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Cluster and Productive Development Policies in the Autonomous Community of the Basque Country

**LESSONS FOR LATIN AMERICA
AND THE CARIBBEAN**

Ricardo Monge González
José Manuel Salazar-Xirinachs

Regional Office for Latin America and the Caribbean

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Ricardo Monge González
José Manuel Salazar-Xirinachs

Ricardo Monge González Professor of economics at the Technological Institute of Costa Rica and director of the CAATEC Foundation (P.O. Box 113-2010, Tel: (506) 2226-1411 / 1450 o (506) 8882-5381, rmonge@caatec.org / rmonge@itcr.ac.cr).

José Manuel Salazar-Xirinachs ILO regional director for Latin America and the Caribbean (salazar-xirinachs@ilo.org).

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Ricardo Monge González & José Manuel Salazar-Xirinachs

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Preface

The economic deceleration and the new recessive cycle affecting the countries of Latin America and the Caribbean have shown that the region cannot count indefinitely on growth based on the circumstantial rise in raw materials prices, but must more decisively confront the economic challenges of diversifying production, increasing productivity and reducing informality, as well as the social challenges of inequality, exclusion, poverty, and labour and civil rights.

The decade of 2002-2013 was a winning decade for many countries in terms of effective and innovative social policies, but it was a lost decade for productive development and quality employment. Half of the region's employment is still informal, and it is calculated that seven of every ten jobs created in the region in the past 15 years are informal, most of them in micro-enterprises and self-employment.¹ The region's structural transformation has not led to a sufficient number of workers moving from low-productivity to high-productivity sectors, and some indications suggest that there has been a move in the opposite direction.

Average productivity in Latin America and the Caribbean is half that of the United States, and for most countries that gap is growing rather than narrowing. The IDB has called this the “tragedy of Latin America” (IDB, 2010) and many economists think this is the main reason why Latin America could be caught in the “middle-income trap”. In many cases, exports remain concentrated in a handful of basic products. The region shows enormous gaps in productivity, innovation, education and job skills (OECD, CAF, ECLAC, 2015).

To escape this trap and begin a process of sustained, inclusive and sustainable growth, it is necessary to achieve a broad and diversified base of economic sectors and activities with growing productivity, high added value and the ability to generate enough high-quality jobs to ensure that informality is gradually but systematically reduced and the economy operates at levels close to full employment.²

1 See ILO (2015) Thematic Labour Overview: Small Enterprises, Large Gaps, at: http://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_398103.pdf

2 For a discussion of sustained, inclusive and sustainable growth, see Salazar-Xirinachs (2015) “Productive Development Policies for Inclusive Growth with More and Better Jobs”, 21st Bradford Development Lecture, University of Bradford, 18 June 2015. <http://www.brad.ac.uk/social-sciences/bcid/bdl/21st-bdl/>

It is no accident, therefore, that in recent years the concept of ***sustained, inclusive and sustainable growth, with full and productive employment and decent work for all*** has become the central focus of development efforts and the development debate and has fully entered the ***2030 Agenda for Sustainable Development*** as Goal 8. Its relevance and urgency for the countries of Latin America and the Caribbean could not be greater.

But what policies and policy instruments would make it possible to change patterns of growth and employment in the desired direction?

The successful experience of the Autonomous Community of the Basque Country, with policies for productive development and clusters, offers important answers and lessons for the region. This study gives an account of the history of the definition and successful implementation of these policies and draws lessons from them for Latin America.

This study has been conducted as part of the ILO's work within regional Priority 1: "Productive Development Policies for inclusive growth with more and better jobs". This priority is in line with Goal 8 of the Sustainable Development Agenda, and its rationale is based on the fact that productive development policies offer the most instruments and tools for achieving structural transformation of economies, although their success demands concurrent policies in the area of macroeconomics, human resources training, social security and labour rights.

These policies, neglected during the era of the Washington Consensus, are now drawing renewed interest, which is not surprising in light of the region's poor performance in inclusive and sustained growth, as well as in diversification and productivity.

The experience of the Autonomous Community of the Basque Country shows that it is possible to design and implement policies for productive development and clusters that accelerate learning, innovation and technology transfer, producing sustained productivity growth, and that the key lies in establishing efficient schemes of public-public and public-private coordination and coordination with other actors. This also implies designing an appropriate system of incentives and ensuring that the institutions involved have the technical, operational and political competencies that make them effective and that they are hedged by the necessary transparency and accountability mechanisms.

This study would not have been possible without the generous logistical support of the Novia Salcedo Foundation, especially its president, Mr. Luis Cañada Vicinay, and his team, which opened doors for us and recommended key actors and institutions to interview in the Autonomous Community of the Basque Country. To all of these persons, too, our sincere thanks for their great willingness to share their knowledge and experience with us.

José Manuel Salazar-Xirinachs
ILO Regional Director
for Latin America and the Caribbean

I. Introduction

The economics literature indicates that to achieve high and sustained economic growth (that is, high and sustained rates in per-capita income), a country must not only have more factors of production (for example, more investment in physical capital or human resources), but must also, and mainly, constantly incorporate technology and knowledge into productive processes. The incorporation of technology and knowledge into productive processes influences the degree of economic complexity and productivity of an economy. It is the growth of productivity and know-how, more than the factor accumulation, which is key to explaining differences in economic growth among different countries (Caselli, 2005; Helpman, 2004; Klenow and Rodríguez-Clare, 1997; Hausmann, et al. 2013). This vision of knowledge and learning as a development strategy requires, among other things, increasing enterprises' ability to innovate and improving the quality of their human resources. From this standpoint, Latin America's model of growth has a serious problem: it is accumulating relatively more factors than the United States and other developed countries, but still lags in growth. The region must find ways to combine factor accumulation with increased productivity. International experience shows that this is the only viable path to catch-up growth.

