

Clusters and Cluster Initiatives

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Clusters

“Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate”.

Michael E. Porter in *On Competition* (1998).

Cluster Initiatives

“Cluster initiatives are organised efforts to increase the growth and competitiveness of clusters within a region, involving cluster firms, government and/or the research community”.

Örjan Sölvell, Göran Lindqvist & Christian Ketels in *The Cluster Initiative Greenbook* (2003).

Introduction

A large body of research now points to the fact that clusters matter both for innovation and economic prosperity of regions and firms. And, despite market globalization, innovative clusters are becoming more important to firms and regions (Porter, 1990; 1998).

Clusters are becoming an increasingly important area for policy development in areas related to competitiveness and innovation. Within the European Union, the Competitiveness Council identified clusters as one of nine priorities in its conclusion of December 2006. The Council's conclusions describe clustering as a priority area for actions to be taken in support of innovation. We can now witness a proliferation of cluster policies, cluster programs and cluster initiatives all around the world. There is now an increasing interest in evaluating the effectiveness of cluster policies, programs and initiatives.

Cluster initiatives (CI) are organised efforts to enhance competitiveness of a cluster, involving private industry, public authorities and/or academic institutions. A cluster initiative (CI) involves:

- a) different member organizations (four main types of actors: private industry, public organizations, academia, and public-private, typically non-profit, organizations)
- b) the cluster organization (CO) with an office, cluster facilitator/manager, website etc.
- c) governance of the initiative (e.g. constellation of CO board)
- d) financing of the initiative (EU/national/regional/local public funding, member fees, consulting etc.).

There are many types of actors within clusters:

- 1) Private industry and financial actors
- 2) Public A - National ministries/agencies:
 - Industry (SME, entrepreneurship, networking, cluster, investment attraction)
 - Regional (readjustment funds, infrastructure, cluster programs)
 - Science and technology (innovation agency, incubator, university-industry cooperation and technology transfer, innovation cluster)
- 3) Public B - Regional agencies/offices of national bodies (e.g. county administrative boards)
- 4) Public C - Regional agencies based on collective efforts of local communities
- 5) Private and public-private local/regional organisations (meta-cluster organisations, chambers of commerce, etc.)
- 6) Universities, research institutes, science parks
- 7) Cluster organisations (COs)

8) Media

9) Independent consultants/auditors

10) Organised cluster members (subset of the above)

This document presents an overview of, on the one hand, clusters and economic agglomerations, and on the other, cluster initiatives. The document is intended to provide background information for users of the European Cluster Observatory (<http://www.clusterobservatory.eu>).

Agglomerations of economic activity in general, and clusters in particular, are natural economic and social phenomena, both in earlier times and in the modern economy. In daily life we often refer to such centres as “The Mecca of ...” or the “Silicon Valley of ...”. Local clusters with a global reach are easily identifiable throughout a range of industries, such as Financial services (inner London, Wall Street, Zurich), Film (Hollywood and Bollywood), Cars (Detroit, Modena, Toyota City, Southern Germany and West Sweden), Watches (Switzerland and Japan), Optical equipment (Tokyo), Flowers (The Netherlands), Computer software (Silicon Valley, Bangalore), Shipping and marine technology (Southwest Norway), Mobile telecommunications (Helsinki), Wine (Barossa Valley, Southern Chile, and California), Biotech and Medical instruments (Boston), Music (Nashville), Gambling (Monte Carlo and Las Vegas), Chocolate (Switzerland and Belgium), and so on.

Descriptions and analyses of clusters are carried out both as case studies and as larger statistical studies, so called cluster mapping studies. Case studies allow for in-depth analysis not only of involved companies (buyers, suppliers and related firms), but also other subsystems in the cluster, including regional/local public organisations, universities and other research organisations, financial actors (e.g. business angel networks, venture capital) and cluster-specific organisations for collaboration (e.g. formal and informal networks, and organised public-private cluster initiatives). Larger statistical studies are typically based on employment data in co-located industries within a particular location (e.g. metropolitan area, state or other type of region), leaving out the other subsystems. The European Cluster Observatory offers data and analyses of both types.

Clusters differ on a number of dimensions:

- some clusters are well-established whereas others are just emerging
- large and dense clusters with a multitude of related industries and associated organisations and institutions as opposed to thin and smaller clusters
- manufacturing-oriented clusters such as automotive versus more service-oriented clusters such as financial services
- science-driven clusters and clusters in traditional sectors
- clusters with strong external linkages and global reach (“hot spots”) as opposed to clusters with a mere regional reach.

