation brings about the fragmentation of value chains, clusters need to be able to project themselves onto the world stage by equipping themselves with a strong enough strategic vision to allow them to construct their own value chains by finding a position on high value-added growth markets. This is particularly the case for those overlapping several fields, such as sustainable transport, nanotechnologies, new materials, optronics, green technologies, creative industries, and more generally, service-oriented markets.

- Internal consolidation

Considering this necessity to find a place on the global stage, clusters need to strengthen their "inner core". This involves following the principle of the triangle of knowledge and ensuring true interaction between the innovation process (from the original idea down to the patent), the prior-to-marketing processes (from prototype to design) and the production process (from manufacturing to market launch). The quality of these internal dynamics is what will make the cluster into something greater than the sum of its parts which, which clusters will become industrial players in their own right, combining high regional attractiveness with competitiveness on the world stage.

- Capitalise on the European potential

Considering this dual necessity of both a global strategy and internal consolidation, European clusters, faced with the formidable competition from emerging countries, need to come together; to forge alliances, to switch from a culture of exchange (such as sharing experiences) to a culture of cooperation (e.g. creating temporary consortia over the period of a programme) and finally to a culture of community (e.g. setting up permanent consortia of three or four clusters complementing one another in the value chain and equipped with a joint management team and a common strategy). This is a road towards the emergence and development of European world-class clusters.

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Towards a European Pact for Clusters

- The need for European coordination

27 member states, 27 different cluster policies, not to mention policies implemented at regional or local levels. The cost of this fragmentation represents "the cost of non-Europe". Clusters are well aware of how such fragmentation hampers the emergence of alliances and cooperation between European clusters aiming towards the achievement of world-class status. This is why real cluster policy coordination needs to be carried out by the European Commission, Parliament and Member States on the basis of the future Europe 2020 programme, thereby enabling clusters to become the central actors of a new European industrial policy.

- Concrete proposals

Hand-in-hand with cluster policy coordination, we propose a number of measures to improve and complement the range of technical and financial tools which will enable the implementation of this globally oriented European strategy: a one-stop shop for all segments of the clusters' value chain, an integrated programme for productive and regional innovation, a tool box for integration, an EU "Single Fund" for the Emergence of European Value Chains, and finally, the acknowledgement of clusters as players in their own right in many of the Commission's and Member States' programmes.

These measures could be brought together under the heading of a "European Pact for Clusters".

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Let it be clear: a reflection on European world-class clusters is also a reflection on a world-class Europe.

Looking at the problem in a purely introspective way, the task may seem impossible. Within Europe, there is nothing but fragmentation – a 27-piece jigsaw puzzle, 27 government policies for research and innovation, 27 cluster policies, not to mention policies implemented at local or regional level. Besides, there are two thousand clusters – half of which have a real management structure – and not counting the many informal clusters.

We only need to take a quick look, outside Europe, at the world stage, and without great psychic powers we can see the emergence of formidable global competitors – Brazil, India and China, whose explicit strategy is to become the world's laboratory.

This is why the emerging of European world-class clusters has become a categorical imperative.

The reflection process initiated by the European Commission on the "Europe 2020" strategy is very welcome: although it is necessary to perfect the Single Market to strengthen ourselves internally, it is increasingly essential, for the future

of Europe in a globalised world, to create a common strategic area so as to project ourselves outwardly.

Europe can no longer be content with being a mere single market. It must become a strategic area – a strategic area for a new industrial policy based on the knowledge economy.

Europe's two thousand clusters can and should be the main actors of this new European industrial policy. There are many reasons for this:

- Some clusters tend to be geographic entities, eco-systems, pools of competencies where, in a particular area, productive interactions arise between the different components of the triple helix: universities, research, business. Such "area clusters" will increasingly turn into the regional anchor points in the globalised world, and may even acquire a relocation dynamics of their own.
- The others tend to be real "virtual companies", with a full value chain, provided that their management teams have equipped themselves with a capacity for strategic monitoring, enabling them to act as true integrators and facilitate the emerging of business clusters, mostly made up of SMEs, which together will act as European spearheads on world markets. These "power clusters" will be Europe's commercial launching pads for the rest of the world.

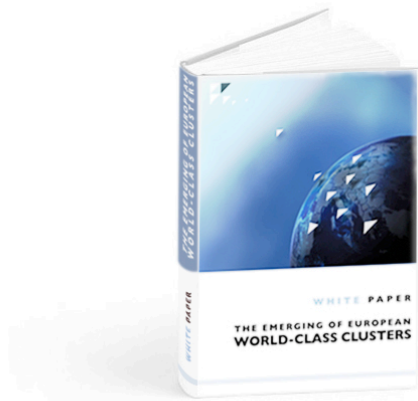
However, the emerging of world-class clusters is likely to be the result of a harmonious combination of these two types of clusters.

This White Book can be viewed as a call for volunteers among European clusters, urging them to become the fully-fledged actors of a world-class Europe.

François-Xavier Level
President, Europa InterCluster

FOREWORD

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WHY THIS WHITE PAPER?

The Communication of the European Commission of 10 November 2008, "Towards World-Class Clusters" was no doubt an "invitation to action". A number of European clusters immediately took up the issue, which lies at the heart of what they stand for. Many questions arose, expressing hope, but also fear: What is a world-class cluster? What strategy can bring one into existence? Go-it-alone or forge alliances? What tools will be required? What should the goal be? How many such clusters will there be? Will a certification label be created? Will world-class clusters have exclusive access to specific programmes or financial tools? Will it mean that most clusters will be left behind?

All these questions have been put forward very eagerly, particularly during the InterCluster 2008 event which took place in Paris on 17 and 18 November 2008 under the aegis of the French Presidency of the EU. Danuta Hübner, Regional Policy Commissioner, stressed the importance of cooperation between clusters to create world-class clusters. Jens Baganz, member of the government of North Rhine-Westphalia, made a comparison with the Airbus approach. During round-table discussions, cluster managers tackled the issue from various angles, based on their own experience.

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Some of our members – clusters in various fields based all over Europe – put forth the idea of pooling all these thoughts and ideas, bringing them into a coherent whole and identifying some guiding principles. This would take the form of a White Paper.

To meet this request and to enable these clusters to have their voices heard, Europa InterCluster put together a central core of cluster leaders and partners in May 2009 to define the paper's outline, structure and method. The group included Gerd Meier zu Köcker, Director of Kompetenznetze Deutschland, Germany's cluster network, Christian Saublens, Director of EURADA, the European association of regional development agencies, Dominique Vernay, President of System@tic cluster and in charge of the informal group of France's 17 world-class clusters¹, Klas Svensson from Tillväxtverket the Swedish Agency for Economic and Regional Growth, which brings together clusters from two national programmes, Nicholas Szechenyi, as Co-President of the Federation of Hungarian Clusters.

Various methods were used, such as: direct consultation with clusters, setting up – as in France – a focus group of about ten clusters, contributions made at colloquia and other events, internet chats.

InterCluster 2009 was held in Brussels on 3 and 4 December. It was an opportunity to put a number of questions to the one hundred clusters present in the context of a "world café", which proved highly productive, particularly following the contribution of Martin Schuurmans, President of the European Institute for Innovation and Technology, on the subject of world-class clusters. Furthermore, exchanges took place with the leaders of the European Cluster Alliance and partners from the European Cluster Excellence Initiative, launched by the European Commission.

During the first quarter of 2010, Europa InterCluster was able to gather opinions and start putting to paper the reflections and advice. In the middle of April, a first draft was the object of a final consultation before publication.

The White Paper is therefore the fruit of a process which has lasted about 18 months and will continue until December 2010, as will still go through another consultation stage, mainly online. The goal is to fine-tune the actual proposals to produce a roadmap which will hopefully be a significant contribution, particularly for the Hungarian Presidency in the first semester of 2011.

¹ "Pôles de compétitivité mondiaux" or "Pôles de compétitivité à vocation mondiale"

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CHAPTER

WHAT IS A
WORLD-CLASS CLUSTER?

An aerial photograph of a city cluster, showing a mix of urban development, green spaces, and water bodies. The image is overlaid with a semi-transparent green rectangle that contains the chapter title and the main question.

1.1

Significance and limits of the definition of a world-class cluster

A working frame-word for a multifaceted concept

For some, a cluster is a matter of observation: it is an ecosystem with a particular mix of innovation activities brought about by the proximity of businesses, research centres, universities, as in the cases of Silicon Valley or Cambridge. This can be referred to as an area cluster. For others, a cluster is a matter of action: it is the fruit of a pro-active endeavour, either initiated by public authorities, or the result of local initiatives, which aims at eliciting cooperation between its members (businesses, universities, research centres), with the goal of promoting innovation. This may be referred to as a power cluster¹.

Distinctions in order to avoid confusion

Confusions and misunderstandings are frequent whenever the word "cluster" is mentioned. When the European Cluster Observatory refers to 2000 clusters currently existing in Europe, it should be clear that these clusters were not all cast in the same mould. About one thousand of these have an actual management team² i.e. a representative

structure with an executive, or more specifically, an administration board representing the different types of members and a coordination team. Such a governing body, as the brain of the cluster, equips itself with a strategy and a road-map, making the cluster a power cluster, i.e. with the power to project itself onto a large field of activity, which may be the world stage. The remaining one thousand are various forms of ecosystems: technopoles, business areas, science parks, education and research parks, etc., i.e. areas where productive inter-relations may develop between the three corners of the triangle of knowledge – research, training, innovation – without the existence of a management structure, even though dominant players may frequently appear, such as universities or large multinational companies. Of course, both types of clusters may be superimposed, or even merged, and we would even suggest that the attainment of world-class status may arise from the art of superimposing these two dimensions.

There are about 2000 clusters in Europe, of which 1000 are power clusters and 1000 area clusters

A static or dynamic approach?

While the concept of **cluster** is manifold, a "world-class cluster" is in many ways a foggy and imprecise concept. On the one hand it may be a static description using a number of criteria, which could define the requirements to qualify for a specific certification granted by some official body, and even possibly serve as the basis of a specific government policy with certain associated benefits and reserved funding. On the other hand, it may be an ideal to strive towards, and dynamics to set in motion, which is within the reach of every single cluster, as long as they play a part in the appropriate strategy.