According to recent studies (IADB, 2011; ILO, 2014), the productivity of Latin American economies is at levels close to half those of leading countries; worse still, during the last two decades, the productivity gap between the two groups of countries has widened rather than narrowing. To a great extent, it is the productive structure of Latin American economies that explains this outcome, both in the sectoral dimension, where relatively few sectors with very high productivity coexist with a majority of sectors or activities characterized by very low productivity, and in enterprise size, where micro- and small enterprises and self-employment predominate. This type of productive and employment structure in Latin American countries results from a lack of appropriate productive development policies (PDPs),³ associated with other labour market policies, which allow a gradual, virtuous structural transformation toward high-

³ Melo and Rodríguez-Clare (2006) define productive development policies (PDPs) as policies that tend to strengthen a country's productive structure. These policies include measures, policies or programmes that tend to increase growth and improve the competitiveness of large sectors (industry, agriculture, services) and specific leading sectors (textiles, software, high technology, and so on), or the growth of certain activities (research and development, other innovation activities, exports, foreign direct investment, productive linkages, and so on).

er-productivity sectors, including an increase in the size and productivity of enterprises and, with it, the creation of more and better sources of employment (ILO, 2015).

Some scholars of economic growth ask whether Latin America will be able to continue along the path of progress if it merely continues to export products with little complexity. These authors stress the importance of the learning processes and capacity building that take place in higher-productivity activities, which Hausmann and Rodrik have called *self-discovery* processes (Hausmann and Rodrik, 2003).

According to these modern theories of growth, achieving high and sustained growth requires several complementary elements: accumulation of factors of production (labour and capital), but also constant learning and innovation that incorporate technology and knowledge into productive processes.⁴ Innovation can take many forms: the use or development of new technologies, the acquisition of new capital goods, new skills or abilities of workers and managers, new production processes, new ways of organizing production and the formulation and implementation of projects, new marketing processes, and so on.

For developing economies, innovation may consist of learning to use existing technologies well or adapting technologies that could result in significant increases in productivity. But innovation is also important for inventing new products, processes or ways of organizing production. Learning, technological change and the accumulation of skills in the country are the main drivers of productive transformation. The function of developmentalist States is to design policies and institutions that facilitate and accelerate learning and innovation, thus promoting a pattern of growth and structural transformation toward higher-productivity activities while creating more and better jobs. This productive transformation, supplemented with social policies, is the basic formula for inclusive growth (Salazar-Xirinachs, et al.; 2014; Salazar-Xirinachs, 2015).

Many countries have tried to achieve such productive transformation through industrial policies or productive development policies, which include support for the development of clusters or agglomerations of enterprises within a certain value chain and a specific geographic area,⁵ so as to forge linkages that decrease information asymmetries and create externalities such as the transfer of knowledge and the develop-

4 For a review of the various approaches to the concept of growth with learning, see Salazar-Xirinachs, Nübbler and Kozul-Wright (2014), Chapter 1.

5 Porter (1990) defines a cluster as a geographic concentration of enterprises in one or more interrelated sectors, specialized suppliers, enterprises in auxiliary and related sectors, distribution companies and their customers, educational and research institutions (such as universities, laboratories and technology centres), and other institutions (governments, business associations, cluster associations), that work constantly to improve competitiveness and, therefore, the ongoing development of long-term competitive advantages.

ment of economies of scale. All of this is the result of better coordination of actions between companies (competitors, clients and suppliers) and other organizations (universities, technology centres, professional training centres, public institutions, local governments and the national government).

A number of developed countries have for years launched many cluster development programmes, some of which focused on strengthening existing clusters or on productive activities in which they had extensive experience. In the early 1990s, various cluster development programmes were operating in the Autonomous Community of the Basque Country (in Spain), Italy and Denmark, and even in some states in the United States (OECD, 2007). Crespi et al. (2014) state that most of these programmes are still operating and have adapted to new demands, while many more have been created since then.

According to the European Commission (2008), by the end of the first decade of the 2000s, more than 130 cluster development programmes had been established at the national or sub-national level in 31 European countries, while the European Cluster Observatory⁶ reported 578 “cluster initiatives” there by 2012. The same trend is seen in other developed countries. For example, in 2010, the US Small Business Administration (SBA) and other organizations launched several initiatives to support the growth of more than 40 clusters nationwide, while in Japan, economic and science and technology officials support more than 100 clusters, especially in high-technology sectors (Crespi et al. 2014). This is clear evidence that support for cluster development is a very important ingredient in the arsenal of productive development policies in Europe, the United States and Japan.

The Autonomous Community of the Basque Country (*Comunidad Autónoma del País Vasco*, ACBC, or Euskadi) was one of the first European regions to adopt a cluster approach in its industrial policies, along with Catalonia and Scotland (Aranguren and Navarro, 2003). Over the years, the various actors there have managed to eliminate or compensate for obstacles in coordination between enterprises and other organizations at the sub-national level, to ensure the *provision of public goods* necessary for production, and to help *internalize knowledge spillover in the cluster* and other elements for improving products and processes. This cluster development process in the ACBC arose to help industries in the region solve problems stemming from the new competition that Spanish industry faced when it joined the European Union (internationalization), as well as the economic crises of the 1980s and 1990s.

6 <http://www.clusterobservatory.eu/index.html>

As this paper describes, the transformation of the Basque economy has resulted from the design and successful implementation of productive development policies (PDPs) since the early 1980s, within which the Cluster Development Policy implemented a decade later has played a very important role.

Although existing impact assessments are incomplete, both the productive transformation of the Basque economy and its performance in creating quality jobs have been very significant over more than 25 years. First, per-capita Gross Domestic Product rose from approximately 13,000 euros in 1980 to 30,000 euros in 2008, both at constant prices,⁷ giving the ACBC a per-capita GDP higher than the EU-15 average in 2011 (21 per cent). Second, unemployment decreased from 25 per cent in 1980 to full employment before the global financial crisis of 2008 and 2009. According to the OECD (2011), by 2007 the ACBC had a very high proportion of workers with higher education (48 per cent), placing it above other communities in Spain (Navarra, 41 per cent; Madrid, 41 per cent; and Catalonia, 31 per cent) and the OECD average (24 per cent).

