Clusters and competitiveness: the case of Catalonia (1993-2010)

Joan Miquel Hernández Gascón
Alberto Pezzi
Antoni Soy i Casals

With the special collaboration of:
Marco Bellandi and Annalisa Caloffi
Christian Ketels
Antoni Subirà

Joan Miquel Hernández Gascón (Valencia, 1957) is the Director of the Observatory for Industrial Foresight of the Catalan government. He has a degree in Economics from the University of Barcelona and is a Senior Administration Manager for the Catalan government. He has published numerous articles analyzing the role of innovation, industrial policy and clusters in the development of the economy in Catalonia. He is a member of the Macroeconomics Group of the College of Economists of Catalonia, the General Council of the European Union, and the editorial board of various economic publications.

Alberto Pezzi (Faenza, 1966) is Manager of the Competitive Analysis Unit at the Observatory for Industrial Foresight of the Catalan government. He has over fifteen years’ experience in economic development and cluster initiatives, working both in the private sector and in local and regional government, particularly in Emilia-Romagna (Italy) and Catalonia (Spain). He has a degree in Economics from the University of Bologna, a Master’s degree in Law, Economics and European Union Policy from the European College of Parma (Italy) and a postgraduate diploma in Economic History and Institutions from the Autonomous University of Barcelona. He is President of The Competitiveness Institute (www.tci-network.org), the global practitioners’ network for competitiveness, clusters and innovation, with world headquarters in Barcelona. He is also a member of the European Commission’s group of experts for the TACTICS project (Transnational Alliance of Clusters Towards Improved Cooperation Support), an initiative aiming to define innovative tools in cluster policy.

Antoni Soy i Casals (Ripoll, 1950) is Secretary for Industry and Enterprise in the Catalan government. He has a Ph.D. in Economics from the University of Barcelona, where he lectures in Applied Economics, and an Executive Master in Public Administration degree from ESADE.

He has been the mayor of Argentona, vice-president of the County Council of Maresme; national councillor and vice-president of the Federation of Municipalities of Catalonia (FMC); counsellor to the General Assembly of La Caixa de Catalunya and member of the bank’s Control Commission; member of the Advisory Council of the Catalan Finance Institute, representing the Catalan parliament.

He has also acted as a validator and consultant for various public administrations, mainly in the field of regional and territorial development and policy; industry and company services; industrial and business policy; evaluation of policies, programmes and projects for regional, local and industrial developments; and the implementation of new institutional measures. He is also the author or co-author of several books and articles of specialized publications in the three areas of specialization of his collaborative work, with an international nature.
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He is a full member of the Industrial Policy Council of Catalonia and of the Industrial Economy Centre. He forms part of the Macroeconomics Group of the College of Economists of Catalonia and is on the editorial board of various economic publications.

Alberto Pezzi (Faenza, 1966) is the Manager of the Competitive Analysis Unit at the Observatory for Industrial Foresight of the Catalan government. He received a degree in Economics from the University of Bologna, a Master’s degree in Law, Economics and European Union Policy from the European College of Parma (Italy) and a postgraduate diploma in Economic History and Institutions from the Autonomous University of Barcelona.

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Executive summary
The term “cluster” is used to refer to a socio-economic concept first described at the end of the nineteenth century by the English economist Alfred Marshall, who observed that enterprises belonging to the same sector tend to group together in the same geographical area in order to optimise their business activities. Marshall’s concept of the crucial role of industrial zones in regional and economic development was further developed in 1979 by the Italian professor Giacomo Becattini, in his work Dal settore industriale al distretto industriale. Alcune considerazione sull’unità d’indagine dell’economia industriale. Cluster theory later gained widespread acceptance among those responsible for industrial policy and regional development around the world as a result of American professor Michael Porter’s work at Harvard University, in particular his 1990 book The Competitive Advantage of Nations, and this led to the concept’s use as a public policy tool to reinforce competitiveness.

Alongside his theory of clusters as geographical concentrations of interconnected companies, specialist suppliers, service companies, and various institutions, Porter developed a methodology for competitive analysis which emphasizes the socio-economic conditions of the geographical area where companies formulate strategy. The importance of Porter’s work lies in a new understanding of competitiveness. He emphasized the key role of companies in a competitive economy, because of their need to react to the challenges facing them, but added that they exist as part of interrelated industrial sectors, and must work within a certain physical, social, economic and political context which conditions the way they operate.

Within this conceptual framework, Catalonia was one of the first regions in the world to adopt a methodology aimed at boosting competitiveness in a geographical area by improving the strategy and working environment of its companies. The project began in 1992 with the publication of Els avantatges competitius de Catalunya (The competitive advantages of Catalonia), which analysed the Catalan economy through eight clusters, important not only in terms of wealth creation, but also for their growth potential. These were: design manufacturers (textiles, furniture, jewellery, etc.); industrial systems (automotive, components, household appliances, etc.); tourism; fast moving consumer goods (food, detergents, etc.); health (hospitals, pharmaceuticals, etc.); raw chemicals; knowledge (education, publishing, etc.); and finance. The study provided a competitive analysis of all these clusters as well as establishing priorities to improve each one’s competitiveness. Most importantly, it led the way to the creation of an industrial and business policy which rejects the concept of good or bad sectors in favour of one focused on the appropriateness
of business strategies, subscribing to the belief that public policy should aim to remove obstacles to productivity and promote cooperation among companies.

The first stage of cluster policy in Catalonia (1993-2004): the beginning

The process began in 1993, at a time of economic and industrial crisis, and while Catalonia was facing the challenge of a significant opening up of the economy resulting from the creation of the Single European Market. The then Department of Industry and Energy of the Catalan government took the decision to embark on an industrial and business policy aimed at strengthening the competitiveness of the country’s industrial clusters through the implementation of a process of change inspired by Michael Porter’s work, and making use of the information provided in the study on the competitive advantages of Catalonia.

The underlying view was that existing industrial policy dedicated a great deal of its resources to boosting quality, productivity, innovation, exports, computerization or design, and managed to improve companies’ operative efficiency, but did not, however, aid companies, especially small and medium enterprises, to reconsider their strategic decisions in order to successfully face up to the challenges of the future. The competitiveness enhancement policy begun in 1993 aimed to complement traditional industrial policy with mechanisms to identify future strategic challenges for companies, to design specific measures to improve their skills and capabilities, and wished to introduce a culture and process of strategic change in those sectors where necessitated by changes in environment, market or technology.

This view of strategic change as a basic element in strengthening competitiveness is the central idea of the cluster policy initiated in 1993, which developed a specific methodology to generate processes of real strategic change. This methodology, highly innovative at the time, was based on a triple shift: from the sector to the strategic segment, from cluster to micro-cluster, and from analysis to strategic change.

The shift from sector to strategic segment originated from the recognition that an analysis of the competitive advantage of an industrial sector defined according to classic parameters is only capable of identifying general problems and can therefore only offer general solutions. As a result, it was important to introduce the concept of strategic segment, conceived as the area where real competition takes place, and where the established companies share common problems and search for solutions. This shift is important, and, within the new framework, means no longer referring to textiles, food or paper, but rather to the knitwear, meat or paper tissue industries.

With the same aim of offering precisely defined measures rather than general recommendations, the methodology used by the Catalan government shifted in focus from the cluster to the micro-cluster, understood as a group of related companies and activities in a certain, not necessarily large, geographical area. This entailed a move away from talking about, for example, the textile industry in Catalonia, to referring to knitwear in the Maresme, weaving in Vallès or clothing in Barcelona.
The last effect of the new focus, and certainly the most important one, was that it led companies to assume specific responsibilities through their participation in the process. Emphasis was placed on the generation of strategic change in a micro-cluster, and to achieve this end a work dynamic was generated which ranged from holding individual interviews to setting up work groups, organising seminars and business trips.

This working method led the members of the micro-cluster through three consecutive stages. The first identified the main challenges of the micro-cluster from the members’ point of view. The second united the members in a common task: formulating a joint proposal for their vision of the future. Finally, the third stage, based on the work of the previous ones, defined the guidelines to be followed in order to strengthen the micro-cluster’s competitiveness.

Within this theoretical framework, over twenty specific initiatives to strengthen competitiveness at micro-cluster level were set up in Catalonia between 1993 and 2004, developed as part of a largely non-interventionist industrial policy, recommending strategies decided by the companies themselves, and offering support focused on opportunities rather than problems.
During the first stage of this new policy, the Catalan government:

- experienced a modification in its dialogue with industry
- benefited from a better strategic knowledge of the sectors it worked with
- identified the various support mechanisms and improvements in coordination needed in order to aid companies.

The main result was probably that the Administration was able to observe how, within the framework of the projects resulting from the new industrial policy, a significant change occurred in the parameters governing its relationship with companies, moving from a rather demanding position to a more positive attitude aimed at strengthening competitiveness. This occurred, for example, in the case of the tanneries micro-cluster, whose companies began by demanding a relaxation of environmental protection measures, and ended up promoting a joint riverside plant and a common centre of research and development, two projects which regarded environmental protection as an opportunity to strengthen competitiveness.

For their part, the companies participating in the initiatives:

- received a strategic analysis of the competitive position of their business
- received a boost to joint initiatives, because on certain occasions it is possible to cooperate in order to compete under better conditions
- benefited from a strengthening of the sectoral structure, as the micro-clusters they worked with sometimes lacked associations to unite them or improve their competitiveness.


In 2004, after ten years’ experience, a decision was taken which opened the door to the second stage of competitiveness reinforcement initiatives in Catalonia. This consisted of the creation of a map of local industrial production systems in the country, following guidelines laid down by the European Union, which considered that the mapping of clusters was a key element in the definition and execution of a cluster policy, and encouraged member states to carry out research with this objective in mind.

It could be seen from the map that there were 42 local industrial production systems in Catalonia, composed of 9,000 industrial companies, employing approximately 235,000 people, and generating a turnover of over 45,000 million euros. These figures represented 26% of companies, 36% of employment, and 39% of industrial turnover, thus demonstrating the clustered nature of the Catalan economy.
Publication of this research led to an operational reappraisal based on the following elements:
• the creation of specific units dedicated to cluster policy within the Administration
• the design of an industrial policy tool aimed at supporting projects of transformation deriving from competitiveness reinforcement initiatives
• the beginning of a gradual process of diversification of competitiveness reinforcement initiatives

And so, in 2005, in the Strategic Agreement for the Internationalisation, Quality of Employment, and Competitiveness of the Catalan Economy, signed by the Catalan government and by the main economic and social institutions in the country (Foment de Treball, FEPEM, PIMEC, UGT, and CC.OO.), the need to establish an Observatory for Industrial Foresight (OPI) was agreed. The OPI would be responsible for analyzing the difficulties of the various industrial sectors, predicting their evolution and proposing measures to strengthen competitiveness. The unit was assigned to the Directorate General for Industry, and commenced operations with a methodology similar to that of specialist strategic analysis consultants at sectoral level. Its competitive diagnoses were centred on:

1. Definition of the cluster or group of companies targeted by the initiative and identification of the principal companies and other stakeholders involved
2. Analysis of the business and the strategic segment, including possible options for the companies
3. Analysis of the local context in which the companies competed, together with an exercise in international benchmarking to discover the competitive position of other clusters in the world
4. Identification of the main areas of competitive improvement to work in, in order to set up specific projects

As it was soon realized that the analysis stage needed to maintain an ongoing relationship with the setting up of competitiveness reinforcement initiatives, a close cooperation was established with a department dedicated to business development created at the Centre for Business Innovation and Development (CIDEM), the agency supporting innovation under the auspices of the government department responsible for industrial matters. This unit then became responsible for implementing competitiveness reinforcement initiatives focused on stimulating and promoting strategic change, and which needed to conform to the diagnoses previously made by the Observatory for Industrial Foresight.

This collaboration between the Observatory for Industrial Foresight of the Directorate General for Industry and the Business Development Department of, first, CIDEM, and, later, the Cluster Promotion Area of ACC1Ó, therefore paved the way for a new cluster policy scheme which had two closely connected stages, combining analysis and subsequent execution of competitiveness reinforcement initiatives.

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1 The Centre for Innovation and Business Development (CIDEM) has since merged with the Consortium for the Commercial Promotion of Catalonia (COPCA) to create the new agency dedicated to promoting the competitiveness of Catalan industry (ACC1Ó) (www.acc10.cat). In turn, CIDEM’s Business Development department was the embryo for the later Cluster Promotion Area of ACC1Ó.
One of the most important innovations introduced in the second stage of the cluster policy of the Catalan government was the use of a new mechanism, specially conceived and designed to offer support to projects of transformation following on from competitiveness reinforcement initiatives. The New Business Opportunities programme (NON) appeared in 2004 as an operational tool to facilitate strategic change in small and medium enterprises through the co-financing of the production of a business plan, and later through financial support to adapt company structure to the requirements of the new business model that it wished to develop. This aid towards structural change may be assigned to training programmes, specific external consultancy, research and development, investment in fixed assets, etc.²

Finally, this second stage also saw the beginning of a gradual process of diversification of the competitiveness reinforcement initiatives being set up.

An initial change consisted of beginning to work with groups of companies which did not fit the classic definition of a cluster, being neither from the same sector nor located in the same geographical area. In line with this new focus, strategy was the key factor in identifying a group of companies with a high potential for implementing competitive improvement projects. Needless to say, geographical concentration ceased to be relevant in these projects, as the common features among the companies were more related to sharing the same strategy and similar competitive challenges than to geographic proximity.

² The NON programme helps to finance up to 75% of the costs of producing a business plan, with a maximum of 60,000 euros per company and up to 100,000 euros, also per company, for structural adaptation costs. (www.acc10.cat)
Another step in the process of diversification of the competitiveness reinforcement initiatives came with projects related to the so-called “emergent clusters” or “potential clusters”, i.e. with the identification of groups of companies which, despite having a limited critical mass, have a high growth potential. These projects were orientated towards identifying obstacles in their development and also towards achieving an improved structuring of the cluster they belonged to. Examples of targeted sectors with these characteristics are photonics and renewable energies.

A third example of the diversification of projects developed from 2004 onwards can also been seen in the “territorial innovation plans”. In this case, the starting point was the territory rather than the sector or strategy. Starting with a specific territory (often a county, but sometimes a city or metropolitan area), strategic and competitive analysis was used to draw up development plans based on projects with drawing power, carried out by key people. These projects, implemented in particular by the Cluster Promotion Area of ACC1Ó, were supported by the cooperation of local bodies such as town and county councils.

During this second stage, over twenty competitiveness reinforcement initiatives were launched by the Catalan government’s industrial departments. The majority of these initiatives were still based on the traditional approach of a geographical micro-cluster, but there was already a significant number of more innovative projects orientated towards strategy.

Table 4. Types of competitiveness reinforcement projects based on cluster methodology, implemented by the Directorate General for Industry and ACC1Ó

<table>
<thead>
<tr>
<th>Project type</th>
<th>Example</th>
<th>Geographical scope</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiatives to reinforce competitiveness in the cluster area</td>
<td>Bathroom fittings in Baix Llobregat</td>
<td>One or more counties</td>
<td>Analysis and reinforcement of the cluster’s competitiveness via strategic change and other areas of improved competitiveness</td>
</tr>
<tr>
<td>Project to identify successful strategies at sector level</td>
<td>Growth and profit strategies in clothing textiles</td>
<td>Variable</td>
<td>Identification of emerging growth and profitability strategies in traditional sectors. Strategy-based grouping and work</td>
</tr>
<tr>
<td>Incipient clusters</td>
<td>Optics and photonics Photovoltaics</td>
<td>Variable</td>
<td>Mapping and identification of emerging and potential clusters and stimulating their growth</td>
</tr>
<tr>
<td>Local innovation and development plan</td>
<td>Innovation plan for the county of Osona Innovation plan for Manresa</td>
<td>City or county</td>
<td>Analysis of the area’s potential for innovation and growth and designing initiatives for its development</td>
</tr>
</tbody>
</table>

Source: Observatory for Industrial Foresight.
A proposal for a new cluster policy

In 2009, after over fifteen years’ experience of implementing competitiveness reinforcement initiatives as part of what was, broadly speaking, a cluster policy, the Catalan government decided to remodel this policy in order to improve the benefits received by the companies.

The main reasons for this remodelling were the limitations experienced in the current policy, suggestions made by the European Commission, and the implications of changes in the industrial model occurring in the advanced economies over the previous few years.

The following limitations stood out from the rest:

- The small size of initiatives undertaken, and the generally immaterial results produced, which in turn reduced their visibility
- The constant public leadership of the management of the projects, and the difficulty of finding the necessary private leadership to take them over
- The insufficient number of the mechanisms dedicated by the administration to implement the policy
• The difficulty of strategic planning for a programme of initiatives aimed at micro-clusters

These limitations were indirectly highlighted by the European Commission in 2008 in its document *Towards World-Class Clusters in the European Union: Implementing the Broad-based Innovation Strategy*, which called for the setting up of competitiveness reinforcement initiatives with the following characteristics:

• Large enough to be able to establish international cooperation relations
  • Run by a professional management team capable of pushing forward complex projects such as those resulting from an industry view incorporating production services

At the same time, it should be made clear that the newly-designed 2009 model for competitiveness reinforcement initiatives demonstrated an obvious continuity with work carried out since 1993 in that it still combined analysis with process, i.e., a diagnosis of the competitive position of the businesses involved and the implementation of measures focused on strategic change, as a key element to improve competitiveness in the long term.

In this context, the first major change relates to the definition of the projects, as the selection criteria since 2009 have been common strategy or target market, and, furthermore, the geographical scope has been increased to include the whole of Catalonia. This change implies a shift in initiatives, for example from knitwear in Maresme, to companies in the textiles and clothing sector emphasising branding and retail in Catalonia (common strategy criterion). A second example is to initiate projects to increase competitiveness for companies producing a range of goods or services aimed at children, from food, publishing or cosmetics to toys, educational aids or audiovisual learning products (target market criterion), see fig. 33.

The second change stems from the first one, and is in the size of the market for competitiveness reinforcement initiatives undertaken by the administration, given that projects, often cross-sectoral, in which companies are grouped together because of their shared strategy or common target market, generally result in a higher combined turnover, as well as a comparatively higher level of employment than that of initiatives based on industrial micro-clusters. An example of this is the previously mentioned project, under the new model, to increase competitiveness in the market for children, which means working with companies with a joint turnover of approximately 3,000 million euros, while former projects, following the earlier scheme, such as those of the cork or leisure boat industrial clusters, involved a turnover of 240 and 150 million euros respectively.
Finally, the third change is related to the following points:

- The actual project management, which, as previously mentioned, and in line with European Union recommendations, should be placed under the control of professionals experienced in pushing forward competitiveness plans
- The mechanisms used by the administration to work on competitiveness reinforcement initiatives.

The work carried out up to 2009 had demonstrated the benefits of the working cooperation between the Secretariat for Enterprise and Industry (as the planning body) and ACC1Ó (as the executive body) in the cluster policy launched by the Catalan government’s industrial departments. Their work together had proved useful. On the other hand, the model still showed weakness in its problems with passing on the management of the initiatives to the business world and guaranteeing their continuity, and also in the lack of a mechanism which could
eventually participate in the financing of any strategic projects arising from the initiatives. As a result, the decision was taken to incorporate AVANÇSA (Empresa de Promoció i Localització Industrial de Catalunya, S.A.) in the policy.

AVANÇSA is an instrument of the Secretariat for Enterprise and Industry, which no longer has an exclusively industrial focus, since it also aims to take part in projects for economic development that rely on a public-private alliance to generate services to companies. With AVANÇSA’s incorporation into the cluster policy of the Catalan government’s industrial departments, whose planning and coordination is carried out by the Secretariat for Enterprise and Industry, competitiveness reinforcement initiatives begin with the production of a competitive diagnosis and an action plan by the Observatory for Industrial Foresight. Following the presentation of this plan to the companies, the Cluster Promotion Area of ACC1Ó carries out actions to boost competitiveness, such as seminars to reflect on strategy, ad hoc management training courses, support operations for internationalisation, networking projects, assistance to companies in obtaining the subsidies offered by the New Business Opportunities programme (NON), etc. Finally, if there are companies prepared to take over from the administration and set up a professional organisation capable of continuing to push forward competitiveness reinforcement initiatives for the cluster, and ensure the continuity of the operation, AVANÇSA may be incorporated as a strategic partner in order to cooperate temporarily with its institutionalisation and with the co-financing of any projects that may be initiated.

Figure 36. Work scheme and main stages in the development of a “new generation” cluster initiative
Catalonia was a pioneer in the use of a methodology aimed at improving competitive efficiency via a strategic rethinking of companies and their continuous adaptation to the challenges of the global market. The model undoubtedly has its limitations, and there remains much to be done, especially in such fields as networking, international cooperation, or the evaluation of results. However, the overall balance of the process that began way back in 1993 is positive.
Introduction: justification and purpose of the work
Cluster policy, understood as a series of industrial and business policy initiatives aimed at improving the competitive efficiency of a group of companies, and their continuous adaptation to the challenges of the global market, began to be developed by the Catalan government in 1993.

Shortly before, in 1990, Michael Porter had published *The Competitive Advantage of Nations*, the book which paved the way for the use of clusters as a public policy tool for boosting competitiveness.

Catalonia was therefore one of the first regions in the world to use a methodology aimed at boosting competitiveness in a geographical area by improving the strategy and working environment of its companies, and this effort was recognised by Michael Porter himself in his work *On Competition* (1998).

However, much has happened since 1993. Cluster policy has achieved undeniable prominence everywhere: the European Cluster Observatory states that, worldwide, there are currently over 2,000 competitiveness reinforcement initiatives based on the use of this industrial and business policy tool, and the European Commission is defining the basic guidelines of a cluster policy within the European Union (European Commission, 2009). It therefore seems reasonable to reflect on our experience and raise the question of future challenges and opportunities. Cluster policies should be refocused with a wider perspective centred on productivity growth and international relations, given the progressive international fragmentation of the value chain and the growing importance of an improvement in productivity within a context where industrial activities (manufacturing and production services) are central to economic growth and competitiveness (Ghemawat, P., Vives, X., 2009).

This is the purpose of this book in the case of Catalonia, taking into account the above-mentioned context. Basically, the book reviews the cluster policy developed by the Catalan government, offers a critical analysis of its results, and proposes a framework of reference for the future. Chapter 2 makes some brief references to the theoretical context of the clusters and their policy within the economy and other social sciences. Chapter 3 explains the first steps in cluster policy in Catalonia as from the appearance of Porter’s book in 1990, while chapter 4 offers a detailed historical review of the policy, defining two basic periods - 1993-2004 and 2004-2009, and explaining the methodological criteria and some specific examples. Chapter 5 analyses the principal causes leading to the need for a change in the
approach to cluster policy, based on a critical review of the preceding experience. A new proposal for a cluster policy for today is made in chapter 6, while chapter 7 offers some final reflections, of necessity provisional. The book closes with some annexes containing the reflections of some international experts in the field, highly renowned both in academic circles and among policy makers: Marco Bellandi and Annalisa Caloffi (Università degli Studi di Firenze), Christian Ketels (Harvard Business School) and Antoni Subirà (Institut d’Estudis Superiors de l’Empresa (IESE Business School)).
A little theory: Marshall, Becattini and Porter
The concept of cluster is one of the possible modern descriptions of a long-observed phenomenon (for at least 125 years): the geographical concentration of economic activities, widely believed to be an important factor in economic and regional development, innovation and competitiveness.

It is generally accepted that there are different kinds of economic activities, which tend to concentrate in certain locations. These concentrations have been given various names: industrial districts, growth poles, clusters, local production systems, milieux innovateurs, innovation systems, etc. In any case, it also seems to be generally accepted that the origins of explanations for these concentrations may be found in Alfred Marshall’s studies of industrial districts in England at the end of the 19th century. More recently, at the end of the 1970s and at the beginning of the 1980s, the studies of Giacomo Becattini and his disciples concerning industrial districts in the Terza Italia (Becattini, 1986) served to revive an interest in Marshall’s work. Finally, in the 1990s, the studies on clusters by Michael Porter and his disciples (Porter, 1990; Porter, 1998) revived interest in the concentration of economic activities in certain locations from another perspective. Marshall, Becattini and Porter are therefore the principal points of reference in the field of clusters. But there are others who deserve a mention.

Nobody disputes that Alfred Marshall was the first to talk about and analyse industrial districts in depth, in nineteenth century England. He identified three fundamental reasons why the concentration of a group of companies from a given sector in a given location (external economies or productive benefits that cannot be taken advantage of by the individual firms that create them or contribute to their creation) should be more productive than if they were separate and dispersed throughout the territory. Firstly, the companies attracted by this concentration develop and benefit from a labour market having a pool of workers with common skills and abilities; at the same time, the presence of many possible employers needing workers with these specialised skills and abilities minimises the economic risks for individual workers. Secondly, this concentration of similar enterprises creates a good market for suppliers and offers the necessary scale or threshold for them to increase and focus their expertise, which in turn represents a productive advantage for their customers. Thirdly, ideas and innovations flow easily from one company to another in an industrial district, as if the knowledge were “in the air” (knowledge spillovers).

For many years after Marshall, economists and other social scientists, with some exceptions (Lösch, Von Thünen, Walter Isard, Jane Jacobs), dedicated little attention to territories.
However, the proliferation of regional studies led to a distinction between two types of external economies and their relative importance: location economies, or gains from the proximity of similar companies, especially from the same sector; and urbanisation economies, or gains from the proximity of dissimilar companies, especially from different sectors, normally associated with large urban areas.

However, as from 1990, some economists (notably Paul Krugman) began to use sophisticated mathematical models to analyse why enterprises settled in geographical agglomerations. These are the New Economic Geography models, which aim to study the location decisions of companies which find their product transport costs reduced, owing to increases in production scale and/or monopolistic competition, allowing a product differentiation that is not due to price. While not usually providing us with a single deterministic solution, these models show us that geographical agglomerations of companies are more probable when the following factors are present: large and increasing economies of scale; companies’ power to set prices; low transport costs; and geographical mobility of buyers, sellers, and workers.

On the other hand, other social scientists – geographers, sociologists, political scientists, urban and regional planners, and also some economists – have approached the study of company location from a more social and institutional perspective, rather than an “economistic” one. In other words, they have placed an emphasis on the effects of social forces (customs and culture, technological change and innovation, human capital, organisations and institutions, social networks) and on their relations with each other, which cannot be reduced to individual decisions in the market.

In the English-speaking world, for instance, Michael Piore and Charles Sabel talked of a Second Industrial Divide in the mid 1980s, largely on the basis of the Terza Italia experience, admittedly. They argued that there was a progressive saturation of mass markets with relatively standardised products that brought about changes in demand, leading to a greater preference for product quality and variety. These changes in demand, together with technological changes (increasingly flexible and increasingly computerised machinery), paved the way for the development of small and medium-sized companies orientated to more personalised products, staffed by a better qualified workforce, with a higher level of skills and abilities, which were highly flexible, and therefore enjoyed a competitive advantage over larger but far less flexible companies. Meanwhile, other writers have studied various specific cases of company agglomeration in a given area: Silicon Valley in comparison with Route 128 in Boston (Saxenian), or Southern California (Scott and Storper), etc.

There is no doubt, however, that it is Giacomo Becattini – with his seminal 1979 work *Dal ‘settore’ Industriale al ‘distretto’ industriale. Alcune considerazioni sull’unità d’indagine dell’economia industriale*” (Becattini, 1979) – and his disciples, with their studies on the industrial districts of the Terza Italia, who have gone further into this more social and institutional perspective, without ever abandoning a rigorous use of the instruments of economics and other social sciences. Basing his work on a reinterpretation of Marshall, Becattini redefines the debate about industrial districts, both as a model of industrialisation
and industrial change, and as a paradigm of local development. In his analysis of industrial districts, he identifies three levels: the productive fabric, or the companies in the district, the system of institutions which link the productive fabric with the community-district as a whole, and the values at the heart of the industrial district. Becattini emphasises the importance of the territory for economic development based on external economies, and proposes a new approach to industrial policy that is closely linked to local development: a development model in which a fundamental role is not only played by the economy, but also by geography, sociology, politics, history, or social capital. For Becattini, the district is the concrete form, both at industrial and at territorial level, of the principle of increasing returns produced by a growth in demand in a competitive situation.

More recently (1990), Michael Porter has popularized the concept of clusters through his “diamond model” for achieving the greatest competitive advantages, which are determined by various interdependent elements: the factor conditions of production, strategy and the structure of firms, demand conditions, related and supporting industries, governmental and institutional determining factors.

Although there are different schools of thought which identify different factors as responsible for conditioning the growth and functioning of clusters, there seems to be a certain consensus that the concept of clusters has, generally speaking, three important dimensions. Firstly, clusters are geographical concentrations of specialised firms, workers with advanced skills and abilities, and support institutions, giving rise to knowledge flows and agglomeration effects in the form of economies of scale and diversification. Secondly, clusters supply a set of specialised, customised services to a particular group of firms, which entails some competitive advantages: advanced and specialised infrastructures, specific support services for the companies, and training for workers; clusters simultaneously enable an intense competition and a close cooperation among their firms, a phenomenon which has sometimes been called “co-opetition”. Thirdly, clusters typically include a set of institutional and social agents (such as universities, companies, and public administration) which are closely interconnected, and cooperate and interact intensively. All this implies many formal and informal contacts, exchanges of information, know-how and technical experience within the clusters, which at the same time facilitates the development of new ideas, designs, products, services, and so on, enabling an improvement in companies’ innovation.