The latter interpretation is to be understood as the basis for the thinking and proposals put forward in this White Paper.

¹ Commonly known as cluster initiative

² Commonly known as cluster organisation

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1.1.1

The world-class cluster at the junction of the local and the global

The world-class cluster as a “power cluster” rooted in an “area cluster”

The common ground between both these approaches lies in the way they enable an effective combination of the three corners of the triangle of knowledge – education, research, innovation – and facilitate the emergence of communities of knowledge and innovation. For the area cluster, such a combination will be mainly geographical (based on physical proximity and the sharing of common platforms, etc.) and irrational (based on the mixing of people and ideas). For the power cluster, the combination will involve the rational construction of a production-oriented value chain. In a way, the power cluster may be considered paramount since it generates jobs, thereby contributing to the success of the area cluster. The power cluster would then be the tip of the area cluster iceberg.

*Area cluster and
power cluster, two
complementary
approaches*

The area cluster: how to construct a value chain of regional innovation

The creation or development of an area cluster requires strategic monitoring from the upper end of the chain, i.e. by planning for the conditions that will make the emergence of the cluster possible, such as material infrastructure (transport, housing, community facilities, etc.) or cooperation tools (business incubators, innovation platforms, shared laboratories, etc.). Regional strategic intelligence will have to put its know-how into action to set up a value chain with strong interactions between its links, which calls for a multidisciplinary approach (architecture, urban planning, sociology, etc.) so as to promote the highest level of synergies between the various players.

The power cluster: how to construct a value chain of productive innovation

Such reconstruction by the lower end of value chains can turn clusters into real networks monitored by the “integrator” in the form of a governing structure or management team, with the vital assistance of VSEs/SMEs^{1,2}: bundles of services in high-potential areas may be conceived (sustainable cities, cultural industries, eco-transport, renewable energy, agriculture and nutrition, online health, etc.) which often requires searching for missing links, such as in complementary clusters in these value chains. Such cooperation between complementary clusters, such future “European clusters”, will, by their very existence, represent a decisive strategic asset in global competition. Web technologies may be a wonderful catalyst for accelerated growth as well as for value creation.

¹ “participation in global value chains strengthens the stability of SMEs”, in “*Staying Competitive in the Global Economy: Moving up the Value Chain*”, OECD 2007

² “VSEs/SMEs need to increase participation in creating the value chain of cooperation, acquire a real culture of exchange, develop a cooperative approach through practice and not shy away from taking part in a real transnational community culture. This is what we have learnt while working in Cluster WEST, and therefore intend to participate actively and make a contribution in a spirit of solidarity, so as to be competitive European players in a globalised knowledge economy.” (See weekly newsletter of Cluster WEST “*Made in West*”, n° 208, 1st February 2010)

1.1.2

Complementarities of the two types of cluster: area cluster, power cluster

The risks of confusion

The lack of a clear distinction in cluster typology may have dire consequences, as was recently pointed out by the Mission for Evaluation and Control of competitiveness clusters in France: "Competitiveness cluster policy lies at the junction between two objectives which may seem difficult to reconcile. It swings between on the one hand a focus on competitiveness, which requires searching for competencies in the entire country so as to integrate them into clusters selected for their scientific excellence, and a geographical focus on the other hand, aiming at preserving regional balance by designating a large number of clusters spread out over the country"¹. The composition of the management teams of some clusters is a perfect reflection of this duality.

Create a value-chain of regional innovation operating in unison with a value chain of productive innovation

De facto complementarities

This distinction between the two types of cluster may seem artificial and in some respects, it is so. However, its advantage is to serve as a working framework showing how European clusters lie somewhere between these two opposite ends, approximating the form either of an area cluster

or of a power cluster. The European cluster profile is therefore highly diversified. At the one end, we find clusters which are basically areas made more attractive by the presence, on a restricted area, of high-technology companies, of research centres and universities, including a "network head" in the form of a university, a technology transfer centre, or a group of businesses; regulation is informal. At the other end, we find clusters particularly in the form of networks structured by a very formal management system, with a thoroughly thought-out strategy and a clearly sign-posted roadmap, even if they directly benefit from the ecosystem where they are based.

Taking advantage of complementarities

This distinction may also serve as a real roadmap for clusters: those clusters as areas full of activity may benefit from being given a "good head", and vice-versa. This can occur by closely combining a focus on attractiveness with one on competitiveness, a policy for town and country planning and local development with an industry-oriented innovation policy. The recent evolution of Silicon Valley clearly shows the growing endeavour to return to endogenous regional development, which even includes a desire to relocate those productive activities of innovation which themselves generate innovation.² Furthermore, it has been observed that cognitive services, which are part and parcel of the make-up of clusters, are the services most deeply rooted in their regions, as opposed to so-called volatile activities such as IT maintenance or outsourced office services.³ The convergence point of the area cluster and the power cluster is a real goldmine to be exploited if we wish to reach world-class status.

¹ Information report of the French National Assembly, as the conclusion of the Mission for Evaluation and Control (MEC) regarding the prospects of competitiveness clusters – September 2009

² "Innovation in high-technology industries requires interaction between two activities: the innovation process (from the original idea to the patent via the R&D stage) and production (from manufacturing production to market launch). Regular interactions need to be promoted so as to respond to market needs optimally. In the long run, an economy lacking infrastructure and engineering processes would lose its capacity to innovate." "Restoring American Competitiveness", Gary P. Pisano and Willy C. Shih, *Harvard Business reviews*, July-August 2009

³ E.M. Mouhoud, edited by (2009), *Economie des services et développement des territoires. Un levier pour la réduction des vulnérabilités, Rapport de prospective de la DATAR (Service Economy and Regional Development. A Lever for Reduction of Vulnerabilities. Prospective Report of the DATAR)*, series "Travaux", La Documentation Française

1.2

Scope and limits of government/EU policies

Scope of government policies

The distinction is not neutral in terms of government policies. If we favour the area cluster concept, we are clearly within a macro-economic approach focused on strengthening competition as the generator of innovation. If we favour the power cluster concept, then we are in a micro-economic approach focused on strengthening an industrial strategy. If we favour the axis "area cluster-market-competition", we are viewing ourselves as operating in a global market, where such distinctions as Europe, international, globalisation, fall away, as Europe is only a part of the world market. If we favour the axis "power cluster-equipped-with-a-strategic-vision", then we are placing ourselves within European limits in order to develop an international strategy for globalisation.

Government policies in the face of globalisation

We increasingly hear statements on the powerlessness of governments, as if there were a clash between two worlds – on the one hand, a hierarchical world where decisions move from top to bottom within the limits set by national or European borders, and on the other, the world of networks, where decisions are made and unmade in real time, irrespective of borders and distances. Cluster policies, whether at the national or the EU level, are therefore often in a difficult position to encourage cluster development without discouraging them, to release their dynamism without putting them in a straightjacket, or, in a nutshell, to find the right balance between a top-down and a bottom-up approach. These difficulties find particular expression in product certification processes.

Towards the renewal of a strategic approach

*Balance out
market forces
with a strategic
approach*

The launching of cluster development policies in most Member States who retain full competence in the area – and the Commission's own cluster policy whose remit remains one of influence or encouragement – create a favourable environment for the rehabilitation of the strategy. Over a time span of a few decades, the strategy had gradually lost ground to the market. The implementation process of the Single Market, the priority given to removing all obstacles to the smooth operation of the rules of competition, and the way the economic actors were considered as interchangeable units, did not make strategic intelligence a necessary part of the picture. In contrast, the launching of the knowledge economy, the acknowledgement of interactions between the different parts of the triple helix, and the need to recompose those value chains which globalisation tends to fragment, makes strategic culture a real competitive advantage.

1.2.1

Significance of coordinating European government policies

Significance of coordinating Member State policies

27 Member States, 27 cluster policies, not to mention policies implemented at regional or local levels. The cost of such fragmentation represents the "cost of non-Europe", which would be interesting to estimate precisely. Clusters do know how much this fragmentation puts a brake on all forms of inter-cluster cooperation: programmes aimed at clusters, financial tools, rules for implementation, time frames for processing applications, etc. are so diverse that it is almost impossible for clusters who wish to cooperate to reconcile schedules, procedures or criteria. And should some form of cooperation ever emerge, it would lack any transnational financial tools to support and develop the industrial project involved, whatever it may be. We are therefore faced with the prospect of developing intergovernmental coordination within a small group of countries aiming at thoroughly coordinating their cluster policies. A discussion has opened and it may find its place in the context of reinforced cooperation as specified in the Lisbon Treaty. This would allow for the development of an Airbus-style approach, with competencies being spread out on a transnational basis between a group of clusters, a coordinating structure for financial tools supporting emerging cluster projects, and a joint management structure focused on a strategy for conquest.

The significance of coordinating national government policies and EU policies

To make life more complicated, EU policies are added on to this fragmentation, or superimposed, i.e. they simply add more policies to the national ones rather than complement these. Of course, the Commission's programmes have shown an unquestionable motivating power, frequently with high added value in terms of innovation and an impact on transnational cooperation. However, the budgets involved amount to a tiny fraction (2 to 3%) of national innovation budgets, and soon reach their limits. Their trigger effect will therefore be all the more limited. In addition, it can hardly involve the use of European funds, apart from Structural Funds, which have often been quoted as being de facto "re-nationalised" and thereby "re-fragmented". We are faced with a considerable challenge for coordinating and yet a real gold-mine of added value.

The significance of coordinating competitiveness policy and innovation policy

The heart of the debate involves on the one hand, the pre-eminence of competitiveness policy as of right, as the only "truly European" policy, since it is a part of EU law, and on the other hand, innovation policy, which does not fall within the remit of the EU, but of Member States. Should any one of these happen to set up tools to boost the emergence of its clusters even in coordination with others, it would be prevented from going any further and, if need be, called to order by the rules of competition, which remain pre-eminent in the hierarchy of norms. A dissymmetry of competencies also favours competitiveness policy at the European level and at the expense of innovation policies, and thereby of clusters, at the national level. It all seems as if European competitiveness policy, designed for action within a globalised environment, actually prevents Member States from developing tools for their clusters which would enable them to implement strategies aiming at reaching world-class status. And this gives emerging countries full scope to forge a global strategy of their own!