Agglomeration of Economic Activity and Clusters

(Text adapted from Malmberg, Sölvell and Zander (1996) Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness . *Geografiska Annaler*, Series B. Vol. 78B No. 2)

Agglomeration involving regional concentration, spatial clustering and path dependence has been described and analysed in some details by numerous writers, from Marshall (1890/1916) and Weber (1909/1929) through Hoover (1948), Myrdal (1957), and Lloyd & Dicken (1977), to Porter (1990, 1998), Krugman (1991) and Enright (1998), to mention a few.

A distinction can be made among different types of agglomeration economies. One type relates to general economies of regional and urban concentration that apply to all firms and industries in a single location (urbanisation economies), representing those external economies passed on to firms as a result of saving from the large-scale operations of the agglomeration as a whole. These are the forces leading to the emergence of industrial core regions, manufacturing belts and metropolitan regions. A second type is the specific economies that relate to firms engaged in similar or inter-linked activities, leading to the emergence of industrial districts. Such districts constitute a base for flexible production systems that can meet volatile markets (Piore & Sabel 1984). In both cases, agglomeration economies have their roots in processes whereby linkages among firms, institutions and infrastructures within a geographic area give rise to economies of scale and scope; the development of general labour markets and pools of specialised skills; enhanced interaction between local suppliers and customers; shared infrastructure; and other localised externalities. Agglomeration economies are believed to arise when such links either lower the costs or increase the revenues (or both) of the firms taking part in the local exchange. Presence in an agglomeration is, in other words, held to improve performance by reducing the costs of transactions for both tangibles and intangibles. In Scott's view (Scott 1983; 1988) the formation of regionalised industrial systems will be particularly intense where linkages tend to be small-scale, unstable and unpredictable, and hence subject to high transaction costs.

The traditional accounts of the agglomeration phenomenon are predominantly static where increased efficiency of the transactions of goods and services give rise to benefits for firms located in agglomerations. In today's global economy, a large proportion of firms have few or no trading links with other local firms within the same cluster, even when there is a strong spatial clustering of a particular industrial sector. Still, spatial clustering may well play an important role without significant local input-output relationships. Sustained competitiveness has more to do with capabilities leading to dynamic improvement than with achieving static efficiency (Porter 1990; 1998). Clusters are not just fixed flows of goods and services but rather dynamic arrangements based on knowledge creation and innovation in a broad sense. In line with this new view, more recent research approaches have come to focus on the importance of innovation when trying to explain the emergence and sustainability of agglomerations. Thus, clusters are made up not only of physical flows of inputs and outputs, but also by intense exchange of business information, know-how, and technological expertise, both in traded and un-traded forms. While Porter's main concern has been the existence and

reproduction of clusters of technologically related firms, there are corresponding attempts to analyse the learning abilities and creativity of regional and urban agglomerations of the general type. Instead of specialisation and spatial clustering of related industries, emphasis is placed on the presence of a regional variety of skills and competencies, where the—often unplanned—interaction among different actors leads to new and often unexpected ideas (Andersson, 1985, Johannisson, 1987, and Florida, 2002).

In the figure below, the agglomeration phenomenon is defined along two dimensions: agglomeration forces operating at the general level or at the level of related firms and industries on the one hand, and forces increasing static efficiency and flexibility or innovation and upgrading of competitive advantage on the other.

Four types of economic agglomerations

	Economic activity in general	Technologically related industries
Efficiency (scale) and flexibility	Metropolises	Industrial districts
Innovation and upgrading	Creative regions	Clusters

Source: Malmberg, Sölvell, Zander (1996).

Clusters and Globalisation

Globalisation has, somewhat ironically, strengthened the role of clusters and furthered their development. Companies face increasing choices in locating their activities in places that provide the best business environments given their specific needs. The more markets globalise, the more likely resources will flow to the more attractive regions, reinforcing the role of clusters and driving regional specialisation. In this process, clusters have become increasingly specialised and increasingly connected with other clusters providing complementary activities. Successful clusters have also significantly increased their global reach – attracting people, technology and investments, serving global markets, and connecting with other regional clusters that provide complementary activities in global value chains.

Cluster Initiatives

Cluster initiatives are public-private initiatives set up and financed to strengthen clusters. Successful initiatives tend to move from a project status into more formal organisations over time. Through our research we have found thousands of such cluster initiatives and organizations active today all over the world. The initial research was published in the *Cluster Initiative Greenbook* in 2003, and was presented at the Annual Meeting of The Competitiveness Institute, TCI, in Gothenburg the same year.