Some economic geographers, such as Ron Martin and Peter Sunley, have harshly criticised Porter’s concept and policy of clusters. They view the concept of cluster as being too elastic, hybrid and confused to properly explain the relations between agglomeration economies and regional and local economic growth. They feel that the concept of cluster has been “sold” by Porter and his disciples as a “brand”, for which they have managed to achieve iconic status, but that it does not provide an adequate theoretical explanation for a complex reality. As a result, they claim that it cannot be a suitable instrument of regional or local policy, or used as a tool to improve innovation and competitiveness. Others, like Paul Benneworth and Nick Henry, have qualified the theory by observing that the obvious diversity of concepts and approaches related to clusters provide a richness that mirrors
the diversity of clusters themselves, and that it is even useful for an understanding of the diversity of levels within regional and local development.

**Clusters versus industrial districts?**

For Becattini, an analysis of the district emphasises the concept of “local society”, rather than the “localised system of firms” from the same sector or from interconnected sectors which tends to be emphasised by scholars of industrial clusters. For him, this system is simply a part of the productive fabric of a local society which must also have public infrastructures and above all an authentic “local social capital” (productive knowledge, mechanisms to increase this, and a sense of belonging to the district which allows for social cohesion and a certain lifestyle). As Fabio Sforzi, one of Becattini’s disciples, has pointed out, the key lies in the fact that “the district as codified by Becattini and the Italian school is, above all, a “local community”, the socio-cultural and institutional environment in which individual companies operate, and which constitutes the living conditions of these companies” (Sforzi, 2008).

The district for Becattini is based on a local society or specialised productive community, and the question is how it may be developed and reproduced as a global, economic and social system. In the case of clusters, the main concern is with the strictly economic conditions of the “system of firms”, and the local society or community where the companies are located is merely at their service. In Becattini’s own words, “the industrial district is born as a local society which specialises in a certain type of product; the cluster is born as a territorial agglomeration of companies devoted to a certain production”. In both cases there is a mixture of competition and cooperation among the companies, but the cooperation is greater when the system of firms is immersed in local society, which is the case of the industrial district, than when that system is merely the host of the local society, which is the case of the cluster (Becattini, 2009).

Becattini stresses that he prefers the concept of industrial district to that of cluster because, according to him, the former takes a man’s life as a whole into consideration, while the latter regards man as mainly an economic agent. This fits in with his view of the economy as political economy in the Marshallian sense; Marshall viewed it as “on the one hand, the study of wealth, but on the other, and more importantly, part of the study of man”. However, in 2006 Becattini acknowledged that “the two concepts (district and cluster) may be considered as symmetrical: the specialised cluster as a system of firms within a local society, the district as a local society endowed with a specialised system of firms”.

Luciana Lazzeretti, in an interesting article written from a perspective somewhere between industrial economy and strategic management, points out an essential difference between districts and clusters: while the latter have a fundamentally economic logic closely linked to the search for profits resulting from competitive advantages, districts encourage local societies or communities to compete as a whole, from Becattini’s perspective of “capitalism with a human face”. So whereas in the district a development model is sought which will achieve economic and social wellbeing at the same time, the main concern in the cluster is competitiveness, despite it also being linked
to social factors. For Becattini, the main focus is on a culturally defined social-productive process, rather than on a technologically defined productive process; in contrast, Porter emphasises that the concept of sector is inadequate to cope with competitive analysis.

Very recently, in a book edited by Becattini and others, Michael E. Porter and Christian Ketels have spoken of the common roots but different perspectives of districts and clusters. According to the authors, districts go further to analyse the working mechanisms of a particular type of agglomeration economy, however important. In contrast, clusters constitute a broader, more general concept. The authors acknowledge, however, that the cluster approach may benefit from the close analysis of institutional and cultural aspects present in the tradition of studies on industrial districts.

Ultimately, the Becattini-industrial district and the Porter-cluster approaches come close, respect each other, and acknowledge each other’s positive aspects, but remain apart. Each considers their own view to be broader and more comprehensive than the other’s, and that the other’s focus is therefore contained within their own.
The first step: the competitive advantages of Catalonia
As a result of the appearance of Michael Porter’s book, *The Competitive Advantage of Nations* (1990), concern to identify the determinants of competitiveness and the systemisation of their analysis increased significantly around the world. As discussed in the previous chapter, Porter explained that clusters are geographical concentrations of interconnected companies, specialised suppliers, service companies, and associated institutions. Within this framework, he developed a methodology for competitive analysis that attaches great importance to the socio-economic conditions of the geographical area where companies make their strategic decisions. Porter stated that national competitive advantage is determined by four attributes which make up the environment in which local companies have to do business: factor conditions, demand conditions, related and supporting sectors, and also company structure, strategy and rivalry.

However, although the concept gained popularity following Porter’s book, clusters exist in the territory for often historical reasons and develop subject to economic progress within contexts of intense rivalry, but also of cooperation, because they stimulate the contextual knowledge present in all productive processes, facilitate the presence of suppliers, provide better access to the specialised workers needed by the member companies, favour the rapid diffusion of information owing to the proximity of competitors, and enable firms to better identify business opportunities and client needs.

In Catalonia, a good example is provided by bodywork manufacturers in La Selva. A cart and carriage workshop was set up in Arbúcies in 1888, as the town had a certain tradition of technical expertise related to the timber and ironworking industries, important for building the vehicles. Another reason was that it was easy to find timber nearby. An employee of the workshop, Joan Ayats, established his own business in 1905. Bodywork evolved in parallel with technology: wood was gradually replaced by iron and, later, by aluminium, plastic and polyester. Today this production system is composed of over twenty companies, employing 1,300 people, and generating a turnover of almost 300 million euros. A significant number of these companies were created by former employees of Ayats.

But beyond the success achieved by the term “cluster”, Porter’s work is important because it has allowed us to understand competitiveness in a different way. Porter stressed that the true protagonists of an economy’s competitiveness are its companies, which need to adopt the most appropriate strategies to address their challenges, but he added that companies make up interrelated production sectors in a physical, social, economic and
political environment which conditions their actions. *The Competitive Advantage of Nations* rapidly became an international benchmark because it was the basis of the appearance of an economic development model which believes that competitiveness depends on company strategy, and on the quality of the environment in which those companies work. The Catalan government wished to begin working in that field, and decided to commission a study on those features.

The work was entitled *Els avantatges competitius de Catalunya* (*The Competitive Advantages of Catalonia*), and was commissioned from Monitor Company, an international strategic consultancy firm. Under the supervision of Michael Porter himself, the study was directed by Xavier Rubió and Emilià Duch, with the general collaboration of Eduard Ballarín and Josep Faus, and statistical input from Jordi Gual, all lecturers at IESE. It was published in 1992, and there follows a summary of its content.

Having reviewed a series of economic indicators which placed Catalonia in a leading position in Spain as a whole, but in an intermediate position in relation to the more advanced countries in Europe, the work made it clear that the statistically sectoral approach, which had been the norm in analyses of an economy’s competitiveness up to that time, failed to allow all factors determining competitiveness to be taken into account, made an over-superficial diagnosis of the problems, and hampered the process of moving from the identification of problems to recommendations, and from these to taking action. It was therefore decided to analyse the various sectors of the Catalan economy in two dimensions: strategic segments and micro-clusters.

The strategic segment is a distinct grouping which is used because the statistical sector is usually too wide and heterogeneous to be analysed as a whole. It is the area where real competition takes place, the market where companies are faced with similar strategic challenges, and where responses to these challenges may be sought. It is a unit of analysis which, for example, within the statistic sector of paper and cardboard proposes the consideration of homogenous groups such as corrugated cardboard, kraftliner, testliner, leather and double-sided leather, paperboard, printing and writing, tissue, wood pulp, and recycled paper.

Meanwhile, because companies enter into competition in strategic segments, and their related and supporting companies, as well as the infrastructures serving them, are located nearby, the study used the term micro-clusters for such groups of firms located in neighbouring areas, and recommended their use as a spatial reference to analyse the sources of competitive advantage. From this point of view, and using the same example as before, the statistical sector of paper and cardboard in Catalonia may be broken down into the micro-clusters of printing and writing in Girona, cardboard packaging in Alt Penedès and Anoia, paperboard in Barcelona, and tissue in Alt Camp.

To analyse micro-clusters, *The Competitive Advantages of Catalonia* recommended the use of Michel Porter’s diamond model and studying the factor conditions, supporting and related sectors, the sector structure and the strategy of its firms, as well as demand conditions. The study recalled that each of the four determinants of competitiveness has an influence on
a country’s industrial capacity for innovation and improvement, and also that the four of them together constitute a more significant dynamic system than each of them separately, presenting the example of the paperboard micro-cluster in Barcelona.

Figure 1. The “Diamond” as an analytical tool: example of the paperboard micro-cluster in Barcelona

Within the framework of this methodological model, The Competitive Advantages of Catalonia analysed the Catalan economy in terms of eight clusters, important not only in terms of wealth creation, but also for their growth potential: design manufacturers (textiles, furniture, jewellery, etc.); industrial systems (automotive, components, household appliances, etc.); tourism; fast moving consumer goods (food, detergents, etc.); health (hospitals, pharmaceuticals, etc.); raw chemicals; knowledge (education, publishing, etc.); and finance.
According to the authors of *The Competitive Advantages of Catalonia*, the “design manufacturers”, “industrial systems”, “tourism”, “fast moving consumer goods”, and “health” clusters acted at the time as key driving forces within the economy; the first three competing internationally to sell their products in an increasingly open market, and the other two mainly competing to supply the Spanish market from Catalonia. For their part, the “knowledge” and “finance” clusters played a key supporting role in the economy, sometimes also as driving forces. Finally, “raw chemicals” was viewed as an inert cluster, as it had no reinforcing effect on the competitiveness of the others.

The study offered a competitive diagnosis of all these clusters, and also identified priority areas for the competitive reinforcement of each one.

For the “design manufacturers” cluster, which included all those business areas which shared the fundamental need to efficiently manage design in one way or another (in the fields of creation, production and sales), for example jewellery, furniture, leather goods, leather garments, knitwear, clothing, household textiles or tissue, etc., the study’s basic recommendation was to promote the introduction of design into the business activity and encourage the creation and management of own brands in order to compete on the basis of differentiation.

For the “industrial systems” cluster, which included businesses having the development of efficient-time management systems as a general skill for success, such as automotive, motorcycle, domestic appliance, machinery, aeronautics, audio and video equipment, or office equipment, among others, the study proposed increasing the sophistication of the demand, improving overall project management skills to achieve a greater internal coordination of the value system, and working as genuine competitive units.
For the “tourism” cluster, with businesses such as theme parks, golf, skiing, natural attractions, or sun-based tourism, The Competitive Advantages of Catalonia suggested that companies should differentiate their products through a greater specialisation, in order to stop competing only on price, which involved initiatives in the fields of accommodation, environmental protection, staff training, promotion of supplementary services, and carrying out marketing campaigns.

In the “fast moving consumer goods” cluster, composed of activities traditionally classified in different statistical sectors, such as the meat, confectionery, milk, wine, nuts, oil, mineral water, precooked food, detergents, and personal hygiene products, etc., all having a basic need to create brands, control distribution, and possess marketing power, the initiatives to be developed, according to the study, needed to be related to the situation of multinationals establishing their headquarters in Catalonia, and also the consolidation of those companies having brands with a strong local identity.

The “health” cluster was composed of general hospitals, specialised clinics, medical laboratories, rehabilitation centres, nursing homes for the elderly, and, in general, all those businesses sharing the fundamental need of managing specialised medical service. According to the study’s authors, the challenge facing the companies was to enjoy a high reputation as a medical centre through the assimilation of new trends, efficient management and a guaranteed quality of service provided.

The “knowledge” cluster included all those activities which created and disseminated knowledge, and had the role of supporting the businesses from the other clusters, such as publishers, software manufacturers, R & D centres, consultancy firms, engineering companies, law firms and universities. The Competitive Advantages of Catalonia suggested working in the field of internationalisation, promoting the circulation of information on the supply and demand of knowledge, and also on applied research findings.

Making up the “finance” cluster were those institutions with a supporting financial role in the economy as a whole, for example banks, savings banks, stockbrokers, venture capital firms, or insurance companies. The study’s suggestions were linked to guaranteeing their facilitating role in economic activity through initiatives such as an improving professional financial training, attracting important European institutions, or reinforcing capacity for financing businesses.

Finally, since “raw chemicals” was regarded as inert, in the sense of it not being essential for the innovation of the other clusters, the suggestions put forward were orientated towards improving the companies’ environmental and safety standards, as well as minimising their negative effects on tourism.

These were, broadly speaking, the recommendations made by The Competitive Advantages of Catalonia for the eight clusters making up the Catalan economy. However, in addition, as a result of the competitive diagnosis made of these eight large networks, the study ended by formulating ten important general principles to define the Catalan government’s competitive support policy:
1. To invest in lasting long-term competitiveness.
2. To define a human resources strategy for Catalonia.
3. To make Catalan citizens and industries into the most demanding and sophisticated consumers in the world, anticipating future trends.
4. To establish industrial and competitiveness policies capable of being pushed forward.
5. To fully manage policies and programmes to support companies.
6. To efficiently organise the Catalan government administration in order to support companies’ competitiveness in Catalonia.
7. To establish an Advisory Board for competitiveness in Catalonia.
8. To promote a competitiveness programme for the key clusters in Catalonia.
9. To “advertise and sell” Catalonia.
10. To make Catalonia into the European capital of design manufacturers.

The Catalan government understood at the beginning of the 1990s that Michael Porter’s work would open up new horizons in the field of industrial policy. Competitiveness could be understood in a different way. The usual formulas were shown to be insufficient, and it seemed appropriate to adopt a working approach that saw competitiveness as dependent on companies’ strategy and the quality of their working environment. This was the reason for commissioning *The Competitive Advantages of Catalonia*, whose publication marked the beginning of cluster policy in Catalonia. It helped to introduce us to an approach to industrial and business policy which does not believe in good or bad sectors, but rather in suitable or unsuitable business strategies, and which subscribes to the idea that the public administration must remove obstacles and impediments to productivity, and promote cooperation among companies. This was possibly another reason for Catalonia being a pioneering territory in the implementation of cluster policy.
The Catalan government’s cluster policy
4.1 Introduction

Following the impact made by Michael Porter’s works, the regional policy of an increasing number of countries attaches a growing importance to what is loosely called cluster policy, which is gradually shaping a new system of industrial policy (OECD, 2001).

Nonetheless, cluster policy not only lacks precise rules, but actions carried out in its name are also highly diverse (Hernández, Fontrodona and Pezzi, 2005). This is surely why the European Commission, interested in its usefulness for promoting regional economic development, launched a project on clusters and company networks in 2002 (European Commission, 2003), in which a group of experts in the field drew up a final report establishing that cluster policy should foster dialogue and cooperation among companies, and between these and institutions, technology centres and training services, so limiting the public sector to acting as a catalyst.

This recommendation came after the European Commission, on the basis of the study of cluster policies carried out in 17 European countries (European Commission, 2002), recognised that these initiatives, with different actions and terminologies, had as their main objective the reinforcement of cooperation between companies and working in networks, and shared a whole series of key characteristics, such as the following:

- They are regarded as a tool for promoting economic development and structural change.
- They emphasise the link between companies and regional technological infrastructures.
- They highlight the role of public organisations as intermediaries in the promotion of company networks and joint projects.
- They underline the need to improve companies’ capacity for innovation and their management through an interactive relationship with their environment.

In fact, this set of characteristics is very similar to the main elements of regional industrial policy based on the relevance of the Marshallian industrial district (Costa, 2004):

- Promotion of external economies.
- Territorial and productive delimitation
- Promotion and improvement of relations among companies, along with the establishment of community structures to support industrial activity
- Coordination between public and private sectors.
The truth is that, with many particularities, but also with many common characteristics, cluster policy has undergone a veritable boom in recent years. This is due to the fact that economies structured in clusters increase productivity because they stimulate contextual knowledge, facilitate the presence of specialised suppliers, and favour the creation of specialised infrastructures. They also improve innovation capacity since they enable a rapid understanding of clients’ needs, and recognition of business opportunities, or facilitate information flow and therefore the diffusion of technology, and they stimulate the creation of new companies, since an improved information flow and the perception of business opportunities increases business dynamism and the chances of creating spin-offs (Porter, 2003).

However, for policy makers in general, and for those responsible for the industrial policy of the Catalan government in particular, clusters are important because they are a reality in the territory which allows for economies of scale when analysing a business and its problems, and also because they enable actions to be taken with a homogeneous group of companies with a view to facilitating their strategic change.

Within this conceptual framework therefore, and going beyond academic definitions, the Catalan government’s cluster policy has been structured, from its beginning at the start of the 1990s, around four elements: competitiveness, business, company strategy and, of course, clusters.

Figure 3. Basic concepts of the Catalan government’s cluster policy

![Diagram](image)


This policy has always viewed the cluster as the unit of reference used to reinforce companies’ competitiveness at regional level through the implementation of initiatives launched by the administration, combining analytical and procedural tools to foster strategic change. For the purposes of this presentation, its evolution may be divided into two stages, 1993-2004 and 2004-2009.

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3 According to the European Cluster Observatory (http://www.clusterobservatory.eu), in 2008 there were more than 2,000 initiatives to reinforce competitiveness underway in Europe alone that could be brought together under cluster policy.
4.2 First stage: 1993-2004

4.2.1 Methodological approach and initiatives carried out

In 1993, at a time of economic and industrial crisis, and while Catalonia was facing the challenge of a significant opening up of the economy resulting from the creation of the Single European Market, the then Department of Industry and Energy of the Catalan government took the decision to embark on an industrial and business policy which, making use of the information provided by The Competitive Advantages of Catalonia, aimed to strengthen the competitiveness of the country’s industrial clusters through the implementation of a process of change inspired by Michael Porter’s work.

The proposed model considered that existing industrial policy dedicated a great deal of its resources to boosting quality, productivity, innovation, exports, computerization or design, and managed to improve companies’ operative efficiency, but did not, however, aid them, especially in the case of small and medium enterprises, to reconsider their strategic decisions in order to successfully face up to the challenges of the future. Improvements in management are very important, but a bad strategic positioning may cancel out or reduce any positive effects achieved through gains in operational efficiency, as shown by the examples of territories with worse infrastructures and lower productivity than others which, however, win in the market not by doing the same things better, but by doing different things in a different way. The competitiveness enhancement policy begun in 1993 thus aimed to complement traditional industrial policy with mechanisms to identify future strategic challenges for companies, to design specific measures to improve their skills and capabilities, and wished to introduce a culture and process of strategic change in those sectors where necessitated by changes in environment, market or technology.

The introduction of the concept of strategy as a basic element in strengthening competitiveness is the central idea of the cluster policy initiated in 1993, which developed a specific methodology to generate processes of real strategic change. This methodology, highly innovative at the time, was based on a triple shift: from the sector to the strategic segment, from cluster to micro-cluster, and from analysis to strategic change (Conejos and Hernández, 1999).

The shift from sector to strategic segment originated from the recognition that an analysis of the competitive advantage of an industrial sector defined according to classic parameters is only capable of identifying general problems and can therefore only offer general solutions. As a result, it was important to introduce the concept of strategic segment, conceived as the area where real competition takes place, and where the established companies share common problems and search for solutions. This shift is important, and, within the new framework, means no longer referring to textiles, food or paper, but rather to the knitwear, meat or paper tissue industries.

With the same aim of offering precisely defined measures rather than general recommendations, the methodology used by the Catalan government shifted in focus from the cluster to the micro-cluster, understood as a group of related companies and activities
in a certain, not necessarily large, geographical area. This entailed a move away from talking about, for example, the textile industry in Catalonia, to referring to knitwear in the Maresme, weaving in Vallès or clothing in Barcelona.

**Figure 4. Example of the shift from the paper and cardboard sector to the strategic segment of tissue**

![Diagram](image1)

**Source:** Observatory for Industrial Foresight.

**Figure 5. Example of the shift from the textile cluster to the knitted fabric micro-cluster in Igualada**

![Diagram](image2)

**Source:** Observatory for Industrial Foresight.

Lastly, and most importantly, this industrial and business policy focus, more than pinpointing the determinants of an industrial activity's competitiveness, led companies to assume specific responsibilities through their participation in the process. The focus in Catalonia did not emphasise the analysis of a cluster's competitive advantage, but rather the generation of strategic change within a micro-cluster. To achieve this end, this policy aimed to generate a working methodology favourable to change through a very didactic and communicative strategy, based on holding individual interviews, setting up work groups, and organising seminars and business trips.
This working method led the members of the micro-cluster through three consecutive stages. The first stage identified the main challenges of the micro-cluster from the members’ point of view. The work in this stage consisted basically of holding interviews with the companies, and generating a climate of trust. At the same time, a mapping of the activity was carried out, which provided the delimitation of the micro-cluster and the identification of the various strategic segments in which it competed.

The second stage united the members in a common task: formulating a joint proposal for a vision of the future. In this stage a competitive diagnosis was carried out, in which new points of view originating from the technical analysis usually emerged, as a rule differing from the sector’s conventional wisdom. It was very useful to make trips at this stage, to learn, at first hand, examples of how other countries had responded with good practices to problems similar to those of the micro-cluster.

Finally, the third stage, based on the work of the previous ones, defined the guidelines to be followed in order to strengthen the micro-cluster’s competitiveness.

Figure 6. Diagram of the process of agreed change

<table>
<thead>
<tr>
<th>Month 1</th>
<th>Month 2</th>
<th>Month 3</th>
<th>Month 4</th>
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<tbody>
<tr>
<td>Establishing the micro-cluster’s challenges</td>
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<td>1st public presentation</td>
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<td>Launching and motivating</td>
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<td>Proposing a common view for the future</td>
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<td>2nd public presentation</td>
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<tr>
<td>Breaking with the sector’s conventional wisdom and proposing a view of the future</td>
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<tr>
<td>Defining the lines of action</td>
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<td>3rd public presentation</td>
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<tr>
<td>Achieving cooperation actions</td>
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Source: Conejos, J. et al. (1997): Canvi estratègic i clústers a Catalunya.

Within this theoretical framework, over twenty specific initiatives to strengthen competitiveness at micro-cluster level were set up in Catalonia between 1993 and 2004, developed as part of a largely non-interventionist industrial policy, recommending strategies decided by the companies themselves, and offering support focused on opportunities rather than problems.
With some exceptions, such as tourism in Lloret or jewellery in Barcelona, practically all the initiatives were conducted in strategic segments (knitwear, clothing, machinery, motorcycles, meat products, etc.) belonging to industrial sectors with a significant presence in Catalonia (textiles, metals, food), distributed throughout the territory according to their location, resulting in the companies being concentrated largely in Barcelona and its area of influence (Vallès, Maresme, etc.).

In terms of strategic position, some initiatives focused on micro-clusters whose companies faced the need to move from a handicraft-based production structure to a more industrialised one (wooden toys in Osona, agricultural machinery in Lleida, jewellery in Barcelona, leather tanning in Anoia, etc.). Others faced the basic challenge of changing from being exclusively manufacturers to becoming integrated into the distribution network (household furniture in Montsià, meat industry in Girona, knitwear in the Maresme and in Anoia, publishing in Barcelona, etc.). Lastly, others had the challenge faced by subsidiaries of large multinational companies (in sectors such as automobiles or consumer electronics) of attaining the ideal environment to achieve manufacturing excellence, and so being able to compete with other territories where these multinationals might be established.

The more than twenty competitiveness reinforcement initiatives carried out during the 1990s made Catalonia a pioneering region in the world in the implementation of cluster policy, understood as an industrial and business policy that emphasised a rethinking of companies’ strategies and the improvement of the environment in which they work. The following chapter offers a summary of one of those initiatives: the leather tanning micro-cluster of Anoia, which was later used as a case study at Harvard Business School (1995).
4.2.2 A case study: the leather tanning micro-cluster in Anoia

At the start of the 1990s, companies that made up the leather tanning micro-cluster in Anoia, for the most part located in Igualada, whose production had been traditionally aimed at the Spanish footwear and leather goods sector, entered into a severe crisis as a result of the sudden incursion into the global market of products (with lower prices) from developing countries, the rise in competition caused by Italian competitors (with a higher quality product), and also the incorporation of European environmental regulations.

This production system dates back to the Middle Ages, when the business of tanning, at that time a traditional craft, became concentrated in Igualada. During the 18th century this activity, dedicated particularly to the production of shoe soles, took part in the growth of the Catalan economy, and the number of tanneries increased eightfold from 1724 to 1765. Over the course of the century a new industrial district developed around the city’s irrigation channel. This district – which still exists today – made it possible to create new, larger tanneries.

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Figure 8. The leather tanning industry in Igualada in the 18th century

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In 1993, this micro-cluster was composed of some fifty firms, mostly small in size, employing a thousand people and generating a turnover of 114 million euros (19,000 million pesetas), the majority resulting from sales in Spain, as little was exported. The most important firms were Fontanellas i Martí, Vivapel, Vidal Bosch, Curtidos Farrés i Cia, Miret i Cia, Curtidos Badía and Industrial Igualadina and their main activity was the transformation of hides, usually cow leather, into leather suitable as a raw material for the footwear industry (60% of the sales), clothing (30%), leather goods (9%) and upholstery (1%). In some products, such as shoe soles, the position of these firms in the Spanish market was absolutely dominant.

However, as previously mentioned, their situation was difficult at that time. Tanning is a dirty industry that uses contaminating chemicals and a large amount of water, and generates a lot of waste. Consequently, in order to satisfy the growing demands of society regarding the environment, the companies in Anoia saw their production costs rise at the same time that the products of industries in developing countries were reaching the market at lower prices. As if that were not enough, the mandatory incorporation into Spanish legislation of stringent EU regulations in this field forced Catalan tanneries into investing heavily in order to continue in operation. This was particularly dramatic at a time when many of these firms were expecting the relocation of their plants, which had been absorbed by the growth of Igualada, with the resulting problems of pollution, urban development and the relatively irrational layout of their facilities. The result of all this was that many companies from the micro-cluster were considering offshoring as the only alternative.

The industrial environment was not very sophisticated. Companies from the leather tanning micro-cluster in Anoia found themselves trapped in a vicious circle: on the one hand, their traditional demand, the Spanish footwear and leather goods sector, was quite fragmented and, since it competed for the most part on price rather than on creativity or design, did not appreciate the possible variations that leather tanners might introduce in terms of textures and colours, which slowed up innovation among suppliers and meant that firms from the micro-cluster had to compete on the same ground as their rivals from developing countries. On the other hand, it was precisely this preference of the Spanish footwear industry for low-cost leather that was stopping the tanning industry in Anoia from making an effort to achieve the quality standards required by the more sophisticated markets in Europe, such as Italy, which in addition had a volume of purchase that few companies in Igualada could meet individually.

With regard to the micro-cluster’s factor endowments, the leather tanning industry in Igualada had a raw material, cow leather from Catalonia and the south of France, that was internationally renowned for its quality. This fact, together with the great expertise in the tanning process possessed by Anoia’s industrialists, meant that the micro-cluster’s production was of higher quality than that produced by Asian and South American countries, which, however, were consistently gaining international market share. It is worth noting that, owing to the capital intensive nature of the tanning sector, competition from developing countries was not so much due to lower wage costs as to the introduction by these countries of tariff restrictions on the free trade of hides, which,
added to this industry’s strong dependence on livestock supplies and the EU’s policy of reducing cattle numbers, did give them important price advantages.

Consequently, in 1993 the leather tanning micro-cluster in Anoia was stuck halfway between two models: that of the developing countries, which competed on price because they had cheaper hides, and lower production costs due to the lack of environmental legislation, and the Italian model which, owing to the high quality demanded by that country’s footwear industry, which set fashion trends and required constant innovation, invested heavily to gain competitive efficiency.

The situation of firms in Igualada, which were attempting to adapt to these changes but only as a reaction, was difficult because they neither had the low production costs to be able to take on producers from developing countries nor sufficient quality to be able to compete with the Italian industry, which was the most advanced in the world, not only because it was constantly creating new colours, finishes and textures but also because it had achieved lower relative costs due to the use of a production process in which subcontracting to various production units, each of them being the right size for each stage, was the key to success.

It is important to note that the Italian model, well represented by the micro-cluster in Arzignano, located in the region of Veneto, is based on the principle that, to gain in efficiency, the tanning production process must be broken up and specialised, as the optimum size required by each of the stages is very different. These stages are wet work, tanning, shaving, dyeing and pre-finishes and, finally, finishes per se, all of them different in terms of costs (whether there are economies of scale or not), environmental impact and their contribution to the product’s final value.

Italian companies were not only the most advanced in the world in creating new colours and new textures but, as previously mentioned, had also achieved lower relative costs owing to the use of a production process in which the subcontracting to production units, each of them being the right size for each stage, was the key to success.

For example, in the wet work stage, where investment was too large for an individual firm, in Arzignano various companies had created a consortium to finance a plant that provided a joint service for all its members. In other stages, where the optimum size was smaller, such as pre-finishes (sammying, setting out, stretching and drying), small units were created that were fully integrated in the micro-cluster and worked with very high levels of quality and service under a subcontracting system.
Tanning stages

1. Stages with high costs and strong environmental impact

**Wet work:** after conservation and preparation, the hide is cleaned to remove any animal residue. Wet work has a high impact on the environment as it uses large amounts of water (from 15 to 20 litres per kilogram of leather), uses chemical products and generates a lot of waste. It requires heavy investment in machinery.

**Tanning:** transforms the hide into a hard material that does not decompose and is heat-resistant. This is the most critical stage in producing leather. In tanning, the hides go through a series of static baths that include the use of chrome components, a product subject to very strict controls in developed countries, and these baths are supervised by specialised workers with extensive experience. Chrome’s impact on the environment is significant, therefore this stage in the process entails costly investment in treatment plants.

These two processes, wet work and tanning, take place at the same plant. In 1993, a modern plant of minimally effective size that could carry out these processes while respecting the environment required an investment of between 4.2 and 6 million euros (between 700 and 1,000 million pesetas).

