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The new complexity of local production and the enlightened role of industrial policy: The Basque Country Case

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The central idea of this work revolves around some structural transformations that are occurring within several local production systems in Europe (and worldwide) that affects their own competitiveness and development potential. These transformations have a significant impact also on theory, particularly discerning the relevance of the Porterian view vis-à-vis the 'district approach'. The first deliberately widens the span of the cluster concept and reality in order to include a large variety of activities and a significant geographical size of production and market dynamics, whereas the second tends to equate the concept of cluster with that of district in two key aspects, i.e. geographical reach and sectoral width of industrial activities. Within this debate, this work offers two meaningful elements. First of all, it focuses on new cluster formations - four clusters in the Basque Country, Spain - that represent the new industrial complexity of local production systems. This complexity is developed endogenously as a means to respond to the new challenges set by globalization. These case studies help to verify whether the former conceptualizations are definitive or need to incorporate new key features. Secondly and simultaneously, the relevance of a proactive regional policy approach is discussed as a means to build up such competitive responses to globalization.

Clusters, Districts, Industrial Transformations, Industrial Policy

1. Introduction

Impressive economic transformations are taking place over these years. These include the changing hegemony from the 'old' western world to East Asia and other emerging economies (Bianchi and Labory, 2006; 2012), the powerful growth of wide-ranging global networks where outsourcing of production and innovation takes place ever increasingly (Ernst, 2009; Yeung, 2009; Cooke, 2012) and, in a more localized way, the transformation of many regional and local production systems from traditional industrial sites to service-based production locations or new creative cities, industries and clusters (Florida, 2002; Lazzarotti and Parrilli, 2012).

Within this specific contribution we focus on the third of these areas of global transformation, and in particular on the structural transformations that take place within local production systems, namely clusters and districts. This change represents one of the responses of the western economies to the challenges put forth by the emerging powers (e.g. China and the likes). Within such endeavor the role of industrial and innovation policies is crucial as it may create capabilities and opportunities to firms and territories that want to upgrade their production and commercialization capacities.

The central idea of this work revolves around the concept of 'cluster' (and district as a specification of the former), which created a heated debate over the past two decades. In fact, some stressed the relevance of the width of the 'interconnected activities and institutions' that compose a specific cluster. Porter's work (1990; 1998) deliberately widened the span of the cluster concept in order to include a large variety of activities and a significant geographical size of production and market activities. A different strand of the literature tended to equate

the concept of cluster with that of district in two key aspects (i.e. geographical reach and width of activities) and, in a way, contradicted Porter's view of clusters (Schmitz, 1995; Van Dijk and Sandee, 2002; for a thorough analysis of this debate see Martin and Sunley, 2003).

Within this debate, this work offers two meaningful elements. **First of all, we focus on new cluster formations** that represent the new industrial complexity of local production systems across the western world (mainly Europe) that respond to new challenges set by globalization. In this way, we may thus verify whether former conceptualizations are definitive or may incorporate new features. **Secondly and simultaneously, the relevance of a proactive regional policy approach** is discussed as a means to build up such competitive response to globalization.

In the next section the debate on new cluster concepts is presented whereas in the following section (three) the proactive cluster policy set up by the Basque government policy is described. Section four includes a review of four novel clusters in the Basque Country that represent the new industrial complexity of regional and local development. A section of concluding remarks synthesizes the conceptual and practical implications of such novelties.

2. New Contexts, New Clusters, New Concepts

The dynamic reality of industrial districts has been known for many years. These types of production systems, identified as 'sectoral and geographic concentrations of firms that exploit a set of rich external economies due to the presence of a thick industrial atmosphere', were first identified by Marshall (1916) in England in the XIX century, and were later observed in the successful experience of the Third Italy industrial districts in the 1970s and 1980s (Brusco, 1982; Piore and Sabel, 1984; Becattini, 1990) as well as in many other regions in Europe and the developing countries (Musick and Schmitz, 1994; Markusen, 1996; Boix and Galletto, 2009). Simultaneously, Porter identified a very similar reality that he defined 'industrial cluster' as the 'geographic grouping of interconnected firms and institutions that compete and cooperate among themselves...' to achieve higher business and territorial competitiveness (1990; 1998).