Outcomes in the area of innovation have been even more impressive: R&D spending as a percentage of GDP rose from less than 0.06 per cent in the early 1980s to more than two per cent in 2011, slightly above the EU average (Crespi et al 2014). The transformation of the Basque economy has been the result of a series of factors. Evidence suggests that a key factor has been the design and successful implementation of productive development policies (PDPs) since the early 1980s, including a successful Cluster Development Policy (CDP) a decade later.

Latin America has also tested cluster-development programmes since the beginning of industrialization, and more strongly since the first decade of the 2000s. Latin America's experience with CDPs⁸ has shown positive outcomes for clusters in terms of increased sales, jobs and exports, but also reveals significant challenges in the area of public-private and public-public coordination (Maffioli, Pietrobelli and Stucchi, 2016). Outcomes seem to depend on the way in which collaboration networks develop among key actors (related to both the exchange of information and collaboration among actors⁹), as well as on the design and implementation of CDPs in these countries.

7 Estimates based on data from BDMORES (<http://www.sepg.pap.minhap.go.es>).

8 Specifically Argentina, Chile, Uruguay and Brazil.

9 The first type of network refers to the transfer of business information, while the second refers to collaborative projects among enterprises.

Given this panorama, an analysis of successful cases, such as that of the ACBC, could offer important lessons about how to solve some of the problems that Latin American countries face in their effort to successfully implement productive development policies that include cluster development. Although there are studies of the ACBC's experience with clusters (Ahedo, 2004; Alberdi, 2010; Aragón, Aranguren and Iturrioz, 2010; Aranguren, 2010; Porter, 2012, and others), most focus on **what** was done in the ACBC and not on **how** the goal was achieved. There are vague discussions of some of the possible factors in the success of the ACBC's **Cluster Development Policy (CDP)**, especially horizontal policies for productive development (education and technology) and macroeconomic stability, which preceded the promotion of clusters. This paper aims to analyse **how** the ACBC designed and implemented a successful CDP, with surprising economic and social outcomes, as well as the importance of certain PDPs that supported the successful development of the CDPs. In short, this is an effort to identify the main characteristics and factors in the success of the PDPs and CDP implemented by the ACBC, to derive useful lessons for the design and implementation of CDPs and PDPs in Latin American and Caribbean countries, in the context of their attempts to promote more inclusive patterns of growth with the creation of more and better jobs. These three points constitute the main thrust of this paper.

The paper is organized in six sections, including the introduction. The second section presents a brief summary of the economic transformation of the Autonomous Community of the Basque Country. It describes some of the ACBC's most important characteristics, the most significant economic crises it has faced, and trends in some of its main economic and social indicators from the 1980s to 2014. The third section analyses the main characteristics of the Cluster Development Policy implemented in the Basque Country beginning in the 1990s, trying to explain in detail its design, implementation and current status. The fourth section discusses the various education, technology and innovation policies the Basque Country authorities have adopted since 1980. The fifth section does the same for fiscal policies. Policies in these areas constitute the basis of the successful operation of clusters in the country. The fourth section analyses in particular the policies for the development of human capital, quality management, technology centres and other technological infrastructure, instruments to support enterprises in the area of R&D&I, and the institutional framework for the design and implementation of PDPs. The fifth section analyses the importance of the ACBC's macroeconomic policy, specifically the Economic Agreement, to ensure fiscal space for implementing Productive Development Policies. The sixth and last section presents the main conclusions and lessons learned for Latin America and the Caribbean.



II. Brief economic summary and social outcomes in Euskadi

The Autonomous Community of the Basque Country (ACBC, Euskadi) is an autonomous region in north-central Spain, bordered to the north by the Bay of Biscay and France, to the south by La Rioja, to the west by Cantabria and Burgos, and to the east by Navarra. It has an area of 7,234 km² and a population of 2,164,311.¹⁰ The Basque Country consists of three Spanish provinces: Álava, Guipúzcoa and Vizcaya.

Porter et al. (2012) present a brief description of the main characteristics of the ACBC, highlighting the homogeneity of its population, the use of two languages (Euskera and Spanish), the clear sense of self-governance, its different culture and the predominance of the Catholic religion. Administratively, thanks to its autonomy statute, the ACBC has its own regional government (Basque government), a provincial council in each of its three provinces, and a parliament. The 75 members of Parliament are elected every four years in free elections, and they elect the president of the Autonomous Community of the Basque Country. The Basque government, in its broadest sense, has the power to approve laws and budgets and appoint the senators who represent the ACBC before Spain's national government.

Under the 1978 Constitution and the 1979 Autonomy Statute, Spain's national government transferred to the ACBC a wide range of competencies and rights, including the free election of its own parliament, the establishment and collection of taxes, and various government functions. The government functions delegated to the ACBC include the health system; the education and training system; maintaining law and order, including the police; the social assistance and welfare system; economic promotion and development of all productive sectors; the promotion of investment in research and development and innovation (R&D&I); the promotion of sources of jobs and life-long learning; the development of regional infrastructure of railroads, metro and ports; housing and urbanism; and the promotion of culture.

Spain's national government retains control over defence policy and foreign relations; economic regulation (education, labour relations, energy, financial system); social security (pension or retirement system) and unemployment subsidies; national trans-

¹⁰ According to the National Institute of Statistics (Instituto Nacional de Estadísticas, INE) <http://www.ine.es/jaxiT3/Datos.htm?t=9681>

portation infrastructure (highways, airports, ports and railroads); payments to the European Union administration; customs; and the penitentiary system (Porter et al., 2012, Exhibit 2). This state of autonomy gives the Government of the Basque Country great flexibility of action that the other autonomous regions of Spain, except Navarra, lack. The fiscal agreement between the Government of the ACBC and the national government, known as the Economic Agreement (*Concierto Económico*), has had a significant impact on the success of the ACBC's productive development policy, as Uriarte (2015) documents in detail and as discussed in the fifth section of this paper. This fiscal agreement has its origins in other economic agreements between the two governments dating back to the nineteenth century.