2. Stages with low costs and lower environmental impact

**Shaving:** dividing the hide into a smooth upper layer called box-calf and a lower, rougher layer. The quality of the former is considered to be much higher and reaches twice the price of the lower layer.

**Dyeing and pre-finishes:** giving the leather its final colour and preparation for finishing. Technological innovation has played an important part in this stage, which requires the involvement of specialized workers. There is little environmental impact because most of the residual substances are reused.

**Finishing:** giving the leather the texture and specifications required by the client. Large investment is not necessary but this does require large amounts of worker creativity and design experience.

Source: Conejos, J. et al. (1997): *Canvi estratègic i clústers a Catalunya.*

The example of Arzignano was very useful for the industries of Anoia as it demolished two great myths: that it was better to integrate all stages in the process and the belief that, in order to maintain a high degree of competition, firms could not cooperate in any business area. Apart from this, it also showed that the tanning industry could be competitive whilst complying with very demanding environmental regulations.
Thus, the decline of the Spanish footwear industry, the increasing competition from leather from Italy and the developing countries, and the adaptation to European environmental regulations were the great challenges facing the companies in the leather tanning micro-cluster of Anoia in 1993, when the Department of Industry and Energy decided to promote an initiative to strengthen competitiveness as part of its incipient cluster policy.

In accordance with the aforementioned methodology, this initiative reached the conclusion that a strategic change needed to be adopted, that to put it briefly, would help to reduce production costs without losing product quality. This change had to be structured around the six courses of action agreed with the different components of the micro-cluster (see the box on the next page).

And what has happened since then? Today, the tanning sector in Igualada is made up of some forty firms that employ approximately 700 people and generate a turnover of 130 million euros. It is true that the micro-cluster has shrunk significantly but this has been accompanied by important changes in its competitive status, as the leather tanning sector in Anoia has achieved a high degree of specialisation in several very demanding market niches over the last few years. The strategic positioning in sophisticated products and markets achieved by companies in the sector in order to adapt to the new demand requirements, as well as their proven intentions and capacity to cooperate, suggest that leather tanning in Igualada may become a benchmark cluster in the future in terms of design, fashion, service and quality.
Actions for strategic change

1. Cost cutting

1.1 Joint purchasing of chemical products: while the purchasing of hides must be reserved for each company individually as it directly affects product quality, the initiative carried out highlighted the fact that the chemical products used in the production process are standard and that joint purchasing would lead to discounts of between 10% and 15%.

1.2 Creating a joint wet work plant: the cluster policy initiative showed that the construction of a suitably sized wet work plant would improve competitiveness in the sector but that this would require such a high level of investment that it could only be done collectively.

1.3 Improving techniques for organising production: developing specialised workshops for stages such as shaving, sammying, setting out, stretching or drying that would increase the micro-cluster’s competitive efficiency was another course of action agreed during the project.

1.4 Closing the water cycle: the conclusion was reached that building channels to take the water from the treatment plant to the starting point of consumption would require investment of approximately one hundred million pesetas at that period, which would be recovered in 4 or 5 years as a result of the savings achieved.

2. Improving innovation and quality

2.1 Improving technology and training: with a view to adopting a more proactive attitude regarding innovation and design, it was agreed to improve the technological and training services provided by AIICA (the Research Association of Leather and Related Industries) and the Tanning School (of a university level and internationally renowned, the only one of its kind in Spain), respectively.

2.2 Studying the Italian market: with the aim of stimulating innovation by learning about the most demanding markets and clients, a proposal was made to carry out a study of the Italian market.

Source: Conejos, J. et al. (1997): Canvi estratègic i clústers a Catalunya.

The tanning business is now strongly conditioned by the following elements:

- World leather demand is stable: the increase in developing countries compensates for the decline in developed countries.
- The number of tanning firms is falling, as well as the number of people they employ.
- There is a high level of competition in the supply of high quality raw materials.
- There is growing competition from Asia, South America and Africa.
- Some artificial products are establishing themselves as a substitute for natural products.

Moreover, the following trends affecting the future may be highlighted:

- Production offshoring is gaining ground.
- The “fast-fashion” factor is becoming increasingly important, and this entails higher quality finishes, more frequent restocking in one year and shorter turnaround times.
- Distribution is changing and consolidating (in all client ranges).
- New players are appearing in the value chain: warehousemen, order managers and production managers.
- International competition is on the rise.
Within this framework, Igualada’s tanning firms have made great efforts to increase the quality of their product, either by using high quality raw materials, as in the case of the best positioned firms in the sector, or by using medium quality raw materials but with high value-added finishes. In order to avoid competing on price, the sector has become highly specialised and has adjusted its production structures to position its products in luxury ranges, as well as significantly intensifying its sales effort to adopt a proactive approach in the search for clients and markets.

Today, among the clients of Igualada’s tanning firms can be found Gucci, Prada, Loewe, Hermes, Louis Vuitton, Versace and D&G in the luxury segment, and Zara, Camper and Timberland in the distribution and/or product brand segment. This change is vital because, as we have seen, when the initiative to strengthen competitiveness was carried out in 1993, the market orientation of these firms was radically different. It must also be stressed that, currently, the business segments aimed at high value-added products are in a better relative position than those that have continued to work for the more traditional, low quality shoe sole market.

Within this context, it is particularly interesting to note the collaborative capacity of the sector’s business people, a good example of which is the BCN Tanners Leather initiative, a platform formed by 5 industrial partners in order to penetrate the Chinese market. Above all, the creation of a shared industrial treatment plant, one of the most important proposals suggested for the process of strategic change promoted in 1993, must be highlighted. This facility finally came into operation in 2005, representing an investment of almost 12 million euros for the firms involved, to be recovered within 15 years. It should be noted that, in addition to the very survival of the tanning industry in Igualada, the creation of this infrastructure has resulted in the gain of invaluable knowledge of the water management process, leading to a 40% reduction in charges for firms for this concept. This treatment plant is a highly technologically advanced facility that carries out the filtering and treatment of waste water and sludge, and is currently working at 50% of its capacity.

As suggested in the 1993 initiative, the work of supporting institutions such as AIICA, the University School and the Tanning Guild significantly influence the quality of the environment in which the micro-cluster’s firms work.

As already mentioned, AIICA has become a benchmark technology centre with more than 10 years’ experience in this field and more than 40 years of support for the tanning industry.

The University School provides the skilled workforce required by the sector. Although its history began with a specialisation in tanning, it has gradually diversified towards other industrial branches.

Finally, the Tanning Guild is an organisation that widely represents the sector, with extensive experience and knowledge and a renewed and highly active management.

However, much remains to be done. The leather tanning firms in Anoia are still too small to tackle some of the challenges posed by the current competitive situation. Their industrial
critical mass is small and the complementary and service sectors are also limited in size. But, above all, Igualada's firms are still located in an almost urban area, which makes it extremely difficult for them to carry out their daily work and also to grow. For this reason, significant investment has been made over the last few years in an attempt to rationalise the use of the space.

Until the 18th century, all the tanneries were within Igualada's city walls. Subsequently, when the city started to grow, the tanneries were moved to the periphery of the walls, where they are currently located. There are many problems now that housing has surrounded these industrial facilities, but moving the factories to a site where they can operate more efficiently and without disturbing the population appears to be a solution that is difficult to accomplish.

Figure 10. Location of tanning firms in Igualada

Source: Observatory for Industrial Foresight, based on Google Maps.
4.2.3 Some lessons

More than twenty initiatives and over ten years’ experience in this first stage of cluster policy allow us draw some conclusions because, naturally, some elements were successful, and others less so. What can be highlighted? For a better understanding, we can differentiate between the results achieved by the public administration and those achieved by firms.

By implementing this new policy, the Catalan government:

a) saw a change in its dialogue with the industrial world;
b) benefited from a better strategic knowledge of the sectors it worked with;
c) identified the support instruments and improvements in coordination required to help companies.

The first point was probably the main outcome since, within the framework of projects promoted by this new industrial policy tool, the Department of Industry and Energy of the Catalan government saw a significant change come about in the parameters governing its dialogue with companies, as they gave up their more demanding attitudes in order to adopt more positive approaches with a view to reinforcing their competitiveness. For example, this was the case of the tanning micro-cluster, whose firms started out by demanding a relaxation of environmental protection and ended up promoting a joint wet work plant and a shared research and development centre, two projects that regard the defence of the environment as an opportunity to strengthen competitiveness.

It should also be noted that the change in dialogue with companies and the fact that the initiatives implemented to strengthen competitiveness combined analysis and process, i.e., the study of the reality of the different businesses and the implementation of actions to strengthen competitiveness, enabled an improvement in strategic knowledge of the different sectors involved, which in turn helped to improve the design of industrial policy. Public programmes to promote industry are often used by companies without prior consideration of their suitability. To prevent this situation from arising, the work with micro-clusters carried out within the framework of the process described above first analysed the competitive problems of each business and then attempted to determine the most suitable instrument for each set of problems.

This ability to detect the most suitable public support mechanism for each initiative was the third great objective achieved by the first stage of the cluster policy with regard to the public administration which, in turn, at the same time also allowed the identification of the type of coordination required between the different public bodies to implement the initiatives the companies needed.

For their part, the firms participating in these initiatives:

a) received an assessment of their strategies;
b) saw joint initiatives strengthened;
c) benefited from the reinforcement of their sectoral structures.
Introducing analysis into the cluster policy carried out by the Catalan government was very important because it provided companies, in each of the initiatives implemented, with a strategic assessment of the competitive status of the business they were working in and, therefore, of their actions, a highly important aspect that is unfortunately often forgotten in the everyday pressure of business. As a consequence of this study on the state of their business and the international trends affecting it, the competitive forces at stake and the quality of the environment in which they operated, the companies involved in the different projects were able to identify new needs with a view to working under better conditions. This was the case, for example, of the meat industries in Girona which realised that, at large points of sale, cold meats competed directly with ready-to-eat products, with all that this entailed.

This new line of industrial policy also emphasised the fact that companies should realise that on certain occasions it is possible to cooperate in order to compete under better conditions, a realisation that was not always easy to achieve. Introducing into the industrial mindset the idea that cooperation among firms can, in some cases, lead to gains in competitive efficiency is one of the assets of cluster policy in Catalonia, although actually accomplishing this has also always been one of its weak points.

Finally, reinforcing sectoral structures was another of the goals achieved by firms. Some of the micro-clusters in question did not have associations to connect them or to try to improve their competitiveness. This was the case, for example, of the household furniture manufacturers in Montsià. However, today there is an association of business people that aims to promote actions and offer services to improve its members’ competitiveness.

In short, it can be said that the main change provided by the first stage of the cluster policy in Catalonia took shape in the establishment of a new relationship between the public sector and private firms within the framework of industrial and business policy. Before carrying out competitiveness reinforcement actions at micro-cluster level, companies and their representatives in the sector used to submit their usually over-generalised requests to the public administration responsible for industry, often concerning macroeconomic issues such as interest rates, fiscal policy or labour legislation. These demands were frequently difficult to meet and were generally beyond the competence of the Catalan government, and so normally received ambiguous responses.

On the other hand, the competitiveness reinforcement initiatives that made up the cluster policy avoided broad, general guidelines, in order to be as specific as possible. This new approach was based on the joint reflection of firms and the public sector regarding the industrial challenges of the future and the strategic positionings required to overcome them, and was achieved by grouping companies by business or strategic segment in a dynamic and participative process and by analysing specific micro-clusters. This task was carried out with the help of consultants specialised in competitive strategy who, in addition to arranging the available information for the sector, were capable of questioning conventional wisdom. International benchmarking was also used in the process to discover the keys to competitiveness of other micro-clusters so that, whenever possible and appropriate, they could be adapted for the circumstances of the micro-cluster in question.
Finally, and with the aim of transmitting to participating companies the commitment of the public administration to the initiatives being implemented, great importance was placed on the presence of the heads of the Department of Industry and Energy at the various public presentations given throughout the process.

However, the model had some limitations that need to be noted before continuing. Firstly, because of the choice to work with micro-clusters, the large majority of the initiatives were small in quantitative terms and the aggregate turnover of the different projects was nearly always very limited, and therefore the impact of new policy on Catalan industry as a whole was not very significant.

The second limitation was that, also nearly always, practically all the initiatives carried out ended up by offering concrete responses that were nonetheless focused almost exclusively on strategic reflection and on intangible or immaterial aspects, which limited their results and visibility. This was due to the fact that the public resources employed were of necessity few, taking into account that it was the first time an industrial policy of these characteristics had been implemented.

The continuation of the projects was not a particularly positive aspect either. All the initiatives started in that period were promoted by the administration and, in most cases, it was very difficult to find a hard core of business people ready to take over from the public sector.

It is also important to note that, during this period, all cluster policy was carried out through the services of specialist consultants, which was very useful in terms of making the process more flexible and not increasing the size of the administration’s structure too much, but had the drawback of the difficulty in its consolidation as a line of industrial policy and also entailed a certain lack of thoroughness in strategic planning.

Finally, despite its theoretical cross-cutting nature, the policy carried out by the Catalan government between 1993 and 2004 was not capable of sufficiently aligning the different institutional agents involved in the competitiveness reinforcement initiatives that were implemented:

• The instruments available to the Department of Industry were only partially used.
• Other public departments were only involved in its initiatives on rare occasions.
• The collaboration of companies’ supporting entities in areas such as training, technology transfer or the provision of services could be significantly improved.
4.3 The second stage: 2004-2009

4.3.1 Map of local industrial production systems in Catalonia

In 2004, after ten years’ experience and twenty-five initiatives carried out, a decision was made that introduced the second stage in the policy of competitiveness reinforcement initiatives in Catalonia: to map the local industrial production systems in Catalonia at that time. This work was justified not only because the Catalan government was offering a public service by providing society with more information on the foundations of its economy, but in particular because, by carrying this out, it was following the indications of the European Union, which considered mapping clusters to be essential in order to define and implement cluster policy, encouraging the different member states to carry out studies with this aim in mind (European Commission, 2003).

Although academic debate on the differences between clusters, industrial districts and local production systems is still open, for policymakers and cluster practitioners these conceptual categories can not only co-exist perfectly well but also, from a practical point of view, refer to three ways of describing to the same phenomenon: that firms belonging to a certain sector or strategic segment tend to concentrate in a certain geographical area, creating links of cooperation and competition among them. Consequently, when carrying out the mapping in question, it was decided to use the expression “local production system” (LPS) to refer to the socio-economic situations to be identified, and to be able to do so with greater conceptual flexibility than if the terms clusters or districts had been used, which were actually the ones that had polarised the debate in the past.\(^5\)

Within the context of these considerations, this mapping aimed to identify the local production systems of Catalan industry by listing the most important characteristics of each one as well as describing their activity, also providing a short comment on their origin and development, a list of the main agents that made up the system, particularly its firms and institutions, and the quantitative information required to get an idea of its size, i.e., its companies’ turnover and number of employees.

Methodologically, the map of the local production systems for Catalan industry was produced in two stages. The first involved the identification of relevant concentrations of firms from the same business, normally at county level. In the second stage, the data from

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\(^5\) Moreover, the significance of this option is diminished in practice when we look at the definition of each of these conceptual categories.


the initial stage was selected, eliminating those company concentrations that could not be confirmed as a local production system, as well as gathering the most relevant economic data for the clusters identified.6

The study found 42 industrial local production systems in Catalonia made up of 9,000 industrial establishments that employed close to 235,000 people and generated a turnover of over 45 billion euros. These figures accounted for 26% of the establishments, 36% of the employment and 39% of the turnover of Catalan industry.

As can be seen in the maps, the distribution of the local production systems in Catalonia reflects that of industry in general, strongly concentrated around Barcelona (Vallès Occidental, Baix Llobregat, Barcelonès and Vallès Oriental) and in a secondary, concentric ring (Maresme, La Selva, Osona, Bages, Anoia and Alt Penedès). However, the number of local production systems in the counties of Girona province (Gironès, Garrotxa, Baix Empordà and Pla de l’Estany) is also worth noting.

Figure 11. Map of the local industrial production systems in Catalonia


6 The study’s methodological details can be consulted in Map of Local Industrial Production Systems in Catalonia. Hernández, J. M., Fontrodona, J. and Pezzi, A. (2005). We should note, however, that after identifying company concentrations using data from the Register of Industrial Establishments, this was filtered using a relative specialisation index and with a minimum size requirement within Catalan industry as a whole, and afterwards numerous interviews were held with industry experts in order to eliminate from the whole those concentrations of companies from the same business where there was no evidence of inter-firm cooperation or externalities to facilitate their competitive efficiency.
By number of workers, the three largest local production systems were those of metal products, the automotive industry and plastic products. All three are located within the metropolitan area of Barcelona and some neighbouring counties, although, as the other two systems largely work for it, we should note the central, structuring role played by the automotive LPS. The large market for these local production systems contrasts with that of the more modest systems: decorative ceramics in the counties of southern Girona, machinery for food industries in the Vallès Occidental and agricultural machinery in the counties of Ponent.

In terms of territory, the largest systems were those of the automotive industry, metal products and olive oil, while the local production systems with the smallest territory were those of leather tanning in Anoia and bodywork in La Selva, which were municipal in scope (Igualada and Arbúcies, respectively).

The LPS of pork products in the counties of Girona and in the county of Osona was definitely the most complete local production system in terms of structure, taking into account the fact that there were firms within its geographical area that carried out a large part of the production stages, as well as technology suppliers, associations, technology centres, training centres and other agents and where there were ties of cooperation and subcontracting, as well as producers of feed and pig farms and even the transforming industry, including slaughterhouses, cutting plants and, above all, an important meat industry machinery business, including some of the world’s most technologically advanced companies in that segment.
### Table 1. The local production systems in Catalonia

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<tbody>
<tr>
<td><strong>Food and beverages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pork meat in the counties of Girona and Osona county</td>
<td>222</td>
<td>8,289</td>
<td>2,000</td>
</tr>
<tr>
<td>Mineral water in La Selva</td>
<td>11</td>
<td>634</td>
<td>400</td>
</tr>
<tr>
<td>Wine and cava in the Penedés</td>
<td>214</td>
<td>2,478</td>
<td>575</td>
</tr>
<tr>
<td>Olive oil in the south and Ponent</td>
<td>129</td>
<td>887</td>
<td>500</td>
</tr>
<tr>
<td><strong>Textiles—clothing and hides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing in the metropolitan area of Barcelona</td>
<td>500</td>
<td>7,894</td>
<td>700</td>
</tr>
<tr>
<td>Wool spinning and weaving in Vallès Occidental</td>
<td>88</td>
<td>2,616</td>
<td>275</td>
</tr>
<tr>
<td>Cotton spinning and weaving in Central Catalonia</td>
<td>153</td>
<td>2,945</td>
<td>325</td>
</tr>
<tr>
<td>Recycled cotton spinning in La Garrrotxa</td>
<td>22</td>
<td>738</td>
<td>100</td>
</tr>
<tr>
<td>Knitted fabrics in Anoia</td>
<td>129</td>
<td>2,611</td>
<td>225</td>
</tr>
<tr>
<td>Knitted fabrics inMaresme</td>
<td>196</td>
<td>2,251</td>
<td>200</td>
</tr>
<tr>
<td>Narrow fabrics in Bagues</td>
<td>28</td>
<td>820</td>
<td>100</td>
</tr>
<tr>
<td>Leather tanning in Anoia</td>
<td>46</td>
<td>791</td>
<td>175</td>
</tr>
<tr>
<td>Leather tanning in Osona and Vallès Oriental</td>
<td>28</td>
<td>1,918</td>
<td>300</td>
</tr>
<tr>
<td><strong>Wood, furniture and cork</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood industries in Osona and La Selva</td>
<td>227</td>
<td>1,228</td>
<td>100</td>
</tr>
<tr>
<td>Cork in the Costa Brava</td>
<td>83</td>
<td>1,130</td>
<td>225</td>
</tr>
<tr>
<td>Household furniture in Vallès Oriental</td>
<td>95</td>
<td>942</td>
<td>100</td>
</tr>
<tr>
<td>Household furniture inMontsià</td>
<td>36</td>
<td>938</td>
<td>100</td>
</tr>
<tr>
<td><strong>Paper, publishing and graphic arts</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production of paper and cardboards in the counties of Anoia, Bitlles and Llobregat</td>
<td>31</td>
<td>1,673</td>
<td>400</td>
</tr>
<tr>
<td>Graphic arts and publishing in the metropolitan area of Barcelona and Central Catalonia</td>
<td>1,025</td>
<td>19,208</td>
<td>2,250</td>
</tr>
<tr>
<td><strong>Chemical industries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer chemicals in the metropolitan area of Barcelona</td>
<td>205</td>
<td>8,056</td>
<td>2,100</td>
</tr>
<tr>
<td>Raw chemicals in Camp de Tarragona</td>
<td>47</td>
<td>4,819</td>
<td>5,600</td>
</tr>
<tr>
<td>Pharmaceutical products in the metropolitan area of Barcelona</td>
<td>132</td>
<td>12,523</td>
<td>3,300</td>
</tr>
<tr>
<td><strong>Plastic materials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic products in the metropolitan area of Barcelona</td>
<td>803</td>
<td>28,182</td>
<td>3,800</td>
</tr>
<tr>
<td><strong>Metallurgy and metal products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal products in the metropolitan area of Barcelona and Central Catalonia</td>
<td>2,680</td>
<td>39,018</td>
<td>4,250</td>
</tr>
<tr>
<td><strong>Machinery and mechanical equipment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery for food industries in Vallès Occidental</td>
<td>38</td>
<td>500</td>
<td>80</td>
</tr>
<tr>
<td>Machinery for food industries in the counties of Girona and Osona county</td>
<td>77</td>
<td>939</td>
<td>125</td>
</tr>
<tr>
<td>Agricultural machinery in the counties of Ponent</td>
<td>85</td>
<td>615</td>
<td>75</td>
</tr>
<tr>
<td>Packing and packaging machinery and equipment in the metropolitan area of Barcelona</td>
<td>54</td>
<td>1,443</td>
<td>300</td>
</tr>
<tr>
<td>Machinery for the textile and clothing industries in Bagues and Vallès Occidental</td>
<td>61</td>
<td>790</td>
<td>100</td>
</tr>
<tr>
<td>Handling and elevating machinery in the metropolitan area of Barcelona</td>
<td>139</td>
<td>4,400</td>
<td>925</td>
</tr>
<tr>
<td>Valves and taps in Baix Llobregat and Vallès Occidental</td>
<td>66</td>
<td>1,700</td>
<td>250</td>
</tr>
<tr>
<td>Moulds and dies in the metropolitan area of Barcelona</td>
<td>278</td>
<td>3,691</td>
<td>300</td>
</tr>
<tr>
<td><strong>Electrical and electronic equipment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics in the metropolitan area of Barcelona</td>
<td>125</td>
<td>7,656</td>
<td>2,200</td>
</tr>
<tr>
<td>Electrical apparatus in the metropolitan area of Barcelona</td>
<td>133</td>
<td>5,222</td>
<td>750</td>
</tr>
<tr>
<td>Lights and lighting equipment in the metropolitan area of Barcelona</td>
<td>125</td>
<td>2,500</td>
<td>300</td>
</tr>
<tr>
<td><strong>Transport materials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automotive industry in the industrial outskirts of Barcelona</td>
<td>226</td>
<td>35,188</td>
<td>9,600</td>
</tr>
<tr>
<td>Bodywork in La Selva</td>
<td>23</td>
<td>1,276</td>
<td>250</td>
</tr>
<tr>
<td>Motorcycles in the metropolitan area of Barcelona</td>
<td>37</td>
<td>2,500</td>
<td>900</td>
</tr>
<tr>
<td>Railway material in the metropolitan area of Barcelona</td>
<td>120</td>
<td>11,000</td>
<td>1,100</td>
</tr>
<tr>
<td>Aerospace material in the metropolitan area of Barcelona</td>
<td>43</td>
<td>750</td>
<td>125</td>
</tr>
<tr>
<td><strong>Various manufacturing industries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articles of jewellery in Barcelonaes</td>
<td>180</td>
<td>820</td>
<td>100</td>
</tr>
<tr>
<td>Decorative ceramics in the counties of southern Girona</td>
<td>67</td>
<td>579</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total sectors</strong></td>
<td>9,007</td>
<td>234,210</td>
<td>45,640</td>
</tr>
</tbody>
</table>

(*) In millions of euros.

Other highly complete local production systems were the automotive industry, motorcycles and railway materials in the metropolitan area of Barcelona, which were also made up of nearly the entire value chain and had important associations, trade fairs, training centres and technology centres.

With regard to their origins, some LPSs grew up close to the natural resources they needed for their work (wine and cava in Penedès, mineral water in La Selva, cotton spinning and weaving in Central Catalonia, wood in Osona and La Selva, cork in the Costa Brava, paper and cardboard in the river basins of Anoia, Bitlles and Llobregat, etc.). Many others emerged close to Barcelona to take advantage of the proximity of suppliers, clients and/or the port. Others originated from investments made by large firms seeking to be near the port of Tarragona (raw chemicals in Camp de Tarragona). Others started to emerge after the investment made by SEAT (automotive industry, handling and elevating machinery, moulds and dies, etc.) while some grew up around successive spin-offs based on an initial company (household furniture in Montsià and Vallès Oriental, bodywork in La Selva, etc.).

The sector with the most local production systems was textiles-clothing and leather, with nine, although the main sector in terms of employees and turnover was that of transport materials.

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Number of LPSs</th>
<th>% of total</th>
<th>Establishments</th>
<th>% of total</th>
<th>Employees</th>
<th>% of total</th>
<th>Turnover (*)</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and beverages</td>
<td>4</td>
<td>9.5%</td>
<td>576</td>
<td>6.4%</td>
<td>12,288</td>
<td>5.2%</td>
<td>3,475</td>
<td>7.6%</td>
</tr>
<tr>
<td>Textiles-clothing and leather</td>
<td>9</td>
<td>21.4%</td>
<td>1,190</td>
<td>13.2%</td>
<td>22,564</td>
<td>9.6%</td>
<td>2,400</td>
<td>5.3%</td>
</tr>
<tr>
<td>Wood, furniture and cork</td>
<td>4</td>
<td>9.5%</td>
<td>441</td>
<td>4.9%</td>
<td>4,238</td>
<td>1.8%</td>
<td>525</td>
<td>1.2%</td>
</tr>
<tr>
<td>Paper, publishing and graphic arts</td>
<td>2</td>
<td>4.8%</td>
<td>1,056</td>
<td>11.7%</td>
<td>20,881</td>
<td>8.9%</td>
<td>2,650</td>
<td>5.8%</td>
</tr>
<tr>
<td>Chemical industries</td>
<td>3</td>
<td>7.1%</td>
<td>384</td>
<td>4.3%</td>
<td>25,470</td>
<td>10.9%</td>
<td>11,000</td>
<td>24.1%</td>
</tr>
<tr>
<td>Plastic materials</td>
<td>1</td>
<td>2.4%</td>
<td>803</td>
<td>8.9%</td>
<td>28,182</td>
<td>12.0%</td>
<td>3,800</td>
<td>8.3%</td>
</tr>
<tr>
<td>Metallurgy and metal products</td>
<td>1</td>
<td>2.4%</td>
<td>2,680</td>
<td>29.8%</td>
<td>39,018</td>
<td>16.7%</td>
<td>4,250</td>
<td>9.3%</td>
</tr>
<tr>
<td>Machinery and mechanical equipment</td>
<td>8</td>
<td>19.0%</td>
<td>798</td>
<td>8.9%</td>
<td>14,078</td>
<td>6.0%</td>
<td>2,155</td>
<td>4.7%</td>
</tr>
<tr>
<td>Electrical and electronic equipment</td>
<td>3</td>
<td>7.1%</td>
<td>383</td>
<td>4.3%</td>
<td>15,378</td>
<td>6.6%</td>
<td>3,250</td>
<td>7.1%</td>
</tr>
<tr>
<td>Transport materials</td>
<td>5</td>
<td>11.9%</td>
<td>449</td>
<td>5.0%</td>
<td>50,714</td>
<td>21.7%</td>
<td>11,975</td>
<td>26.2%</td>
</tr>
<tr>
<td>Various manufacturing industries</td>
<td>2</td>
<td>4.8%</td>
<td>247</td>
<td>2.7%</td>
<td>1,399</td>
<td>0.6%</td>
<td>160</td>
<td>0.4%</td>
</tr>
<tr>
<td>Total sectors</td>
<td>42</td>
<td>100%</td>
<td>9,007</td>
<td>100%</td>
<td>234,210</td>
<td>100%</td>
<td>45,640</td>
<td>100%</td>
</tr>
</tbody>
</table>

(*) In millions of euros.