It is relevant to clarify the most significant difference between clusters and districts. In general terms, they represent very similar geographic concentrations of interconnected businesses, though more specifically the industrial district model relies on a thicker 'industrial atmosphere' and social capital that set up the ground for trust-based interactions across firms that increase the division and specialization of labor across the local firms and the economies of scale and scope that these systems can effectively reap (Becattini, 1990; Maskell and Malmberg, 1999; Becattini et al., 2009).

Both types of production systems were found across regions and countries on a global scale and were analyzed by a number of scholars interested in the wide realm of local development and local production systems (Nadvi and Schmitz, 1999; Van Dijk and Sandee, 2002; Guerrieri and Pietrobelli, 2004; Lastres and Cassiolato, 2005). For this reason, from the early 1990s **this large stream of scholars mixed the two concepts in one (mostly defined 'cluster')** whose definition called for a number of different interpretations on the relevant features for the competitiveness of these local production systems (see Martin and Sunley, 2003).

The two most important analytical approaches to cluster development, which we empirically define the '**porterian approach**' and the '**district approach**', present clear differences. First of all, the Porterian approach defines the width of cluster formations also in terms of **regional and sometimes even broader geographies**. This is different in the district approach, which limits it to local spaces alone (i.e. municipalities). In this way, the porterian approach responds more directly to the deepest concern of policy-makers, whose core interests extend beyond the local boundaries to take into account regional and national

constituencies and larger groups/sectors of businesses. This aspect is however linked to a second crucial feature of clustering: the set of **external economies** that are available in bounded geographic environments (Marshall, 1916). In fact, proximity leads to capturing advantages at no cost, i.e. specialized workers, information, innovations, and clients that are available for free in the local environment. For this reason, the distance that exists among firms within too broad (regional) types of cluster does not permit to obtain significant benefits from such localized resources; indeed, firms and businessmen would not be able to observe, imitate and cooperate with others on informal, tacit knowledge bases. This is an aspect that is stressed much more in the district approach to clustering vis-à-vis the porterian's.

The second critical difference refers to the **sector width** that these two analytical interpretations offer. The district approach traditionally focuses on mono-sector cluster definitions. It is the case of traditional geographic concentrations of firms in furniture, tiles, footwear, textiles, among others. In contrast, the Porterian approach identifies the cluster in much broader terms as the 'interconnection' of firms and institutions is enough to identify this kind of local production system. This second interpretation is more flexible but less in line with the 'specialization' that traditionally characterizes industrial districts and mono-sector clusters. Somehow, this distinction opens the way to a debate: is the local production system better-off when it is highly specialized in one specific production or it rather enjoys higher advantages when it focuses on inter-sector competences and other industry complementarities? This question is relevant in the context of the new types of cluster that can be identified today (see section three and four).

This debate seems to be very connected to the discussion on new policy approaches developed within the EU academic space. Within such debate, the 'related variety policy platform' framework emphasizes the importance to construct and 'diversify' the new regional competitive advantage on the bases of extant knowledge bases by extending them to close pools of knowledge. This is the case of developing new industry competences in the area of nano-materials once a territory has accumulated competences in chemicals and plastics, or the development of biotech companies and competences on the basis of former pharmaceutical knowledge and industries, among others (Asheim et al., 2011; Cooke, 2006). On the other hand, the new EU tenet of 'smart specialization' emphasizes the importance of coordinating different territorial specializations across the EU space in order to help everyone to 'specialize' in a remunerative industry and market through a number of strategies termed 'retooling', 'extending', 'emerging' and 'cross-sector' (Foray and van Ark, 2007). Notwithstanding the apparent similarities among some of the strategies implemented under both approaches (i.e. related variety and smart specialization), the different emphasis that they deliver on processes of specialization (stronger in smart specialization) and diversification (stronger in related variety) shows the importance to discuss the dual approach to cluster development that we have identified (i.e. the district approach vs. the porterian approach).