1.2.2

Towards European World-Class Clusters

The beginning of a formidable competition

Although clusters are blossoming all over the world, it is clear that those already created or currently being created in emerging countries, such as India, China, Brazil, will grow rapidly, particularly due to the fact that they are among the very tools of the general strategies implemented in these countries. China's strategy for instance is to become the world's laboratory, and that is why it concentrates a large number of resources on about fifty clusters. Faced with this reconfiguration of the global landscape of innovation, a European response from Europe is necessary. But due to its fragmentation, Europe is still poorly equipped to weigh in on events.

World-class clusters "made in Europe"

Becoming aware of this formidable competition goes hand-in-hand with tackling the issue of strategic alliances. Furthermore, we need to recognise that one cluster acting alone is unlikely to have much weight on the international stage, at least for those that tend towards the power cluster type, as strategic alliances in this case is a categorical imperative. For those tending towards the area cluster type, such as Cambridge, the plateau of Saclay, Stockholm, etc, the overall strategies are different, and the question of alliances is dealt with on another level. Whatever the case, the "made in Europe" issue has become a most pressing question.

A Chart as opposed to a Label

Without giving up the definition of a world-class cluster, we must clearly avoid turning it into a formally defined status or a certified label, so as not to fetter the development of an attained state and to respect the various cluster concepts. The absence of such certification does however not prevent us from selecting a number of criteria as an assessment framework. The main objective of a Chart is to know precisely what we are talking about. Such a Chart should function rather as an assessment framework of a shared vision and project, or a control panel, particularly for the "designers" of government/EU policies. The Chart could reflect the recognition of a dual and complementary approach to clusters, i.e. area clusters versus power cluster, listing quantitative, qualitative, and – more importantly – developmental criteria. Generally, a "competitiveness cluster" or power cluster would be deemed likely to become a world-class cluster if, by maximising interactions with the local "competence cluster" or area cluster, it has managed to develop a strategy for conquest on a world-class market.

1.3

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An attempt to describe the main characteristics of world-class clusters

In order to avoid having different understandings of WCC (World-Class Clusters) in future discussions or to discuss WCC as a phantom, there is an increased demand coming from European leading clusters (that are interested to know more about WCC since they consider themselves as potential candidates for WCC) as well as from cluster policy makers, to better specify the term WCC.

Basically, there are two options on how to do so. One is to agree a harmonised definition of a WCC which is accepted by the majority of cluster practitioners and policy makers. This approach seems to be very difficult, since there is yet not even a common understanding about the cluster concept. The other option is to define specific criteria, which can be used to describe what is meant by a WCC and which requirements they should fulfil. The latter approach seems to be more practical since not everyone must agree with every single criteria, but it would help to specify the characteristic of WCCs.^{1&2}

¹ In this chapter a set of criteria is presented in order to better describe the nature of WCC and in order to stimulate a more specific discussion about them. This approach should contribute to gain a better understanding about WCC and what they should be. These criteria have jointly been developed in close cooperation with about 35 leading clusters from France, Germany and Sweden that have been intensively involved in this process. All of them are labelled in their respective countries as the most competitive clusters. This close involvement of those clusters guarantees a realistic bottom-up approach and avoids any top-down policy or scientific driven approach, which may not be according to the practice. Consequently, the clusters involved, all of them WCC candidates, strongly back this approach of characterising the nature of world-class cluster.

² The development of these criteria has been coordinated by Gerd Meier zu Köcker (managing director of Agency Competence Network Germany), with the help of Klas Sjöström (Tillväxtverket, Sweden) and Nicholas Szechenyi (Europa InterCluster's working group for French clusters and world-class "pôles de compétitivité").

The 15 criteria presented here should be, to some extent, understood as favourable conditions enabling the emerging of high performing clusters. These criteria are grouped into three main categories in order to better structure the assumptions and requirements. All three categories have an important impact on the development and performance of clusters, which, of course, may vary accordingly.

Framework Conditions (F)

- The framework surrounding the cluster's main actors is of importance for the cluster's potential to reach world class level. Relevant elements in this aspect are R&D and educational institutions of quality as well as a dynamic business climate when it comes to innovation policy and general regulation for start-ups, which together create an attractive environment for cluster development.

Cluster Actors (A)

- Clusters provide fertile eco-systems for firms to thrive, which drives innovation, regional development and competitiveness. The excellence of clusters depends, among others, also on the competitiveness of their main actors.

Cluster Organisation / Management (M)

- The strength and future prospects of a cluster are very much linked to the strengths and professionalism of the cluster management, which provides or channels specialised and customised business support services and added-values to the cluster members. Cluster management of high quality is therefore seen as essential to promote cluster excellence and is very characteristic for world-class clusters.

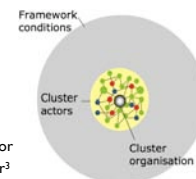


Figure 1: Three categories for describing world-class cluster³

³ Promoting Cluster Excellence - Measuring and Benchmarking the Quality, of Cluster Organisations and Performance of Clusters, G. Meier zu Köcker, J. Røstad (eds.), 2010, <http://www.clusterobservatory.eu/library/100184.pdf>

1.3.1

Criteria for cluster framework conditions:

WCC can be characterised by the following criteria focusing on framework conditions enabling the emerging of high performing clusters

1 / Quality of cluster sector relevant R&D

Rationale:

The R&D capacity connected to the cluster initiative is critical for a dynamic cooperation and the potential for renewal and innovations. The quality level of the R&D actor in comparison to other national and international actors must be considered very high. Nevertheless, the openness and willingness for cooperation among the R&D actors along with the relevance of the field of research is a success factor as crucial as the level of academic excellence. The R&D institutions at the local university often share the same views on industrial legacy as the cluster initiative, and consequently a common focus on certain fields of specialisation comes natural and is of value for both parts. On the other hand, this does not imply close collaboration with the local R&D actor as general principle. "Too" locally based initiatives run the risk of lock-in effects that impede compatible cluster development. With this in mind, the cluster organisation of WCC have a very good track record

in looking for R&D able to meet the direct demands of the business actors i.e. the ones with the most appropriate potentials for relevant R&D input - not necessarily the local university nor the most prestigious institutions and centres of excellence.

2 / Quality of the education in relevant fields

Rationale:

The interrelations between educational institutions/knowledge suppliers and the business actors within the cluster are important for competence creation and building of critical mass. The success of the cluster in this area is dependant on the process of policy making and creation of content and educational curricula on all levels of the educational system (Primary school – High school – University – Master programmes - Capacity building for adults). Naturally, if this process is based on a dynamic dialogue and related to the needs of the business community, the chance for relevant competence creation within a specific region is more likely. The cluster organisation can become a credible and thus valuable intermediate for a fruitful development of this kind. With a System@tic approach on this, a rewarding dialogue can be created in both the short and long term perspective – working on many levels of the system. However, empirical facts state that the cluster organisation does a better job in linking the needs rather than organising and conducting the actual educational programmes themselves.

Cluster organisations of WCC have a very good track record in looking for the knowledge providers meeting the direct demands of the business actors i.e. the ones with the most appropriate potentials for relevant knowledge delivery - not necessarily the most prestigious institutions and centres of excellence.

3 / Dynamics of creating new and innovative companies in the region

Rationale:

The role of legislation and the awareness among policy makers of the cluster as a tool for economic growth and innovation is important for the build up of a stronger business sector.

However, the cluster network itself can play an active role in supporting innovative processes and ideas that can result in spinoffs, competitive on a global market. Winning clusters usually have strong links to incubators and/or test lab environments for members to use in able to develop and test new products and services. Development platforms of this kind are key factors in establishing arenas for linking of competencies. Creative processes can take place when unique competencies are merged in an animated setting and hence help increase chances for innovative business ideas. In this environment, the cluster organisations of WCC offer a broad range of specific services and play the role of matchmaker between competencies and business areas. Nevertheless, it is worth to mention that the potential of cluster organisations to successfully support the creation of new companies strongly depend of the technological domain of the cluster. Of course, there are domains where entrepreneurship does not play any specific role. But there are others, like ICT, Biotechnology, etc. where cluster organisations of WCC can provide significant impact.

4 / Attractiveness of the region for high potentials and world-class researchers as well as for foreign investments

Rationale:

In order for the cluster to gain strength in relation to other world-class hubs, it is essential to profile the region as an attractive place for the most innovative business within the sector in question as well as for world-class researchers. In turn, the chances for powerful investors will increase with the capacity to create this attractive atmosphere. Only then, the region can achieve the critical mass essential for a cluster process to reach world class. In able to succeed, the image building has to be a common objective based on a comprehensible communication strategy for the whole region concerned. Relevant stake-holders inside and around the cluster framework have to share a legible common value in able to achieve a credible and attractive region. WCC have been able to attract a significant number of high potentials and world-class researchers in the past.

5 / Existence of innovation stimulating regulation and public sector demand

Rationale:

The public sector is capable to initiate innovative purchasing processes that sustain and promote technology and service improvement for the future. Together with rules and regulations simplifying business start-ups and attracting private investments in research, development and innovation, the public sector can become a driving force for a demand driven progression, enriching the cluster. As far as WCC are concerned, innovation stimulating regulations exist, combined with a significant public sector demand.

1.3.2

Criteria for cluster actors:

WCC can be characterised by the following criteria focusing on cluster actors

1 / Critical mass of market and technology leaders developing or manufacturing high tech products, components, applications (or processes) or providing innovative services

Rationale:

Clusters provide fertile eco-systems for firms to thrive, which drives innovation, regional development and competitiveness. The excellence of clusters, among others, predominantly depends also on the quality (in terms of innovation capability, competitiveness, market position, etc.) of their main actors, which means mainly firms and R&D institutions. Market and technology leaders, regardless whether they are Global Companies or SMEs, can be considered as main generators of break through innovations,

which lead to further scientific excellent and competitiveness of many cluster actors. WCC have gained a critical mass of market and technology leaders among the cluster actors and actively involve them in the cluster work. Having the complete value chain covered is also characteristic for a WCC. A dynamic way of viewing the traditional chain is to look at it as a star – a value star – where linkage and collaboration can be made possible and create innovative solutions between actors that are not subsequently interrelated traditionally. This does not imply that the value chain actors have to be operative in the actual geographical region.