Finally, although, as previously mentioned, the local production systems as a whole accounted for 36% of the employment and 39% of the turnover of Catalan industry, those belonging to transport materials had 90% of the employees and 85% of the turnover of their sector, making this branch the most heavily clustered in Catalan industry.
Table 3. Relative importance of industries in LPSs in Catalan industry as a whole
Data from 2003

<table>
<thead>
<tr>
<th>Sectors</th>
<th>LPS Firms</th>
<th>% of sector in Catalonia</th>
<th>LPS workers</th>
<th>% of sector in Catalonia</th>
<th>LPS turnover (*)</th>
<th>% of sector in Catalonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and beverages</td>
<td>576</td>
<td>20.4%</td>
<td>12,288</td>
<td>16.4%</td>
<td>3,475</td>
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</tr>
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<td>20.2%</td>
<td>22,564</td>
<td>26.4%</td>
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<td>28.5%</td>
</tr>
<tr>
<td>Wood, furniture and cork</td>
<td>441</td>
<td>10.5%</td>
<td>4,238</td>
<td>12.6%</td>
<td>525</td>
<td>17.0%</td>
</tr>
<tr>
<td>Paper, publishing and graphic arts</td>
<td>1,056</td>
<td>25.9%</td>
<td>20,881</td>
<td>35.6%</td>
<td>2,650</td>
<td>29.7%</td>
</tr>
<tr>
<td>Chemical industries</td>
<td>384</td>
<td>33.8%</td>
<td>25,470</td>
<td>40.5%</td>
<td>11,000</td>
<td>59.6%</td>
</tr>
<tr>
<td>Plastic materials</td>
<td>803</td>
<td>52.3%</td>
<td>28,182</td>
<td>76.2%</td>
<td>3,800</td>
<td>70.0%</td>
</tr>
<tr>
<td>Metallurgy and metal products</td>
<td>2,680</td>
<td>36.3%</td>
<td>39,018</td>
<td>42.8%</td>
<td>4,250</td>
<td>40.3%</td>
</tr>
<tr>
<td>Machinery and mechanical equipment</td>
<td>798</td>
<td>30.1%</td>
<td>14,078</td>
<td>27.9%</td>
<td>2,155</td>
<td>33.2%</td>
</tr>
<tr>
<td>Electrical and electronic equipment</td>
<td>383</td>
<td>32.8%</td>
<td>15,378</td>
<td>38.7%</td>
<td>3,250</td>
<td>39.5%</td>
</tr>
<tr>
<td>Transport materials</td>
<td>449</td>
<td>64.6%</td>
<td>50,714</td>
<td>90.5%</td>
<td>11,975</td>
<td>84.8%</td>
</tr>
<tr>
<td>Various manufacturing industries (**)</td>
<td>247</td>
<td>–</td>
<td>1,399</td>
<td>–</td>
<td>160</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total sectors</strong></td>
<td>9,007</td>
<td>26%</td>
<td>234,210</td>
<td>36%</td>
<td>45,640</td>
<td>39%</td>
</tr>
</tbody>
</table>

(*) In millions of euros.
(**) A comparison cannot be made as this is residual and multi-sectoral.

4.3.2 Operational rethinking

It has already been mentioned that mapping existing local industrial production systems in Catalonia opened the door, in 2004, to the second stage in cluster policy in Catalonia. This mapping initiative aimed to find out more about the situation on the ground and critically review the previous experience, in particular everything related to the limitations of a model focused exclusively on micro-clusters and put into practice by subcontracting all the competitiveness reinforcement initiatives launched. It led to an operational reappraisal in two broad areas:

- On the one hand, a knowledge and information unit was created within the public administration, one of whose goals was to analyse the industrial sectors and clusters of the Catalan economy in order to diagnose their situation and propose measures and initiatives to reinforce their competitiveness.
- On the other hand, a gradual process of diversifying competitiveness reinforcement initiatives was started.

Creating the Observatory for Industrial Foresight

In effect, in the Strategic Agreement for the Internationalisation, Quality of Employment, and Competitiveness of the Catalan Economy, signed by the Catalan government and by the main economic and social institutions in the country (Foment de Treball, FEPIME, PIMEC,
UGT, and CC.OO.) the need to establish an Observatory for Industrial Foresight (OPI) was agreed. The OPI would be responsible for analyzing the problems of the various industrial sectors, predicting their evolution and proposing measures to strengthen competitiveness.

Although the word ‘cluster’ did not appear at that time among the tasks attributed to the Directorate General for Industry, the unit, which was assigned to the Directorate General for Industry, (at that time the Department of Industry and Energy), commenced operations with a methodology similar to that of specialist strategic analysis consultants at sectoral level.

The first competitive analyses carried out by the OPI were in traditional sectors of Catalan industry, such as the clusters of moulds and dies, sheepskin in the county of Osona and kitchen and bathroom taps in Baix Llobregat. They highlighted the fact that diagnosis was not enough in order to have a concrete effect on companies’ competitiveness; the analysis stage needed to maintain an ongoing relationship with the setting up of competitiveness reinforcement initiatives. To answer this need, a close cooperation was established with a department dedicated to business development created at the Centre for Business Innovation and Development (CIDEM), the agency supporting innovation under the auspices of the government department responsible for industrial matters. This unit then became responsible for implementing competitiveness reinforcement initiatives focused on stimulating and promoting strategic change, and which needed to conform to the diagnoses previously made by the Observatory for Industrial Foresight.

This collaboration between the Observatory for Industrial Foresight of the Directorate General for Industry and the Business Development Department of CIDEM paved the way for a new cluster policy scheme which had two closely connected stages, combining analysis and subsequent execution of competitiveness reinforcement initiatives.

During the first phase, which lasted between three and five months, the OPI produced a document of strategic and competitive analysis by means of a process in which the holding of interviews (between 25 and 40) with the main companies and agents in the cluster was very important.

Briefly, this analysis focused on:

1. Definition of the cluster or group of companies targeted by the initiative and identification of the principal companies and other stakeholders involved.

7 The Strategic Agreement for the Internationalisation, Quality of Employment and Competitiveness of the Catalan economy (hereinafter the Strategic Agreement) was signed for the first time on 16th February 2005. Measure no. 56 states that "An Observatory for Industrial Foresight shall be created to ascertain the problems of the sectors and companies and, at the same time, to have the information, within the Observatory’s scope, through a process of interlocution of social agents with the administration. The purpose of this Observatory shall be to ascertain the problems of the different Catalan sectors and firms, to predict how they might develop and suggest the design of future lines of action. In order to establish a permanent interlocutor with the Administration and to monitor the agreements contained in this document, the social agents, through the sector commission, shall take part in the areas of work of a sectoral nature of the Observatory for Industrial Foresight according to the needs they jointly consider".

8 The explicit link between the Observatory for Industrial Foresight and the Catalan government’s cluster policy came about in 2008 with the signing of the revised Strategic Agreement for the period 2008-2011. See: www.acordestrategic.cat.

9 The Centre for Innovation and Business Development (CIDEM) has since merged with the Consortium for the Commercial Promotion of Catalonia (COPCA) to create the new agency dedicated to promoting the competitiveness of Catalan industry (ACC1Ó) (www.acc10.cat).
2. Analysis of the business and strategic segmentation, including possible options for the companies.
3. Analysis of the local context in which the companies competed, together with an exercise in international benchmarking to learn about the competitive situation of other clusters in the world.
4. Identification of the main areas of competitive improvement to work in, in order to set up specific projects. These would make up the action plan to be designed in collaboration with CIDEM’s Business Development department.\(^{10}\)

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**Figure 13. Main development phases of a diagnosis and report contents**

<table>
<thead>
<tr>
<th>Project work phases</th>
<th>Standard structure of the diagnosis reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Definition of the sector and its key traits</td>
</tr>
<tr>
<td></td>
<td>• Analysis of the sector’s competitive forces</td>
</tr>
<tr>
<td></td>
<td>• Analysis of the environment</td>
</tr>
<tr>
<td></td>
<td>• Summary analysis of the sector (DAFO)</td>
</tr>
<tr>
<td></td>
<td>• Business trends globally (and benchmarking of similar clusters)</td>
</tr>
<tr>
<td></td>
<td>• Suggestions to companies and the public administration</td>
</tr>
<tr>
<td>2</td>
<td>• Gathering and processing the available codified information on the sector</td>
</tr>
<tr>
<td></td>
<td>• Preparing expert interviews</td>
</tr>
<tr>
<td>3</td>
<td>• Interviews with sector experts and social agents</td>
</tr>
<tr>
<td></td>
<td>• Gathering non-codified information</td>
</tr>
<tr>
<td>4</td>
<td>• Processing, comparing and analysing information internally</td>
</tr>
<tr>
<td></td>
<td>• Drawing up the report and delivery</td>
</tr>
<tr>
<td></td>
<td>• Co-designing the action plan</td>
</tr>
<tr>
<td></td>
<td>• Monitoring and supporting some actions</td>
</tr>
</tbody>
</table>

Source: Observatory for Industrial Foresight.

As previously stated, these diagnostic documents, which were designed from the start to be concise, thorough, neutral and confidential, were produced so that CIDEM’s Business Development department could begin work on the second phase of the process, starting with the design of action plans focusing mainly on initiatives of horizontal and pre-competitive cooperation, such as specific training, innovation and/or internationalization projects and, above all, the key aspect of the strategic change to be carried out, both at the level of individual firms and also of the cluster as a whole.

\(^{10}\) With the creation of ACC1Ó, this department became the Cluster Promotion Area of the Centre for Business Innovation.
It should be made clear that while strategic change was, and still is, one of the main elements of the Catalan government’s cluster policy, one of the most important innovations introduced in the second stage of this line of work, which this section is examining, was the use of a new industrial policy instrument conceived and designed specifically to support transforming projects arising out of competitiveness reinforcement initiatives.

The New Business Opportunities programme (NON) appeared in 2004, was allocated a budget of four million euros and was designed as an operational tool to facilitate strategic change in small and medium-sized companies. This programme was based on the premise that facilitating strategic change towards more profitable businesses in the medium-long term was a key factor in improving the competitiveness of companies, and that working at cluster level enabled the identification of future challenges and the changes required to face them under better relative conditions.

Since then, the NON programme has facilitated this strategic change by co-financing the production of a business plan following on from the competitive diagnosis carried out previously by the OPI and, subsequently, with financial support to adapt the company’s structure to the requirements of the new business model that it wished to develop. This aid towards structural change may be assigned to training programmes, specific external consultancy, research and development, investment in fixed assets, etc.

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11 In fact, the first assessment of this new way of working at sectoral level was published under the title Canvi estratègic i clústers a Catalunya (Conejos, J. et al. 1997).

12 The NON programme helps to finance up to 75% of the costs of producing a business plan, with a maximum of 60,000 euros per company and up to 100,000 euros, also per company, for structural adaptation costs. More information on the ACC1Ó website (www.acc10.cat).
It should be noted that, during the five years the programme has been in operation, more than 400 strategic and structural change projects have been supported, 75% of which were companies with fewer than 50 employees.

Figure 15. Promotional leaflet and operational system of the New Business Opportunities programme (NON)

"Structure follows strategy"
Alfred Chandler, Massachusetts Institute of Technology (MIT)

> Action in emerging markets
> New business model
> Extending product range
> Own product development
> Marketing technology
> Brand positioning and distribution channels

Funding for STRATEGIC CHANGE
Up to 75% non-refundable grant for external consultancy
Market surveys. Business plan
Up to 60,000 euros

Funding for STRUCTURAL CHANGE
Fixed assets: up to 30%,
External consultancy up to 75%
Training: up to 35%
Product certification and official approval: up to 75%
R&D: up to 60%. Up to 200,000 euros

Creativity, technology, funding, design, product development,
market research, marketing

Strategic support

Source: ACC1Ó.

Another new feature in this new stage of the Catalan government’s cluster policy was related to the need to ensure continuity for the competitiveness reinforcement initiatives underway.

To do so, it was decided to involve a number of external agents who, in addition to guaranteeing the projects would continue, could also contribute with local and sectoral knowledge to the initiatives promoted by the public administration. These agents comprised around thirty organisations already present in the locality (the so-called PIC network, the former CIDEM innovation points network) composed both of public bodies (the economic development services of some councils, etc.) and private and semi-public entities (sector associations, chambers of commerce, etc.), responsible for monitoring the projects started, a task that sometimes even included providing a cluster manager for the competitiveness reinforcement initiatives in progress. The work of the PIC network and particularly the people involved in implementing the cluster action plan was a highly important asset in this new methodological approach that not only contributed to training professionals working with clusters but also helped provide external resources to finance projects.
Diversification of competitiveness reinforcement initiatives

The second main field of the operational reassessment which took place in the period 2004-2009 consisted of a significant diversification in competitiveness reinforcement initiatives, during a gradual process in which pilot tests were carried out to improve cluster policy and incorporate innovations based on experience gained.

An initial change consisted of beginning to work with groups of companies which did not fit the classic definition of a cluster, being neither from the same sector nor located in the same geographical area. In line with this new focus, clusters went from being the reference unit for defining and implementing competitiveness reinforcement initiatives to becoming a way of working with a certain group of companies with common strategic challenges. Strategy was the key factor in identifying a group of companies with a high potential for implementing competitive improvement projects.

The initiatives carried out under this model focused on companies that employed successful strategies that were translated into turnover growth rates higher than the sector average and involving the reconsideration of some basic elements used up to that point. This new working methodology started in 2006 with a pilot project related to one of the most traditional industrial sectors in Catalonia: textiles-clothing. This initiative, focusing on companies with a branding and retail strategy, is covered in detail in section 5.3 of this book.

With these new projects, the element of geographical concentration ceased to be so important. The most traditional geographical clusters used to contain all kinds of firms, whereas discrimination through strategy excluded some, even if belonging to the same business. With this focus, the common features among the companies were more related to sharing the same strategy and similar competitive challenges than to geographic proximity.

Another step in the process of diversification of the competitiveness reinforcement initiatives came with projects related to the so-called “emergent clusters” or “potential clusters”, i.e. with the identification of groups of companies which, despite having a limited critical mass, have a high growth potential. These projects were orientated towards identifying obstacles to their development and also towards achieving an improved structuring of the cluster they belonged to. Examples of targeted sectors with these characteristics are photonics and renewable energies.

A third example of the diversification of projects developed from 2004 onwards can also be seen in the “territorial innovation plans”. In this case, the starting point was the territory rather than the sector or strategy. Starting with a specific territory (often a county, but sometimes a city or metropolitan area), strategic and competitive analysis was used to draw up development plans based on projects with drawing power, carried out by key people. These projects, implemented in particular by the Cluster Promotion Area of ACCIÓ, were supported by the cooperation of local bodies such as town and county councils.
Table 4. Types of competitiveness reinforcement projects with cluster methodology implemented by the Secretariat for Industry and Enterprise and ACCIÓ

<table>
<thead>
<tr>
<th>Project type</th>
<th>Example</th>
<th>Geographical scope</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiatives to reinforce competitiveness in the cluster area</td>
<td>Kitchen and bathroom taps in Baix Llobregat</td>
<td>One or several counties</td>
<td>Analysis and reinforcement of cluster competitiveness via strategic change and other areas of competitive improvement</td>
</tr>
<tr>
<td>Project to identify successful strategies at sector level</td>
<td>Growth and profitability strategies in clothing textiles</td>
<td>Variable</td>
<td>Identification of emerging growth and profitability strategies in traditional sectors. Strategy-based grouping and work</td>
</tr>
<tr>
<td>Incipient clusters</td>
<td>Optics and photonics</td>
<td>Variable</td>
<td>Mapping and identification of emerging and potential clusters, and growth stimulation</td>
</tr>
<tr>
<td>Local innovation and development plan</td>
<td>Innovation plan for the county of Osona</td>
<td>City or county</td>
<td>Analysis of the area’s innovation and growth potential and design of initiatives for its development</td>
</tr>
</tbody>
</table>

Source: Observatory for Industrial Foresight.

Figure 16. Main competitiveness reinforcement initiatives carried out in Catalonia as part of the Catalan government’s cluster policy from 2004 onwards

Source: Observatory for Industrial Foresight.
4.3.3 A case study: kitchen and bathroom taps in Baix Llobregat\(^\text{13}\)

In 2005, the kitchen and bathroom tap sector seemed to be in good health because there was a housing construction boom at the time. However, many auxiliary companies were closing down, and this set off warning bells that triggered a competitiveness reinforcement initiative in the sector. In line with the methodology described above, this initiative started with a competitive diagnosis by the Observatory for Industrial Foresight of the Directorate General for Industry.

Tap manufacture is quite a traditional activity within the metal transformation sector. Almost all taps are made of brass\(^\text{14}\) and a significant proportion of the production, especially the final stages of finishing and surface treatment, is subcontracted out to auxiliary firms because these operations are not profitable for companies with small production output.

![Production process of a kitchen or bathroom tap](image)

**Source:** Observatory for Industrial Foresight.

Although there is an increasing number of “designer” taps, manufacture is not very complicated from a technological point of view, and so many of the most important manufacturers moved a significant share of their production to China and countries in Eastern Europe, such as Poland, as a result of rising production costs in Spain (and Europe).

At that time, the sector turned over almost 300 million euros in Catalonia, employing 1,600 people in some fifty firms, both manufacturers of the end product and suppliers of parts or services, mostly located in the county of Baix Llobregat, one of the most industrialised counties in Catalonia and which, at that time, was suffering the most from offshoring. Catalonia’s turnover represented 80% that of Spain, which, in turn, was the third largest manufacturer in Europe after Italy and Germany.

\(^{13}\) This section has been prepared with the collaboration of Joan Martí, Director of the Cluster Promotion Area of ACC1Ó.

\(^{14}\) Raw materials and components can account for 50% of the production cost.
The main agents in the cluster were end product companies and suppliers of parts and services, firms selling foreign products (top range products from Italy, Germany and other northern European countries, and lower ranges mostly from China and Eastern Europe), and also some firms that imported foreign products but carried out the final assembly in Catalonia, at the end of the production chain.

However, these companies did not have any representative structure at the time (there was only one association, AGRIVAL, which grouped together a portion of the manufacturers and was dedicated, from its offices in Madrid, to matters relating to official standards approval and certification), and neither was there any dedicated training centre or technology transfer centre. The only relation with a technology centre was the one that some firms had with the LGAI (General Laboratory of Trials and Research) for matters of official standards certification (see fig. 19).

It should be noted that one of the cluster’s most significant characteristics was the high degree of concentration of production: its largest firm (world leader in the sector of bathroom and kitchen fittings) accounted for almost 50% of the whole turnover; the top five companies accounted for 80% and practically all of them also had production plants in low-cost countries, which led to a constant decline in workload for auxiliary businesses, with the closure of a dozen small firms and the loss of more than 250 jobs in the three years before the initiative was implemented.
Analysis of the competitive situation

In 2005, the kitchen and bathroom tap cluster in Baix Llobregat had two apparently contradictory characteristics. On the one hand, it was an expanding business due to the strong growth in its client, the construction sector, which also led to an increasing number of firms in Catalonia selling products from abroad; on the other hand, offshoring to China and other low-cost countries was causing a big crisis among local suppliers of parts and services, whose workload was steadily decreasing. Moreover, it was also quite evident that there was growing polarisation between premium range products (in which design was important) and the cheapest products (normally imported from China). Therefore, in the strategic segmentation carried out by the Observatory for Industrial Foresight during its analysis of the sector’s competitive situation, basically three kinds of manufacturers were identified:

1. Wide range suppliers: companies with an extensive product catalogue with wide-ranging qualities and prices and with renowned brands in the market in all segments. In practice there were two companies that worked for the new build sector with a large production output.

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15 During the previous four years, imports from China had multiplied by 15 and those from Italy had grown by almost 90%.

16 Although this was not a specifically Catalan phenomenon, the price of copper, the main component of brass, which practically all taps are made from and which can account for up to 20% of the product’s final production cost, had multiplied by 2.5 over the previous four years. Paradoxically, however, this provided Catalan manufacturers with a competitive advantage over low-cost countries (China, among others), as in these countries raw materials represent a much larger proportion of the production cost.
2. Specialised firms: normally foreign companies with a smaller range of products, concentrated in the premium segment with established brands. Their strategy was orientated towards product differentiation and innovation. They enjoyed comparatively higher margins and mainly worked for the replacement market.

3. General profile manufacturers: companies that worked by volume-price and sold a not very differentiated standard design product. In spite of having their own (non-premium) brand, they manufactured, or mostly imported, taps for third parties (often department stores and DIY chains)\(^\text{17}\).

Figure 20. Strategic segmentation of companies from the kitchen and bathroom tap cluster

Moreover, as previously mentioned, there were some twenty auxiliary firms mostly dedicated to providing complementary services to production in the areas of finishes, surface treatment and assembly. These firms only competed on cost and were continuously losing competitiveness because offshoring reduced their production volumes, which, in turn, raised their production costs. The consequences were paid by those manufacturers who had not offshored to China or Eastern Europe, whose inputs were increasingly more expensive. To complete this vicious circle, the crisis in the auxiliary sector was leading to the closure of many highly specialised workshops supplying premium range companies that manufactured the best design and quality products and had a more developed strategy, consequently compromising their future.

\(^{17}\) There were increasing numbers of manufacturers that imported middle to low range products for the new build or retail markets.
Within this context, the diagnosis carried out by the Observatory for Industrial Foresight revealed some weaknesses in the cluster: firstly, its excessive dependence on the housing construction sector in Spain which, during the boom years, reduced the pressure to innovate and diversify in terms of geographical markets\(^\text{18}\) and which, when the crisis came, accentuated its fragility.

Secondly, the offshoring to China of many local manufacturers not only compromised the viability of many auxiliary firms but was also leading to a great skills loss (in contextual know-how), which made it difficult to implement the differentiating strategy started by more innovative companies in order to gain a foothold in the premium range segment, traditionally dominated by foreign firms.

Finally, the lack of coordination between companies and the absence of a body to represent the cluster made any kind of reaction difficult, except for individual, short-term ones.

\(^{18}\) The cluster’s exports never exceeded 10% of production, a very different figure from that of its competitors, such as Italy or Germany.
The action plan and cluster promotion

The conclusions of the Observatory for Industrial Foresight’s competitive diagnosis were presented to the sector at a working session in Sant Feliu de Llobregat, which brought together for the first time not only the main manufacturers of the end product, at least some of whom periodically met through AGRIVAL, but also other important agents of the cluster, such as manufacturers not belonging to the association and, above all, firms from the auxiliary sector, which were not represented by any trade organisation at the time.

The initial reaction of the sectoral establishment was one of mistrust. Some of the most important companies in the cluster, with a great deal of influence over the rest, stated categorically that the Catalan government did not have the capability to improve the sector’s competitiveness, which was conditioned, according to them almost exclusively, by unfair competition from low wage countries, especially China. According to these firms, this could only be counteracted by introducing technical barriers to imports through product certification and official standards approval.

Nevertheless, the plan to strengthen competitiveness designed by the Cluster Promotion Department of ACC1Ó (at that time CIDEM’s Business Development department), based on the competitive diagnosis carried out by the Observatory for Industrial Foresight, ignored
the conventional wisdom of the sector. Wishing to break away from traditional stereotypes, it laid emphasis on a whole series of market-orientated initiatives which, for the first time, in a clear declaration of intent, were publicly presented, not just to the large end product manufacturers, but to all the cluster’s key agents.

The first point in this action plan concerned something that was apparently very simple but actually very complex: creating a climate of trust among, on the one hand, a significant proportion of the cluster’s firms and, on the other, the public administration that was suggesting they should take part in a hitherto unknown process. In line with the procedure previously described, the Cluster Promotion Department of ACC1Ó, the administration’s unit in charge of the operation, worked in collaboration with the council of Sant Feliu de Llobregat (the town where most of the cluster’s firms were located), as a local strategic partner, part of the above-mentioned PIC network.

Figure 23. Action plan for the kitchen and bathroom tap cluster in Baix Llobregat

- Individual strategic change
- Support for technological change
- Explore the possibility of setting up an association of suppliers and auxiliary firms
- Supplier productivity plan
- Specific management training
- Benchmarking with more advanced tap clusters (Italy)
- Create a cluster website with key information
- Actions on request
- etc.

Source: Observatory for Industrial Foresight.

Once this climate of had been achieved by making numerous visits to most of the cluster’s firms, reviewing with them the competitive diagnosis carried out by the OPI and discussing the competitiveness reinforcement initiatives to be carried out, the project’s actions started to be implemented early in 2006.
Main actions carried out in the kitchen and bathroom tap cluster

Of particular importance were the initiatives aimed at encouraging strategic change in the cluster’s firms (manufacturers of the end product and auxiliary companies) by redirecting their business towards activities that were more sustainable and had a higher margin. Also important were those initiatives that aimed to improve the key elements for competing more efficiently, such as training company managers, production gains and investment in innovation and development.

The process of strategic change for the cluster’s firms, surely the most important of all, was promoted firstly by holding workshops on strategic reflection which presented the problems and challenges facing the sector and also served to create a climate of trust in the group and, secondly, by offering financial support at the same time, via the New Business Opportunities programme described in the previous section, to individual companies taking effective steps towards another way of competing. Both initiatives were considerably successful, as more than half the firms took part in the first strategic reflection workshop held and 17 carried out projects of strategic change19, many of them auxiliary firms that wanted to enter new market niches20 or incorporate more design so as to target more profitable segments21.

Some actions carried out in the area of internationalization should also be mentioned, such as the participation of some tap manufacturers in a trade delegation of Catalan home products firms (furniture, lighting, home textiles, etc.) to Dubai.

Collective actions included the creation of a marketing platform called Grup 7, through which seven auxiliary firms from the cluster, suppliers of parts or complementary services, joined forces to market their products, working with a joint website or sharing the marketing expenses of their joint participation in trade fairs.

As is customary in a large number of SMEs in Catalan industry, the management of the tap cluster’s firms had a great deal of practical experience and excellent knowledge of their business, but limited strategic vision for competing in a totally globalised economy. For this reason, the competitiveness reinforcement initiative set up by the Catalan government in 2005 aimed to reinforce the management skills of the sector’s managers by offering them tailor-made training courses, held in collaboration with a business school. It should be noted that, beyond their main aim, these training courses also served to engender a true networking spirit that helped to eradicate suspicion, and to open the eyes of many of the participants to the possibilities of cooperation arising from the initiative they were involved in.

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19 ACC1Ó dedicated 700,000 euros over two years to support projects of strategic change presented by firms in the kitchen and bathroom tap cluster.

20 For example, a company producing shower hoses developed a product line for hairdressers.

21 See the case of the Orfesa, Griferías Galindo and Standar Hidráulica companies in the newspaper cuttings accompanying this text.
Finally, other actions carried out were the creation of a website or benchmarking trips to identify good practices in similar and more advanced clusters.

All these practices also served to create a “cluster feeling”; in other words, they helped companies in the kitchen and bathroom tap sector in Baix Llobregat to realise that they could cooperate in order to compete under better relative conditions. Three years after the initiative started, this feeling was consolidated through the creation of a cluster association promoted by 13 sector firms, both manufacturers and suppliers, which was given the task of improving their competitiveness.

It is difficult to be objective when assessing the results achieved by the initiative to strengthen competitiveness of the kitchen and bathroom tap cluster in Baix Llobregat, not only because it is not easy to know what would have happened if it had not been carried out, but also because most of the strategic change projects generated are still being implemented and their results will only be perceived in a few years’ time. However, it is possible to state that the operation helped a significant proportion of the cluster’s firms to have a more positive attitude, and to face the crisis resulting from the slump in housing construction with more confidence in the future.
On the one hand, this change in mentality has been shown by the modification in the dialogue between companies and the public administration, which no longer focuses exclusively on defensive aspects and demands for import restrictions through standards certification on products made in low-cost countries, but has been extended to more constructive considerations related to the competitiveness of Catalan firms. On the other hand, the initiative has enabled an awareness of belonging to a community, developed the idea of networking, substantially altered the relations between the cluster’s agents and made the auxiliary sector and, therefore, parts and service suppliers, more visible.

**Figure 25. Main stages in the competitiveness reinforcement project of the kitchen and bathroom tap cluster in Baix Llobregat**

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<tr>
<td><strong>Project started, contact with social agents</strong></td>
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<tr>
<td><strong>Cluster association set up</strong></td>
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<tr>
<td><strong>Presentation with cluster firms (50 attending) Sant Feliu - November 2005</strong></td>
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<tr>
<td><strong>Cluster diagnosis</strong></td>
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<tr>
<td><strong>Action plan launch</strong></td>
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<td><strong>Diagnosis (OPI)</strong></td>
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<td>- 30 interviews held</td>
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<td>- Return to social agents</td>
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<tr>
<td>- Sector included in Annual Report</td>
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<tr>
<td><strong>Implementation of action plan</strong> (Cluster Promotion Department – ACC1Ó)</td>
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<tr>
<td>- 75 individualised consultancy visits</td>
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<tr>
<td>- 17 firms receive NON grants (approx. 700,000 euros)</td>
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<tr>
<td>- Management training course at EADA (40 hours)</td>
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<td>- 7 workshops and working groups</td>
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<tr>
<td>- One tap manufacturer takes part in a large R&amp;D consortium (CENIT) for surface coatings</td>
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<tr>
<td><strong>Project monitoring</strong> (PIC: Sant Feliu town council)</td>
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<tr>
<td>Other activities:</td>
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<tr>
<td>- Visit to Cusio_Novara cluster (Italy)</td>
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<td>- Design workshop</td>
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<td>- 2nd management training course</td>
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<tr>
<td>- Innovation management seminar</td>
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<td>- Productivity programme</td>
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Source: Observatory for Industrial Foresight.
The need for changes
In 2009 the Catalan government’s cluster policy changed direction as a consequence of a whole series of factors, to be explained in this chapter.

Firstly there will be a critical review of the previous experience because, as will become clear, a large number of the limitations of the 1993 model, detected in 2004 when the first stage of that policy ended, still existed in 2009.

Secondly, on one of the most important changes in advanced economies will be commented on: the blurring of the boundaries between the industrial and tertiary sector and the consequent appearance of “new industry”, understood as the integration of manufacturing and production services, which is now the central sector in the Catalan economy and the target for new competitiveness reinforcement initiatives based on cluster policy.

Finally, we will also review the basic features of the project that led to the new design of this industrial and business policy tool: the textile-fashion case in Catalonia.

5.1 A critical review of the previous experience

The rethinking of cluster policy carried out in 2004, described in the previous chapter, helped to improve the line of work introduced in Catalonia in 1993, especially in terms of its organisation within the public administration, which, as mentioned, was provided with internal units to analyse and promote clusters and with budgetary instruments devoted essentially to this function.

However, some of the limitations identified in that operational rethinking, which paved the way to the second stage of this policy, were still present five years later. Most were of an endogenous nature, related to the cluster methodology, in other words, the direct responsibility of the public administration itself. At the same time, other elements, exogenous to the administration, were also making it necessary to reflect on what was being done and there was a pressure for new changes to be introduced in the cluster policy of the Catalan government.