Because of its geographic position, as well as the availability of good natural ports and navigable estuaries, for centuries the Autonomous Community of the Basque Country has been a natural transit route between Spain and northern Europe. Since medieval times, the ACBC has been organized in three provinces, and its inhabitants have enjoyed an identical legal status, without distinctions of nobility. A no-tariff policy promoted free trade in the community, where trade in northern Spain was concentrated in the ports of Bilbao and San Sebastian (Porter et al., 2012). During the seventeenth and eighteenth centuries, the ACBC's economy made significant strides in fisheries, transportation, shipbuilding, international trade, iron and agriculture. During this period, Bilbao became the most important port in northern Spain's Atlantic region. By the nineteenth century, the iron mines near Bilbao were being operated on a large scale by both domestic and foreign companies, which exported the ore to iron and steel industries in Europe, mainly in England.

The riches resulting from iron, steel and shipping industry activities began to give rise to other productive activities, especially during the Industrial Revolution, including railroad equipment; the production of metals, tools and machinery; chemicals; the generation of hydroelectricity; electrical equipment and electrical machinery; and banking, notably with the creation and development of Banco Bilbao and Banco Viscaya. This development attracted many immigrants from the rest of Spain to the Basque Country.

During the twentieth century, economic development in the ACBC was marked by the economic policies that predominated in the rest of Spain. That influence was significant until the early 1980s. Beginning in the 1950s, after the Spanish Civil War and the end of World War II, the ACBC saw a second wave of industrialization, which produced significant economic and social changes, as well as renewed immigration of workers from other regions of Spain. During this period, sectors related to iron, steel, transportation, shipping, energy, the chemical and paper industries and the electrical industry were strengthened. The banking sector became the most powerful in Spain,

financing major investments in the rest of the country. There was also a large accumulation of capital during the 1960s and 1970s, as well as agricultural development in other regions of the ACBC, mainly Álava (OECD, 2011).

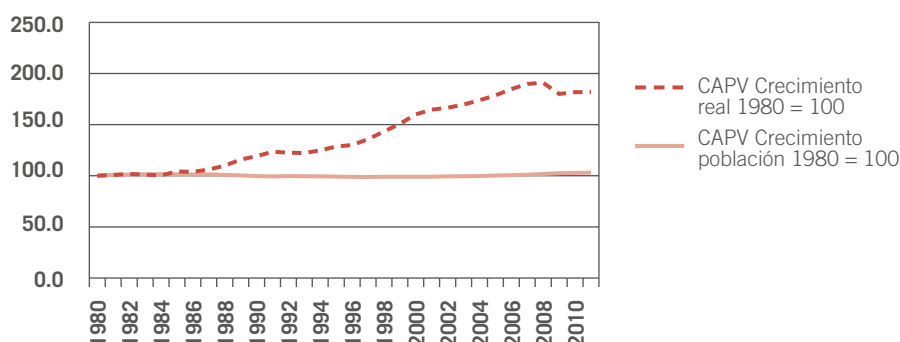
During the Franco regime, the ACBC already had a per-capita income well above that of the rest of Spain. This situation later deteriorated with the worldwide oil crisis in the 1970s, which caused the collapse of the iron and shipping industries, resulting in what Alberdi (2010) calls the great economic crisis of 1980.

During the years preceding the Great Crisis, the ACBC had a weak technical and higher education system, even though it had a large number of public and private primary and secondary schools. Infrastructure was relatively poor, and investment in research and development (R&D) was non-existent (Alberdi, 2010; Navarro, 2010). Spain was in a transition between the Franco regime (who died in 1975) and democracy (initiated through the establishment of a constitutional monarchy). This panorama was further complicated by the emergence of a paramilitary group that sought independence from the rest of Spain and took up arms to press its cause. This group, Euskadi Ta Askatasuna (ETA), unilaterally abandoned armed insurgency on 20 October 2011.

According to Alberdi (2010), the global deceleration caused by the oil crisis of the 1970s, the sluggish increase in productivity and growing tensions over rent distribution in leading economies, were key factors behind the 1980 crisis in the ACBC (and Spain in general). Alberdi also asserts that the lower development of the ACBC (and of Spain), combined with the characteristics of an authoritarian state, obscured the fact that the growth experienced in the preceding years responded to a model that was wearing out. The Great Crisis of 1980 began to appear in 1973, with a painful loss of rents, deindustrialization, productive restructuring, and mass unemployment. By 1980, real revenue was seven per cent below that of 1975, when the economy had grown by four per cent. In addition, the industrial sector, which represented half of the Basque economy's GDP, experienced a sharp loss of jobs (approximately 50,000). Added to this was the crisis in the service sector, a relatively small and unproductive sector of the Basque economy during those years. By the end of 1981, the Basque Country's economy had an unemployment rate of 17 per cent, well above the full employment (structural unemployment) rate, which had held steady for many years (Alberdi, 2010). This state of economic decline, according to Alberdi (2010), persisted until 1988, with per-capita GDP shrinking by 10 per cent in comparison to the same indicator for Spain as a whole.

The crisis began to ebb in 1993 as a result of economic diversification and an opening to international markets. The changes in the productive structure were very significant, especially as of the 1990s. Alberdi (2010) considers the next decade (1988 to 1998) to be the decade of recovery, although not of significant economic resurgence, which occurred toward the end of the 1990s. The sustained upward trend in real per-capita GDP in the ACBC between 1980 and 2008 was very significant (Figure 1). Annual growth during this period was 2.33 per cent. As of 2008, the repercussions of the global financial crisis began to be felt in the Basque economy, a situation that had not changed significantly by 2014.

Figure 1. Autonomous Community of the Basque Country: Real per-capita GDP growth and population growth



Note: The per-capita GDP figures used are at constant 2008 prices.

Source: Compiled by authors with data from BD.MORES (<http://www.sepg.pap.minhafp.gob.es>).