In spite of the significant differences identified within these interpretations, such as the geographical reach of such industrial agglomerations, or the sector width that can be integrated in the cluster, both conceptualizations have had great success. The importance of such concept has been so high that the large majority of the governments in western countries as well as in emerging and developing economies have been developing **policies and programs** to promote such industrial agglomerations and have been promoting the working of international, national and local development agencies so as to promote the growth of clusters and to generate relevant economic activities for the sake of their populations and their regions (Ceglie and Dini, 1999; Bianchi and Labory, 2006; Becattini et al., 2009). The promotion of joint actions and cooperation in general is central in these policies that perhaps value less the potential and actual indirect effects of external economies on these local production systems.

The development of clustering for policy-making is such a relevant activity that several academic schools and policy projects are aimed at identifying and measuring the existence of actual clusters. For example, the European project ECO-2 led by the Stockholm School of Economics that adopts the conversion tables proposed by Porter (2003) on the basis of the interrelation between specific NACE categories and selected clusters. Simultaneously, other efforts are made to propose cluster configurations and measurements on the basis of input-output tables with which industrial clusters are identified on the basis of real flows of inputs that are purchased and utilized by other sectors and industries (Hidalgo et al., 2007). The statistical office of the Basque Country, EUSTAT, has also realized an effort in this sense (2000), although they could not give continuity to this effort and keep track of the changes occurred in the market and, above all, in the relation between sectors in search for new industrial configurations.

In the next section, the proactive policy approach taken by the Basque government for the promotion of clusters is depicted and discussed in general and later (section) with reference to four specific cases of novel types of clusters.

3. Cluster policy in the Basque Country

The Basque Country is a unique 'autonomous community' where these dynamics can be analyzed and discussed in depth. It represents one of the few 'manufacturing regions' of Spain (with Catalonia, the Valencia community and Madrid district region); in fact, relevant industries were developed in shipbuilding and steel production from the 1930s. From the 1950s onwards, geographical business agglomerations ('mono-sectoral clusters') developed in machine-tools (Elgoibar), pulp and paper (Tolosa), shipbuilding (Bilbao), white-ware and automotive (Mondragon).

After the intense economic crisis of the end of the 1980s, the Basque Country (autonomous community) government set up a very proactive policy for the identification and promotion of clusters. 'Cluster associations' were thus formed and financed by the regional government as a means to boost cooperation for innovation and internationalization of the associated firms, among other less relevant activities (Aranguren et al., 2009; Orkestra, 2011). This represents a soft type of policy that costs relatively little to the regional government (a few hundred thousand euro per year per cluster association as a maximum), but that can have important effects on the competitiveness of the firms and their historic territories (i.e. municipalities, provinces and the region).

At first (early 1990s), the Basque government identified and promoted around ten cluster associations, among which various that were focused on the above-mentioned 'mono-sectoral clusters'. Simultaneously and progressively, pure or quasi-pure 'service clusters' have been promoted such as logistics and transportation (e.g. people and ware transportation, intelligent transport systems, etc.) and port services (e.g. warehousing, loading and unloading, shipping ware, etc.). On the other side, a number of 'multi-sector clusters' arose beside their client and the main sources of demand. It is the case of the energy cluster that pulls together very different sectors such as wind, solar, gas, oil, electric energy, and the 'Habitat' cluster (which resembles a lot the 'infancy' clusters created in France and Catalonia) that includes the production of furniture, toys and structures for public gardens, architecture services. Both kinds of clusters exceed the typology of clusters focused upon a homogeneous final product. As a result, these cluster associations work now for a range of businesses that traditionally belong to completely separate clusters and sectors.