Endogenous elements

Although the small size of the projects carried out was identified in 2004 as being responsible for the limited impact of the Catalan government’s cluster policy on the industrial sector as
a whole, the truth is that the vast majority of competitiveness reinforcement initiatives set up from then on (see previous chapter) continued to focus on the micro-clusters of Catalan industry as their main target.\textsuperscript{22}

Moreover, some factors, such as the often immaterial nature of the main results obtained in the short term by the companies involved in most of the initiatives (which basically consisted of a reflection on their business strategy), meant that the work carried out within the framework of cluster policy had a relatively low visibility.\textsuperscript{23}

In turn, as was also the case in the first decade of the policy, all the initiatives started from 2004 onwards were promoted by the public administration. It is true that company response over the last few years has been more dynamic, and that, in some cases it has been possible to find companies with whom to share the responsibility for the projects, after at least two years of work, but the truth is that finding a core of business people prepared to learn how to take over the leadership of the projects from the public administration remains an aim to be accomplished.

Related to this, the creation of a unit within ACC1Ó responsible for pushing forward competitiveness reinforcement initiatives carried out within the framework of cluster policy has significantly boosted the continuity of the projects over the last few years. However, it is also true that the intense work carried out lately in this field has highlighted the need for professional cluster managers, from outside public administration, and with suitable training and experience to manage such complex projects as those defined in the action plans within the policy. Such professionals have not always been easy to find within the PIC network, whose functioning was discussed in the previous chapter.

Although cluster policy in Catalonia has always considered, in agreement with a well-known opinion of Michael Porter\textsuperscript{24}, that there is no such thing as a good or bad sector but rather appropriate or inappropriate strategies, the truth is that this line of industrial and business policy has not been able to avoid criticism in the past for its lack of good planning. The mapping of the local industrial production systems in Catalonia by the Observatory for Industrial Foresight, covered in the previous chapter, was a significant step forward in this field as it provided very useful information to decide which competitiveness reinforcement initiatives should be implemented. However, a review of the projects carried out over the last few years leads to a recognition that the first operational rethinking of cluster policy did not conclusively resolve strategic planning aspects.

\textsuperscript{22} A large number of the competitiveness reinforcement initiatives promoted as from 2004 focused on micro-clusters with an aggregate turnover of less than 300 million euros.

\textsuperscript{23} In this respect, O. Sölvell (2008) pointed out in a recent work that the propensity of policymakers to emphasise the implementation of collaborative actions among firms involved in competitiveness reinforcement initiatives often forgets the importance of company rivalry, which makes it difficult to obtain results from this policy and does not improve its visibility.

\textsuperscript{24} Porter, M. (1998): \textit{Clusters and Competition – New Agendas for Companies, Government and Institutions, in On Competition}, page 209: “The productivity and prosperity of a location rest not on the industries in which firms compete, but on how they compete. Firms can be more productive in any industry - shoes, agriculture, or semiconductors, if they employ sophisticated methods, use advanced technology and offer unique product and services…”
As in most regions or countries that choose which clusters to target, in Catalonia the criteria used to prioritise focused on clusters’ relative weight in the production structure, their growth potential or territorial distribution but, nevertheless, the semblance of improvisation has never totally disappeared.

Finally, neither did the Catalan government’s cluster policy manage to resolve, in the initiatives implemented during its second stage, the problem of the lack of involvement of organisms belonging to different departments to those promoting them. This limitation was already identified in the reassessment carried out in 2004 and it has yet to be resolved. By definition, cluster policy is cross-cutting, but it has still not been possible to align the different institutional agents involved in the competitiveness reinforcement initiatives launched as part of it. This is surely not unrelated to the difficulty found in establishing an objective, reliable system to evaluate its results, something which also appears as one of the most limiting endogenous elements.

**Exogenous elements**

Apart from these unresolved problems, certain circumstances that might be classed as exogenous to the public administration have recently highlighted the need to reformulate cluster policy. There are basically three: the large number of cluster-based projects emerging in Catalonia in the last few years, recent statements by the European Union concerning this subject and, finally, the consideration of ‘new industry’ (understood as the integration of manufacturing and production services) as the central sector in the Catalan economy and the target of new competitiveness reinforcement initiatives based on cluster policy.

Cluster policy has undergone a veritable boom over the last few years, not only owing to its usefulness for increasing productivity, improving the capacity to innovate or stimulate the creation of new firms (see chapter 4) but also because some of its elements, such as fostering external economies, delimiting by locality and production, promoting business cooperation and the public-private coordination required by many of its initiatives make it a very interesting tool in regional development policy.

This phenomenon has occurred throughout the world and particularly in Europe, where the European Cluster Observatory estimates that there are currently 1,100 cluster organisations. Catalonia has not been exempt from this trend and, over the last few years, has implemented a large number of initiatives in its territory that, in general terms, might be considered as part of the methodology to strengthen competitiveness that characterises cluster policy.

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25 The difficulty in defining a good evaluation system for cluster-based competitiveness reinforcement initiatives is an unresolved problem for the vast majority of the regions and countries working with this methodological approach. Some recent efforts made by regions such as Scotland or the Basque Country (see Aragón, Aranguren and Iturrioz, *La evaluación de la política de clusters de la CAPV*, Orkestra, San Sebastian, 2010), while representing an advance, still do not overcome key obstacles such as measuring intangible results (change in attitude or strategic change of companies at an individual and cluster level) or differentiating from the effects attributable to mere market dynamics.

26 In 2003, a group of researchers from the Stockholm School of Economics carried out a survey entitled *The Global Cluster Initiative Survey* (GCIS) that identified the existence of more than 500 competitiveness reinforcement initiatives based on cluster policy. Just two years later, the second edition of the GCIS increased this figure to 1,400.

27 European Cluster Observatory: www.clusterobservatory.eu.
The diagram showing the competitiveness reinforcement initiatives in Catalonia, which is not exhaustive and has been included merely for illustrative purposes, aims not only to show that there are many projects still underway but that overlaps are now appearing that might give rise to inefficiencies, especially considering that all the current initiatives have been promoted by the public administration, either at a state\textsuperscript{28}, autonomous community or local level.

Another very important factor in the 2009 rethinking of cluster policy in Catalonia was the opinion of the European Union, which was making some very interesting statements.

It should be noted that the European Union started to consider cluster policy as a useful instrument for improving competitiveness some time after other international organisations, such as the United Nations Industrial Development Organisation\textsuperscript{29} or the World Bank, which was already using this methodology in different projects in developing countries.

\textsuperscript{28} Order ITC/2691/2006, of 2 August, supporting Innovative Business Groups (AEI) of the Ministry of Industry, Tourism and Trade, established aid to finance typical actions of working with clusters, particularly the initial strategic plan and the costs associated with its operation. In Catalonia alone, around thirty of these groups have been created since then, some institutionalising pre-existing initiatives promoted by other administrations.

\textsuperscript{29} UNIDO: www.unido.org.
countries in the 1990s. However, the EU's interest in this area has continued to grow since it first turned its attention to it nearly 10 years ago\textsuperscript{30}.

In 2006, the Directorate General Enterprise and Industry of the European Commission launched a series of initiatives to improve knowledge of the state of cluster policies being implemented in many countries and regions in Europe. However, it was not until 2008, in the conclusions of the Presidency of the European Council held in Brussels on 13 and 14 May, that the European Union solemnly recognised the importance of the role played by clusters in improving competitiveness and fostering innovation in Europe. A few months later, the first official communication dedicated to clusters appeared from the European Commission: \textit{Towards World-Class Clusters in the European Union: Implementing the Broad-Based Innovations Strategy} (European Commission, 2008)\textsuperscript{31}.

As can be deduced from the inclusion of the term ‘\textit{World-Class Clusters}’ in the very title of the communication, the Commission wanted to convey to European policymakers the fundamental idea that it was necessary to make a qualitative leap in the definition and implementation of competitiveness reinforcement initiatives in order to have excellent clusters with a broader scope.

The Commission suggested three ways to achieve this goal: firstly, by integrating cluster policy within the various national development and reform programmes; secondly, by improving the transnational cooperation of initiatives (which too often have an exclusively local scope), for which it is fundamental to increase the professionalisation of the organisations responsible for their management; finally, by further integrating innovative SMEs into the competitiveness reinforcement projects within the framework of cluster policy\textsuperscript{32}.

The last element that forced a critical review of what was being done and largely motivated the redesigning of the Catalan government’s cluster policy was the market. The change in the industrial model in developed economies following the important changes in the world economy due to globalisation, technological change and the pressure to achieve sustainable economic growth, among other factors, has substantially modified companies’ competitive scenario, to the extent that previous business strategies and models are no longer valid.

\textsuperscript{30} Particularly relevant is the document entitled \textit{Regional Clusters in Europe}, produced by the Observatory of European SMEs in 2002.

\textsuperscript{31} This communication was preceded by an unofficial document: \textit{The European Cluster Memorandum} (High Level Advisory Group on Clusters, 2007) in which the role of clusters was already being described as a fundamental tool for competitiveness and innovation in Europe’s economy. Both documents are available online at http://ec.europa.eu/enterprise/policies/innovation/documents/index_en.htm and at http://www.proinno-europe.eu/node/19196.

\textsuperscript{32} In accordance with the principles of the Communication, in 2009 the DG E&I implemented a series of initiatives aimed at improving the general framework of cluster policies in Europe. Of note are: a) the creation of the European Cluster Policy Group to reflect on the future of this line of work; b) the boost given to the European Cluster Observatory (www.clusterobservatory.eu) to learn more about the situation of clusters in Europe; c) the launch of the European Cluster Excellence Initiative project (www.clusterobservatory.eu) to improve the professionalism of cluster organisations; and d) the creation of the European Cluster Alliance, a network of more than 80 European organisations working with clusters to foster transnational cooperation on the initiatives underway. More information can be found on the websites www.europe-innova.eu and www.proinno-europe.eu.
One of the most important aspects of the change in industrial model which has occurred in advanced societies is the blurring of the boundaries between the secondary and tertiary sectors (see next section). Industry has changed and this is shown in the increasing heterogeneity of its activities and particularly in the outsourcing of many of its tasks. The concept of ‘new industry’ has therefore emerged as an integration of manufacturing and production services, two complementary and interdependent realities. “New industry” is the central sector of the economy (in Catalonia it accounts for two thirds of the total), and this fact cannot be ignored. Cluster policy therefore has to modify the scope and focus of its competitiveness reinforcement initiatives, not only does it make no sense to define them on the basis of statistical classifications, but they must also fundamentally take the target market into account.

**Figure 27. Main elements driving change in cluster policy in Catalonia**

<table>
<thead>
<tr>
<th>Endogenous factors (related to the methodology of working in clusters)</th>
<th>Exogenous factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Small size of projects</td>
<td>• Multiplicity of initiatives</td>
</tr>
<tr>
<td>• Usually immaterial results</td>
<td>• Changes in the European Union</td>
</tr>
<tr>
<td>• Poor visibility of initiatives</td>
<td>– Excellent, larger initiatives</td>
</tr>
<tr>
<td>• Leadership always public and lack of companies taking over</td>
<td>– Professionalisation of cluster management organisations</td>
</tr>
<tr>
<td>• Insufficient instruments within the administration</td>
<td>– Boosting transnational dimension of initiatives</td>
</tr>
<tr>
<td>• Lack of strategic planning</td>
<td>• The change in the industrial model</td>
</tr>
<tr>
<td>• Lack of evaluation of results</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author.

### 5.2 The “new industry”

There is no doubt that the 20th century was characterised by significant changes in the economic basis of the most advanced societies. Throughout this period, the pattern of structural change in these economies was expressed in the continued growth of service activities, to the detriment of agricultural and, from the 1960s and 1970s, industrial activities.

Traditionally, experts have explained this rise in services in terms of the changes occurring in the composition of final demand as per capita income increases. However, although this may be a valid explanation for the rise in the tertiary sector in the 1960s and 1970s, it seems less valid as an explanation for the rise of services from the 1980s onwards. In fact, the explanation for the growth of the tertiary sector in recent years lies in the rise of the specific importance of production services for intermediate consumption in most branches of activity as a consequence of technological and organisational changes in the industrial sector.
For this reason, one of the most relevant aspects in the change of structural model that has occurred recently in advanced economies is the progressive blurring of the boundaries between the industrial and tertiary sector. As explained by Baró and Villafaña (2009), in order to properly understand today’s economies, there must be a readjustment in the analytical instruments and, in particular, a review of the traditional boundaries of what has been understood, until very recently, as industry.

According to these authors, the industrial object has changed considerably over at least the last two decades, both from a technological and organisational point of view. This mutation of industry can particularly be seen in terms of a rise in the internal heterogeneity of these activities and in how its boundaries have evolved as some of its tasks have been outsourced and it has shifted towards service activities.

In line with this interpretation, many economists complain that terminology for current economic activities has little relevance in the face of the deindustrialisation of developed societies, as shown in the continued loss of value added and employment in the secondary sector, and propose an extensive review of industry’s current delimitation to take into account the organisational changes and changes within the nature of industrial production. A new terminology is therefore required to be able to grasp in more detail, and in an appropriate way, current industrial dynamic in general and outsourcing in particular.

One very interesting proposal considers that the industrial sector’s boundaries must include production services that are essentially complementary and interdependent with manufacturing activities. In line with this interpretation, one may talk of an integrated sector of manufacturing-production services, the analysis of which, in terms of size and dynamics, changes many of the hitherto existing views concerning the phenomenon of industry’s loss of specific weight.

This is also the position of the EU’s institutions, which increasingly stress that a demand for production services exists where there is a strong industrial sector, and call for services provided to companies to be recognised as an integral part of industrial policy (European Commission, 2003, 2004, 2005 and 2007).

So what do we understand by production services? Namely, that proportion of market services characterised by the fact that their services become part, increasingly over the last few decades, of the intermediate inputs of manufacturing activity.
Recently, the European Commission has stated that production services cover the following four groups of activities (NACE rev 1.1):

- Company services (NACE 70 to 74).
- Trade services (NACE 50 to 52).
- Services for electricity, gas and water (NACE 40, 41), transport and communications (NACE 60 to 64).
- Financial services (NACE 65 to 67).

In line with this consideration, using data from the Comptabilitat Regional d’Espanya (Baró and Villafaña, 2009) for the period 1995-2005, in Catalonia this macro-sector generated 607,000 jobs and contributed 51% to the rise in total employment for the period. Similar figures are obtained in the case of Spain, where it generated 43.8% of net employment created; in the Community of Madrid the figure was 47.5%; and in the Basque Country, where new jobs generated accounted for 48.2% of the total.

In 2005, the “integrated” manufacturing and production services sector accounted for 55.7% of all employment in Catalonia, 54.5% in the Basque Country, 48.7% in the Community of Madrid and 47.2% in Spain as a whole.

In terms of value added, the importance of the integrated manufacturing-production services sector is also primordial and quantitatively greater than for the economy as a whole in terms of employment, which highlights two things:

- Firstly, that new industry, understood as the sum of the manufacturing industry and production services, occupies a central position in the economy of Spain and its most industrial Autonomous Communities. In Catalonia, and at constant prices, its share of the
total in 2005 was 66.7%; in the Basque Country, 66.5%; the Community of Madrid, 63.7%; and Spain as a whole, 59.1%.

- Secondly, that “new industry” operates with a higher level of productivity than the average in the economies in question, a result that could be expected from manufacturing activities but was less predictable in the case of production services.

The change in the structural model in developed societies, which has blurred the boundary between industry and services and given way to “new industry” both as a concept to replace obsolete classifications, and as a central sector in the economy, calls for the recognition of services provided to companies as an integral part of industrial policy. And this is also expressed in cluster policy, understood as a series of initiatives aimed at improving the competitive efficiency of a group of companies through their strategic rethinking and continuous adaptation to the challenges of the global market.

This will be explained in the next few pages, but the Catalan government’s new cluster policy is based not only on lessons learnt from previous experience and from the suggestions made by the European Union, but also on the important changes produced in our economy, requiring a modification in the scope and focus of competitiveness reinforcement initiatives in order to include production service companies as targets of these policies.
### Table 5. Trends in employment by large economic sector: Catalonia, Community of Madrid, Basque Country and Spain, 1995-2005

**a) Thousands of jobs**

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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing &amp; mining industries</td>
<td>615.0</td>
<td>778.7</td>
<td>163.7</td>
<td>340.1</td>
<td>463.2</td>
<td>123.1</td>
<td>457.1</td>
<td>624.1</td>
<td>167.0</td>
<td>2,507.6</td>
<td>3,162.4</td>
<td>654.8</td>
</tr>
<tr>
<td>Production services</td>
<td>17.4</td>
<td>20.1</td>
<td>2.7</td>
<td>191.6</td>
<td>233.1</td>
<td>41.5</td>
<td>52.4</td>
<td>86.6</td>
<td>34.2</td>
<td>2,086.4</td>
<td>2,680.8</td>
<td>594.4</td>
</tr>
<tr>
<td>Financial services</td>
<td>68.5</td>
<td>72.5</td>
<td>4.0</td>
<td>85.1</td>
<td>102.7</td>
<td>17.6</td>
<td>18.8</td>
<td>37.2</td>
<td>18.4</td>
<td>233.0</td>
<td>316.1</td>
<td>83.1</td>
</tr>
<tr>
<td>Trade &amp; repairs</td>
<td>37.6</td>
<td>44.1</td>
<td>6.5</td>
<td>66.8</td>
<td>76.2</td>
<td>9.5</td>
<td>88.1</td>
<td>121.9</td>
<td>33.8</td>
<td>842.3</td>
<td>1,070.4</td>
<td>228.1</td>
</tr>
<tr>
<td>Services for consumption</td>
<td>43.8</td>
<td>49.9</td>
<td>6.1</td>
<td>52.9</td>
<td>63.1</td>
<td>10.2</td>
<td>71.7</td>
<td>112.6</td>
<td>40.9</td>
<td>2,285.3</td>
<td>3,103.5</td>
<td>818.2</td>
</tr>
<tr>
<td>Construction</td>
<td>595.3</td>
<td>633.7</td>
<td>38.4</td>
<td>52.9</td>
<td>68.1</td>
<td>15.2</td>
<td>72.0</td>
<td>113.2</td>
<td>41.2</td>
<td>2,960.1</td>
<td>3,791.9</td>
<td>831.8</td>
</tr>
<tr>
<td>Agriculture &amp; fishing</td>
<td>64.0</td>
<td>66.7</td>
<td>2.7</td>
<td>73.8</td>
<td>80.8</td>
<td>7.0</td>
<td>83.1</td>
<td>88.2</td>
<td>5.1</td>
<td>860.8</td>
<td>949.6</td>
<td>88.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,401.7</td>
<td>3,592.0</td>
<td>1,190.3</td>
<td>1,983.2</td>
<td>3,230.2</td>
<td>1,247.0</td>
<td>751.3</td>
<td>1,077.9</td>
<td>326.6</td>
<td>13,733.7</td>
<td>20,113.5</td>
<td>6,379.8</td>
</tr>
</tbody>
</table>

**b) Percentage share**

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing ind. + production service</td>
<td>13.85</td>
<td>20.24</td>
<td>6.39</td>
<td>980.6</td>
<td>1,572.6</td>
<td>592.0</td>
<td>590.0</td>
<td>430.0</td>
<td>140.0</td>
<td>597.5</td>
<td>157.5</td>
<td>400.0</td>
</tr>
</tbody>
</table>

### Table 6. Trends in value added by large economic sector: Catalonia, Community of Madrid, Basque Country and Spain, 1995-2005*

<table>
<thead>
<tr>
<th>At constant prices</th>
<th>Catalonia</th>
<th>Community of Madrid</th>
<th>Basque Country</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing industries</td>
<td>27.94</td>
<td>29.39</td>
<td>15.70</td>
<td>16.15</td>
</tr>
<tr>
<td>Production services</td>
<td>38.07</td>
<td>37.30</td>
<td>45.93</td>
<td>47.53</td>
</tr>
<tr>
<td>Services for companies</td>
<td>13.77</td>
<td>11.11</td>
<td>18.22</td>
<td>18.83</td>
</tr>
<tr>
<td>Financial brokerage</td>
<td>1.50</td>
<td>4.30</td>
<td>3.87</td>
<td>6.38</td>
</tr>
<tr>
<td>Trade &amp; repairs</td>
<td>11.73</td>
<td>10.34</td>
<td>10.96</td>
<td>10.37</td>
</tr>
<tr>
<td>Transport &amp; telecom</td>
<td>8.12</td>
<td>6.26</td>
<td>9.80</td>
<td>10.03</td>
</tr>
<tr>
<td>Electricity, gas &amp; water</td>
<td>2.94</td>
<td>1.30</td>
<td>3.08</td>
<td>1.93</td>
</tr>
<tr>
<td>Services for consumption</td>
<td>25.18</td>
<td>21.77</td>
<td>30.57</td>
<td>25.51</td>
</tr>
<tr>
<td>Construction</td>
<td>6.95</td>
<td>9.88</td>
<td>7.55</td>
<td>10.59</td>
</tr>
<tr>
<td>Agriculture &amp; fishing</td>
<td>1.85</td>
<td>1.67</td>
<td>0.25</td>
<td>0.21</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Manufacturing ind. + production services</td>
<td>66.01</td>
<td>66.70</td>
<td>61.63</td>
<td>63.69</td>
</tr>
</tbody>
</table>

(*) The data for 2005 at constant prices of 2005 are an estimation based on data from the Spanish Statistics Institute.

### 5.3 The change in industrial model: the branding & retail project in the textile-fashion sector

In 2006, the Directorate General for Industry of the Catalan government, through the Observatory for Industrial Foresight, decided to set up a competitiveness reinforcement initiative related to the textile-clothing sector, which was going through a major crisis.

In fact, between the year 2000 (when it still accounted for 9% of production and almost 15% of industrial employment in Catalonia and provided 36% of the jobs and 42% of the turnover for the sector in the whole of Spain) and 2006, the textile-clothing sector in Catalonia had lost 27% of its firms and 37% of its jobs as a consequence of the acceleration of globalisation and offshoring to low wage countries.

It should be noted that the textile-clothing sector played the main role in Catalonia’s industrial revolution and was one of the engines of its industry. This activity has traditionally been highly “clustered”, with the presence of nine local production systems (micro-clusters) and a wealth of agents (trade associations, technology centres, university and training centres, etc.).

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Figure 29. Clusters of the textile-clothing sector and map of agents

Narrow fabrics
- Bages
- Berenguèda
- Osona
- Ripollès

Recycled cotton spinning
- Garrotxa

Leather tanning
- Osona
- Vallès Occidental

Knitted fabrics
- M. A. Barcelona
- Anoia
- Maresme

Clothing
- M. A. Barcelona
- Leather tanning
- Vallès Oriental

Employees
- Up to 1,000
- 1,000-3,000
- More than 3,000

Number of establishments
- Up to 100
- 50-100
- More than 100

Other uses: household textiles (30%) and industrial uses (15%)

M.A. = Metropolitan Area of Barcelona.
Includes: Vallès Occidental, Barcelonès and Baix Llobregat.

There was a considerable amount of information available about the sector in 2006, not only because there were many studies available, but also because the Catalan government had worked a great deal with it ever since the launch of cluster policy in Catalonia. However, the far-reaching competitive changes undergone by the sector were not sufficiently understood. At that time, the most common view of the textile-clothing value chain was the one that fundamentally considered the manufacturing aspects of the activity.

Consequently, when the Observatory for Industrial Foresight was commissioned to start an initiative that could help to strengthen the competitiveness of the textile-clothing sector, the following questions were asked:

- What are the growth strategies in this activity?
- How many companies are following these growth strategies in Catalonia?
- Which companies are they?
- What are these companies’ main operational problems/strategic challenges?
- What actions might be identified to improve the competitiveness of companies working with these strategies in a practical and operational way?

This project was innovative in its approach from the start. Firstly because, for the first time, it did not focus on firms that were from the same business but on those that shared the same strategy; secondly, because its geographical scope was not a micro-cluster but the whole of Catalonia.

This initiative was therefore more proactive than reactive, in that it aimed to identify the growth patterns of the most successful firms, analyse their strategy and understand their future challenges, in order to subsequently inform the sector as a whole about this way of competing.

35 Many of the competitiveness reinforcement projects of clusters carried out since 1993 were related to the textile and clothing sector: leather tanning in Anoia, knitted fabrics in Maresme and Anoia, clothing in Barcelona, narrow fabrics in Bages, etc.).
The analysis carried out in the first phase of the project described the key forces of change in operation in the textile-clothing sector and identified the various competitive strategies being followed by its firms at the time.

It was clear that the most important of the major trends affecting the sector was offshoring to low cost countries, such as China, India, Pakistan and Turkey, whose exports of textile products to Spain were growing annually by double figures.

The role of distribution and its growing influence on the business value chain was also very important. It was observed that the most dynamic and profitable companies in recent years had been those that controlled the distribution channel (for example, Mango, the Galician group Inditex and foreign companies like H&M, GAP and Benetton).

Another important aspect was the change in the distribution channel structure, where multi-brand shops were steadily losing market share to brand distribution channels\(^\text{36}\).

For its part, the brand, of both product and distribution, had become a key factor in competitiveness, and companies with a “brand-orientated” strategy were tending towards integrating distribution in order to obtain its margin.

Within this context, it became evident that the classic segmentations used by the sector, still mostly based on concepts such as age or purchasing power, made increasingly less sense because the most dynamic firms were using more and more intangible criteria such as experiences, emotions or lifestyles.

\(^{36}\) This phenomenon has continued over the last few years. For example, in 2008 the market share for multi-brand shops was 27% while for factory outlets it was 11% (ACOTEX data; http://www.acotexconecta.org).
With regard to strategies, the analysis carried out by the Observatory for Industrial Foresight highlighted that the most successful was the ‘branding & retail’ strategy which, as its name suggests, emphasised the brand and control of the distribution channel.

This way of competing provided extensive knowledge of the market and consumers\textsuperscript{37} as well as a greater control over product positioning, a strategic element not always possible with a multi-brand distributor as intermediary. It also enabled companies to better secure the distribution margin, very significant in the clothing sector.

In this strategy, the role of shops in the growth and profitability of the business was obviously very important. Retail spaces became the real engine of production for companies following this strategy, forcing them to invest heavily.

The analysis carried out also showed that this kind of competition based on brand and control of distribution had affected the environment where the sector’s firms worked, opening the floodgates to agents related to logistics, brand management, point of sale management and specialist training in these new competitive areas. The textile-clothing cluster was thus making way for the textile-fashion cluster.

\textbf{Figure 32. Map of agents in the textile-fashion cluster}

\textsuperscript{37} Companies with this strategy were much better at spotting consumer trends and anticipating their clients’ behaviour.
The study calculated that there were 130 firms in Catalonia that, actually or potentially, were following or might follow a branding & retail strategy, although with different options 38:

- A first group was made up of “brand distribution” firms, so called because they did not directly manufacture products and only distributed through their own shops (owned or franchised). These companies might be considered as “pure retailers”; there were about forty, and their turnover totalled 2,700 million euros. The most important firms were Mango, some brands from the Inditex group with head offices in Catalonia (Massimo Dutti, Stradivarius, Berskha, Oysho), Punt Roma, Pronovias, Rosa Clarà and Caribú.

- A second group was made up of “product brand with shops” firms, which did not manufacture directly either, but combined distribution with their own shops and multi-brand shops. There were 17 of these firms that had gradually consolidated a brand but had not started out as “pure retailers”39, and their turnover totalled 400 million euros. The most important companies were Desigual, Custo Barcelona, Armand Basi and Escorpión.

- Finally, there was a third group made up of 70 firms that could not be deemed as having adopted, in a strict sense, a branding & retail strategy as they did not directly control distribution, but that potentially might do so, as they had a relatively well-known product, often manufactured directly.

In accordance with this data, the diagnosis discovered that about sixty firms, with a turnover in excess of 3,000 million euros and controlling more than 3,000 shops throughout the world, had adopted a growth strategy that was of particular interest in a context where the textile sector was frequently said to be undergoing a crisis. Moreover, although not producing in Catalonia, the firms following a branding & retail strategy employed a large number of people at their head offices40 who were better qualified professionals than those in strictly manufacturing companies and who were consequently paid relatively higher wages.

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38 Extensive fieldwork was carried out that helped to identify many firms that, although statistically classified as service sector firms because they worked in distribution, were undoubtedly textile firms following this strategy.

39 All this data comes from company accounts submitted to the Company Register and corresponds to the time when the study was carried out. Today these figures are significantly higher.

40 At the time of carrying out the diagnosis, the Mango company employed 1,700 people at its headquarters in Palau Solità i Plegamans. This case was doubtless exceptional in terms of size but firms such as Desigual were clearly in the process of expanding. Desigual went from a turnover of 30 million euros in 2005 to 275 million in 2009. See www.desigual.com and also Desigual, tras los pasos de Zara y Mango, published in Expansión, 22 July 2009, p. 4-5 Ed Catalonia.
Table 7. Professional profiles of employees at head offices of companies with a branding & retail strategy

| Design | • Designers  
|        | • Model and pattern makers… |
| Marketing and advertising | • Design survey  
|    | • Sales and marketing directors  
|    | • Retail managers |
| Commercial and sales management | • Experts in franchise management  
|    | • Property experts (finding properties and prior handling of contracts…) |
| Shops | • Architects and surveyors  
|    | • Experts in shopfitting and merchandising  
|    | • Shop managers |
| Purchasing and production | • Buyers - production managers, quality control… |
| Logistics | • Logistics and warehouse managers  
|    | • Warehouse personnel |
| Administration, finance… | • Software manager project  
|    | • Administrative personnel  
|    | • Production personnel (quality control finishes) |

Source: Observatory for Industrial Foresight.