2 / International visibility and reputation of the cluster and its actors

Rationale:

International visibility and reputation are one of the most important preconditions that interested parties world-wide become aware of the existence of the cluster and its actors. WCC operate as internationally recognised innovation and business hubs with a strong charisma, becoming more and more attractive for world-class researchers and leading companies. WCC governed by cluster organisations have often implemented a strategy to gain international visibility in order to increase their own attractiveness and to communicate on international level. But also on regional and national level, WCC are well known.

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3 / Commitment and active involvement of key actors (industrial, academic and public) in the cluster work

Rationale:

Only a significant agglomeration of triple helix actors is not enough to generate all the different advantages clusters can provide. WCC have been able to gain long term commitments and an active involvement of key actors from industry, academia and public administration. In these cases cluster actors are ready to invest significant time and personnel resources even if the outcomes and potential impact is not really clear at the beginning or have a long term character. Strong cooperation, communication, mutual trust, etc. can be first outcomes, followed by joint businesses or joint product / technology / service developments.

4 / Involvement of competitors

Rationale:

Rivalry is an important driver for competitiveness of firms, especially if it happens within clusters. Thus, it is not sufficient to only have actors along the value chain involved within the cluster. Involving competitors within a cluster and motivating them to intensively cooperate and compete with each other typically leads to very positive outcomes for the whole cluster. Consequently, the involvement of competitors across many elements of the value chain is typically for WCC.

5 / Involvement of cluster actors in international co-operations and linkages to key actors outside the cluster

Rationale:

Clusters (and companies located in them) have multiple connections to other locations; and these connections in global value chains have become increasingly important. Intensive international co-operations and connections across borders are very characteristic for WCC (and companies located in them) and avoids potential look-in effects. There are many reasons why clusters benefit from foreign partners, whereas international co-operations are not only understood as export activities or production abroad. Cluster actors can benefit from various kinds of international co-operations. The corresponding tools and approaches to internationalise have to be driven by the specific needs of cluster actors, often initiated by a responsible cluster organisation.

1.3.3

Criteria for cluster organisation:

In those cases where WCC are governed by cluster organisations, the following criteria are applicable to describe cluster organisational excellence¹

1 / Cluster strategy and its implementation

Rationale:

A dedicated cluster strategy with short, middle and long-term goals is characteristic for WCC governed by cluster organisations. Such a strategy has to be understood as a clear guideline for the future work of the cluster management as well as for the key actors. The strategy has to be based on the given regional potentials and the main objectives to be reached in the future. Usually the majority of the cluster actors significantly contribute to it as well as are committed to contribute to the successful implementation. The management units WCC also review periodically the current strategy and adjust it. Customer satisfaction analysis or similar tools are commonly used as well, in order to assure that the cluster managements perform according to the expectations of the cluster actors.

¹ In the event that a cluster does not have any cluster organisation set into force, these criteria can be considered to be irrelevant. Thus, the following only refer to cluster with cluster organisation.

2 / Professionalisation of cluster management services

Rationale:

The strength and future prospects of a cluster is very much linked to the strengths and professionalism of the cluster organisation, which provides or channels specialised and customised business support services and added-values to the cluster actors. Cluster management of high quality and high professionalisation of the services offered are characteristic for WCC. Professional cluster management also intend to sustainable cluster development with long term perspective. WCC managements provide a broad spectrum of added-values, depending on the main objectives and needs of the cluster actors.

3 / Sustainability of financing and appropriate staffing of the cluster organisation

Rationale:

There is clear evidence that sustainable financing of the cluster organisations as well as adequate staffing often have a direct impact on the overall performance of cluster management. If the financing is unclear or not assured, the staff of the cluster organisation can not focus on supporting the cluster actors accordingly or the personal resources are not adequate compared to the mandatory tasks. The source of financing is not of relevance at this time. Nevertheless, WCC have assured a sustainable financing in the recent past as well as have assured it for the future (time horizon may be of about two years at least).

4 / Coherence between educational actors, R&D institutions and cluster actors

Rationale:

Having actors from the triple helix gathered within a cluster, also means to regard very different expectations and intentions adequately. The management of a WCC is able to provide good coherence between education actors, R&D institutions and other cluster actors. Furthermore, the management is able to act in such a way that the three different interest groups provide added values that is not reachable by any single actor.

5 / Added value

Rationale:

Clusters provide fertile eco-systems for companies to thrive, which drive innovation, regional development and competitiveness. The strong link between clusters on one side and research, development and innovation on the other side opens the opportunity to generate new products, technologies or services as well as to explore new scientific paths. Regardless what the main objectives of a cluster are, in the end the cluster approach must provide significant added values to their key actors from industry (mainly SMEs) and science. It is characteristic for WCC that they already have provided significant added values and specific added values for cluster actors over a longer period, which never would have been gained without such a cluster approach or outside the cluster. Consequently, the added value of the cluster approach has led to a strong positive impact in terms of competitiveness and innovation capability of the cluster actors.

CHAPTER

2

THREE CHALLENGES FOR THE EMERGING OF EUROPEAN WORLD-CLASS CLUSTERS



2.1

First challenge: an external challenge: projection onto the world stage

Background: globalisation and fragmentation of value chains

Any reflection on the emerging of European world-class clusters needs to take account of the emergence of globalised value chains. The rapid growth of information and communication technologies has allowed for the fragmentation of value chains and for the location of activities at each link of the chain to be determined on the basis of cost cutting, optimisation of local resources and penetration of new markets. Such internationalisation and geographic fragmentation of value chains is expressed in the appearance of new players on the world stage, such as Brazil, China, India, Russia and in the centre of gravity shifting from the Atlantic to the Pacific.

A structural change towards a knowledge economy

The globalisation of value chains has a strong impact on their composition and dynamics: we are witnessing a gradual disappearance of the dividing line between producers and distributors; the growth of strategic monitoring from demand and from the market; the integration of services into the production process and the growing importance of cognitive services (fundamental research, higher education, marketing...). The combination of all these factors is bringing about a gradual shift towards a knowledge economy.

The challenge: moving up the value chain

*An incontrovertible
fact: the emerging of
global value chains*

Therefore the main challenge for companies, if they are to be competitive, is to move up the value chain¹ and become more specialised in knowledge-intensive and high value-added activities through the invention of new technologies, innovative products, services and processes, or new management methods. Such a movement up the value chain must be put at the heart of the strategic thinking carried out by the cluster's "brain", i.e. its governing body, but it must also involve all members of the cluster, and particularly small and medium-sized industries and other SMEs, each of which may represent one of the many links in an efficient and innovating value chain.

¹ *Staying Competitive in the Global Economy – Moving up the value chain – OECD – 2007*

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Guiding principle n°1:

Possessing the ability to develop a global strategic vision

**The more fragmented the value chain,
the more a reconstruction strategy is required**

Due to the fragmented nature of value chains which we have witnessed as well as the voluntary emergence of new markets, clusters enjoy an excellent opportunity: with an appropriate strategic management, they may become real "integrators" on global markets. To achieve this goal, it will be necessary to optimise the value chain from one link to the next, from the available resources to the market, from top to bottom, based on the proven principle that an increase in the value of the entire chain is greater than what would be achieved by the independent optimisation of each link in the chain. This transformation represents a paradigm shift in which the citizen-consumer is the driving force, and each component of the chain contributes to the total value. A cluster's strategic plan must therefore be superior to the sum of the strategic plans of its constituent members.

Guiding principle n°2:

Securing a position on the global market
or generating new integrating markets
on a global scale

Towards "integrating markets"

*Clusters as new
integrators*

According to a widely observed principle, the most innovating value chains are those which promote hybridisation. Innovation most frequently arises at the junction of several fields, or in instances where new transversal technologies (such as ITC, nanotechnologies, or biotechnologies) penetrate more traditional fields such as health, nutrition, materials, or transport. Growth markets will increasingly be such "integrating markets", i.e. markets for new products created as a result of the strategic construction of multidisciplinary value chains. A cluster that wishes to emerge on the world stage will have to construct a value chain with high potential for innovation and act as a real integrator.

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Guiding principle n°3: Control one's own value chain

Know yourself in order to act

Consequently, controlling and steering their own value chain is one of the major challenges for each European cluster, whatever its size or specialisation. Prior to thinking up strategies, it is most important for them to be fully aware of their own competence map, i.e. the competencies of every cluster member, the range of stake-holders involved, the degree of cooperation between them, the observed as well as potential synergies, in other words all internal forces which will provide the cluster with the required arsenal to implement its external strategies with success. A cluster's first challenge will therefore be to control its own value chain of productive innovation in order to optimise its performance, from the available resources to the market. Such an analysis will thereby enable it to identify areas to be consolidated, either by endogenous actions, or by "interclustering-style" transnational partnerships.

2.2

Second challenge: an internal challenge: an inward projection to become an effective player

The background: 2000 clusters within 27 Member States

The European Cluster Observatory has identified about 2000 clusters, albeit with considerable variation between them. A majority – called power clusters – arise from a determination to set up an organisation with a governing body and a common strategy; their main focus is on competitiveness. The remainder can be referred to as area clusters, i.e. geographical ecosystems where significant interaction takes place on the one hand between various companies, and on the other between companies and research centres or universities; the focus is here rather on regional attractiveness. And yet, every one of these 2000 clusters, whether competitively or regionally focused, is faced with the same challenges: the globalisation of the knowledge economy on a background of increasingly harsh competition.

A knowledge economy at the junction between local and global levels

It is an increasingly established fact that innovation arises at the meeting point between globalised value chains and the regional anchor points of high-level competencies. These cutting-edge skills are to be found in the cognitive services – research, education, innovation – which are considered to be the most firmly anchored activities in a particular region as well as the least volatile, the least likely to undergo relocation. Such an anchor point in a geographical area is also a launching pad to the world stage. The effectiveness of the latter depends on the quality of the former. And the reverse is also true.