Through the government cluster policy, eighteen clusters are identified today. Five of them are pre-clusters, i.e. identified as an agglomeration (mostly regional, but not exclusively), although the cluster association is yet to be formed. Another cluster association was formed in the 1990s (1996), the knowledge cluster association, but did not work effectively and its

activities were later incorporated in the core activities of the regional innovation agency ‘Innobasque’. In the table below these clusters are displayed:

Table 1. Cluster associations in the Basque Country

Clusters	Year of Creation	Geographical basis
Machine-tools	1992	Elgoibar (local)
White-ware	1992	Mondragon (local)
Automotive	1993	Mondragon/regional
Environmental services	1995	Regional
Energy	1996	Regional
ICT systems	1996	Regional
Aircraft	1997	Regional
Shipbuilding	1997	Regional
Port	1997	Bilbao (local)
Pulp and paper	1998	Tolosa (local)
Audiovisual	2004	Regional
Socio-linguistics	2004	Regional
Logistics and transport	2005	Regional
Biosciences	2011	Regional
Foundry	2011	Regional
Forge	2011	Regional
Furniture & children parks	2011	Azpeitia-Azkoitia (local)
Food	2011	Regional

Source: own elaboration on the basis of Aranguren et al., 2009.

The identification of the first group of clusters was made on the basis of a consultancy work developed by Porter himself (Azua, 2008) who suggested the industries that had a significant development potential. A group of experts has concurrently grown up in the community and has started identifying an additional set of industrial activities that could be promoted through a cluster industrial framework. In particular, these knowledge pool was formed around the ‘microeconomics of competitiveness’ course delivered twice a year within the University of Deusto and the Basque Institute of Competitiveness and the scientific journal ‘Ekonomiaz’ whose editorial committee is also involved in several policy advise activities that lead to the identification of new development opportunities for the Basque territory as a whole. On these bases the cluster associations that were formed in the early 2000s and those that are currently being formed were supported by the same type of policy and support instruments.

In the next section, we describe the critical features of some of the most novel types of clusters that have been created in the Basque Country and discuss their implications for a reconceptualization of the cluster notion and model.

4. Service and multi-sector clusters: four cases

Although these (18) clusters do not characterize the totality of the Basque economy (in which public sectors such as education, infrastructures and general administration also matter), without any doubt they represent the production strengths of the private sector in this autonomous community. On the basis of the statistical database of EUSTAT (www.eustat.es) and interviews with the general managers of various cluster associations, we found that the population of firms in these clusters has been steady together with their overall economic weight until 2011, in spite of the tough impact of the current economic crisis on the Basque

economy. On those bases, the accumulated capacity for the most ‘novel’ types of clusters is displayed.

Table 2. Selected Basque Country Clusters, key figures

		Number of firms	Employee nt	Turnover (million euros)	Export (% of turnover)
1	Bio-sciences	74	1500	300	12
2	Energy	350	25000	15000	n.a.
3	Environment	67*	3300	1500	15
4	Port	170	5000	1400	50
5	Logistics and transportation	100	35000	12680	4
6	Habitat	145	9100	1600	20

Note: * members only. All these data are estimations based on information available, through EUSTAT, in the webpage of cluster associations completed with information obtained from the coordinators of the cluster associations.

These clusters represent a ‘*complexification*’ of the regional economy, i.e. deepening and extension to wider production and markets ensembles, which the cluster producers consider like their business environments. They represent new modalities of clustering in which the core business spans across different sectors, including service-oriented activities. Some of them underwent a sort of ‘*internal complexification*’ as from a former mono-sectoral orientation opened their core business to a much wider set of activities (e.g. the former furniture cluster of Azpeitia-Azkoitia vis-à-vis the current ‘habitat’ cluster discussed later in this section).

In the next sub-sections four cluster case studies are presented and discussed in order to show the new complexity of industrial production emerging in current competitive local production systems.

4.1. Service-based clusters: logistics and environment

The cluster of logistics (and the cluster association formed in 2005) integrates all kinds of firms, including public administrations and private firms, large and small enterprises in production and services, infrastructures, transport manufacturing, as well as logistics and intelligent transport systems. The cluster association has classified these firms among those that are oriented to build up and manage infrastructures (e.g. port authorities, airports, highways, among others), the so-called ‘loaders’ that use the services of logistics and transportation (e.g. Eroski, Irizar, Orona, SDA, Skunkfunk, among others), the ‘operators’ that focus on transporting goods and people (e.g. Euskotren, Alditrans, Pesa, Erhardt, among others); the manufacturing companies that produce transportation goods and components (e.g. CAF, Ingeteam) as well as services of logistics, engineering, intelligent transport systems (e.g. Ikusi, Idom, Cegasa, among others); in addition, there is another type of organizations that includes public administrations and representative organizations such as chambers of commerce as well as technology centers and universities that are involved in joint innovation projects.