While per-capita GDP in the Basque Country in 1980 was about 13,000 euros, mainly generated by industry, which employed half of the economically active population, 30 years later, in 2008, the Basque Country had a per-capita GDP of 30,000 euros, both at constant prices.¹¹ This significant increase in per-capita production was due to the growth of the service sector, as well as the restructuring of the industrial sector, which in that year contributed slightly less than 30 per cent of added value (29.3 per cent), compared to 60.8 per cent for services, 8.9 per cent for construction and one per cent for the primary sector (OECD, 2011).

The figures in Table 1 show the transformation of the ACBC economy between 1980 and 2014.

¹¹ Estimated figures based on data from BD.MORES (<http://www.sepg.pap.minhafp.gob.es>).

Table 1. Autonomous Community of the Basque Country: Per-capita GDP at current prices and other economic indicators

Indicators/Milestones	Start of Autonomy 1980	Entry Europe 1986	Recession 1993	Convergence with Europe 2003	End of Great Moderation 2008	After financial crisis 2014
1. Per-capita GDP (constant 2005 euros)	12,834	13,105	17,181	25,438	29,395	27,395
2. Convergence with Europe 15=100	80	75	83	100	107	102
3. Labour market	-	-	-	-	-	-
Economically active population	797,900	818,800	909,400	1,007,800	1,081,900	1,034,200
Employed	699,100	629,000	696,600	912,600	1,010,200	865,300
Unemployed						
Number of people	98,800	189,800	212,800	95,200	71,700	168,900
Percentage	12.4	23.2	23.4	9.4	6.6	16.3
4. R&D spending as percentage of GDP	0.07	0.5	-	1.39	1.81	1.93
5. Population with Internet access (%)	-	-	2.5 (1997)	31.4	50	63.3

Source: Alberto Alberdi, based on Eustat, EPA (INE), AMECO and European Commission

As the preceding table shows, in terms of GDP, the ACBC economy has more than doubled in 34 years. As a result, by 2008 (before the global financial crisis), it had a per-capita income seven per cent above the average for the rest of Europe (Europe 15), which contrasts with 1980, when per-capita income in the Autonomous Community of Euskadi was 20 per cent below the European average. In addition, although the workforce grew by 35.6 per cent between 1980 and 2008, the employment rate practically reached full employment in that final year. In 2008, the unemployment rate was just 6.6 per cent, which can be considered the frictional unemployment rate.¹²

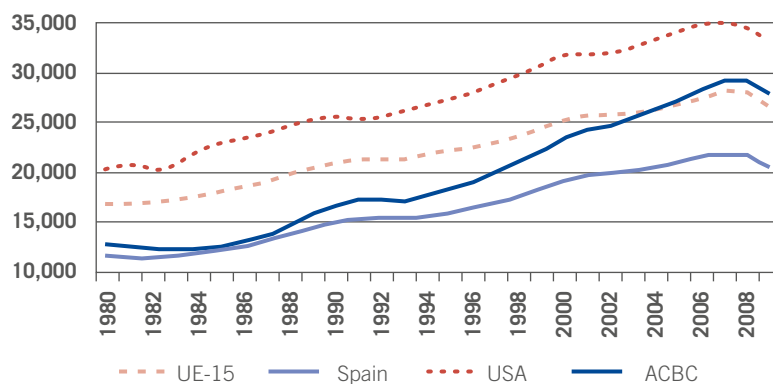
According to studies by several Basque researchers (Alberdi, 2010; Castillo and Paton, 2010; Navarro, 2010), this outcome could not have been achieved without the implementation of productive development policies, particularly in the areas of education, technology and innovation. For example, spending on R&D rose from just 0.07 per cent of GDP in 1980 to 1.81 per cent in 2008 (that is, 25 times greater). By 2014, that indicator was among the highest in the European Union and emerging countries

¹² In other words, unemployment produced between the time a worker leaves one job and finds the next.

(1.93 per cent). Meanwhile, the population's access to the Internet rose from 2.5 per cent in 2007 to 63.3 per cent in 2014.

The productive transformation of the Basque economy enabled it to grow at rates above the average for the European Union (EU-15), the United States and Spain, until it had a per-capita income in 2009 that was higher than that of all of those countries except the United States, as shown in Figure 2.

Figure 2. Evolution of per-capita GDP of ACBC, Spain, EU-15 and USA, 1980-2009 (figures in thousands of 2005 euros)



Source: Figure 4.4 of Aranguren et al. (2012).

From a social standpoint, the ACBC also shows very positive outcomes, both in the job market and in people's living conditions. The labour market shows positive transformations in the structure of employment, according to employee educational level, women's participation in the workforce, the number of employees in R&D activities, and job satisfaction. For example, there was a notable increase in the proportion of workers (active workforce over age 16) with vocational and secondary education between 1986 and 2011 (Table 2). In 2011, nearly half the active working population of Euskadi was professional (49.5 per cent), and 19.4 per cent had a secondary education. Those figures are far higher than those for the ACBC in 1986.

**Table 2. Autonomous Community of the Basque Country: Composition of the active population over age 16, by worker's educational level, 1986-2011**

Educational level of active population > 16 years	1986	1991	1996	2001	2006	2011
Professionals	33.2%	35.9%	43.4%	47.6%	49.8%	49.5%
Secondary	10.8%	14.5%	15.3%	11.1%	21.7%	19.4%
Primary	45.9%	42.8%	39.1%	27.2%	27.6%	28.6%
No studies or illiterate	10.1%	6.7%	2.2%	14.1%	0.9%	2.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Compiled by authors based on EUSTAT data: Population and housing censuses