A challenge: the art of combining attractiveness and competitiveness

Whether a cluster is in a position to acquire global significance lies fundamentally in its ability, on the one hand, to release and structure the potential of an approach based on productive innovation – the creation of high value-added products in a globalised value chain – and on the other hand, to utilise an approach focused on regional innovation, i.e. create synergies at the highest level within a given region between the three corners of the triple helix. The attractiveness of a highly skill-intensive region and the competitiveness of an economic strategy are the two sides of a cluster on its way onto the world stage.

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Guiding principle n°4: The art of combining all three branches of the triple helix

A fundamental principle: the triple helix

What makes a cluster what it is, lies precisely in this combination of research, innovation and business for the emergence of "collaborative knowledge". Besides, we must not give preference to any particular component of the triangle, but rather adopt a holistic approach, even if this may cause disequilibrium in the cluster and make it evolve into something else, such as a technological park, a technopolis, or an industrial area.

In abiding by the principle of the triple helix, clusters may ensure real interaction between the innovation process (from the original idea to the patent) and the production process (from manufacture to market launch). It is this very internal dynamics which will determine the ability of the cluster to launch itself successfully into the globalised arena.

Guiding principle n°5: The art of combining governance with the dynamics of cluster members

The cluster as a player in its own right that needs to come of age

Since a cluster as an entity is greater than the sum of its constituent members, it needs to endow itself with its own management team whose excellence will be a real strategic asset. The excellence of such management will find expression in its ability for strategic planning towards emerging on the world stage and its capacity for tactical monitoring aimed at setting up, internally, virtuous dynamics between all three pillars of the knowledge economy. A cluster possessing a clear picture of its competence map, a controlled knowledge of its value chain, a determination to find its missing links elsewhere, the ability to forge strong and durable alliances with other clusters, the intelligence to set up a joint management team with other partner clusters, as well as shared tools, all this with the goal to secure a position on a growth market. Such a cluster will have acquired the capacity of a world-class European player.

*Strategic cluster
monitoring – a
strategic asset*

Guiding principle n°6:

The art of combining
attractiveness with
competitiveness

Regional attractiveness for global competitiveness

The emergence of a world-class cluster probably depends on the convergence between on the one hand the strategy of a cluster initiative, which aims at setting up a cutting-edge value chain through control operated by the lower end of the chain, i.e. by the demand, by the market, and on the other hand a cluster seen as an ecosystem, guided by control from the upper end of the chain, i.e. by supply, by the available skills and tools, these including the physical infrastructure (transport, housing, community facilities, etc.) as well as collaborative tools (business incubators, innovation platforms, shared laboratories, financial tools, etc.). A world-class cluster will be a cluster initiative which has put its roots into an "ecosystem cluster", the former being like the tip of the iceberg of the latter.

2.3

Third challenge: harness the European potential

Background: Europe, the US, China

Developing a strategy for the emerging of world-class clusters necessarily implies taking account of European realities as compared to its main competitors: China, the US, Japan and India. While innovation and research budgets are now roughly equivalent on all three continents, the first thing to strike us is the fragmentation of Europe: close to 2000 clusters, 27 different national cluster policies, 27 separate non-coordinated budgets and only a minute proportion (about 3%) of Community funding. The European Commission should no doubt encourage Member States to coordinate their policies. However, clusters themselves need to take matters into their own hands and ensure that their growth strategies take account of the fact that, compared with their counterparts on other continents, they have to acquire a critical mass so as to be competitive outside Europe. However difficult it may be to calculate the cost of inter-cluster coordination, this alone may cause Europe to fall behind its global competitors.

Europe – an asset and a necessity

The European area is the inescapable playing field for Europe's clusters. As the number-one market for high value-added products, Europe is a great asset for the invention, manufacturing and selling of innovative products. It has huge potential for the emerging and development of growth markets. Yet clusters cannot restrict themselves to local or national markets. If they are successful at integrating the European internal market into their strategies, they will increase their ability to operate on the world stage. However, they will only achieve this by cooperating, by forging alliances and thereby reinforcing one another mutually. Such an ability to develop a European strategy for globalisation will prove to be one of the most fundamental assets of European clusters.

A challenge: acquiring the ability to implement strategies for cooperation and mutual reinforcement

The dynamics of a cluster primarily depends on the intensity and the quality of the synergies between its constituent parts. The same holds true for the dynamics of cooperation between clusters: they need to synergise competencies existing within different clusters and which are complementary in nature, so as to avoid the risk of competition and develop an external strategy for the domination, not only of internal European markets, but also and more importantly of markets outside Europe. The ability to harmonise such a cooperative approach between a number of European clusters may give birth to a true European world-class cluster.

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Guiding principle n°7: Reinforcing one another through European cooperation

The three stages of cooperation between clusters

The challenge of European clusters should be to move higher within the value chain of cooperation.

First stage: developing a culture of mutual exchange. This will involve the sharing of experience in management, the pooling of financial tools, relations between businesses and universities, benchmarking, etc.

Second stage: learning a cooperative culture, i.e. setting up a temporary consortium, such as on the basis of a Community programme, and make a joint proposal, or even carry out a programme.

Third stage: acquiring a community culture. This will imply the creation of a permanent consortium of three or four clusters complementing one another in the value chain, with a joint management team and a common strategy, and the objective to become leaders on world markets. Such progress towards greater integration is also a path towards world-class status.

Guiding principle n°8: Developing a structure on the basis of world-class value chains

Gain critical mass

Few European clusters can expect to reach a global scale on their own. By coming together to create a transnational value chain, a few complementary clusters may contribute to the emerging of new markets by creating new high added-value and high-use products, and using the internal market to pay off investment costs, they may become leaders on an international scale. The make-up of these new value chains can draw inspiration from the growth markets identified and supported by the European Commission. It can also strengthen these by turning them into integrating markets at the junction of several fields. This strategy may be taken up by any European cluster, as there are unlimited ways in which new value chains may be conceived and structured.

Guiding principle n°9: Coming of age to become the actors of a new European industrial policy

A European management team for world-class clusters

In order to reach world-class status, those European clusters which decide to join forces in permanent consortia must first of all become major players on the European economic stage and be acknowledged as such.

Just as a cluster is greater than the sum of its constituent parts, a European cluster is greater than the sum of its constituent clusters. This is why it needs to gain legitimacy in the form of a clearly recognised management entity capable of dealing with the world's largest clusters on an equal-to-equal basis.

These European clusters will therefore be equipped with the "capacity to act" and will be in a position to provide a European response to globalisation. The path is now mapped out for the emerging of European world-class clusters.

3

CHAPTER

PROPOSALS



Since all the following proposals would benefit from the existence of a general guidance framework for all sectorial policies of the European Commission, Member States and local or regional authorities, we propose to set up a **European Pact for Clusters**.

This European Pact for Clusters (EPC) could be included as part of the project to set up a "European industrial policy in the age of globalisation" and an "Innovation Union".

Besides being highly publicised, it should function as a real roadmap mobilising all European clusters and enabling the emerging, within their ranks, of European world-class clusters.

The European Pact for Clusters could be set up:

- on the joint initiative of the European Parliament and the European Commission
- and/or on the initiative of several Member States (with the support of the European Parliament)

Proposal n° I

Create an integrated programme entitled "strategy and prospective"

Observation:

The increasing fragmentation of value chains calls for the implementation of reconstruction strategies, which implies the possession of considerable information from the markets, businesses, and research centres. Now, such information exists but remains highly scattered. Any single cluster acting alone does not have the capacity to gather such data, to analyse them and identify strategically significant facts.

Proposal:

In order for clusters to design and implement a strategic plan which takes account of the global dimension of the challenges, an integrated programme for "strategy and prospects" needs to be made available to clusters. Most importantly, it would consist of:

- a European fund to subsidise consultancy for the design of strategic plans or of technological roadmaps, etc.
- support measures such as seminars or training courses
- a European prospective studies and forecast unit focusing on industry, research and innovation, which would provide clusters with material for the forecast and control of strategic issues of global significance.

Proposal n°2

Draw up a framework programme to promote integrating markets on a global scale

Observation:

Under the European initiative on growth markets, a number of priorities were highlighted and broad market segments, rather than single products, were focused on, with a knock-on effect on the entire value chain at a European level.

Proposal:

A similar initiative on integrating markets, which overlap various fields, such as sustainable cities, digital cultural industries, eco-transport, etc., will provide European clusters with:

- a suitable working environment and strategic visibility
- potential lines of cooperation.

Such a programme will have to be designed in an integrated way, which implies:

- just as in the previous programme, preserving the four identified areas of public policy (legislation, government contracts, standardisation/certification, complementary activities);
- in addition, if need be, a series of coordinated programmes arising from various administrations or government services and focused on an entire value chain, from its higher end (research,...) to its lower end (market launch), and for each of the selected integrating markets;
- and including a government purchasing policy in these areas, so as to create the market.

Proposal n°3

Create an integrated programme for regional innovation, as part of a European regional planning policy

a. Territorial

Observation:

European clusters without a formal management structure, i.e. area clusters, tend to focus their strategy on regional attractiveness. However, it must be pointed out that the tools and financial programmes aimed at promoting the development of such eco-systems are sometimes too scattered, lack transparency and are rarely connected in terms of a continuum allowing for a structured and long-term action plan.

Proposal:

The creation of an integrated programme for regional innovation and of a European Charter of Area Clusters will allow the different players in area clusters representing the triangle of knowledge to have access to a range of services structured into a real value chain of regional innovation monitored by its higher end, i.e. by supply, competencies and tools, with the objective of creating and developing an efficient eco-system:

- material infrastructure, such as transport, housing, public facilities, or business parks
- collaboration tools, corresponding to the different stages of the innovation process:
 - identification of the value of the knowledge involved: laboratories, technical platforms, incubators, etc.
 - validation or proof of concept: R&D centres, technology transfer centres, etc.
 - support for scaling process: pooled technical support services.
 - access to capital: risk capital, development capital, etc.
 - improvement of management processes: training centres, profit centres, etc.

An integrated programme of this kind may be included in the Structural Funds' operational programmes, with an ad hoc funding chain.