The endogenous development of this cluster (it is not a mere cluster association) is shown by the number of joint actions and interactions taking place among these firms in the Basque territory. It is the case of the current (2011/12) elaboration of the ‘Comprehensive Mobility Management System’ (*S3road*) by a consortium of firms including Cegasa, Ikusi, Telvent, Maser, Fagor, Ibermatica together with various regional technology centers ‘to unify several information sources in a database and offer advanced support tools for operation and decision-

making, thus giving a reliable, complete and accurate information in real time'.¹ As a result the consortium expects to improve business volumes and the strategic positioning of Basque firms in the EU market space. Another example is a current project termed *Berritrans* that includes sixteen organizations including firms (Ikusi, Idom, ZIV, SQS, Fensom, among others), knowledge organizations (Deusto university, Tecnalía) and public organizations and authorities (the territorial transport authority of the province, the national train company Renfe and the cluster association). This project focuses on the structuring of a new integral transport management system that includes control mechanisms based on 'intelligent monitorization, actions based on predictive control, a system based on the interoperability of transport modes and timetable management, in addition to an intelligent supervision system endowing the entire unit with reliable automated security able to generate alerts and make decisions with minimal human intervention'.²

The cluster of environmental services is another case of service-based clusters. It has been identified and formed by the Basque government in 1995. This cluster is characterized by a large number of firms, mainly in the fields of waste management, soil decontamination and restructuring of industrial sites, water management (e.g. Cespa, Indumetal Recycling, Arcelor-Mittal, Smurfit Nervion), and also in minor sectors such as air and noise management/control (IHC, Smurfit, Factor CO2 Integral Services, Adirondack), and engineering and consultancy firms that support the design of systems to manage such operations (e.g. Idom, Ekotek). Moreover, a group of client firms of environmental services such as concrete and construction companies, some large renewable energy companies (i.e. Iberdrola), and some public administrations that invest in decontamination and recycling of soils, water and air integrate this cluster and the related cluster association. It is a cluster that includes more than one hundred companies that sell services for about 1,670 million euro and that employ about 3,300 workers (reckoning only direct employment in this service sector). It is oriented almost exclusively to the internal market, although in the management and disposal of solid wastes some firms are reaching out to foreign clients that absorb about 10% of total sales of the Basque firms.

In terms of recent cooperation projects, an important accomplishment of the Basque cluster firms is the obtainment of the EMAS certificate (Eco-Management and Audit Scheme) by more than fifty Basque companies.³ It is a voluntary scheme promoted by the EU for those companies that implement an Environmentally-friendly Management System (EMS). Another example is the signing of the Green Pact between six hundred Basque companies and the Basque government in order to adopt plans of eco-efficiency in the management and working of their production and commercial businesses.⁴ This project is led by the retail distribution chain Eroski that discusses with its suppliers relevant eco-efficiency issues such as the social and environmental adequacy of delivery hours, the recycling of residuals and the saving of water, the information about environmental standards and procedures, among others. An additional collective project is currently led by the technology center Tecnalía that involves a number of manufacturers in different industries in a R&D project led to the study of the ecotoxicity of industrial materials, and within this project focuses in particular on the study of 'biofilms', i.e. the formation of colonies of microorganisms that help them to survive in

¹ <http://www.s3road.org> accessed on August 27, 2012.

² <http://berritrans.itseuskadi.com/en/description/> accessed on 28/08/2012.

³ <http://www.aclima.net/aclima/informacion.nsf/fwListadoInformacion?openForm&Sec=2&IDCat=F4D0405E314B02B1C1257665006172B3&StartF=1&StartN=1&Count=10&> accessed on 28/08/2012.

⁴ <http://www.aclima.net/aclima/notiobs.nsf/vwListadoNoticias/50D721A9630458FEC1257A30002E6716?OpenDocument&Sec=2&IDCat=F4D0405E314B02B1C1257665006172B3&StartF=1&StartN=41&Count=10&> accessed on 28/08/2012.

determined environments and surfaces.⁵ For environment protection purposes, the group of organizations works to identify materials and substances that help getting rid of such biofilms.