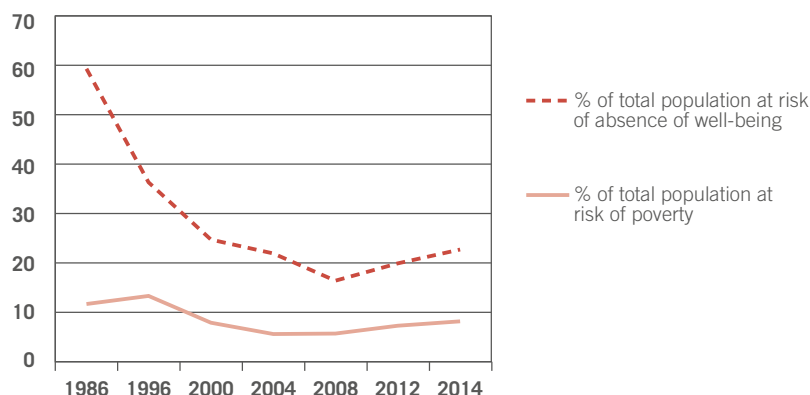
A report by the OECD (2011) indicates that by 2007, a very high percentage of the ACBC workforce had higher education (48 per cent), placing it ahead of other communities in Spain (Navarra, 41 per cent; Madrid, 41 per cent; and Catalonia, 31 per cent) and above the OECD average (24 per cent). In most cases, higher education students are enrolled in disciplines directly related to local enterprises, which shows very good vocational orientation and relevance from the standpoint of employability. It is also notable that 37 per cent of the active working population with higher education has participated in vocational training, compared to just 25 per cent in Spain as a whole.

Another notable outcome in the labour field is the growth in women's participation in the workforce (over age 16) in the ACBC, which increased from 29.2 per cent in 1986 to 46.6 per cent in 2011, according to EUSTAT figures.

The number of people working in R&D in the ACBC has increased significantly and with a positive growth trend, according to the same OECD report (2011); most of these workers are in the engineering field. In 2007, the proportion was 15 people working in R&D for every 1,000 of the active population, which contrasts with the average of 10.4 for the EU and 10.5 for Spain. Of all personnel dedicated to R&D in the ACBC, 64 per cent were researchers, mostly engineers (71 per cent), while 10 per cent of all R&D personnel were in the exact sciences. Women's participation in R&D occupations rose from 24 per cent in 1997 to 33 per cent in 2007.

The degree of satisfaction among the Euskadi employed population with aspects of work such as breaks during the workday, holiday and leave allowances, stability, wages and promotion is very high, with more than 93 per cent of workers expressing a degree of overall satisfaction between moderate and high between 2010 and 2013, according to surveys of living conditions (EUSTAT).

Figure 3. Evolution of rates of risk of poverty and risk of absence of well-being in the ACBC, 1986-2014



Source: Compiled by authors with figures from EUSTAT. Basque Government, Department of Employment and Social Policies. Survey of poverty and social inequalities

As Table 1 shows, in 1986, the Euskadi unemployment rate was 23.2 per cent, which had a negative impact on people's living conditions. In contrast, EUSTAT indicators of risk of poverty and absence of well-being in Euskadi reflect a positive change in living conditions between 1986 and 2008 –that is, before the global financial crisis (Figure 3).

As Figure 3 shows, the percentage of the population at risk of poverty increased between 1986 and 1996, from 11.7 per cent to 13.3 per cent, as a result of the Great Economic Crisis discussed above. As of that year, this indicator showed a downward trend until 2008, when it stood at 5.7 per cent. This indicator's behaviour is consistent with economic activity described by Alberdi (2010) for the same period. Alberdi states that the decade from 1988 to 1998 is considered the decade of economic recovery, while significant economic resurgence occurred in Euskadi in the late 1990s. The relationship between the indicator of percentage of the total population at risk of absence of well-being and Euskadi's economic activity is even more eloquent. Between 1986 and 2008, that indicator dropped from 59.3 per cent to 16.4 per cent. (Figure 3).

According to Zubero (2010), the improvement in the living conditions of the Euskadi population during the period analysed is the result of an active employment policy on the part of the ACBC authorities, through inter-institutional plans with provincial governments, municipalities and the Basque Government. As part of this policy, various programmes were adopted to improve job training, encourage hiring, foster an entrepreneurial spirit and risk taking, and encourage job sharing and “*relevo laboral*” (partial early retirement while mentoring a new hire who had been unemployed),

among other things; various specialized entities were created for these purposes (for example, Egalian, Development Agencies, Hobetuz, Behargintz and others). Other institutions and entities (for example, social and trade union organizations) have also been agents of the Basque Country's active employment policy. During that period, policies were also implemented to protect and improve the situation of people excluded from the job market, such as passive employment policies and policies for combating poverty and social exclusion. Policies of this second type, in the author's opinion, have been innovative pioneering initiatives in Spain.

In short, Euskadi's economic transformation during the past 35 years has been a success from both an economic and social standpoint.

The rest of this paper will discuss the main factors in the success of the Basque economic transformation, including specific policies related to science, technology and innovation, beginning in the next section with an analysis of the Cluster Development Policy of the 1990s.

III. Cluster Development Policy in the ACBC

In the early 1990s, officials of the Autonomous Community of the Basque Country decided to promote the creation of clusters or agglomerations in different productive activities, to increase the technological development, innovation and internationalization (especially toward the European Market) of the ACBC's businesses. This was done with an eye toward increasing economic growth and improving living conditions for the Euskadi population (Orkestra, 2009). This goal was motivated by the fact that, at the end of the 1980s, the ACBC's industrial sectors were facing a strong recession, as well as the loss of their traditional competitive advantage – price competition (Aranguren, 2010). It was therefore necessary to seek sustainable competitive advantages that would enable the Basque productive sector to compete in the international arena.

This section aims to answer the following questions: What is a cluster? How was the CDP encouraged? How were Cluster Associations (CAs) created? How do CAs function? What advantages do businesses and other key actors obtain by belonging to a CA? And what is the relative importance of CAs in the ACBC economy? This is based on a review of the available literature and interviews with members of eight clusters¹³ between 2015 and 2016, as well as with other actors in the ACBC who were important in the design and implementation of PDPs, including the CDP (see list in Appendix 1).