The creation of a European Charter of Area Clusters, by gathering the most useful experiences and presenting them in a synthetic, usable form, may serve as the basis for a certification label aimed at promoting the global attractiveness of the best European clusters.

b. Productive

Observation:

European clusters equipped with a formal management structure, i.e. power clusters, tend to focus their strategy on maximising competitiveness. As already mentioned, there are many existing tools, which vary greatly from one country to another, and too often involve highly time-consuming procedures. Besides, such heterogeneity makes cooperation between clusters of different Member States almost impossible.

Proposal:

- The creation of an integrated programme for productive innovation and of a European Charter of Power Clusters will provide the management and members of these clusters with a range of services organised on the basis of a real value chain of productive innovation and containing the tools required for the various stages of project development, from the innovation process (from the original idea to the patent)
- to the production process (from manufacturing to market launch).

An integrated programme of this kind may be included in the Structural Funds' operational programmes, with an ad hoc funding chain.

The creation of a European Charter of Power Clusters, by gathering the most useful experiences and presenting them in a synthetic, usable form, may serve as the basis for a certification label aimed at promoting the global competitiveness of the best European clusters.

Proposal n°4

Combine the programmes existing at the Commission level with the aim to provide a one-stop shop for all international efforts of clusters

Observation:

The vertical structure within the European Commission is not conducive either to dealing with transversal issues, or to an integrated approach of the problems to be solved, or to capitalising on the results obtained, or even to the cross-fertilisation of knowledge generated with the help of EU tools. This observation also holds true within other EU structures and for relations between EU structures.

This leads to three major disadvantages in terms of governance and transparency:

- different terms of implementation, i.e. a lack of coherence for recipients.
- specific "clients" for each DG, making it difficult to understand and get a clear picture of the sector's value chain.
- "JIMA" (Just In My Administration) attitudes just as much in terms of knowledge as of the benefit of the particular DGs.

The same holds true for most of the 27 Member States taken individually.

Proposal:

For clusters to be able to control and develop their own value chains, cluster-promoting government structures need to be in a position to set up their own "mirror" value chains. This can be achieved by the following measures:

- create a one-stop EU shop for each segment of the cluster's value chain, and produce integrated programmes allowing each cluster to develop programmes as they progress along their value chain, from research to innovation, then to production and sales.
- create national one-stop facilities based on the same principle.
- subsequently, create synergies between the EU one-stop shop and the national ones.

Proposal n°5

Create a tool box for European integration

Observation:

The one thousand European clusters equipped with their own management structure and thereby a strategic ability to project themselves onto the world stage, are a real army of hundreds of thousands of businesses, research centres, universities. As they are themselves structured on the basis of value chains, they know that they can become the links of a Europe-wide value chain – the only type of value chain allowing them to project themselves effectively onto the world stage.

They are faced with three possible scenarios:

1. Going-with-the-flow scenario	clusters remain isolated; cluster fragmentation persists and develops	increased splintering; loss of competitiveness relative to the rest of the world; simultaneous growth in the power of non-European clusters
2. Individual proactive scenario	clusters engage in coordinated projects and inter-cluster cooperation	learning to cooperate at the European level; a better utilisation of EU programmes; consolidation of competencies
3. EU-based proactive scenario	clusters engage in an integration strategy as part of a European strategy for globalisation	emergence of transnational value chains on the basis of integrating markets; emergence of world-class European clusters

In the Commission's communication "Europe 2020, a European strategy for smart, sustainable and inclusive growth", we read that "the Commission will work closely with stakeholders in different sectors (business, trade unions, academics, NGOs, consumer organisations) and will draw up a framework for a modern industrial policy, to support entrepreneurship, to guide and help industry to become fit to meet these challenges, to promote the competitiveness of Europe's primary, manufacturing and service industries and help them seize the opportunities of globalisation and of the green economy. The framework will address all elements of the increasingly international value chain from access to raw materials to after-sales service."

Clusters now have a mission to set up this increasingly international value chain with the help of technical and financial tools which could be the focus of a specific programme.

Clusters wishing to cooperate via long-term alliances are faced with many difficulties, most frequently related to the lack of suitable financial tools. Therefore it is necessary to create technical and financial tools to limit the transaction costs incurred in inter-cluster cooperation, the goal being the creation of alliances whose added value exceeds the transaction costs.

Proposal:

The tool box for EU integration should include the following items:

Tools for equipment and pooling of resources:

- *Horizontally-oriented European innovation digital platforms:*
 - Description: Such online platforms are designed as structures for the pooling of resources (equipment and human resources in particular) aimed at providing an open community of users, as cluster members who have forged strategic cooperation alliances, with resources (renting/leasing of equipment, provision of services, etc.) enabling them to bring their R&D and innovation projects to fruition

- Eligibility: cluster consortia who have forged strategic alliances and equipped with a common strategic agenda
- Objectives: contribute to the development of durable structures for cooperation between European clusters and to the emergence of European InterClusters; promote inter-company cooperation at a transnational level; develop integrated European projects.
- *Vertically oriented European innovation digital platforms:*
 - Description: Such online platforms are designed in the same way as those just mentioned, but exclusively dedicated to a grouping of clusters focused on an integrating market
 - Eligibility: cluster consortia who have forged strategic alliances, with a joint management and a common strategic agenda
 - Objectives: become the sufficient supportive base for the emergence of a world-class cluster

Financial tools:

- *A continuum of the existing financial tools,*
 - ensuring that there is no missing link in the entire funding chain, from its higher to its lower end, from research to market launch
 - and with a single decision-making centre;
- *An international investment fund providing funding for projects arising from inter-cluster cooperation.*
- *Promoting the creation of Business Angel capital (transnational), particularly on integrating markets.*

Proposal n°6

Creation of a "Single EU Fund for the Emergence of European Value Chains"

Observation:

While on the one hand there is great fragmentation of the financial tools connected to research and R&D, with a mostly sectorial approach, and therefore the need to create a real continuum as mentioned above, on the other hand, there are no EU financial tools in existence promoting the emergence of European value chains, with a focus on multidisciplinary and complementarity.

Proposal:

This "Single EU Fund" would, via calls for regular projects (twice a year) and with a preference given to bottom-up approaches, fund R&D projects with particularly demanding specifications including:

- the setting-up of a multidisciplinary European value chain
- control by the lower end of the chain (market and market launching), and moving back towards the higher end (R&D)
- with the participation of at least three clusters originating in different Member States.

Should this fail to materialise, a number of Member States could take the initiative of a "Single Inter-governmental Fund".

Proposal n°7

Consider clusters as fully-fledged players in many programmes of the Commission and of Member States

Observation a:

Clusters are not eligible for a number of EU programmes. The most significant example is the Interreg programme. Other programmes, in contrast, though focused on areas precisely connected to what clusters aim to achieve, have very broad eligibility criteria, causing clusters to be drowned in a sea of other partners, thus losing their specificity and thereby their strategic capacity to cooperate with their peers.

Proposal a:

In the interest of coherence and maximum effectiveness, we propose to integrate into a number of programmes a section for the exclusive use of clusters. For instance:

- the European technological platforms,
 - which could be increasingly reserved for clusters;
 - alternatively, launch a call for proposals for new platforms reserved for consortia of clusters
- all or some of the FP8 programmes,
- some of the Interreg programmes, etc.

Observation b:

The coordination teams of European clusters are still all too often understaffed, and yet the objectives to be achieved require high-level competencies. Operating budgets, considered as start-up funds, are essential for setting up ambitious projects, at least over a transitional period.

In addition, there are no funds provided at the EU level for inter-cluster coordination structures, which holds up the emergence of transnational projects.

Proposal b:

The creation of a financial tool for cluster management may be the focus of a permanent call for proposals, as part of the FP8 for example. Two sections could be envisaged:

- funding for structures shared by several clusters cooperating as an intercluster with a specific management team, i.e. financing the "transaction cost"
- funding for cluster management structures whose specifications involve the emergence of transnational projects

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Synthesised table of all proposals

European Pact for Clusters

1	FIRST CHALLENGE Stepping onto the world stage: creation of a framework programme for international cluster development	1	Create an integrated programme entitled "strategy and prospective"
		2	Draw up a framework programme to promote integrating markets on a global scale
2	SECOND CHALLENGE An inward projection to become effective players: creation of a framework programme for cluster performance	3	Create an integrated programme for regional innovation, as part of a European regional planning policy
		4	Launch a European one-stop shop for all clusters
3	THIRD CHALLENGE Harnessing the European potential: creation of a framework programme for the Europeanisation of clusters	5	Create a tool box for European integration
		6	Creation of a "Single EU Fund for the Emerging of European Value Chains"
		7	Consider clusters as fully-fledged players in many programmes of the Commission and of Member States

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Clusters are a new paradigm for defining a new industrial policy based on the knowledge economy. Indeed, the effectiveness of a policy connected to the knowledge society is not determined by the sum total of deregulations – although these are necessary for the realisation of a Single Market – or the sum of its individual members, but by organisations such as clusters, i.e. area clusters or power clusters. Clusters are real hubs enabling their members – companies, research centres, universities – to gain access to new territories, which would be impossible on an individual basis.

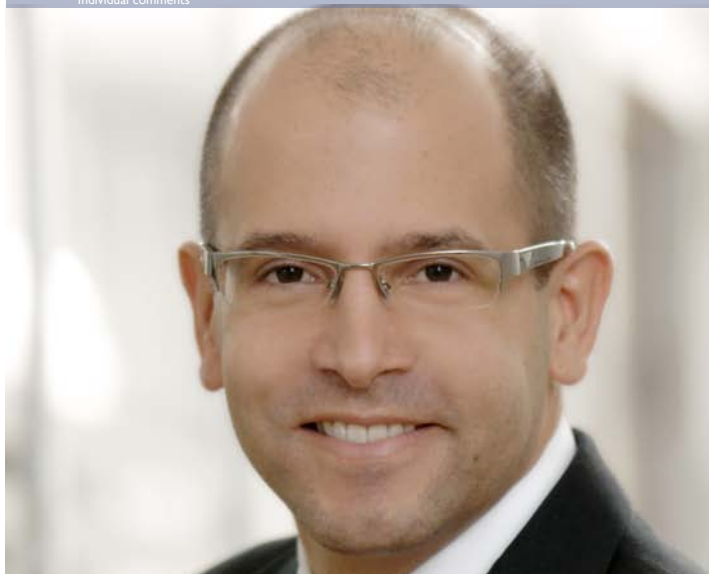
Clusters are to become fully-fledged players with a capacity for action and the ability to provide a European response to globalisation. The path is now mapped out for the emergence of world-class clusters.