4.2. Multi-sector clusters: energy and habitat

A novel type of cluster is the multi-sector energy cluster in the Basque Country. It is integrated by about 350 firms of different sizes and capacities which employ about 25,000 people in the Basque Country, and many others worldwide where these firms have set up production plants and commercial offices. Overall the turnover of these firms amounts to 15,000 million Euros. A reduced part of these firms (95) are associated to the energy cluster association that has been promoted by the Basque government; however, they represent 90% of the cluster production because those that remain outside the association are small and micro enterprises involved in petty services. As in the case of the environment cluster, the firms in this cluster are divided in segments: oil (Petronor), gas (Naturgas), thermoelectrics (Sener), wind (Iberdrola and Gamesa), solar (Ingeteam, Solartek), while the segments of maritime energy (in the phase of exploration), hydroelectric, and biomass energy are less relevant in the association and in the Basque Country in general. This large cluster is being led by large multinational companies such as Iberdrola, leader in the management of energy distribution in the country as well as in the promotion of renewable energies, and Repsol-Petronor, leader in the refining of oil. Nevertheless, another large number of firms lead specific market segments, such as Sener, Ingeteam, and Idom in process engineering, Gamesa in the installation of wind energy parks, Orion Solar and SolarTek in the installation of solar power stations, Elecnor in the installation and management of electrical grids and networks, among others. Simultaneously, there are a large number of micro and small enterprises that fill market niches and interstices in components, materials and more or less traditional services for the energy sector in general.

The effective existence and interaction within this cluster is shown for example by the the €25 million EU project ‘Azimut Offshore Wind Energy 2020’, coordinated by Gamesa in collaboration with 10 other companies, including Alstom Wind, Acciona Windpower, Acciona Energía and Iberdrola Renovables and 22 research centers mostly based in the Basque Country.⁶ The overall purpose of the project is to generate know-how to develop a large-scale marine wind turbine (Parrilli et al., 2012). Another example is the 60 million euro *Bidelek Sareak* project that is currently developed by the lead company Iberdrola, with its many suppliers and other organizations (Basque government, BBK bank, the Biscayan provincial government) across the Bilbao municipality in order to develop an intelligent energy network that replaces the former meters with digital meters.⁷ This project is involving hundreds of firms and offers employment to thousands of people in the area. A further example is the formation of the group *Mugelec* in which a relevant number of lead firms collaborate to improve the electrification technologies adopted within the full range of transportation systems. Companies such as Iberdrola, AEG, Gamesa, ZIV, Semantic, Ormazabal, Ingeteam, Fagor electrodomeotics focus on different technologies that make the system more sustainable and competitive.⁸ Among these, the ‘electroliner’ of Ingeteam for swift recharge of electric vehicles, the new ‘electric stations’ of Cementos Leonas, the new intelligent transformation system of Ormazabal, the different types of recharge points set up by ZIV, among others.

⁵ <http://www.aclima.net/aclima/notiobs.nsf/vwListadoNoticias/374DA268F4A63A0CC1257A4700391AD2?OpenDocument&Sec=2&IDCat=F4D0405E314B02B1C1257665006172B3&StartF=1&StartN=1&Count=10&> accessed on 28/08/2012.

⁶ <http://www.gamesacorp.com> accessed on 4/7/2012.

⁷ http://www.ejgv.euskadi.net/r53-2291/es/contenidos/nota_prensa/bidelek_sareak/es_bidelek/bidelek_sareak.html accessed on 28/08/2012.

⁸ <http://www.clusterenergia.com/ficheros%5Cattz1i7.pdf> accessed on 28/08/2012.