First, it is important to keep in mind the main characteristics of the socio-institutional system of the ACBC economy before implementation of the CDP, because although these characteristics did not determine the policy's results, they conditioned and shaped its outcome, as discussed below.¹⁴ From a socio-institutional standpoint, the ACBC has four important characteristics: (i) a multi-level public administration system, as described in Section 1; (ii) the need to govern in Parliament through alliances among minority parties, because during the last quarter of the twentieth century,

¹³ Interviews were conducted with members of seven of the 12 priority clusters, according to the classification by Aranguren et al. (2012), specifically the Energy Cluster, the Maritime Industries Cluster, the IT and Electronic Cluster, the Aeronautics Cluster, the Machine Tool Cluster, the Environment Cluster and the Automotive Cluster, and with members of one of the 10 clusters in the process of consolidation or recognition by the Basque government, specifically the Food Cluster (see Appendix 1).

¹⁴ The conditions specific to the ACBC when its authorities defined and implemented the CDP are important when other countries or regions, especially those that are developing, consider the relevance of the Basque Country's experience in this area.

Basque society was divided by different political tendencies; (iii) the consolidation of three different business communities (a *large business group* associated with the BBVA bank, the energy company Iberdrola and other members of the so-called Society of Basque Businesses (*Círculo de Empresarios Vascos*), made up of nearly 60 large businesses in the ACBC; an *industrial cooperative movement* consisting of the Mondragón Cooperative Corporation; and an *extensive and informal community of small and medium-size enterprises or “SMEs”*);¹⁵ and (iv) the creation of a business association – CONFEBASK – in the ACBC in 1984, which consisted only of businesses associations in the community and did not include industrial sector organizations, which had their own interests (Ahedo, 2004). It is interesting to note that in those years, there was no significant presence of multinationals operating in the ACBC, as there is today in many Latin American countries as a result of the attraction of significant flows of foreign direct investment.

Because most Basque enterprises were small and medium-size enterprises (*SMEs*), the ACBC's CDP sought to encourage cooperation and networking between large and small enterprises in Euskadi to increase their competitiveness (Aranguren, 2010). To achieve these goals, a decade before implementing the CDP, the ACBC adopted another series of productive development policies, among which the industrial, regional, education, and science and technology policies were particularly noteworthy. According to several authors (including Aranguren, 2010, and Navarro, 2010), this other set of policies has been crucial in enabling the CDP to achieve its objectives. In other words, in the analysis of the CDP's scope and impacts, it is important to keep in mind that it was part of a broader series of PDPs (which are discussed in detail in the next section).

Overall, the added value of a CDP is that through it authorities can: (i) provide certain public goods, such as human resources training, infrastructure, research, information and other goods needed by cluster members, which the market does not adequately provide; (ii) support cooperation and networking among cluster members; (iii) provide support for the construction of the cluster association (brand, creation of forums, communication mechanisms, visible concentration); and (iv) help resolve weaknesses or imbalances that may exist in some parts of the cluster (Navarro, 2003). To do this, a cluster development policy is often implemented through the establishment of institutions or organizations that foster collaboration among the members of each cluster. In the ACBC, these institutions (called cluster associations, or CAs) are a specific type of organization established for collaboration, and their members are businesses, educational and research institutions, government agencies and other institutions, all of

which collaborate with the goal of increasing the competitiveness of related activities in a particular territory, and which are supported and coordinated by a small technical group dedicated to that purpose (Porter and Ketels, 2008).

According to *The Cluster Initiative Greenbook 2.0*, 65 per cent of cluster initiatives in the world are legal entities, where the direction of the initiatives is mainly governed by representatives of the private sector, and where representatives of academia and the public sector also participate (Lindqvist, Ketels and Sölvell, 2013).

According to Porter and Ketels (2008), there are three areas in which CAs play an important role in fostering competitiveness and productivity: (i) facilitating public-private collaboration; (ii) strengthening relationships and technology and knowledge spillovers; and (iii) encouraging the design and implementation of joint projects among enterprises that are members of the cluster. Aranguren (2010) notes that although these organizations can be promoted by enterprises, universities or government agencies, “studies show that their good implementation and success depend on the involvement not just of the group that started them, but of all agents in carrying out the associations’ projects.” (p. 89).

Aranguren *et al.* (2012) note the importance of distinguishing between the cluster reality (that is, what is observed in an economy) and cluster initiatives (the measures or activities implemented to reinforce those cluster realities). According to these authors, there are several clusters in the ACBC that have not been the express target of support initiatives or that do not have a cluster association behind them. Similarly, not all enterprises or organizations that really form part of a cluster decide to integrate and become members of the association that may exist in the cluster. Given the purpose of this study, this section will examine only clusters that have received express support from ACBC authorities and are therefore backed by a cluster association.¹⁶

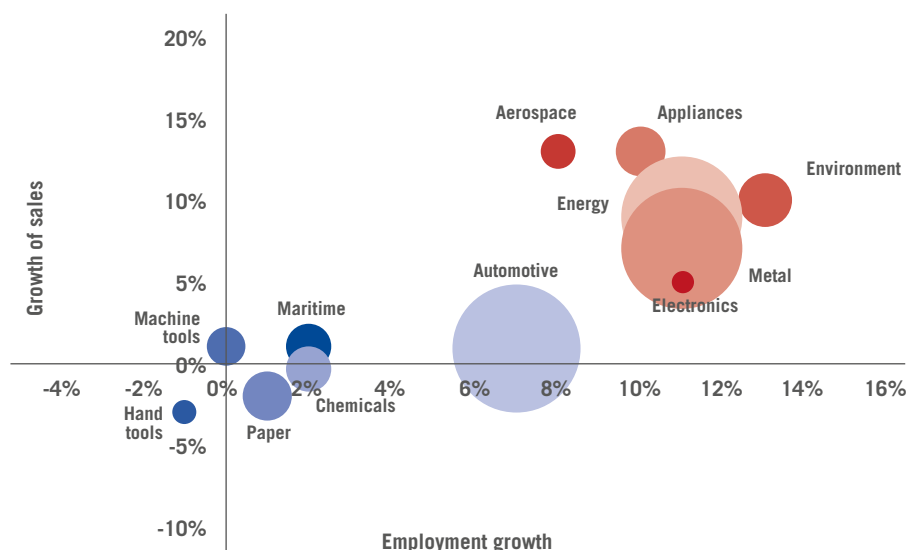
This study’s exclusive attention on clusters that have an association could be considered a limitation, but there are several reasons why that is not the case. First, the 12 clusters that have been supported by ACBC authorities and have an association represent 31.5 per cent of total production and 13.4 per cent of total employment in the ACBC (Faíña and López-Rodríguez, 2009). These 12 clusters consist of 1,603 manufacturing companies (that is, 12.4 per cent of all Basque manufacturing companies), which represent 66.7 per cent of the Basque industrial population and 50.1 per cent of Basque industrial employment. Moreover, according to Faíña and López-Rodríguez (2009) these clusters have performed well in both sales and job creation

¹⁶ A form of legal organization in Spain for the operation of not-for-profit institutions.