CONCLUSION



INDIVIDUAL COMMENTS

What follows is not some kind of portrait gallery, but rather a sample of perspectives coming from cluster managers. These perspectives are expressed as comments made on a particular topic of the White Paper, or as illustrations, and are based on an awareness that the coining of the expression "world-class European clusters" does not make it a reality. This section as it stands is only a start. We would like to urge all European cluster managers to make their own contributions. New contributions will be included in the follow-up work of this White Paper.



Christian Tidona, Cluster Manager of BioRN, Germany

What is a “World-Class Cluster“?

Definition using five simple criteria

by Dr. Christian Tidona, Managing Director
BioRN, the BioTech cluster of Rhine-Necker
Heidelberg, Germany

In 2008, the European Commission set itself the goal of promoting, through the implementation of an EU wide innovation strategy, the development of “world-class clusters” along the lines of the successful American model (see COM(2008) 652, dated Oct. 17, 2008).

Enormous resources are required to develop high technology clusters that are visible and competitive in the context of a global economy. This includes above all creative talents and capital for research and development. A further requirement is an appropriate political framework. Even a leading economy such as the USA, with a good education system and a high per capita gross domestic product, was only able to generate about one “world-class cluster” per 10 million inhabitants in the recent decades. Transferred to the five largest economies in the European Union (Germany, France, Great Britain, Italy, Spain) with a total population of some 320 million people, this means that the resources of the EU are sufficient, assuming a suitable political framework, of creating some 30 “world-class cluster” and maintaining them on an internationally outstanding level.

The following five simple criteria for “world-class cluster” can be derived from the characteristics and history of the world’s leading high technology clusters (e.g. Silicon Valley). Once these criteria have been achieved, the attraction of creative talents and the acquisition of capital for research and development occurs under its own efforts. Applying these five criteria is intended to help identify these 30 European clusters with “world class” potential.

1. Excellence in research and education

If you examine the world's leading high-tech clusters, there is always at least one university with outstanding international reputation in their center (e.g. Silicon Valley: Stanford University). A good orientation is provided by the QS World University Rankings.¹ Accordingly, at the center of a "world-class cluster" lies at least one university which is ranked in the top 100 of the appropriate discipline, and the academic excellence of which is augmented by other outstanding large research institutions.

2. Branch focus

In order to position oneself in the worldwide competition as an outstanding location, it is necessary to concentrate the entire resources of a cluster on a clearly defined branch segment (e.g. Silicon Valley: semiconductor / computer / software industry). One mistake frequently committed in the development of clusters is a thematic defocusing in favor of larger benchmarks (e.g. numbers of employees). But this always happens to the detriment of the positioning, and thus to the detriment of competitiveness.

3. Geographical density

In order to reach the "ignition temperature" of a "world-class cluster", in which the regional economy grows more quickly through the foundation and attraction of innovative companies, a locally concentrated critical mass must be reached. It is astounding that the dynamically growing core of a "world-class cluster" typically has a radius of 30 kilometres, and that a radius of 50 kilometres is never exceeded in practice (e.g. Silicon Valley: some

200,000 employees in the semiconductor / computer- / software industry in an area of 30 x 50 km). The critical mass within a "world-class cluster" (i.e. within a clearly defined branch segment and within a radius of 30 km) amounts to about 30,000 employees, of which two thirds are in private companies and one third in research institutes. Another mistake that is committed just as frequently in the development of clusters is geographical inflation in favor of larger benchmarks (e.g. numbers of employees). This strategy, often pursued by state governments, of course, results inevitably in a local concentration not being able to achieve a critical mass, since the resources used are dissipated over a wide area.

4. Technology infrastructure

To achieve the "ignition temperature" and beyond, an attractive, forward-looking and growing technology infrastructure is of crucial importance for a "world-class cluster". In particular, above-average growth is the result of the establishment and attraction of innovative companies. These are attractive employers for creative talents from all across the world, and at the same time they are attractive customers for numerous service companies, who are consequently also encouraged to settle within the cluster. New business premises in start-up centers are required for these companies, as well as in technology and industrial parks – ideally in the direct vicinity of a university campus (e.g. Silicon Valley: Stanford Industrial Park). In international competition, the location that normally wins out is the one that can react quickest and most flexibly to the requirements of the companies that want to settle there. Soft location factors are also important, such as quality of life, cost of living, childcare facilities and the cultural life and leisure activities.

¹ see www.topuniversities.com

5. Networking of key individuals

The most important criterion by far for a “world-class cluster” is the close networking and regular personal contact between key individuals (“network nodes”) from industry, science, politics and finance, who all follow a shared, regionally defined goal (cluster strategy). These key individuals can be defined as follows on the basis of empirical values (all details refer to the respective cluster in the narrow sense of the term, i.e. within a clearly defined branch segment and within a radius of 30 km):

Industry:

CEOs, managing directors and site managers of private sector companies with personnel responsibility for at least 1,000 employees;

Managing directors and board members of relevant branch and industry associations who, in their membership, represent the interests of at least 10,000 employees.

Science:

Rectors, managing directors and board members of universities, colleges and research institutions (including university hospitals in the case of life sciences) with personnel responsibility for at least 1,000 employees.

Politics:

The lord mayors of cities with at least 100,000 inhabitants;

Members of the respective state government, provided that the concentration of the available resources into a locally restricted cluster (i.e. radius of 30 km) is supported uncompromisingly.

Capital:

Managing directors and partners of venture capital firms and family offices with an investment volume of at least 100 million Euros.

Personal networking between these key individuals normally occurs as they work together on supervisory boards and in addition by meeting regularly in small groups for sport, dinners or cultural events. The continuous further development of the shared cluster strategy and its moderation can be overseen by a cluster manager or by key individuals themselves (e.g. Silicon Valley: senior partners of the leading venture capital companies). The degree of networking should be to the extent that each of the above-mentioned key individuals meet personally at least once per month with at least half of the remaining individuals from this group. Only then are close coordination and a continuous pursuance of the common cluster strategy guaranteed.



Dominique Vernay, Cluster Manager of System@tic, France

Internationalisation of SMEs in competitiveness clusters

by Dominique Vernay, President,
System@tic, the IC cluster of Île-de-France
Paris, France

Innovation and export: the case for SMEs

A recent survey conducted by OSEO and UBIFRANCE, the two French agencies, the former dedicated to SMEs' growth and innovation and the latter to international business development, has brought to light the following results:

- A direct link between innovation and success of firms on export markets
- A need for ICT firms to seek international markets in the early phase of their development as they rely on so-called niche markets, which tend to be too narrow in domestic markets.

Since its creation in 2005, System@tic has approved 200 R&D projects for a total budget of 1 billion € which are the result of a major collaborative work led by its 5 Working Groups (Automotive & Transports; Security & Defence, Systems Design and Development Tools; Telecoms and Free & Open Source Software). Based on a twinned "cooperation-competition" model along with a public-private financial partnership, we have collectively reached our goal of boosting our regional economy through open innovation.

Our innovation ecosystem now requires from us to engage into an internationalisation strategy with 2 goals in mind:

- To bring more business opportunities for the benefit of members, especially SMEs.
- To improve the attractiveness and visibility of the Paris Region.

This strategy is based on 2 pillars, Europe and the world, each with its own set of objectives and methodology.

Connect System@tic to Europe through inter-cluster alliances

In Europe, System@tic is developing alliances with counterparts which are complementary in the value chain of its 5 Working Groups (listed above). The purpose of these inter-cluster alliances is among other aspects to better connect SMEs to Europe's ICT innovation programmes.

The priorities given to this task are to:

- Gather and qualify a coherent and stable group of partners to facilitate the emergence of joint collaborative projects at European level within the framework of EU funding programmes (7th Framework Programme; Joint Technology Initiatives (ARTEMIS); Community Innovation Programme (CIP); ...) and transnational initiatives such as Eureka clusters (CELTIC; ITEA2; Eurostars)
- Share technological roadmaps and from these work jointly on the definition and orientation of future European innovation programmes.
- Enable access through partner clusters for SMEs to market opportunities and new clients.

Examples of this approach include:

- EICOSE2, a grouping of European clusters dedicated to critical software for security in transports, initiated in 2006 with the German cluster SafeTRANS, now involving 5 clusters from 4 countries (Austria, France, Germany and Spain).
- World-class cluster System@tic's alliances with Point-One, a Dutch nanotechnology and mechatronics cluster centered on Philips Electronics near Eindhoven; BICC-Net, an ICT cluster based in Munich and Digital Signal Processing (DSP) Valley in Belgian Flanders.
- The EIT ICT Labs, one of the three Knowledge and Innovation Community (KIC) selected in 2009 by the European Innovation and Technology Institute (EIT), will function with 4 French competitiveness clusters as affiliate partners.
- The INTERREG project SIGNATURE a European transnational project with five partners from England, France, Belgium and Germany, funded under the INTERREG IVB programme, which aims to become a leading European security network by expanding the existing Security Sector cluster infrastructure within North West Europe to address the currently fragmented supply-side and increase opportunities for new innovations. The European Security Innovation Network will develop and implement collaboration between clusters, SMEs and other organisations.

The second pillar addresses global presence in innovation hotspots around the globe where System@tic has set up special facilities for its members known as "hubs".

Connect System@tic globally through hubs

System@tic has opened technological hubs for the benefit of its members in three key places on the globe (Boston, Beijing, Tunis) with a view to:

- promote System@tic (the Cluster, the Paris Region and its members)
- facilitate technological partnership projects
- provide export opportunities for SMEs

Hubs are chosen with the following criteria in mind:

- business opportunities for members (SMEs)
- intensity of local R&D
- cluster-based organisation
- local presence of our ecosystem through subsidiaries of member companies especially large companies

Beyond a local presence, regular missions are organised for SMEs in those hubs twice a year with tangible results with already one company setting up offices in the Boston-Cambridge cluster and 3 others leading R&D projects with Chinese academic labs.