The plan for competitive improvement and the actions carried out

Particularly of note among the strategic challenges for firms following a branding & retail strategy were those related to knowledge of the market, in order to be able to anticipate trends and influence consumers. This knowledge was particularly important with a view to opening up points of sale in new, distant markets, a challenge facing many companies following this strategy. The choice of a certain market, city and, within this, the most suitable street, was very important.

Table 8. Main strategic challenges for firms with a branding & retail strategy

| Market intelligence? | • Increased difficulty in identifying targets and segment brands |
| Find professional profiles? | • Significant loss of profiles related to production  
|    | • Appearance of new professional profiles  
|    | • Professionalised company management |
| Locate and manage stores? | • Growing inflation of prices and rent for premises, making it difficult to open and find suitable stores  
|    | • Lack of distribution management knowledge on the part of former manufacturing firms |
| Purchasing and logistics? | • Growing importance of technical buyers with knowledge of product and logistics management |
| Brand management? | • Brand positioning and management |
| Internationalisation? | • Difficulty in accessing international markets, leading to market surveys and search for alliances with partners |
| How to finance growth? | • Options for financing growth  
|    | • Difficulty of obtaining necessary investment to make the change |

Source: Observatory for Industrial Foresight and Cluster Development.
Also of particular importance were those challenges related to growth: suitable human resources and financing, surprising in a situation in which the most commonly held view of the textile sector was associated with ‘crisis’ and ‘reconversion’.

With regard to human resources, it has already been said that firms following a branding & retail strategy need different professional profiles to those opting for an essentially manufacturing strategy, with personnel specialising in design, brand and sales channel management, marketing, advanced logistics, developing in-house software, purchasing and management, etc.

Regarding finance, the companies’ needs met with a lack of interest from investors, who, due to a lack of knowledge, did not find the sector attractive.

Given these challenges, and according to the previously described modus operandi, the branding & retail project in the textile-fashion sector was completed by designing an action plan in which the Cluster Promotion Area of ACC1Ó played a very important role.

The plan consisted, on the one hand, of a number of horizontal initiatives that aimed to improve the competitive level of the environment where these firms worked and, on the other, by actions to support firms that wanted to redirect their business towards a strategic model based on brand and controlling distribution.

| Table 9. Action plan to reinforce the competitiveness of the textiles-fashion cluster |
|------------------|----------------------------------------------------------------------------------|
| Market intelligence | • Spreading the use of market surveys and carrying out studies for groups of firms |
| New professional profiles | • Agreements with agents from the training environment |
|                              | • Encouraging public-private training initiatives |
| Shop location and management | • Scheme to reinforce brand distribution |
|                              | • Support for the installation of Information Systems |
| Purchasing and logistics | • Improvement of global purchasing (new profiles) |
|                              | • Promotion of collaboration among firms |
| Brand management | • Diffusion of environment agents (branding) |
|                              | • Brand programme (brand distribution channel) |
| Internationalisation | • Support for international market studies and entering new national markets |
|                              | • Collaboration in finding international agents |
| Financing growth | • Search for venture capital for growth strategies |

Source: OPI, ACC1Ó and Cluster Development.

This plan aimed to help implement a strategy based on three main elements: a strong, well-positioned brand, efficient management of outsourced production on a global scale (with all this entailed in terms of logistics, IT and organisation) and control of an increasingly extensive distribution network. To do so, it placed great importance on training (to obtain the new professional profiles required by the branding & retail strategy) and the need to secure the necessary resources to finance strategic change and growth.

41 See sections 4.3.2 and 4.3.3.
In terms of the positive results achieved, the following actions are of particular interest:

a) The carrying out of an ad hoc management training course (immersion in retail marketing), designed in collaboration with a leading local business school, which has been held twice and attended by the most important firms in the sector.

b) The development of pilot projects to help, in their initial stages, companies wishing to follow a branding & retail strategy, such as a “incubator” for young designers (called the Bressol project) and an initiative aimed at implementing prototyping services, production management and the establishment of commercial relations with fashion brands already well-established in the market (called the BePhisyc project).

c) The support given through the New Business Opportunities (NON) programme to firms wishing to redirect their strategy: about thirty projects received grants totalling almost 1.5 million euros.

In an earlier chapter, one of the key ideas of cluster policy was recalled, namely that there is no such thing as a good or bad sector, but only appropriate or inappropriate strategies. The competitiveness reinforcement initiative described in this chapter enabled a better understanding of how, in a sector hard hit by globalisation, there are companies working very well owing to a competitive strategy that emphasises brand and control of distribution.
A proposal for a new cluster policy

42 This chapter has been written with the collaboration of Emma Vendrell, International Project Manager for the Observatory for Industrial Foresight.
In 2009, after over fifteen years' experience of implementing competitiveness reinforcement initiatives as part of what was, broadly speaking, a cluster policy, the Catalan government decided to remodel this policy in order to improve the results received by the companies.

The main reasons for this remodelling were the limitations experienced in the current policy, the suggestions made by the European Commission, and the implications of changes in the industrial model occurring in the advanced economies over the previous few years. As seen in the previous chapter, the following limitations must be mentioned in particular:

• The small size of initiatives undertaken, and the generally immaterial results produced, which in turn reduced their visibility
• The constant public leadership of the management of the projects, and the difficulty of finding the necessary private leadership to take them over
• The insufficient number of the mechanisms dedicated by the administration to implement the policy
• The difficulty of strategic planning for a programme of initiatives aimed at micro-clusters

These limitations were indirectly highlighted by the European Commission, which was expressly calling for the setting up of competitiveness reinforcement initiatives with the following characteristics:

• Large enough to be able to establish international cooperation relations
• Run by a professional management team capable of pushing forward complex projects such as those resulting from an industry view incorporating production services

At the same time, it should be stated that the new cluster policy, in other words the model for competitiveness reinforcement initiatives redesigned in 2009, demonstrated an obvious continuity with work carried out since 1993 in that it still combined analysis with process, i.e., a diagnosis of the competitive position of the businesses involved and the implementation of measures focused on strategic change, as a key element to improve competitiveness in the long term.

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In this context, the first major change in the new model compared with its predecessor relates to the definition of the projects, as until 2009 the vast majority of initiatives had been focused on micro-clusters, located in a small part of Catalonia’s territory, whereas, since then, the selection criteria have been common strategy or target market, and, furthermore, the geographical scope has been increased to include the whole of Catalonia. To illustrate this better, the change implies a shift in initiatives, for example from knitted fabrics in Maresme, to companies in the textiles and clothing sector that stress branding and retail in Catalonia (common strategy approach). A second example is to initiate projects to increase competitiveness for companies producing a range of goods or services aimed at children, from food, publishing or cosmetics to toys, educational aids or audiovisual learning products (target market approach).

It should also be noted that the shift towards this kind of initiative, which in many cases could become cross-sectoral:

- is perfectly in line with the most recent work by the European Union on cluster policy;
- was almost compulsory if, as previously mentioned, the change in industrial model produced in recent years in the area’s economies is considered;
- enables advantage to be taken of many initiatives previously carried out with micro-clusters, which could be redirected by bringing them together to rationalize new projects to boost competitiveness (see Figure 33 for a description of how projects now underway, such as furniture in La Garriga or La Sènia, lighting in Barcelona, taps in Baix Llobregat or household textiles in Vallès Occidental, might be brought together into a competitiveness reinforcement initiative for the home products sector in Catalonia).

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44 As previously seen, the branding & retail project started as a pilot project in 2006 and opened the door to the operational rethinking set up definitively in 2009.

45 In 2010 a project was started to boost the wellness sector, which included companies from sectors as different as cosmetics, functional foods or the production of sports equipment.

This new methodology, more selective and strategic, in which cross-sectoral initiatives must play an increasingly important role, is in line with what has also been started in countries such as Denmark, where studies have already been presented in which selected clusters or work areas are identified more according to common strategy or target market criteria than statistical ones. Catalonia still lacks a map of those clusters that can be called ‘new generation’, although Figure 37 attempts to show the kind of leap that should be made from the local production systems mapped in 2005 by the Observatory for Industrial Foresight towards the groupings towards which this line of industrial and business policy should be directed.

47 In Denmark, new generation cross-sectoral clusters have been identified such as those of the environment (a mixture of energy, construction and mechatronics), health (including areas related to life sciences and food) and creative industries. Finland has carried out a similar exercise: http://www.oske.net/en/competence_clusters/.
The second main change implemented by the cluster policy model in 2009 (in relation to the previous one) is in the size of the market of the competitiveness reinforcement initiatives undertaken by the administration. As previously mentioned, this aspect is one of those that the European Union suggests that cluster policy in Europe should take into account. It stems from the first change, given that projects, often cross-sectoral, in which companies are grouped together because of their shared strategy or common target market, generally result in a higher combined turnover, as well as a comparatively higher level of employment than that of initiatives based on industrial micro-clusters. By way of example, as previously mentioned, the project to increase competitiveness in the market for children, under the new model, includes companies with a joint turnover of approximately 3,000 million euros, while the projects of the cork or leisure boat clusters, following the former scheme, involved a turnover of 240 and 150 million euros respectively.

Finally, the third change is related to the following points:

• The actual project management, which, as previously mentioned, and in line with European Union recommendations, should be placed under the control of professionals experienced in pushing forward competitiveness plans
• The mechanisms used by the administration to work on competitiveness reinforcement initiatives.

The work carried out up to 2009 had shown the benefits of the collaboration between the Directorate General for Industry (as the planning body) and ACC1Ó (as the executive body) in the cluster policy launched by the Catalan government’s industrial departments. The joint work of the Observatory for Industrial Foresight of the Secretariat for Industry and Enterprise in designing initiatives and of the Cluster Promotion Area of ACC1Ó in
implementing the subsequent actions plans had proved to be useful. On the other hand, the model still showed weakness in its problems with passing on the management of the initiatives to the business world and guaranteeing their continuity, and also in the lack of a mechanism which could eventually participate in the financing of any strategic projects arising from the initiatives.

As a result, the decision was taken to incorporate AVANÇSA (Empresa de Promoció i Localització Industrial de Catalunya, S.A.) in the policy. AVANÇSA is an instrument of the Catalan government’s industrial and business policy that no longer has an exclusively industrial focus since, among other objectives, it also aims to take part in projects for economic development that rely on a public-private alliance to generate services to companies. Consequently, within the framework of this line of work and always as a complement to previously existing instruments, AVANÇSA’s involvement in the new cluster policy model takes the form of temporary support for the institutionalisation required to provide continuity to the initiatives promoted by the administration (collaboration with companies that wish to be involved in setting up a cluster support organism, hiring professional managers, etc.) and eventually, always following strict intervention criteria, supporting any projects that may arise from these initiatives.

Finally, the fourth change, rather than in the type of competitiveness reinforcement initiatives promoted by Catalonia’s industrial administration, can be seen in the implementation of a new line of work determined by the growing importance given by the European Commission to a cluster policy capable of boosting cooperation among clusters in different countries.

In fact, as an example, the European Union may be said to be currently working in four broad areas of cluster policy:

- Preparing statistics and information on this field through the European Cluster Observatory
- Highly specialised training for cluster managers through the European Cluster Excellence Initiative
- Producing recommendations for drawing up public competitiveness reinforcement policies through the European Cluster Policy Group
- International collaboration among the different public players in charge of developing cluster policies through the European Cluster Alliance

Within this framework, and with the intention of participating in cluster policy at a European level, the Directorate General for Industry joined the European Cluster Alliance, whose objective was to become the platform for dialogue among policymakers from different countries and regions in the European Union. This decision allowed its participation in projects already underway, such as INNET, whose aim was to encourage pre-competitive cooperation among clusters from different EU member states.
How to support international cooperation at European Union level?


Figure 36. Work diagram and main phases in developing a “new generation” cluster initiative

Source: Observatory for Industrial Foresight.
At the same time, the Directorate General for Industry also participates in the European Cluster Excellence Initiative, a project whose members include some of the most prestigious training institutions in the European Union in the field of clusters, such as Syddansk University in Denmark, the Baltic Innovation Agency in Estonia and the Institut d’Estudis Superiors de l’Empresa (IESE) in Catalonia. This operation is particularly important because it is related to the European demand to professionalise the management of organisations responsible for pushing forward competitiveness reinforcement initiatives set up within their area. The project aims to provide the tools and knowledge required for European cluster managers to achieve excellence in their work.

In summary, and in line with this model, the Directorate General for Industry is responsible for this line of public policy, whose projects start with a competitive diagnosis and the drawing up of a strategic plan by the Observatory for Industrial Foresight. Following the presentation of this plan to companies, the Cluster Promotion Area of ACC1Ó carries out competitiveness reinforcement initiatives, such as seminars to reflect on strategy, ad hoc management training courses, support operations for internationalisation, networking projects, assistance to companies in obtaining the subsidies offered by the New Business Opportunities programme (NON), etc. At the same time, if there are companies prepared to take over from the administration and set up a professional organisation capable of continuing to push forward competitiveness reinforcement initiatives for the cluster, and ensure the continuity of the operation, AVANÇSA may be incorporated as a strategic partner in order to cooperate temporarily with its institutionalisation by co-financing it. Finally, in its role as an operational instrument of the Directorate General for Industry and in line with the government’s industrial policy, AVANÇSA can also take part, temporarily and with complete transparency, in some of the projects stemming from competitiveness reinforcement initiatives set up for clusters by the public administration.
Final considerations
Cluster policy, understood as a series of industrial and business policy initiatives aimed at improving the competitive efficiency of a group of companies through strategic rethinking, and their continuous adaptation to the challenges of the global market, began to be developed by the Catalan government in 1993.

Shortly before, in 1990, Michael Porter had published *The Competitive Advantage of Nations*, the book which paved the way for the use of clusters as a public policy tool for boosting competitiveness.

Catalonia was therefore one of the first regions in the world to use a methodology aimed at boosting competitiveness in a geographical area by improving the strategy and working environment of its companies, and this effort was recognised by Michael Porter himself in his work *On Competition* (1998).

However, much has happened since 1993. Now that cluster policy has achieved undeniable prominence everywhere, and it is said that, worldwide, there are currently in progress over 3,000 competitiveness reinforcement initiatives based on the use of this industrial and business policy tool, it seemed reasonable to reflect on our experience and to suggest alternatives for the future.

Such has been the aim of this book, which has basically reviewed the cluster policy implemented by the Catalan government from the start, has critically examined its results and has provided a frame of reference for its future.

This book has explained the main limitations detected to date in applying this line of public policy, as well as the successive measures adopted to improve the outcomes of the competitiveness reinforcement initiatives promoted within its framework. But these limitations cannot hide the fact that the overall balance of the process that began way back in 1993 is positive.

Among other results, companies involved in the initiatives have been able to reflect on their strategies, a highly important aspect that, unfortunately, is often forgotten in the everyday pressure of business; they have seen joint initiatives promoted so that they can compete

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48 Catalonia, Scotland, the Basque Country and some American states such as Massachusetts, California and Arizona were the first places to define and implement cluster policies according to Michael Porter’s concept.
under more favourable relative conditions since, on certain occasions, firms can cooperate in order to compete better; and they have benefited from the reinforcement of sectoral structures, especially when lacking associations to connect them or to try to improve their competitiveness.

For its part, during this period and within the framework of projects promoted by this industrial and business policy tool, the public administration has seen its dialogue with the industrial world change as companies have given up more reactive attitudes in favour of adopting approaches that tend to reinforce their competitiveness; it has also benefited from a better strategic knowledge of the sectors it has worked with, helping it to design its policy better, and has been able to identify the most suitable support instruments to help companies.

However, perhaps the most important consequence of the more than fifteen years’ experience of promoting competitiveness reinforcement initiatives is the “sedimentation” process that Catalonia has experienced in terms of specialised cluster knowledge, a phenomenon that can be seen in the significant number of institutions and organisations working in this area, as well as in aspects of an intangible or social nature, such as Catalonia’s human capital with expertise in this policy.

By way of illustration, the example of a triple helix may be used to show the role that administrations, knowledge generators and companies have played, and are still playing, in cluster policy in Catalonia.

With regard to the first group, and as previously mentioned, cluster policy was introduced by the Catalan government through then Department of Industry and Energy in 1993. Today, the government continues to be the main driving force for this line of industrial and business policy, now led by the Directorate General for Industry, which, although it has reoriented its work successively since 1993, continues to use the same conceptual focus. Also within the Catalan government and collaborating closely with the Directorate General for Industry, the Agency to Support Catalan Companies, or ACCIÓ, resulting from the merger between CIDEM and COPCA, has extensive experience in cluster policy. But the Catalan government is not the only public administration working in this area. Barcelona City Council, through 22@, also promotes projects with this focus in the field of ‘urban clusters’, which operate in highly knowledge-intensive areas such as renewable energies, information and communication technologies, audiovisuals and design. In addition, other councils of a certain size have also recently implemented territorial development initiatives using a cluster policy methodology.

The second component of the helix relates to the generation and transfer of knowledge; it is clear that Catalonia has very important players in this area. For some time now IESE business school, and in particular its International Centre for Competitiveness (ICC), has been working in the field of clusters and has held one of the first summer schools devoted

49 In this case, an indirect reference to the process of “sedimentation” of social practices into formal and informal, tangible or immaterial institutions. See G. Becattini, Industrial Districts, A New Approach to Industrial Change, Edward Elgar Publications, Cheltenham, 2004.
entirely to this topic. This centre is also leading a project, funded by the European Union, that aims to improve the quality of cluster initiatives through the professionalisation of the organisations responsible for their management. Furthermore, Barcelona is also the world headquarters of The Competitiveness Institute (TCI), the world’s most important network of cluster professionals, whose members include government and public agency employees, business people, cluster managers, university professors and specialised consultants. This network of cluster practitioners is present in over a hundred countries and its main aim is to share practical and applied knowledge concerning cluster-based competitiveness improvement methodologies.

Finally, to turn to the third part of the helix, which relates to the business world, not only the large number of firms involved in competitiveness reinforcement initiatives carried out in Catalonia since 1993 should be emphasized, but also the significant number of representative organisations created in recent years to promote projects generated under the policy. Moreover, two of the main consultancy firms in the world that specialise in this area were created in Catalonia, two firms that now also work in other countries, and from which have come a large number of expert professionals in the execution of projects related to cluster policy.

With its long experience in cluster policy and prolonged sedimentation of knowledge in this area, Catalonia today is an important focus of specialisation in the implementation of competitiveness reinforcement initiatives. However, it is necessary to continue working in order to gain more and more knowledge, and try to improve day by day. There is still a long way to go, and in areas such as networking, transnational cooperation and the evaluation of results, there is still much to be done.
Annex: clusters and competitiveness: Florence, Boston, Barcelona
It has already been mentioned that clusters and industrial districts are two concepts referring to the same socioeconomic phenomenon, identified for the first time towards the end of the 19th century by the English economist Alfred Marshall: namely that companies from the same sector tend to concentrate geographically because it helps them carry out their business, creating ties of cooperation and competition between them. This forms the basis of a line of industrial policy that, as we have already seen, aims to improve the competitive efficiency of a group of companies by them reassessing their strategy and continually adapting themselves to the challenges of the market.

However, there’s still some academic debate between both conceptual categories and this book therefore contains three contributions that, owing to their content and to the professional prestige of their authors, aim to highlight the similarities while not underestimating the differences.

In their text, Marco Bellandi and Annalisa Caloffi, lecturers at the University of Florence, review how industrial policies have developed in Italy and the country’s experience. Their work stresses the importance of technological districts and networks in industrial policy with a view to promoting innovation and, in order to mobilise strategic capacities, they also note the need to implement new ways of collaborating between the different levels of public intervention.

Christian Ketels, a lecturer at the Harvard Business School, highlights the confusion that still exists concerning cluster policy, in which he believes that robust institutions and competitive environments have a fundamental role to play. He also points out that the impact assessment of competitiveness reinforcement initiatives is slowly making headway in this line of business development policy.

Finally, Antoni Subirà, a lecturer at IESE and the politician responsible for introducing cluster policy in Catalonia during his time as Minister for Industry, reflects on clusters as a useful tool to boost competitiveness. In his opinion, in a country the size of Catalonia and with its complex production system, clusters are a very important instrument to improve the pro-competitive dialogue between firms and the public administration.
A. Industrial policies for innovation and local development in Italy

Marco Bellandi and Annalisa Caloffi, Università degli Studi di Firenze

1. Introduction

Current policies and strategies for innovation and industrial development explicitly entail the idea of innovation as a systemic process, embedded in specific socio-economic and institutional contexts, and developing around clustered sets of production and research activities. This is exemplified by the widespread reference to units of combined public actions and private strategies, such as the innovation cluster or the regional innovation system approach (Cooke et al., 2004), which have moulded the innovation policies designed by the EU and implemented by the European regions (Koschatzky et al., 2001; Landabaso and Rosenfeld, 2009). Further examples are provided by the system-based policies that have been designed and implemented in a large number of regions belonging to OECD countries, which insert in different institutional contexts and refer to different systemic concepts.

These policies have some antecedents in a wider group of local development strategies that have been implemented by local agents (Brusco, 1994; Dei Ottati, 2002). Territorial and system-based policies for innovation and industrial development have been built relying on those local experiences, in particular in Italy, since the beginning of the nineties (last century). There is no explicit and unitary framework at the basis of the adoption of those new types of industrial policies, but for the increasing reference to a variously interpreted concept of industrial district. Nonetheless some common lines could be summarized as follows: i) the identification of industrial districts and of related territorial and system-based units of policy; ii) the promotion of bottom-up approaches to innovation and local development; iii) the support to the creation of specific public goods; iv) the identification of an important role for the regional governance. The rationale of these territorial system-based approaches to innovation and industrial development policies is briefly discussed in sections 2 and 3, while section 4 summarizes the main results of the Italian experience in the promotion of industrial districts. Section 5 presents some new policy practices and tools that have been elaborated by the Italian policy maker, which built on the previous experience. Section 6 concludes, recalling two main challenges that the current industrial policy needs to face: the necessity of implementing new forms of collaboration between the different levels of policy making, and the mobilization of a strategic capacity.

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50 See also the official definition of “innovative clusters” provided by the European Commission for policy purposes (Official Journal of the European Union, 2006, Community Framework for State Aid for Research and Development and Innovation. 2006/C 323/01: 10).

51 As for the European scenario we may recall, for instance, Italian policies promoting industrial clusters, technological districts and innovative networks (Rossi and Russo, 2009; Bellandi and Caloffi 2010), the support to regional platforms in Sweden and Belgium (Vanhaeverbeke, 2001), the German promotion of regional systems of innovation (Dohse, 2000; Casper and Kettler, 2001; Kaiser and Prange, 2004), together with the Swedish and Dutch cases (Prange, 2008). For a comparison between EU and USA see Landabaso and Rosenfeld (2009) and Porter and Ketels (2009).
2. Some rationale for territorial system-based policies

The support to the generation and dissemination of innovations within enterprises and in the whole society plays a central role in current policy making. However, this problem can be examined from different perspectives. The traditional one places innovation upstream of the production process in an (a-territorial) logic of linear development, which proceeds in a pre-established sequence from invention to the production and marketing of artefacts, thereby moving through the various phases of applied research and development. Although in the very beginning of the process university industry relations may play a role, particularly when the latter are large enterprises holding major research laboratories, the leading actors of the process are single enterprises. The support to innovation is, therefore, a question of defining and managing appropriate monetary incentives in the different phases, and in particular of stimulating an increase in expenditure on R&D activities. When the various phases are not comprised under the umbrella of major enterprises, the policies may be complemented by specific measures aimed at facilitating the matching between innovation supply (upstream) and demand (downstream).

These approaches have dominated the scenario of industrial policies (as well as that of innovation studies) for decades, until the nineties. However, during the same time a large body of experiences and literature have emerged, suggesting deeper reflections on the multidimensional quality of innovation, and the need to adopt systemic and procedural approaches. The main focus of innovation studies have gradually shifted to processes that take place in conditions of uncertainty, with complex feedback and strong interdependencies and complementarities between science, technology, production, markets and institutions (Edquist, 1997). New units of analysis and policy interventions thus emerge, which exhibit a systemic nature.

Among the new system-based perspectives on innovation, we take here that focussing on territorially embedded system. This perspective hinges on the “local forces” of development, which in Italy for example have led to the consolidation of the industrial districts (Brusco, 1994; Becattini et al., 2003). According to this approach, processes for mobilising network of entrepreneurial energies and cognitive bases for productive and innovative work are not confined within the boundaries of enterprises, industries and markets, but instead they evolve within the living contexts of the territories to which the populations of researchers, entrepreneurs and other agents belong. The working mechanism of local creativity and innovation relies on an architecture of systemic conditions, which is represented by specific public goods. The latter may be tangible or intangible public goods whose basic features are specific to the local processes of production and innovation taking place at the local scale. Specific platforms for university-industry interactions, convergent investments in new components and competencies, educational and training programmes focused on the local needs, a set of well functioning local labour and product markets, as well as a wide group of rules of

52 See Kline and Rosenberg (1986) and Rothwell (1994) for a diachronic review of innovative theories and policy approaches until the Nineties.
interactions between local agents, are all examples of such goods. Within an evolving system, part of these goods may be governed by informal institutions like customs and conventions, emerging organically from the localized set of producers (Trigilia, 2005). However, customs and conventions change slowly, through incremental adaptation. They tend to fail when higher challenges demand discontinuous adaptation. Similarly, the use of tangible public goods regulated only by means of customs (the “commons”) shows heavy dynamic failures. Here we see the importance of an appropriate collective action (Schmitz, 1999). Henceforth the collective efficiency of successful localities of industry seems to be also strongly related to the crucial role of co-operative behaviours among private agents and of strategic action by policy-makers.

More directly, public action supplies or regulates the supply of public goods strongly linked to the territory, where the limits of the informal institutions and of private joint action are stricter. Public action is particularly important when a bifurcation in the path of development is met, and private actions are weakened by high uncertainty and lack of coordination. The perspectives of positive results are enhanced if scenarios are constructed within a public sphere of interests, ideas on the perspectives are discussed by the local society, and leadership is won on the ability to progress along a direction that presents long run advantages against short run risks and costs (Garofoli, 2001).

A large variety of policy instruments is associated with this perspective, for the simple reason that there has to be a significant bottom-up component of local governance53. Nevertheless, the principal instrument is represented by the support to the bottom-up construction of networks relations aimed at the systematic incorporation of technical-scientific knowledge for the development of the local knowledge base.

If the territory is not a neutral support but a milieu with specific and differentiated characters strictly linked with innovative processes, the innovation policies have to be implemented in appropriate territorial units. These are represented not only by the industrial districts, but by a wider variety of types of urban and regional system, such as the dynamic cities and the regional innovation systems. Units such as the previous three ones are the passive object of policies within the traditional linear vision (they are basically administrative fields of policy implementation); they become evolving units of governance processes within the systemic approach to innovation.

3. The role of the regional governance

The current European policies for innovation and industrial development place a great emphasis on the regional level of policy-making. The relevance of the regional level (NUTS 2) of government and governance has been somehow anticipated by Italian policies launched at the beginning of the nineties, which recognized that locally rooted systems such as the industrial district should have been supported by regional policies.

53 See Belussi (1999).
Two main reasons justify this peculiar role of the regional policy-making: firstly, a relative distance between the regional government and the local contexts and, secondly, the emergence of possible synergies between different local systems that may be governed at regional scale (Bellandi and Caloffi, 2010). As for the first point, in relatively large countries the regional government is not as distant as the national one from the specific contexts where innovation processes develop. While a certain degree of distance helps autonomy from sectional interests looking at rent capture, too much separation weakens both the understanding of what is needed for an effective support to the innovative processes, and the effectiveness of conversation between the policy-makers and the innovators (Lester and Piore, 2004; Rodrik, 2004). Therefore, an “intermediate” level of government, such as the regional one, can play a key role in channelling into the local systems the knowledge and the networks of relations acquired in super-regional levels (e.g. EU), and in orienting the strategies of the local agents towards viable alternatives.

As for the second point, the regional policy maker may support the processes of cross-fertilisation among different local systems, for example targeting the promotion and the application of certain technologies or organisational solutions generated or developed within specific innovative systems to other technological/sectoral contexts of the region. This kind of intervention is not simply aimed at disseminating specific innovations within the regional borders, but also at promoting an original incorporation of the same innovations into various local systems and clusters included within the regional milieu. Embedding is fostered by appropriate relations among key actors of the systems involved: agents having different competencies but sharing a common language and capable of mobilising networks of relations at the local and regional scale. Once applied to other contexts, the initial solutions (the new technologies, the organisational solutions…) can give rise to new streams of innovation.

Moreover, the some types of public goods related to local innovation and industrial development may exceed the span of local resources. Public support offered by the regional government may be necessary given the size of the intervention, the presence of coordination problems, the risks and time scale involved, or the specific level of competence into which it falls (e.g. production of laws), and it adds to private funds coming from the local systems within which much of the design process takes place.

The design of these policies requires both a strategic vision, and the ability to exercise leadership. However, it cannot elude typical cognitive and motivational failures arising from the sides of both public and private cluster agents. More than the presence of an omniscient policy maker capable of identifying the modes and targets of the interventions, in this sphere what assumes fundamental importance is the capacity to produce “rules of interaction” and to sustain the development of networks of strategies for the...

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54 This has happened, for instance, in the case of the Tuscany Region, in Italy, where specific public funding has been allocated to experimenting the potential of the application of laser technologies produced within an innovative cluster of the region to the restoration of cultural assets and to other industries in the region (see Bellandi and Caloffi, 2010).

55 We refer here both to the creation of the tangible infrastructures and to the production of rules (norms) related to the creation of these types of goods.
experimentation of interventions. More generally, as Rodrik (2004:17-18) aptly points out, industrial policies should have the nature of a discovery process, where public and private agents invest and learn about costs and opportunities of collaboration, and engage in a process of strategic coordination.  