Cluster initiatives can be found in many parts of the economy, but there is a focus on technology-intensive areas like IT, medical devices, production technology, communications equipment, biopharmaceuticals, and automotive. The six main objectives carried out by Cluster Initiatives include:

- 1) HR upgrading
- 2) Cluster expansion
- 3) Business development
- 4) Commercial collaboration
- 5) Innovation and technology
- 6) Business environment upgrading

Some of the main findings in the *Cluster Initiative Greenbook* include:

- Every Cluster Initiative is unique. The setting varies from developed to transition and developing countries, from prosperous to weak regions, and from strong to weak clusters. Furthermore, the range of objectives varies, as does the process by which Cluster Initiatives are initiated, financed and organised. However, some ways of choosing objectives and organising the process lead to better performance.
- Cluster Initiatives are most frequent in developed economies and transition economies. Cluster Initiatives tend to focus on technology intensive areas. Most Cluster Initiatives are found in: IT, medical devices, production technology, communications equipment, biopharmaceuticals, and automotive. Most CIs active in 2003 were initiated 1999 or later (72%).
- Most Cluster Initiatives are found in national environments where science and innovation promotion is an important part of government policy, and where local government plays an important role.
- Cluster Initiatives occur in clusters that often are of national importance and almost always of regional importance.
- The objective of the Cluster Initiative can vary greatly. Some objectives are pursued by most Cluster Initiatives, while others only by a few.
- Cluster Initiatives tend to be broad, on average covering four to five main objectives. This holds true both for young and old Cluster Initiatives. If anything, older Cluster

Initiatives tend to be somewhat more narrowly focused than younger Cluster Initiatives.

- Cluster Initiatives are initiated by government (32%), by industry (27%), or equally by both (35%).
- Financing comes primarily from government (54%), from industry (18%) or equally from both (25%).
- Companies are the most influential parties in the governance of Cluster Initiatives.
- Only in rare cases does the government initially pick the members of the Cluster Initiative.
- Cluster Initiatives tend to have a narrow geographical focus. (50% have most of their members within one hour's travel distance.) Cluster Initiatives typically have a broad membership and rarely exclude foreign owned companies, competitors, or small companies.
- Almost all Cluster Initiatives (89%) have a dedicated facilitator, and many (68%) have some sort of office. Cluster facilitators tend to have an industry background from the cluster.
- Many (78%) spend time and efforts to build a framework of shared ideas about why the Cluster Initiative is beneficial and how it is supposed to work. This framework is usually (87%) based on an evaluation of the cluster's own strength and capabilities, and more rarely (36%) is an international blueprint adopted. Cluster Initiatives tend to have an explicitly formulated vision (84%), but less (68%) also have quantified targets for their activities. 83% reach some level of consensus about what activities to perform.
- 95% of Cluster Initiatives have ten active members or more. 40% depend for their future success on one key individual.

Furthermore, some characteristics of successful Cluster Initiatives include:

- 85% agree that the Cluster Initiative has improved the competitiveness of the cluster, and 89% have helped the cluster grow. Overall, 81% of Cluster Initiatives have met their goals, while only 4% have been disappointing and not led to much change.
- The national social, political and economic setting within which Cluster Initiatives are implemented is important for the performance. Key factors include a high level of company trust in government initiatives and having influential local government decision makers, which are both clearly related to good Cluster Initiative performance.
- Cluster Initiatives serving strong clusters of national and regional importance are more successful.

- Cluster Initiatives initiated through a competition process to get government financing perform significantly better in terms of increasing international competitiveness. CIs for clusters in areas designated by government as attractive perform significantly better in attracting new firms.
- There is no effect on performance if the government picks the companies to involve in the Cluster Initiative. Nor do Cluster Initiatives with members within one hour's travel distance, in a single level of the value chain, or avoiding direct competitors or small companies perform better. Cluster Initiatives limited to domestic companies perform worse.
- Cluster Initiatives with offices and budgets sufficient to conduct significant projects without seeking separate funding perform better. For promoting cluster growth, establishing an exchange with other clusters in the same industry is beneficial.
- For the facilitator, having a broad network of contacts is the most important success factor, but the facilitator's qualities are more importance for competitiveness performance than for growth performance.
- Cluster Initiatives that build a clear, explicit framework, based on the cluster's own strengths, and that spend time to share this framework with all parties, are clearly more successful in promoting cluster competitiveness.
- Generally disappointing results and failure for Cluster Initiatives to generate changes are related to poor consensus, weak frameworks, facilitators lacking strong networks, lack of offices and sufficient budgets, and neglected brand building. Disappointing Cluster Initiatives tend to be aimed at less important clusters.
- Government policy and other setting factors also influence performance indirectly, by affecting the objectives Cluster Initiatives pursue and process issues. For example, in countries where local government decision makers are important, Cluster Initiatives tend to pay more attention to various competitiveness-related objectives, such as promoting new technology and monitoring technical trends.