This presence in global markets also aims to contribute to the attractiveness of the Paris Region in conjunction with the Paris Region development agencies.



Johan P. Bång, Cluster Manager of FPX, Sweden

Growing together

by Johan P. Bång, Cluster Manager
Future Position X, the Swedish GeolT cluster
Gävle, Sweden

It's October 2009 and Johan P. Bång has just finished addressing 400 delegates at China's largest annual geographical information conference. He has just marketed the Swedish cluster Future Position X, and in doing so has brought a number of Swedish SMEs to the attention of a market which in principle they would never be able to enter as individual companies.

"Being a cluster, we are able to present ourselves as one unit," says Johan P. Bång, who is the FPX Project Manager. "As a company with 75 employees, you're a nobody in this context. As a cluster, we can state that we have 26 000 members and net sales of SEK 44 billion¹. Then we start to become interesting. We get to meet the Lord Mayor and Governor; we are invited to a meeting with the Vice-Chancellor of the University."

The Swedish FPX project is Europe's leading geographical information cluster. In simple terms, geographical information technology is a way of processing, working with and presenting geographically-related information. To the average person, perhaps the most well-known examples are hitta.se and eniro.se, which offer the facility to search for a street address and display other information, such as nearby restaurants, on the map. Geographical information has many different applications and can be used, for example, to calculate the number of potential customers within ten minutes' driving distance from a particular store. It can also be used, as FPX has done with the Municipality of Karlstad (West Mid-Sweden), to develop a model to illustrate flooding risk areas and identify appropriate measures.

FPX is based in Gävle (East Mid-Sweden) and is an independent arena for the testing, development and marketing of geographical information, services and expertise.

¹ About 4,5 million Euros

To China via Norway

In recent years, FPX has increased its focus on finding its member companies new business opportunities outside Sweden. The fact that FPX was the only international organisation to be invited to last year's Chinese geographical information conference is the result of many years of dedicated work to help the Swedish member companies access an international market. Early on in the process, China was not the obvious market to aim for; FPX's route there actually began in Norway.

"Four to five years ago we envisaged the Baltic region as the first step towards expansion for FPX companies," explains Johan P. Bång. "And we were able to help some of our companies in Norway and the Baltic region. What we learned was that it takes a great deal of time and effort for companies to change country, culture, legal system and language. So why go to the trouble of expanding into countries that are smaller than Sweden when the same time and effort will get you into a large country?"

Consequently, FPX changed its strategy. If the cluster was going to invest time and effort, it was preferable to do so in a market with potential for growth.

"By entering one province in China, we immediately gain a population of 100 000 000 and an entirely different customer base. What's more, the country is showing nine to ten percent growth, which cannot be said for our Nordic neighbours or any other European country."

Since 2007, FPX has built up relationships with three provinces in China. There have been meetings with central government agencies, universities, research institutions and provincial and city governments. Slowly but surely they have cemented confidence and understanding – a process which Johan P. Bång explains would have

been impossible for a small individual company that needs to hunt for business transactions on a daily basis to ensure survival.

"As a cluster, we can work in a long-term perspective, with the goal of conducting business transactions in a time span of several years."

Fellow-hunters, not rivals

Johan P. Bång goes on to point out that a small Swedish company would never have had the chance to enter the Chinese market in the same way.

"The effort is too great and the individual company is too small. But as part of a cluster, successful entry is possible. When we enter China with the Provincial Governor, University Vice-Chancellor and Municipal Commissioner onboard, and representing 26 000 people rather than 25 or 100, then we are a stronger player."

However, the FPX companies gain mutual reinforcement not only by being mentioned in the same context or included in a presentation table – through the efforts of FPX they have also started to cooperate in business development in a practical way. Johan P. Bång uses the example of two companies, each with a hundred or so employees, which often compete for the same customers in Sweden. By cooperating, the two companies can create an international business enterprise and reach new customers.

"The cluster helps them by providing a project manager who motivates the companies to work together in the project – a project manager who gets them to let down their guard and realise that, while they may well be fighting for the same customers in Sweden, they can be fellow-hunters internationally."

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New cooperation agreements

Johan P. Bång cites the example of an ongoing cooperation initiative whereby a company that hosts and operates online services has developed a joint service with a software company.

"The software company appreciated the difficulty of entering the Chinese market on its own. In the company's words, 'Conducting business there would have involved selling a program CD which would then have been copied'. But by offering use of the software over the Internet, the company can receive payment for each registered user. The result is a new enterprise, and a service that is the product of the two companies' combined expertise."

FPX has had good results from its efforts to promote member companies' business development. The cluster has generated an annual average of 100 new jobs for its member companies since 2004.

And the result of the FPX presence at the conference in October 2009? A number of new business contacts, two letters of intent with Chinese companies and four universities declaring themselves willing to cooperate in research and student exchange programmes.

A new trip to China in spring 2010 has resulted in the signing of seven cooperation agreements with companies and universities. The municipality of Gävle has also signed an agreement with Zhuhai, which is a relatively small city in Chinese terms, with 1.4 million inhabitants.



Nick Storer; Cluster Manager of Envirolink, United Kingdom

The R&D&I Active Network : from regional to international level

by Nick Storer, Cluster Manager
Envirolink, the energy and environmental cluster of Northwest UK
Warrington, United Kingdom

EUROPE 2020 offers a European strategy for smart, sustainable and inclusive growth and there is no doubt that under its Flagship Initiative:

'An industrial policy for the globalisation era' world-class clusters have a major role to play to improve the business environment, especially for SMEs. Many excellent books have been written about how to create a world-class cluster and they offer a scientific methodology and business models which organisations can adopt however one of the greatest challenges is how to convince SMEs that it is worth giving time now for a future return on that investment.

England's Envirolink Northwest Ltd is a not for profit organisation funded by the North West Development Agency to improve the competitiveness of the regions energy and environmental technologies and services sector (EETS) in England's North West. In order to engage with the sector and to stimulate industry and academic research, development and innovation (RDI) collaborations we have adopted a concept which has been around for a number of years but which is now gaining higher profile: the Triple Helix approach.

Triple Helix Approach

Industrialized countries are witnessing significant changes in the science and technology policies and practices which encompass enterprises, universities and central, regional and local governments. The business world has undergone a major overhaul in its thinking as it comes to terms with the challenges caused by increasing difficulties in technological updating due to the increase of competitors in a globalised market and to the complexity and risks it faces with the introduction of innovation.

At the same time central, regional and local governments are faced by demands on finite resources to support infrastructure, education, health and environmental issues and by demands to support local industries having to deal with a global recession.

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Therefore they have to select and monitor the limited resources under their control.

It is a useful way to describe the relations and exchange on knowledge and experience between:

- Business – private sector
- Higher education – research sector
- Public / governmental institutions and organisations – public sector

The triple helix approach can be described as the three different spheres of business, higher education and public institutions working together on new tasks and in new fields. Getting these three spheres to work together make it possible to obtain an enhanced outcome from the cooperation and invested capital in the form of innovative new products and solutions

RDI Active Network

This model was based on the triple helix approach and adapted by Envirolink Northwest in 2006 when it developed an exciting new concept - the RDI Active Network which consists of a forum of northwest universities, local authorities and businesses involved in the recycling and waste sector. The aim is to:

- Stimulate collaborative RDI in the EETS sector in the region
- Encourage organisations to explore their RDI ideas and opportunities
- Encourage interaction and collaboration between businesses and universities
- Build a network of researchers to address the technology needs of the EETS sector

Methodology

In a world of work where people are increasingly accepted to be the major component in creating a competitive edge, any idea that seems to offer the possibility of enabling them to work together more co-operatively and productively is likely to raise a great deal of interest.

The six step user driven approach has proved beneficial in engaging with SMEs in the environmental technologies and services sector and larger companies from other regional industries such as chemicals, food & drink processing, construction etc

1 / Establish market/problem focused stake-holder groups and networks to identify RDI needs and establish projects to meet these needs. Where no known solution to a market need or problem can be identified, the network draws up plans to address RDI goals that could lead to breakthroughs and step changes in science and technology.

2 / Commission market driven research and development from commissioned studies that addresses this area.

3 / Include representatives from relevant areas of the science base, sector supply chain, waste producers, government agencies, consultants etc.

4 / Identify common areas of interest and existing mechanisms for developing partnerships for RDI. These networks will also help to transfer knowledge if technology already exist.

5 / Identify and secure regional, national and European funding opportunities and encourage consortia to bid for funding to agreed targets.

6 / Implement collaborative R&D projects among members and other interested organisations.

An online forum has also been developed as a tool to keep members updated on news and funding opportunities and is a point of communication for members via internal discussions on the message board and a web forum. It also generates an e-magazine built up from the latest content on the site, which can be adapted with new articles for members. One of the main aims of the site is to encourage project collaborations between members; the information exchange should be secure between these

Sometimes those processes represent incremental gain built on established wisdom but often they originate from step change thinking often from sectors unaligned to those which suddenly recognise opportunities in transferability, adaptation and exploitation. The veritable hothouse for these trends offered by the threat of Climate Change is now a significant reality. Carbon efficiency, resource utilisation and environmental impacts are increasingly relevant to a multiplicity of supply chains and their recognition is entering board level thinking as an important feature of sectorial, national and company competitiveness.

International Collaborative Research Network

Building on the successes of the existing network Envirolink is now developing a similar network to be created at the international level, to stimulate RDI in energy and environmental technologies and services and to encourage cross fertilisation of ideas amongst researchers, world wide. This will widen global research capabilities, generate new research ideas and encourage collaborative RDI. It will also open the international market for businesses to market their technologies and will be an opportunity to further extend their knowledge base.

Aims:

- To encourage collaborative research in Environmental Technology between international researchers & businesses and to share R&D resources and facilities.
- To create an international open laboratory whose facilities would be available to network members.
- To pool international intellectuals to collaboratively solve environmental problems and provide working solutions.
- To engage funders in supporting environmental R&D, demonstration of technology and applying such technology worldwide.