4. System-based policy in Italy: the promotion of industrial districts

System-based units of policy emerge in Italy at the very beginning of the nineties (last century), when the national industrial policies recognize the role of industrial districts (Caloffi, 2000; IPI, 2002; Altobelli and Carnazza, 2010). The national law n.317, signed in 1991, which was aimed at regulating the public support to the innovation of small enterprises, provided a policy definition of industrial district and defined a general framework for the implementation of specific interventions within these systems.

Though until 1991 no explicit role was recognized to the policies for the promotion of industrial districts, a large variety of agents operating at local level – local governments, Chamber of Commerce, research centres, business associations and financial institutes – had already provided various kind of support to local processes of innovation and to the internationalization of the local systems (Dei Ottati, 2002). The emergence of a web of specialized business development service centres and the promotion of the formation of consortiums between enterprises are among the main results of these local actions (Brusco 1992; Bianchi 1996; Ceris 1997). In particular, with the diffuse creation of business development service centres, local policies mark a divide with the old model based on monetary incentives granted to the single enterprises, upon which the national industrial policy was based. They aimed at creating public-private organizations able to provide specialized services to the local firms, to support knowledge and technology transfer from research centres, and to facilitate learning (Brusco 1992; Bianchi 1996).

Within the previously cited Italian law n.317 (year 1991) the article 36 adopted a definition of industrial district based on the economic literature, stating that “an industrial district is a territorial area characterized by a high concentration of small specialized enterprises, where there is a particular relation between local enterprises and population”. The national law defined a general policy framework, but delegated the design and the implementation

56 See also Sabel (2004).

57 The notion of business development services (BDS) refers to a broad range of services, ranging from access to information on the evolution of markets and technology, support to innovation, quality certification, product testing, award of trademarks, credit guarantee, product and export promotion, export insurance, organisation of fairs, client rating, consultancy, training, to pollution control. Among all the labels that are found in the relevant literature to designate similar concepts, a notion that is quite common is that of “real services”; to indicate their impact on structural features of company behaviour, and notably on their competitiveness. In this context, “real” should be interpreted as “structural”, because the provision of these services transfer knowledge and technology, and facilitate learning, thereby modifying in a structural, non-transitory way their organization of production and their relation with the market (Brusco 1992; Bianchi 1996). In any case, it must be the result of a shared process: since policies to create BDS could have a strong impact on the socio-economic structure of a region, they need a strong involvement of the different local agents (Bellini, 2000).

58 A subsequent law (issued in 1993) fixed the parameters for the identification of the industrial districts referring to the definition provided by the National Institute of Statistics (ISTAT). Following this definition, an industrial district is a local labour system where there is a high degree of agglomeration of SMEs, which mostly operate in a particular manufacturing sector.
of the specific interventions to regional governments. In particular, the Regions had to identify the industrial districts localized within their boundaries, and then define the specific policies to be enacted. These policies aimed at combining bottom-up actions with the regional government intervention: on the one hand, the district agents, grouped in a local committee or consortium\(^{59}\), had to elaborate a “district development plan” composed of innovative projects; on the other hand, the Regions had to fund these innovative projects on the basis of periodical calls. The national law also established that the funds had to be granted to district collective agents, such as the local consortia previously mentioned. However, it provided no funds to the Regions\(^{60}\), and the promotion of industrial districts has initially experimented a very limited application.

During the nineties a group of Italian regions have started to draw official maps of industrial districts and have started to design their interventions under the limitations of their policy competencies (Caloffi, 2000)\(^{61}\). Among the most diffuse kinds of policies, we recall: the support to innovation projects, especially when implemented in collaboration with local research institutes; in general, solutions able to bridge between the world of industry and that of research, like the constitution of incubators for new enterprises having specific technological/sectoral/territorial targets. Other interventions have been aimed at supporting district internationalization (e.g. through the support to the participation.

In the most active regions, such as Lombardy, Tuscany, Piedmont, the district development plans have been funded for some years. Then, at the beginning of the millennium – and within a modified context of competencies – Italian regions have opted for a different kind of intervention. They have inserted the promotion of industrial districts into more general policy lines qualified by specific sectoral and territorial policy targets (Bellandi and Caloffi, 2006). In the same period the devolution to Italian Regions of national competencies in industrial policy have progressively enlarged and consolidated, together with the definition of some areas of inter-regional and national coordination as, for instance, in the case of the technological districts that will be discussed in the following section.

### 5. Technological districts and innovation networks

New system based units of industrial policy emerged during the last years more explicitly target the promotion of university-industry relations and technological change. The

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59 District committees usually included representatives of local agencies such as Provinces, Municipalities, Chambers of Commerce, consortia, SMEs’ associations, trade and labour unions. The definition of the specific composition of each District committee was left to the Regions.

60 The first national funds have been granted in 1997.

61 Lombardy has been the first Region to elaborate a map of industrial districts (in 1993), while the latter has been the Veneto. In 2003, Veneto Region has completely renewed its approach to the promotion of industrial districts and has introduced the concept of “productive district” (see section 5). A particular case is that of Emilia Romagna Region, which has chosen not to elaborate an official map of the industrial districts, but instead has elicited the bottom-up presentation of district projects, thereby leaving to the local agents the identification of the district boundaries.
Recent promotion of technological districts is a case in point. They are aimed at identifying and promoting specific areas characterized by the presence of both research resources and high tech enterprises that collaborate (or might collaborate) for the realization of common innovation projects. The underlying approach to the promotion of innovation suggests to concentrate public and private resources in sectoral and territorial contexts that feature major development potential: these are dynamic areas that can act as a significant driving force for the regions and countries in which they are rooted. Although the emergence of the single “technological district” frequently takes its cue from initiatives promoted at local and regional level, in many cases a formal acknowledgement at the level of central government – via protocols of understanding between the Ministry for the University and Research (MIUR) and the Region – identifies action priorities and funds for their implementation. Connected with such action there are no “official” parameters or quantitative thresholds to be complied with, as instead was the case of the industrial districts. In the majority of cases, such initiatives are still in the launching phase, and hence the picture proves to be necessarily partial. Moreover, the promotion of specific technological fields goes beyond technological districts. In fact, several regions have inserted specific technological targets within their innovation policies, defining specific funding schemes with priorities to specific technologies.

Recent policies also place a new emphasis on the promotion of industrial districts. In fact, in 2005, the national government has identified new system-based tools, such as the “productive district”. Following the national law 266 (year 2005), this system may be defined as a territorial and functional agglomeration of enterprises, which aims at implementing collective projects of development. This definition established neither “official” parameters, nor quantitative thresholds to be complied with, nor a preventive territorial analysis to be performed by the regions.

The same holds true for the “network contract” that has been regulated by the national law 33, signed in 2009 (Cafaggi, 2009, see also http://www.retiidimprese.it/). The latter is a contract through which two or more enterprises implement a common economic activity in order to achieve positive results in terms of innovativeness and competitiveness. Specific fiscal benefits will be provided for the enterprises participating to network contracts (and projects) and to productive districts’ projects alike. In particular, to fiscal purposes, the group of joint stock companies included in these projects may be assimilated to a formal group of enterprises and then benefit from the simplified group taxation system.


63 However, the most diffuse criteria for the identification (or the promotion) of technological districts may be summarized as follows: i) the presence of a set of agents, including universities, research centres, technology transfer organizations; ii) these agents jointly elaborating an innovation project, which is consistent with the national framework of the research policy; iii) the innovative project has a strong development potential; iv) and its cost is jointly funded by the public actor and the local partnership, also in collaboration with other private venture capitalists. See Bonaccorsi (2006).

64 Among those which were already launched or at an advanced stage of set-up a 2007 survey (www.distretti-tecnologici.it) mentions Wireless in Turin (Piedmont), Biotechnologies in Milan (Lombardy), Hi-Mec (Emilia-Romagna), biomedical in Mirandola (Emilia-Romagna), Nanotechnologies (Veneto), Integrated Intelligence Systems in Genoa (Liguria), Aerospace in Castel Romano (Lazio), microelectronics in Catania (Sicily), IT in Pisa (Tuscany), Polymer materials in Naples (Campania). In all cases, the development projects for the “technological district” have been proposed by networks of agents comprising universities, research centres and enterprises.
Since these new policies are still in their infancy, their possible impact on the innovativeness and competitiveness of the Italian enterprises and localities of industry cannot be predicted. Moreover, the extent of their success will depend on the way these policies will be designed and implemented within the framework of the current industrial and innovation policies. However, one particular element suggests that they might prove successful in promoting innovation. This refers to the fact that the new units of policy-making focus on technologies and networks rather than on sectors and territorial boundaries. Following a large body of literature, these are the building blocks of innovative systems.

6. Concluding remarks

The concise discussion on industrial policies for innovation and local development in Italy presented here shows that these policies have played a controversial role. At a first stage, with the promotion of industrial districts, the Italian policy-maker has introduced potential discontinuities in established policy practices, recognizing the relevance of new system-based units of policy, and integrating into national frameworks new tools and models of intervention that had been previously experimented at local levels. These interventions have been quite innovative and they have somehow anticipated most of the elements that characterize the current framework of European cluster policies and regional innovation systems. However, as noted earlier, the implementation has been driven in various ways by the local agents and by (the most active) regions, while national design and coordination have remained in the backdrop.

The current scenario entails a new challenge for industrial policy. In particular, the adoption of system-based approaches requires new forms of collaboration among the different levels of policy making, as well as the mobilization of a strategic capacity. As for the first point, it has to be recalled that, thanks to a process of institutional learning that has involved the European Union and the European regions, during the last decade the regional policy-makers have experimented a large variety of system-based policy tools for the promotion of innovation and local development. The results of these interventions need to be carefully evaluated, in order to identify successful experiences that may be fruitfully strengthened by the joint support of regional, national and European policy-makers. The collaboration between the national and the regional policy-makers is required, as the new policy tools, such as the technological districts or the innovative networks, often target high-tech sectors, where national public research organizations play a fundamental role. Furthermore, the local context hosts the basic nuclei of competencies upon which these systems may develop, and the regional policy-makers play a leading role in the scouting and in the promotion of the local experiences.

As for the second point, the new system-based innovation policies increasingly require the implementation of strategic capacities from the side of the policy-makers. Successful experiences show that local innovative systems often emerge thanks to a considerable investment in public or private research activities, made by research organizations or leading firms. Strategy is essential in order to target specific competencies and
technological fields that may benefit from the public investments. Moreover, strategy is required in order to support the formation of linkages between particular groups of agents, and clustering projects. As noted earlier, this kind of industrial policies has the nature of a discovery process, where multi-level policy networks engage in a process of strategic collaboration.
7. References


Christian Ketels, Harvard Business School

1. Introduction

There is an increasing interest in the role of economic geography in explaining differences in prosperity levels across locations (World Bank, 2009; Spence et al., 2009). Different strands of the academic literature have contributed to this debate. The New Economic Geography approach applies models with increasing returns and mobile factors to explain the emergence of regions with different density of economic activity (Royal Swedish Academy of Science, 2008). The work on clusters (Porter, 2008) breaks this analysis down to the level of regional agglomerations of companies, research institutions, government agencies, and others in a specific area of business activity related through various knowledge and economic linkages. Other related approaches have looked at regional innovation systems (Cooke et al., 1997), industrial districts (Becattini, 1990; Porter/Ketels, 2009), and locations home to a ‘creative class’ (Florida, 2003).

But while there is widespread agreement that ‘geography matters’, there is little consensus on whether there is a case for policy. Arguments are made for (Porter, 2008) and against (Duranton, 2007); some authors acknowledge the theoretical case for intervention (Norman/Venables, 2004) but point out the complex implementation issues that render success unlikely (Venables, 2008). In the meantime, practitioners have made their choice and especially cluster-based economic policies have become widely used (Borras/Tsagdis, 2008; Oxford Research, 2008; Yusuf et al., 2008; Zeng, 2008; Davies, 2006; Pietrobelli/Rabelotti, 2006; Freser, 2005).

This article discusses the current state of the academic debate on cluster policy. It first reviews the findings on the relationship between the presence of clusters and economic outcomes, putting clusters into the context of other geographic and non-geographic factors affecting prosperity differences across locations. It then reviews the work on the emergence and evolution of clusters, a topic particularly important for policy that ultimately aims to change the trajectory of such paths’. The second part of the article addresses the issue of cluster policy. It sets out by presenting the basic theoretical argument for cluster policy. It then discusses two opposing understandings of how cluster policy should be conducted. Their different underlying definitions of what cluster policy is, it is then argued, are at the core of the different opinions about the use of cluster policy. A final section then discusses issues of implementation that have a crucial influence on whether and when cluster policy is beneficial and how large these benefits might become.
2. Clusters as building blocks of a modern economy

2.1 Clusters and economic performance

Marshall’s (1890) original observation that firms can enjoy benefits from locating close to others engaged in related activities continues to find empirical support, in advanced as well as in developing countries. It is widely argued that the benefits have three main sources: First, there is the potential to attract more specialized suppliers and interact with them more efficiently (Amiti/Cameron, 2007). Second, there is a labor market that is deeper and provides more specialized skills. And third, there are knowledge spillovers through different channels that one can only tap into locally (Thompson, 2006). There is significant empirical evidence for each of these sources to matter (Ellison/Glaeser/Kerr, 2007) with their relative weights driven by cluster-specific factors. In biotechnology, for example, knowledge spillovers are found to be especially important (Aharonson et al., 2007) while in other areas the access to a specialized labor market is seen as crucial (Eriksson/Lindgren, 2008).

But there are countervailing effects that hold the unfettered push towards co-location in check. Companies are in business to make a profit when serving customers and if the costs of serving customers from a distance are too high, it can be more beneficial to follow them instead of staying with related companies in a cluster. And companies need to look at the cost side too: More companies close by leads to more competition for employees, dedicated infrastructure, and other input factors. Again, there is clear evidence that these factors matter as well, especially at the level of narrow industries (Braunerhjelm/Thulin, 2009; Delgado/Porter/Scott, 2008). The tendency of economic activities to co-locate depends on the specific balance between these opposing forces. On the level of national economies, between 30% and 40% of all employment tends to be in industries that co-locate across regions (U.S. Cluster Mapping Project, 2008; European Cluster Observatory, 2008). The rest is largely in activities that serve local markets without any effective competition from companies located elsewhere. A small share of employees is in activities that have to be where specific natural resource deposits can be found.

While the size of the cluster sector is largely a reflection of broad patterns in economic composition at the national level, especially the degree of service-orientation the economy has reached, the level of specialization within the cluster sector turns out to be an important driver of economic performance. This should come as no surprise: Being in an industry that is part of the cluster sector indicates that there are significant benefits from co-location. If a region has a lower level of specialization in such an industry, productivity in this industry will be lower. If a region has much of its employment in the cluster sector spread out across many industries rather than being concentrated in a few industries where it can benefit from agglomeration, its overall level of productivity and ultimately its prosperity will suffer.

The evidence from quantitative studies across many countries and regions clearly bears out this positive relationship between employment in strong clusters and economic performance. Data from Europe and North America indicates that differences in the strength of cluster specialization explain on average around one third of the difference in GDP per
capita levels across the two geographies (European Commission, 2007; Porter, 2003). The more detailed US data also shows that differences in specialization are associated with differences in relative wages across locations within each industry. This industry-level wage effect is on average twice as important as the cluster composition of a regional economy in explaining differences in average GDP per capita. US data also suggests that strong clusters receive more foreign direct investment (Bobonis/Shatz, 2007). While none of these studies prove causality, they are indicative of the close relationship between clusters and economic outcomes.

Figure 37. Cluster Portfolio Strength and Regional Prosperity
NUTS 2 Regions in European Countries

Specialization in clusters is clearly not the only driver of regional prosperity. In terms of locational factors, the pure size of economic activity is another candidate suggested in the literature. There are two varieties of this argument. One approach argues that cross-cluster spillovers are more important than within-cluster spillovers, so that absolute size and density instead of relative specialization matter most (Bruelhart/Sbergami, 2008). Another approach goes further and argues that absolute size allows for heterogeneity, i.e. the absence of specialization, and that this heterogeneity is critical for ‘creativity’ (Florida, 2003; Jacobs, 1961). Both of these models suggest the emergence of a very unequal world, i.e. a few prosperous large regions (core) and many poor small regions (periphery). The cluster model instead is consistent with a world where all regions of similar fundamentals can reach similar levels of size and prosperity if they develop different specialization patterns.

In terms of other influences, the competitiveness framework points towards the more general economic fundamentals given in the quality of the business environment and the sophistication of companies (Porter, 1990). Clusters, this approach suggests, can amplify the strengths that the fundamentals provide but they are dependent on them and cannot substitute their weaknesses.
A number of empirical studies look at all three dimensions, i.e. cluster specialization, agglomeration/diversification, and the quality of the economic fundamentals (Lall/ Mengistae, 2005; Brülhart/Mathys, 2007; Carlino/Hunt, 2007; McDonland et al., 2007; Fritsch et al., 2008; DeGroot et al., 2008). There is no clear consensus across these studies but the overall evidence suggests that all three play an independent role. Looking at the two dimensions related to geography, there is some evidence that cross-cluster agglomeration remains the dominant force in developing economies, while it is losing power in advanced economies where cluster specialization plays an increasing role (Word Bank, 2009; Brülhart, 2009; Krugman, 2008). The European data suggests that while cluster specialization explains a significant share of prosperity differences among the EU-15, a group of broadly similar competitiveness, it is much less powerful among the EU-25, where differences in competitiveness are much stronger.

Recent studies indicate that specialization and diversification are not necessarily in conflict: The advantage of large metropolitan areas seems to be that they can combine both, i.e. due to their size create sufficient critical mass in individual clusters while supporting an overall portfolio of clusters that provides a breadth of knowledge and capabilities. And the advantage of diversification seems to be strongest when it happens in ‘related clusters’, i.e. in activities that share common aspects of knowledge or capabilities. High specialization in a narrow industry supports high levels and growth of productivity. Employment growth, however, is likely to occur in related industries within the cluster, not in the already highly present industry itself where competition for input factors drives up costs (Delgado/Porter/Scott, 2008).

The positive impact of cluster strength on economic performance works through a number of distinct channels (Porter, 1998). Companies within clusters achieve higher levels of productivity (Boasson/MacPherson, 2001). They can, because the presence of specialized suppliers and service providers reduces reaction times and the need to keep higher levels of working capital. They must, because the competition for inputs drives up costs and the competition on the end market enforces a constant focus on efficiency improvements and the adoption of best practices. The effect of higher competition is felt not only by companies but also by employees that are seen to work longer hours in strong clusters (Rosenthal/Strange, 2008). Companies within clusters reach higher levels of innovation (Moreno et al., 2004). The cluster environment creates stronger pressure to innovate, a richer source of relevant ideas, and lower costs of turning ideas into new products and services. In a dynamic sense, this will also increase the incentives of companies to invest in innovative capacity, giving a further boost to innovation. Importantly, there is emerging evidence that the impact of clusters is particularly strong on the commercial use of knowledge, not just the creation of knowledge (Sölvell/Protsiv, 2008). Clusters finally provide a beneficial environment for entrepreneurship. New companies are more reliant on external assets and capabilities than incumbents. This leads to higher levels of entry in cluster environments (Guiso/Schivardi, 2007; Freser et al.; 2008; Glaeser/Kerr, 2008). More importantly, new studies also indicate that survival rates (Wennberg/Lindqvist, 2008) and firm growth (Audretsch/Dohse, 2007) are higher in strong clusters as well.
2.2 Cluster evolution

The evidence of a positive relationship between strong clusters and strong economic performance is of little policy relevance, if we do not understand and ultimately have the ability to influence the dynamics that lead to the emergence of strong clusters. The limitations of a cluster policy that argues for a narrow “strengthening the existing strengths”, i.e. working only with clusters that are already strong, is particularly clear for less advanced economies that need to create new capabilities (Ketels/Memedovic, 2008). But it is also problematic in advanced economies where structural change within and across clusters is of strong importance as well.

The knowledge about the processes that lead to the emergence of strong clusters is still largely case-based. Clusters emerge where economic transactions across locations are feasible and there are specific factors in a location that provide a nucleus for cluster dynamics to develop. The first condition is often neglected in policy discussions but crucial for cluster dynamics to become more relevant. It is clear, however, that the much longer history of deep market integration in the US compared to Europe has a profound impact on the different patterns of cluster emergence and overall economic geography in these two large regions. Where trade across locations is inhibited, the productivity benefits of clusters are irrelevant and the seeds of cluster evolution have no opportunity to come to fruition.

Figure 38. Emergence of Clusters

For the second condition, a number of different types of nuclei have been found to play a role. Endowments of natural resources or the geographic location close to trading routes often played an important role. Specific elements of the business environment, for example the presence of a strong university, are another trigger for the development of a cluster. The existence of unique local demand conditions, for example environmental regulations that support the use of renewable energy, is another variation of this theme. And then there can be individual companies, be it entrepreneurial start-ups or investments from elsewhere (Manning, 2008), that succeed in the market and over time become the anchor of spin-offs.
and other companies that turn into a cluster. Quite often, new clusters are also rooted in older clusters that have lost their traditional market but found new ways to leverage their capabilities. Changing patterns of regional specialization therefore tend to follow a pattern of “related diversification” (Neffke et al., 2009). Clusters can increase companies’ ability to transfer capabilities to such new uses, even if the traditional anchor company that initially gave rise to the cluster has vanished (Treado/Giarratani, 2008). All these different factors often interplay and change in importance over time as clusters evolve.

The case evidence also emphasizes the role of entrepreneurs in translating the opportunities from effective cross-regional competition and conducive business environments into actual cluster emergence (Braunerhjelm/Feldmann, 2006). This is particular true for the development of collaboration within a cluster that moves beyond the automatic benefits of pure co-location.

A growing literature looks at the life cycle of clusters (Bergmann, 2006). Clusters often seem to follow an s-shaped development path. After an (often long) phase of slow gestation a cluster reaches a size where cluster effects set in and growth accelerates. This growth than becomes self-reinforcing; cluster effects reach their full scale and growth explodes. Eventually, growth moderates as the cluster reaches its market potential and congestion effects become more relevant. Some clusters then manage to reinvent themselves, finding a new market or technology to ignite a next phase of cluster dynamisms. Others, however, get locked into existing technology and eventually shrink, as their markets disappear or other locations develop more dynamism.

This thinking finds its reflection in the work on regional economies (Audretsch et al., 2008). One hypothesis is that the rise and fall of regions basically follows the rise and fall of key clusters. Another hypothesis is that regions are of different types, and clusters ‘move’ across these types as they pass through their life cycle (Duranton/Puga, 2001).

The limitation of many of these studies is that they work well backwards, i.e. track the path of successful regions, but have only limited predictive power, i.e. are able to identify clusters that eventually blossom already early in their life cycle. Many case studies suggest that the process of cluster development is complex and fragile (Feldman/Francis, 2004); the life cycle hypothesis is a helpful analytical tool but describes only a moderate part of the mix of self-organizing and externally induced processes that are under way when clusters form (Sölvell, 2008).

The discussion so far has not touched the role of government, and for good reasons: There is very little evidence that governments can create clusters and ample examples of where they failed in such efforts (Porter, 2008). But it is quite clear that government is an important factor in the different types of cluster evolution processes described above (Sölvell, 2008; Meier zu KÖcker, 2008). Government policies are important for how the potential benefits of geographic location or natural resources can be exploited. They influence many aspects of the business environment, from decisions about the university system to infrastructure to consumer and environmental regulation. They can make market entry more or less
attractive for entrepreneurs. And they can play a role in the diversification towards new clusters through targeted FDI attraction and facilitating collaboration in existing clusters.

Where efforts aim to facilitate the evolution of new clusters, they need to identify which new clusters have a reasonable probability of developing. Two new approaches have recently been suggested to support this selection, both based on identifying areas that are related to current strengths. These current strengths are seen partly as a source of existing company capabilities that can also be used in the new field, and partly as an indication of existing business environment strengths that are also relevant there. One approach looks at the types of products and services that countries at a given level of economic development tend to export (Hausmann/Klinger, 2007).

As countries develop, it turns out that they move sequentially into new exports of related goods and services, rather than ‘jumping’ into very distant areas of the product space. Another approach looks at the linkages between and within clusters revealed in employment, and takes that as a starting point to analyze the potential to develop an existing portfolio of exports (Porter/Ketels, 2007). Growth can be generated from increasing the value per unit of exports in existing clusters, growing exports in so far weaker industries within strong export clusters, developing related clusters, and turning exports positions in narrow niche industries into broader cluster strengths. These findings are relevant not only for exports but also more generally for economies’ changing patterns of specialization.

3. Cluster policy

Cluster research over the last twenty years has to a large degree focused on establishing clusters’ role for the market success of companies and the performance of regions. Not surprisingly, the evidence that clusters are important for economic success has attracted the interest of policy makers. But while there is an emerging consensus on the usefulness of clusters as an analytical tool, at least the academic discussion on cluster policy remains far from agreement.

Practitioners, meanwhile, have over the last few years launched an impressive number of cluster policy programs. Catalonia was among the first economies globally that launched cluster efforts around the time when Porter’s “Competitive Advantage of Nations” was published (other “early adopters” where the Basque country (Aranguren et al., 2006) as well Denmark, Finland, and the Netherlands). The experience with this first wave of cluster policies was mixed, and there was a period of less activity that lasted up until the early 2000s. Catalonia was among the few regions that continued its cluster programs over time. Since then, there has been a marked revival of cluster efforts, especially since 2005. This revival was driven largely by a growing frustration of policy makers with traditional approaches at a time when pressure to increase competitiveness was growing (Davies, 2007; Freser, 2005). The new policies and programs could draw on the learnings from earlier efforts. But they could still not build on a consensus model of cluster policy that would have converted the skeptics.
The lack of a generally accepted definition of cluster policy was a significant source of the disagreements in the policy debate. For this analysis, we define cluster policy to focus on efforts by governments, alone or in a collaborative effort with companies, universities, and others, that aim to increase the competitiveness of specific clusters by organizing government policies around them. This excludes efforts by other entities acting alone, for example pure private cluster initiatives, and government policies that are either not directed at clusters (but might affect them) or do not focus on raising the cluster’s competitiveness (but might use them to create institutions that benefit the economy in general). The term cluster-based economic policy is used in a slightly wider sense, including also cross-cluster policies affecting the fundamental conditions for cluster emergence as well as the use of cluster structures as public private dialogue tools to improve cross-cluster competitiveness.

**Figure 39. Cluster-based Economic Policy**

<table>
<thead>
<tr>
<th>Aims to improve the competitiveness of specific clusters</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies to strengthen cross-cluster competitiveness through cluster-based efforts</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Policies to remove general barriers for cluster emergence</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

Use clusters as a tool to organize policy delivery

Source: Produced by authors.

### 3.1 The basic motivation for cluster policy

Economists consider policy interventions as justified when specific conditions exists that reduce the ability of the normal market process to lead to optimal outcomes from an overall welfare perspective. Such ‘market failures’ provide the traditional motivation for economic policy. The local externalities that give rise to clusters create a number of such market failures:

- Coordination failures exist, because individual companies consider in their decisions, be it whether to locate in a cluster or what investments to undertake being there, only the impact on themselves, not on others.
- Information asymmetries exist, because even if the incentive problems of taking account if the impact of own actions on others could be managed, the knowledge necessary to make the right ‘social’ decision is dispersed among the many participants of the cluster.
- Path dependency exists, because decisions not only influence the present, but also the possible evolutionary path of the cluster in the future. Both coordination failures and information asymmetries thus have a dynamic dimension as well. And social and private discount rates might differ, creating an additional source of market failure.
Where cluster policy addresses market failures, it does not reduce global welfare. Under some assumptions, the free competition between rational governments in supporting clusters even leads to the best possible outcome, not a race to the bottom (Norman/Venables, 2004). While these arguments do not prescribe specific policy interventions, they give some guidance on the direction that cluster policy should take. The best approach is always to target the market failure at the source. Policy can subsidize activities that are underprovided because of coordination failures or differences in discount factors. And policy can facilitate platforms for collective action to overcome coordination failures and informational asymmetries. In practice, efforts to address market failure are never perfect (Rodrik, 2008). They suffer from government failure in implementation (lack of knowledge to target the intervention, inability to provide incentive-neutral financing, political pressure by interest groups for beneficial treatment, etc.) and might have unintended side-effects, creating collateral costs that outweigh the benefits.

Economic policies can be compared on both the impact that they generate, i.e. addressing the problem or market failure, and the costs they might create, i.e. distortions or government failure. Policies that target individual companies are highly effective but also very distortionary. Policies that target the entire economy have little if any distortionary effect but are often also not very effective. Policies targeted at individual industries come somewhere in the middle on both accounts. Cluster policy, however, offers a superior mix of benefits and costs. It is organized around a group of industries that by definition have strong linkages. Targeting policy at them will thus not only be effective but even trigger additional benefits from positive spillovers that are induced. And while the policy is neutral within the cluster where competition for factors of production is the strongest, it is distortionary only relative to activities outside the cluster where by definition other skills and assets are needed. While some distortion remains, the approach promises a potentially better balance of effects.

3.2 Two opposing approaches to cluster policy

In the academic debate, the strongest criticism of cluster policy does not come from researchers that claim that locational factors are irrelevant, but from economic geographers and others that fully support the view that locational factors are important. Some criticize the “fuzzy” way the cluster framework is translated from an academic idea into a practical policy concept (Martin/Sunley, 2003). But while the issues raised in these discussions reflect important operational challenges of implementing cluster policy, they also tend to reveal a limited sense of the needs of policy practitioners: Cluster policy is a complex process and requires a framework that enables context-dependent on-the-ground choices, but that does not provide a conceptual argument against its use. Others provide a more fundamental criticism of the motivation for cluster policy (Duranton, 2008) that turns out to be highly revealing for how the lack of a generally accepted definition of cluster policy continues to hamper the debate.