Bibliography

Andersson, Å.E. (1985). Creativity and regional development. Papers of the Regional Science Association 56: 5–20.

Enright, M.J. (1998). Regional clusters and firm strategy, in Chandler A. D.Jr., Hagström, P. and Sölvell, Ö. (eds.). *The Dynamic Firm*. Oxford University Press.

Florida, M. (2002). *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*. New York: Basic Books.

Hoover, E.M. (1948). *The location of economic activity*. New York: McGraw-Hill Book Company.

Isaksen, A.; Hauge, E. (2002). *Regional Clusters in Europe*. European Commission DG Enterprise – Observatory of European SMEs, No. 3. Brussels.

- Johannisson, B. (1987). Toward a theory of local entrepreneurship, in Wyckman, R.G., Merredith, L.N. & Bush, G.R. (eds). *The spirit of entrepreneurship*. Vancouver: Simon Fraser University.
- Krugman, P. (1991). *Geography and trade*. Cambridge: The MIT Press.
- Landabaso, M. (2002). *Cluster in Less Favoured Regions: policy options in planning and implementation*. Unpublished paper, EU Commission, DG REGIO B3, Brussels.
- Lloyd, P.E.; Dicken, P. (1977). *Location in space. A theoretical approach to economic geography*. Second edition. London: Harper & Row.
- Lindqvist, G.; Malmberg, A.; Sölvell, Ö. (2003). *Svenska klusterkartor*. Uppsala: CIND.
- Malmberg, A.; Sölvell, Ö.; Zander, I. (1996). *Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness*. *Geografiska Annaler, Series B*. Vol. 78B No. 2.
- Marshall, A. (1890/1916). *Principles of economics. An introductory volume*. Seventh Edition. London: Macmillan.
- Myrdal, G. (1957). *Economic theory and the underdeveloped regions*. London: Ducksworth.
- Nauwelaers, C. (2003). *Innovative Hot Spots in Europe: Policies to promote trans-border clusters of creative activity*. DG Enterprise, Background paper on cluster policies – Trend Chart Policy workshop, May 5–6, Luxemburg.
- Nauwelaers, C. (2002). *Enterprise Clusters and Networks – Belgium*. Unpublished paper European Commission DG Enterprise, Brussels.
- Piore, M.; Sabel, C. (1984). *The second industrial divide*. New York: Basic Books.
- Porter, M.E. (1998). *On Competition*. Boston: Harvard Business School Press.
- Porter, M.E. (1990). *The Competitive Advantage of Nations*. London, Macmillan.
- Porter, M.E.; Stern, S. (2001). *Innovation: Location Matters*. MIT Sloan Management Review. Vol. 42 No 4.
- Porter, M.E.; Sölvell, Ö., Zander, I. (2000). *Microcompetitiveness of Wireless Valley*. Invest in Sweden Report 2000. Stockholm: Invest in Sweden Agency.
- Porter, M.E.; Sölvell, Ö., (1998). *The Role of Geography in the Process of Innovation and Sustainable Competitive Advantage of Firms*, in *The Dynamic Firm*, Chandler, A.D., Hagström, P., Sölvell, Ö. (eds). Oxford University Press.
- Raines, P. (ed) (2002). *Cluster Development and Policy*. EPRC Studies in European Policy. Aldershot: Ashgate.
- Rosenfeld, S. (2002). *A Governor's Guide to Cluster-Based Economic Development*. Washington D.C.: National Governors Association.
- Scott, A.J. (1988). *New industrial spaces: Flexible production organisation and regional development in North America and Western Europe*. London: Pion.
- Scott, A.J. (1983). *Industrial organisation and the logic of intra-metropolitan location – 1. Theoretical considerations*, *Economic Geography* 59: 233–250.
- Sölvell, Ö.; Lindqvist, G.; Ketels, C. (2003) *The Cluster Initiative Greenbook* Stockholm: Ivory Tower, www.cluster-research.org.
- Sölvell, Ö.; Zander, I.; Porter, M.E. (1991). *Advantage Sweden*. Stockholm: Norstedts Juridik.
- Weber, A. (1909/1929). *Theory of the location of industries*. Chicago: The University of Chicago Press.