A fourth case is represented by the former furniture cluster based in Azpeitia and Azkoitia, fifty kilometers in between Bilbao and San Sebastian. For many years it was the base of a relevant number of medium and small-sized firms devoted to the production of all kinds of furniture, especially wooden ones (Parrilli et al., 2010). Over the past few years, this cluster has suffered a significant competitive pressure from other producers based in other countries. For this reason, some of the lead companies decided to move a step beyond crossing the landmark of the former 'mono-sectoral' basis to transform itself into a more multi-sector type of cluster. A larger and more heterogeneous type of firms came together in the brand-new cluster association (Habic, created in the last two years) that involves not only furniture producers, but also producers of plastic toys and structures for kindergartens and playgrounds, companies focused on related components such as coatings systems, floors, ceilings and roofs, illumination and acclimatization systems, domotic and security systems, and companies focused on architectural services as well as client companies such as schools, hotels, public administrations, gymnasiums and hospitals, among others.

Among other cooperative actions, this effort led to the creation of the NORA Group (six local firms) that targets renovation projects for international hotel chains. This particular group includes firms involved in illumination systems, glass mosaics, bathroom furniture, house furniture in general, among others.⁹ Another group of local companies (fifteen) developed another relevant joint action: they invited about seventy German architects in a Basque artistic venue in order to present the special production features and skills of their firms. Additionally, in collaboration with the cluster association Habic, a system of competitive intelligence has been developed and made available to the member firms as a means to anticipate changes in market demand and in supply technologies.¹⁰

5. Synthetic view on cluster definitions and cluster policy

This industrial story leads to recognize the increasing complexity of many novel industrial clusters. They exceed former sector-based (mono-sector) cluster conceptualizations that have become far too limited to represent the complexity of current industrial dynamics. Most of them exceed the limitations of one specific field/sector of operation; they operate in several fields (e.g. in solar energy as well as in wind energy within the energy industry; in manufacturing transport vehicles and components as well as in engineering logistics solutions in logistics and transportation; in furniture, glass, plastics, and in architectural services and electronics in the 'habitat' cluster). In this respect, the 'porterian approach' to clusters seems to be more effective and explanatory vis-à-vis the mono-sectoral nature of the 'district approach'. In terms of economic performance, this evolution of the regional economic bases seems to be paying off as, despite the strong impact of the current economic crisis, the Basque Country is reacting much better than the rest of Spain. This is shown by a key economic figure: the unemployment rate. Twenty years after the former crisis of the late 1980s in which both the Basque Country and Spain had unemployment rates ranging at around 25%, the Basque Country maintains a 10-11% today vs. 25% for Spain as a whole. It is a first indication of the worthwhile effort and success reached by the Basque government industrial policy over such a time span.

In the various projects listed above and in many other joint projects developed within these and other novel types of clusters, the dynamizing role of the cluster association is crucial. Such associations are thought to favor the exchange of experiences and the cooperation among firms as a means to improve their collective strategic planning, technological capacity, and insertion in global markets. Through their individual agents, a very restricted group of people (usually including the director, a technician and an assistant/secretary), the association

⁹ 'Las firmas de Habic venden 1050 millones', *El Economista*, July 9, 2012.

¹⁰ <http://www.clusterhabic.com/> accessed on 28/8/2012.

acts both as a market and production broker across the firms and sometimes as a technological gatekeeper to promote the implementation of significant innovation projects. This successful experience shows the relevance of public policy to promote and favor the coordination of the competitive actions of the several firms integrated in the geographical cluster (Aranguren et al., 2009). In fact, the above-described four clusters, as well as many others in the Basque Country, have been identified by the firms in agreement with the Basque government. The proactivity of the government in open dialogue with the private sector has led to the creation of the related cluster associations.

Some academics may query whether the creation of a cluster association (by public policy) guarantees the effective interactions between the firms located in the cluster itself. The response to such question has to stress the actual exchanges that take place among clustered firms. Through their active involvement in joint projects, often developed within the boundaries of the cluster association, the firms themselves recognize the meaningfulness of their endogenous effort to cluster in geographical proximity to one another, as well as the relevance of industrial (cluster) policy designed at the regional level as a means to promote the competitiveness of local/regional territories. This process is enhanced by the knowledge-base nature of these companies and organizations that recognize that innovation is also a by-product of both codified and tacit knowledge exchanges. For these reasons, they tend to interact intensely as a means to exchange key knowledge in new collective projects that help them to acquire a competitive edge in the global market.

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