To understand the different views on cluster policy, it is useful to go back to a simple diagram that relates agglomeration to competitiveness. The evidence discussed in chapter 2 points towards a positive relationship between the two, a fact that is generally accepted by critics...
as well as supporters of cluster policy (as discussed previously there are differences in the view on how strong this relationship is relative to other factors). But how should cluster policy intervene to move a location from a place at the bottom left to the top right? This is where the fundamental difference sets in:

One approach sees agglomeration as the central policy lever; as agglomeration rises, competitiveness will naturally follow as cluster effects set in. With agglomeration the ultimate goal, efforts to attract companies through incentives — from tax rebates to free infrastructure — naturally come to the forefront of the policy debate. Economic geography-based approaches, too, look at the effects of traditional tax, trade, and regional policies on agglomeration patterns (Baldwin et al., 2003). Dynamic ‘new economic geography’ models provide guidance on when and how these instruments should be used to have a maximum impact (Brenner, 2008, 2003): the process of agglomeration in these models is characterized by important break-points at which economic geography patterns are determined. For economic policy, this implies that intervention has to be early, i.e. at a time when the locational patterns of where a dominant cluster will be located has not been determined yet. And it has to be massive, i.e. it has to give such a meaningful boost that the location gains sufficient critical mass to be far ahead of all potential rivals. And it implies a critical role for identifying a small number of clusters on which economic development then hinges.

If large-scale targeted subsidies in the early phase of cluster emergence are the policies under discussion, should they be used? Not only critics of cluster policy come to a negative answer: such policies are likely to fail because they require an abundance of information and ability in the hands of the policy maker. And they are not even necessary: current economic geography is already in line with the fundamentals including local externalities, so any policies to change the location of companies would lead away from an existing optimum (Martin/Mayer/Mayneris, 2008).

Figure 40. Two Perspectives on Cluster Development

Source: Produced by authors.
Another approach sees competitiveness as the central policy lever; as competitiveness rises, agglomeration will naturally increase as the cluster becomes more attractive for new entrants (Rodríguez-Clare, 2005a). With competitiveness the ultimate goal, clusters become a process tool to design and implement policies more effectively, not an ultimate objective. The instruments then targeted at existing clusters are well known from innovation policy, regional policy, and enterprise policy. They are supplemented by actions that specifically support collaboration in their use and that create platforms for collaboration within an agglomeration.

The competitiveness literature, including the insights on cluster evolution provide guidance on when and how to use these instruments that is radically different from the model cluster policy critics have in mind: The focus should be largely on agglomerations that have already passed the test of the early stages of development (Rodríguez-Clare, 2005b). This indicates that the fundamental conditions for economic success are in place and active collaboration can become a ‘turbo’ for the use of strengths already in place. The focus of policy interventions should be on enabling collaboration and channeling existing resources in a different way, using moderate amounts of new funding. Large new funds are not necessary and could be harmful by increasing the potential for distorting incentives. And while a selection of clusters is necessary to be able to deploy sufficient resources and attention on any one initiative, economic development is the result of many clusters in all regions flourishing, not just a few per country.

If these are the policies under discussion, should they be used? Even the critics of cluster policy have a slightly favorable view: Improvements in the fundamentals of competitiveness are a sensible goal and the suggested approach limits the downside. But they remain skeptical about whether cluster efforts can have a sufficiently strong impact on improving underlying competitiveness. The quantitative evidence is still limited but points to moderate positive effects (Engel/Henrik, 2004; Dohse, 2007; Christensen et al., 2007; Dohse/Stähler, 2008; Falk et al., 2008; Fromholt-Eisebith/Eisebith, 2008). Proponents of cluster policy see enough case-evidence that such efforts can in fact lead to a much more meaningful improvement in the way policies for higher competitiveness are being conducted (Waits, 2000; Cortright, 2006; Mills et al., 2008).

There remains a fair amount of disagreement in the debate about cluster policies. At least part of this disagreement is related to a lack of effective communication between theoretical research and policy practice. This communication failure leads to a fundamental disconnect on what cluster policy is and how it is related to competitiveness upgrading. For many researchers, improving competitiveness is fundamentally an automatic process, driven by the self-interest of all parties involved. For most practitioners, improving competitiveness is a complex challenge of identifying action priorities and mobilizing allies to implement them. Cluster policy, as understood by its proponents, is an answer to these real challenges that practitioners face, challenges that the critics assume will be taken care of automatically over time.
3.3 Implementing cluster policy to improve competitiveness

The discussion so far has established a solid conceptual argument for cluster policy as a tool to leverage cluster agglomerations as a tool to achieve higher impact on upgrading underlying competitiveness. Whether these possible benefits of such policies materialize in a meaningful fashion, is a question of how and where they are implemented, not just of their conceptual solidity. Three issues are of particular important. First, does cluster policy open the door to distortive interventions that have little to do with the original objective but easily follow once cluster programs are launched? Second, are the effects of cluster policy strong enough to warrant more fundamental policy interest? Third, which locations should use cluster policy?

Cluster policy uses industry-specific policy instruments and activities. As such, it can become a politically convenient cover for what then in reality is nothing else but traditional distortive industrial policy. The political economy argument that some critics then make is the following: Even if cluster policy has its merits, it opens the political process for all kinds of sector-specific interventions that undo its theoretical benefits (Rodrik, 2008). On balance, they argue, it is then better to forgo a useful instrument like cluster policy if it leads to opening the Pandora box of ‘vertical’ policies (EBRD, 2008).

This is an important consideration. But it has to be balanced against another political economy dynamic: Many governments are under intense political pressure to ‘do more’ rather than upgrading the general business environment. In such situations, the alternative to cluster policies is often not the absence of targeted policy action, but the use of exactly the type of old style industrial policy tools that should be avoided. And specific steps and conditions can reduce the likelihood of cluster policies being high-jacked by narrow interest groups: High exposure to external competition and robust competition policies domestically reduces the danger that collaboration leads to lower rather than more sophisticated rivalry. Competition models with the involvement of external jurors can de-politicize the selection process and induce a clear orientation to excellence. And the threat of losing funding in case cluster dynamics remain low avoids subsidizing many weak clusters rather than allowing stronger clusters to gain position. Overall, especially the role of government needs to be carefully designed. While there is no systematic evidence that a government role per se is negative (Sölvell/Lindqvist/Ketels, 2003), government cannot create clusters (Porter, 2008) and can easily impose conditions that hurt competitiveness.

Cluster policy has in the past often been applied at the level of individual clusters. But simple arithmetic suggests that working with one cluster in a region, even if it is a large one, is unlikely to generate economic outcomes that are meaningful for an overall regional economy. The average regional cluster accounts for about 1% of total employment in a region (European Cluster Observatory, 2008); larger cluster categories like financial services or transportation can in individual cases reach much higher levels but are for most regions not above 5% of total regional employment. High-tech clusters like biotech range at a fraction of such numbers. Purely growing one such cluster by improving its competitiveness can thus have high impact on a few individuals and companies but will tend to have only a moderate impact on the regional economy at large. A number of recent analyses have identified how
Cluster policy can be designed to affect the wider regional economy and thus become a quantitatively important tool for economic development efforts (Pietrobelli/Rabelotti, 2004; High Level Advisory Group on Clusters, 2008; Ketels, 2009). Locations should take a portfolio perspective on their cluster efforts, addressing the different needs of clusters at different stages of development and leveraging the linkages across clusters. Effective cluster policy mobilizes all clusters, not just one that is supposed to drive future economic growth. Locations should leverage the experience of the cluster efforts for economy-wide improvements. At least part of the business environment weaknesses that create problems for specific clusters usually also affect companies more generally. And locations should integrate their cluster efforts into a broader economic strategy that identifies the specific value that the location provides relative to its peers. Clusters can effectively communicate the unique advantages a location offers, much better than general attributes like “open for business” or “entrepreneurial”.

Cluster policy has advantages that apply to pretty much all locations. But as is the case for many other policies with general benefits, their particular value depends on the specific context in which they are applied (Rodrik, 2007). Cluster policies are most powerful, if cluster dynamics address some core challenges an economy is facing. In Sweden, for example, low levels of entrepreneurship and insufficient commercialization of research activity are two important concerns that cluster policy is well placed to address (Ketels, 2009). Cluster policies can be ineffective or even backfire, if the economic context in terms of government institutions and effective competition is weak; the discussion above has pointed out how cluster policies can otherwise turn into costly interventions. In Russia, for example, some basic conditions are missing for the national cluster program to be very effective (Porter/Ketels, 2007). This also indicates that cluster policies are not a substitute for sound general economic policies. In the Central European countries that joined the EU, there was little evidence that countries with stronger cluster policies did better overall or even had stronger clusters; it was the general competitiveness of the economy that mattered most (Ketels/Sölvell, 2006). If the general context is not suitable for ambitious cluster policy programs, cluster efforts can still play an important role. In developing countries, cluster efforts can play an important role in creating the local and regional social capital that is a foundation for future competitiveness upgrading (Ketels, 2006). This makes them an important effort, even when the direct economic impact of the cluster policy is moderate or low.

4. Conclusions

Cluster policy is a field under dynamic development where the clarity of the conceptual discussion has not always kept pace with the efforts of practitioners. While there is an emerging consensus of the role of clusters in the modern economy, the discussion on a workable theory of cluster policy is still very much ongoing.

The absence of a consensus on the usefulness of cluster policy is to a large degree the consequence of confusion about what cluster policy actually is. If cluster policy is understood as a tool to artificially change the nature of economic geography, there are many conceptual and practical arguments against its use. If, however, cluster policy is seen
as a way to leverage existing agglomerations as platforms for collaboration to enhance cluster dynamics and as more effective channels to deliver economic policies, it has much potential.

Whether or not cluster policy can fulfill this potential, is not only a matter of achieving more clarity in a conceptual debate that is too often conducted in the parallel worlds of different research traditions that fail to communicate. It also depends on the way cluster policy is implemented in practice. Every policy approach that includes industry-specific measures and is focused on enhancing collaboration within an industry is exposed to the danger of becoming a cover for interventions that reduce competition rather than enabling competition at a higher level of productivity. To avoid this fate, cluster policies need to be accompanied by robust institutions and market environments with intense and open competition.

Every policy approach that claims a more prominent role in the policy debate also needs to be able to demonstrate a meaningful quantitative impact on economic outcomes. For cluster policy to pass this test, it needs to pursue a wider agenda, including portfolios of clusters and using clusters as a tool for economy-wide competitiveness upgrading, then is the current practice in many regions. And every policy approach has to show its relevance in the context of a specific location. For cluster policy, this creates demands both on the economic environment that should exist and on the economic challenges that a location needs to tackle. Cluster policy is not always the most important answer, but it is often part of what governments should consider.

Further progress in the cluster policy debate will have to be driven by more data. For clusters, there is now an increasing amount of quantitative data across many regions that has enabled a new wave of interesting empirical research. For cluster policy, there is nothing comparable. The impact assessment that exists looks at individual cases on-by-one and tends to be focused on improving the specific policy program in place, not on fundamental tests of cluster policy as a concept. This is a start, but more has to follow.
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C. Clusters: a strategic tool

Antoni Subirà, Institut d’Estudis Superiors de l’Empresa (IESE Business School)

1. A little history

One of the areas in the European Union where cluster methodology has been systematically used for longest is Catalonia. In fact, the Catalan government’s Department of Industry and Energy of the time started to think of applying this methodology to its territory in the early 1990s, a few months before the publication of The Competitive Advantage of Nations by Professor M. Porter.

The fact that this department was aware of and interested in this methodology was down to the academic relationship and friendship between two colleagues of mine at IESE, namely Professor Josep Faus and (the recently deceased) Professor Eduard Ballarín. Both of them, with doctorates from the HBS and lecturers at IESE, had known Porter for some time and were up-to-date on the work that had been the focus of his academic interest for several years, namely the reasons behind the different competitive efficiencies between some localities and others.

The ideas that Porter had been developing had their origin in Alfred Marshall. Other academics, such as Professor Becattini, had also been working on this area for some time but, at that moment, it seemed clear that Porter’s focus was the most modern, most promising and least interventionist. At heart, at least at the outset, cluster theory as a whole was more aimed towards understanding the causes or sources of competitiveness than towards public intervention in industrial systems; we will return to this point later.

Ballarín and Faus were the ones who gave me a draft of the book The Competitive Advantage of Nations, which Ballarín had received from his friend, M. Porter, asking him to comment on it. On reading it, I found it to be so interesting, so pertinent to our situation and so full of potential practical applications that I passed the draft around the top people at the department and also CIDEM, with the instruction that they should start to think about the practical applications of his methodology for Catalonia.

It soon became clear that the issue of clusters needed to be promoted among those government departments concerned with economic issues: Trade and Tourism, Agriculture and, most particularly, Economy and Finance. Once again the professionalism and high academic level of Faus and Ballarín played an essential part in convincing Macià Alavedra, who commissioned them to carry out a general analysis of clusters in the Catalan economy. That initial study had two positive consequences: firstly the concept, method and name of “clusters” started to become well-known in the Catalan government as a useful, modern tool; and secondly, it helped to create a group of experts in applying cluster methodology in Catalonia. We should note here that, although the team’s core was made up of Faus and Ballarín, a brilliant young HBS graduate also joined them, called Emilià Duch, who
in the coming years would set up a cluster consultancy firm that worked extensively with the department and its internal teams. E.Duch is currently one of the most prestigious international consultants in the field of clusters.

2. The concept matures

But that initial study was too general and we can illustrate this with just one example. We should remember that one of the clusters identified was Tourism. An analysis more oriented towards governmental action would have indicated that at least four tourist clusters could be identified, with quite distinct characteristics, needs, interactions, clients and strategies: urban tourism (essentially for the city of Barcelona), coastal tourism (the Costa Brava and the north of Maresme), sun and sand tourism (the Costa Daurada) and mountain tourism with its winter and summer variants.

The large industrial clusters identified were also too general for the Department of Industry’s needs. In spite of this, the government had already realised that clusters were useful and, at the Department of Industry, we started to create an incipient internal team under the direction of Jordi Conejos, and we hired external services to start working in more detail, especially aimed at facilitating the Department’s actions.

As from this point, I will abandon my chronological account and go on to a more conceptual description.

3. Understanding the industrial system: clusters as an analytical tool

Catalonia is small enough for its industry to be known in detail by everyone who holds a public post (as in the case of the senior figures, starting with myself, at the Department of Industry and Energy) or anyone who, due to academic interest, is working on this industry. Catalonia therefore resembles other countries in Europe such as Finland, Denmark, Slovenia, the Czech Republic, etc., where the ministers, heads of government and academics have an extremely detailed knowledge of their production systems. When I say “extremely detailed”, I don’t mean only, or principally, in sector statistics terms. I mean a direct knowledge of companies and their strategies, as well as their relations and the people in charge, down to truly small dimensions. This does not happen (it’s impossible) in large countries such as France, Germany, the United Kingdom or Italy, where the governments only know the large firms or company groups in such detail. We should point out that this detailed knowledge can be found at the level of “Land” in Germany, with the consequence that some Länder’s promotion policies have been as effective as those of small countries. This was what we were trying to achieve in Catalonia, which is small enough to allow for detailed knowledge.
The other characteristic of our production system is its complexity. Our economy is not based on a natural resource like Norway. Quite the opposite: we’re a transforming and exporting economy (we’ve even been called the factory of Spain) and our exports, which are not exactly of natural resources, usually account for 30% of all Spanish exports. Their effectiveness is based on complexity and on the great entrepreneurial spirit that creates this complexity. In short, it’s a strongly clusterised economy, clusterised in the sense of Marshall, albeit avant la lettre. In other words, it has geographical concentrations of practical knowledge and business experience that makes it particularly productive.

All of us for whom the Catalan industrial system was our focus of interest knew all this. And that’s why we felt the concept of cluster “a la Porter” was so appealing. If you’re immersed in an industrial environment like the one in Catalonia, when you read The Competitive Advantage of Nations, each page is exciting and you can think of local examples that fit each section of the book. The cluster concept’s appeal is that it allows you to add structure to detailed knowledge; it rationalises this and also helps you to identify and evaluate the relations between the activities carried out by the cluster’s components, which are the cause of the synergies that lead to the cluster’s effectiveness.

In summary, the classic structure of statistical sectors also describes an economy, certainly, but the description that truly grasps and clarifies what those with detailed knowledge perceive as being the most important (relations, interactions, synergies, etc.) is the one based on clusters, and this description is sufficiently rich to reveal even the most subtle but at the same time crucial aspects with a view to configuring an industrial system’s productivity and therefore its competitiveness. M. Porter’s methodology and concept of cluster was adopted by the Department of Industry as the theoretical basis for analysing the Catalan production system in order to improve its effectiveness.

4. Clusters as an ecosystem

In 2003, Christian Blanc, a member of the French parliament who had previously been, among many other things, President of Air France, was commissioned by the Prime Minister to produce a report, which was entitled “Pour un écosystème de la croissance”. In this report, which contains many positive references to Catalonia’s industrial policy in the 1990s, a cluster methodology approach is recommended to boost French competitiveness. I mention this report because, beyond its high intrinsic quality, it used (for the first time, as far as I know) an intelligent, enlightening analogy that actually appears in its title, namely that a cluster is analogous to an ecosystem. Obviously the components of an ecosystem (without humans) are living beings that interact, compete, generate synergies and modify their environment but they are not, individually, intelligent or aware of their activity.

On the other hand, the components of a cluster (companies and the people in charge of them) are aware of their activity and can attempt to behave more intelligently. But, apart from this important difference (I will refer to this in more detail later), what the analogy highlights is that clusters are a spontaneous “natural” phenomenon and no administrative decision is required to create them. They are a system of relations based on competition
and the creation of synergies that develops spontaneously and has probably existed as long as economic activity itself (beyond pure survival) with more or less specialisation and trade. I’m inclined to think that many economic facts in history can be satisfactorily explained in terms of clusters and their spontaneous emergence but this is not the place to develop this idea.

In my opinion, what we should bear in mind is that clusters have existed and produced competitive advantages for their members since before they were baptised, academically identified or administratively defined.

Secondly, we should also realise that, as with ecosystems per se, any intervention involves a risk. These systems’ internal relations are numerous and subtle and it’s almost never easy to predict the effects of any particular action. Convincing the main agents of a cluster (who were generating synergies by competing with each other) that they can “strengthen” their action by collaborating may turn the cluster into a cartel which, in the short term, might seem beneficial but which, later on, would become fatal for their effectiveness and ruin them. I don’t wish to take this analogy between clusters and ecosystems any further but will merely point out the most evident lessons to be learned:

• Clusters are systems that appear spontaneously and that prosper thanks to the synergies they create.
• They are more or less rigid (it depends on them). Less rigid clusters adapt better to changes in the environment and survive by changing and some evolve successfully for centuries.
• Intervening in clusters is delicate and must be done with a highly systematic and cautious approach. It’s easy to harm them by trying to help them.
• Just because an administration wishes to define a cluster does not mean that it effectively exists (that it’s real), beyond being a ploy to get a newspaper headline or to give out grants and make a few people happy.
• It’s extremely difficult to create a cluster out of nothing and there are as many examples of failure as you’d like. It’s much better to try to transform an existing cluster or get a new one out of an existing cluster, like a “cutting”. Both of these things are also extremely difficult but are more viable than invention, pure and simple.

Finally, the analogy between clusters and ecosystems ends when we consider that the constituent parts of clusters are companies run by people you can talk to, while you can’t talk to the components of an ecosystem, as far as I know. This has significant consequences regarding the interaction between public administration and clusters and we will now discuss this further.

5. Clusters and the dialogue between the industrial world and public administration

Traditionally, dialogue between governments and production systems has taken place through different kinds of employer organisations; some aim to represent all companies in a locality, others to represent companies of a certain size, generally small, which feel
they are not represented by other associations, some are markedly sector-based, some have obligatory membership, such as chambers of commerce, etc. It’s a complex world that actually reflects the complexity, freedom of association and, ultimately, the vitality of our economy. All this is good and useful for a dialogue about the most general and basic issues that make up a country’s competitiveness, such as transport and communications infrastructures, the quality of the educational system at different levels, labour law, tax system, general support for R&D and innovation, etc.

But today we all realise that the competitiveness of advanced countries (and Catalonia, in spite of our deficiencies and problems, is one of them) depends on much finer issues. I don’t mean that we shouldn’t be concerned about large, general infrastructures or the tax system or education. All that continues to be extremely important. But even if we manage to resolve these issues successfully, or well enough, we will still need to tackle the details. And this is what we started doing in the early 1990s, so we could compete effectively as an advanced country with other advanced zones in the world. I would like to make it clear that I’m saying this with all modesty. We’re a small country, but so is Finland. We won’t be an economic superpower but we can be a country that offers its people employment, progress and wellbeing, and that means being competitive at an advanced level, not only at a basic level.

My argument is that, to achieve this finer state of competitiveness, which does not eliminate the other, more basic conditions, a kind of dialogue is required between the government and the production system for which clusters are more appropriate than traditional interlocutors, which still remain entirely valid for the more basic and general issues.

Reinforcing the synergies detected within a cluster is crucial in order to build up its competitiveness. That’s why we need to delimit clusters, identify their agents, enter into a dialogue with them and, with them, carry out a thorough analysis of their relations, explore their potential to improve, etc.

All this requires a precise methodology which, in turn, the Department of Industry developed and applied in a highly pioneering and original way. But, in any case, the aim was to achieve a new kind of dialogue with the industrial reality in which the government’s interlocutor was clusters, and where the idea was to be very precise and concrete, very detailed and effective, without jumping to conclusions as to who should do what and who should pay for it. It isn’t a question of setting up a system for giving aid but rather of identifying what is most effective and most practical among the things that need to be done and to do them. Given the chronic lack of budget in Catalonia, this kind of dialogue allowed us to apply our horizontal programmes much more efficiently, as they could be converted into schemes that were tailor-made to the specific characteristics of each cluster.

6. The dialogue concerning strategy

At the start of the 1990s, Finland, a country with just over four million inhabitants, found that its main client, the Soviet Union, had disappeared. This was obviously a much more
serious situation than ours at that time. For Finland, a change in strategy at all levels was a question of pure survival. I haven’t mentioned this case to carry out an analysis, not even a superficial one, but merely mention it to make it clear that, with a highly pragmatic and detailed dialogue between the government and business people, changes in strategy can actually be defined and executed for companies, and subsequently accepted and incorporated by them, that drive an economy forward; brilliantly in the case of Finland. It’s true that Catalonia, which is larger than Finland, does not control all, and I mean all its political, fiscal, budgetary and other resources, but this should not stop us from tackling strategy with our clusters. And that’s precisely what we did.

This annex is not the place to enter into a detailed analysis of everything done up to 2002, which is when my responsibility for this area ended, and everything that has been done subsequently, among other reasons because this is precisely one of the aims of this publication you’re holding, especially chapter 4. But I do think it’s worth noting the attempt to establish (and this was achieved quite successfully in some cases) an effective, practical dialogue concerning the strategy of companies and to demonstrate how government could be a useful interlocutor at this level in practice. A good explanation of this process can be found in Canvi estratègic i clústers a Catalunya (Conejos, 1997). Although it’s hard to believe, this isn’t very common in government-production sector relations and I believe that cluster methodology effectively helps this strategic dialogue, if applied properly.

The traditional interlocutors of government (employers, chambers of commerce, etc.) are perfectly adequate when holding a dialogue on transport infrastructures, for example, and the investment required to take these to a competitive level, but entering into a dialogue about the internationalisation strategy of furniture manufacturers in La Sènia, for example, has to be done with the clusters themselves. This kind of interaction does not exclude the other; they’re simply complementary and the latter, the cluster interaction, adds a new level of dialogue that is of extreme importance.

7. How the concept has evolved

The concept of clusters and its methodology of application have evolved a great deal over the last few years and there are many different versions in Europe. I won’t list them here. Both the chapters and annexes in this book discuss the most important variants, described by perfectly legitimate people with great insight into what is happening in this field. On the other hand, we “pioneers” tend to think that what we did was authentic and that it has subsequently been tarnished. However, I don’t want that to be my case at all and that’s why I feel very relieved that I don’t have to explain what is happening with clusters right now in Europe and in Catalonia.

To end, I would just like to suggest that clusters should not be turned into a new administrative structure aimed at channelling aid. If that happened, they wouldn’t be used for the purpose they could best serve, namely:
• Gaining insight into a country’s situation in production terms.
• Enabling intelligent dialogue between this (microeconomic) reality and the government of the day.
• Helping this dialogue to achieve a strategic level.

If such aims become tarnished, clusters will merely thicken the sludge of administration and bureaucracy that weighs down production activity.

On the other hand, if clusters are used, one way or another, for the three purposes I have just mentioned by way of a final recommendation, then they will help to strengthen the country’s capacity to compete, giving its citizens more and better jobs, progress and wellbeing.
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Clusters and competitiveness: the case of Catalonia (1993-2010)

Joan Miguel Hernández Gascón
Alberto Pezzi
Antoni Soy i Casals

With the special collaboration of:
Marco Bellandi and Annalisa Caloffi
Christian Ketels
Antoni Subirà

Joan Miquel Hernández Gascón
Valencia, 1957
He is Director of the Observatory for Industrial Foresight of the Catalan government. He has a degree in Economics from the University of Barcelona and is a Senior Administration Manager for the Catalan government.
He has published numerous articles analyzing the effects of emerging industrial economies and clusters within Spain and other European countries, such as the European Union (2005), the Infrastructure of Regions in Catalonia (1998), Technology Clusters in Catalonia (2001), and the competitiveness of Catalu...n

Alberto Pezzi
Faenza, 1966
He is the Manager of the Competitive Analysis Unit at the Observatory for Industrial Foresight of the Catalan government’s Department of Enterprise and Labour.
He has over fifteen years of experience in economic development and cluster initiatives, working both in the private sector and local and regional governments, particularly in Emilia-Romagna (Italy) and Catalonia (Spain).
He has a degree in Economics from the University of Bologna, a Master’s degree in Law, Economics and European Union Policy from the European College of Parma (Italy) and a postgraduate diploma in Economic History and Institutions from the Autonomous University of Barcelona.

Antoni Soy i Casals
Ripoll, 1950
He is Secretary for Industry and Enterprise in the Catalan government. He has a Ph.D. in Economics from the University of Barcelona, where he lectures in Applied Economics, and an Executive Master in Public Administration degree from ESADE.
He has been the mayor of Argentona, vice-president of the County Council of Maresme; national councillor and vice-president of the Federation of Municipalities of Catalonia (FMC); counsellor to the General Assembly of La Caixa de Catalunya and member of the bank’s Control Commission; member of the Advisory Council of the Catalan Finance Institute, representing the Catalan parliament.
He has also acted as a consultant for various public administrations, principally in the field of regional and territorial development and policy; industry and company services; industrial and business policy; evaluation of policies, programmes and projects for regional, local and industrial development, tourism, and technology innovation; and the author of several publications related to these areas of specialization. He has collaborated with various international entities.
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Christian Ketels
Antoni Subirà

Joan Miquel Hernández Gascón (Valencia, 1957) is the Director of the Observatory for Industrial Foresight of the Catalan government. He has a degree in Economics from the University of Barcelona and is a Senior Administration Manager for the Catalan government.

He has published numerous articles analyzing the impact of innovation and industrial competitiveness, clusters dynamics, and the regional dimension of innovation. His research has been published in a wide range of academic journals and has been presented at conferences and seminars. He is the author or co-author of several books, including "Estructura Industrial de Catalunya (1987), "Les infrastructures de transport a Catalunya (1992), "Canvi estratègic i clústers a Catalunya (1997), "Les multinacionals industrials catalanes (1998 and 2001), "Les empreses gasela a Catalunya (1999), "Mapa dels sistemes productius locals industrials a Catalunya (2005), "Directius catalans al món: 30 experiències (2007) and "Les empreses d'alt creixement i les gasela a Catalunya (2010).

He is a member of the Industrial Policy Council of Catalonia and of the Industrial Strategy Centre in the Catalan government's Department of Enterprise and Labour.

Alberto Pezzi (Faenza, 1966) is the Manager of the Competitive Analysis Unit at the Observatory for Industrial Foresight of the Catalan government's Department of Enterprise and Labour. He has over fifteen years' experience in economic development and cluster initiatives, working both in the private sector and in local and regional government, particularly in Emilia-Romagna (Italy) and Catalonia (Spain).

He has a degree in Economics from the University of Bologna, a Master's degree in Law, Economics and European Union Policy from the European College of Parma (Italy) and a postgraduate diploma in Economic History and Institutions from the Autonomous University of Barcelona.

He is President of The Competitiveness Institute (www.tci-network.org), the global practitioners' network for competitiveness, clusters and innovation, with world headquarters in Barcelona. He is also a member of the European Commission's group of experts for the TACTICS project (Transnational Alliance of Clusters Towards Improved Cooperation: Support And Evaluation Of The Development Of Innovative Tools In Clusters Policy).

Antoni Soy i Casals (Ripoll, 1950) is Secretary for Industry and Enterprise in the Catalan government. He has a Ph.D. in Economics from the University of Barcelona, where he lectures in Applied Economics, and an Executive Master in Public Administration degree from ESADE.

He has been the mayor of Argentona, vice-president of the County Council of Maresme; national councillor and vice-president of the Federation of Municipalities of Catalonia (FMC); counsellor to the General Assembly of La Caixa de Catalunya and member of the bank's Control Commission; member of the Advisory Council of the Catalan Finance Institute, representing the Catalan parliament.

He has also acted as a consultant for various public administrations, principally in the fields of regional and territorial development and policy; industry and company services; industrial and business policy; evaluation of actions, programs and projects for regional, local and industrial development; and the search for new economic opportunities and the expansion of productive activity in Catalonia. His research and publications have been oriented towards the areas of specialization of his Collaborative Network, with a focus on international matters.