(Figure 5). Second, according to the Second Competitiveness Report (*II Informe de Competitividad*) prepared by Orkestra (2009), the cluster companies that have an association and are supported by Basque authorities, “show better indicators of quality, innovation, internationalization and growth than those that are not associated, and are thus able to exercise an important trailblazing effect for improving the competitiveness of the other enterprises” (Aranguren, 2010; p. 91). Third, in the same report on competitiveness, Orkestra (2009) notes that while the seven main clusters (of the 12 priority clusters) that have an association and are supported by ACBC authorities¹⁷ represent 37 per cent of the Community’s exports, the three clusters identified as potential clusterization processes in the study, and which do not have an association, account for 16.1 per cent of total ACBC exports. Finally, between 1995 and 2007, the first group of clusters showed growth rates in global exports greater than those of the three clusters that did not have associations.

The preceding arguments suggest that the choice of cluster associations as the focus of this study is not a significant constraint on analysis of the importance of CDPs in the Basque economy.

Figure 4. Main ACBC clusters, by size and trends in sales and employment, 2000-2005



Source: Compiled based on figures from Faïña and López-Rodríguez (2009)

¹⁷ These seven clusters are: automotive, production technology, motors and equipment; paper; energy; aerospace; and maritime.

It is important to emphasize that the ACBC's success in terms of increased productivity and job creation cannot be attributed to the CDP alone; there are strong complementarities with other policies, such as macroeconomic (for example, fiscal) policy and policies related to investment in technology and human resources. The continuity of the CDP by Basque authorities, as well as its renewal and constant adaptation to the challenges and opportunities that enterprises have faced in their value chains over the past 25 years, is also a success factor. Nevertheless, the CDP has not been exempt from failures over the years, as noted by the father of the CDP, Jon Azua, during the Basque Cluster Day ceremony on 6 November 2015.¹⁸

a. What is a cluster?

Porter (1998: 199) states that “A *cluster* is a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities.” Specifically, a cluster is a geographic concentration of businesses in one or more interrelated sectors, specialized suppliers, businesses in auxiliary and related sectors, distribution companies and their customers, educational and research institutions (such as universities, laboratories and technology centres) and other institutions (governments, business associations, cluster associations), whose purpose is to work to constantly improve competitiveness and productivity and, therefore, the ongoing development of long-range competitive advantages (Porter, 1990). Uriarte (2015) indicates that the main idea behind a cluster is that it is a model of private-private cooperation (that is, of enterprises that compete in the same sector, but are willing to cooperate for the common good), to which is added another area of cooperation, public-private cooperation.

The cluster approach acknowledges that the competitiveness of any business, especially smaller ones, depends largely on networking and on flows of learning and innovation that stem from those interactions (Rodriguez and Moso, 2003). This is extremely important, because more than 95 per cent of productive enterprises in any country are micro-, small and medium-size enterprises (MSMEs¹⁹) (Kushnir et al., 2010); (ILO, 2015). Clusters therefore allow cooperation that promotes learning, technological improvement, innovation, exports, internationalization and better management

¹⁸ <http://www.spri.eus/es/actualidad-spri/contenidos-de-jornadas/ris3euskadi-todo-lo-que-sucedio-en-el-basque-cluster-day-videos-y-presentaciones>.

¹⁹ This paper uses the OECD classification to group enterprises into four categories, based on the number of workers: micro-enterprises (fewer than 10 employees), small (10 to 49 employees), medium-size (50 to 249 employees) and large (more than 250 employees) enterprises.

models, increasing the productivity of the participating businesses and promoting a higher degree of productive linkages, all of which facilitate the development of long-range competitive advantages.

With its cluster development policy, the ACBC moved from competitive advantages based on elements such as low labour costs, which often are temporary, to more sustainable competitive advantages, increasing the quality of products, adding characteristics that make them more attractive to consumers, developing technology or increasing the efficiency of production, all of which also leads to higher-quality jobs and increases the income of workers in the cluster.

b. How was the CDP promoted in the ACBC?

ACBC authorities decided in the early 1990s to make the cluster development policy (CDP) a central thrust of government policy. This new policy approach followed significant efforts in the areas of science, technology and innovation since the early 1980s, which are discussed in the fourth section of this paper. The Basque government promoted the creation of clusters through a decisive policy, even though the ACBC's economic situation at the time was particularly complicated (Uriarte, 2015).

To create clusters, ACBC authorities conducted a series of studies, the first four of which were carried out by the Monitor Group and led by Michael Porter, a professor at Harvard University, and later by local consultants who used Porter's methodology to identify a series of productive sectors in which the ACBC had business experience, skills and a track record. This effort was an initiative of Jon Azua, who was vice-president of the ACBC at the time (Uriarte, 2015). Besides identifying key sectors for implementation of the CDP, these studies made it possible to prioritize them and thus facilitate the sequential creation of clusters. In other words, instead of creating various clusters at once, they were created one by one over more than 15 years. During the first phase, 50 sectors were identified that were able to compete in the international market, while the second phase involved grouping those sectors into clusters and analysing possibilities for making them more competitive (Aranguren, 2010). That analysis identified a series of common problems and challenges for the various clusters, which led to the design and implementation of a series of policies for successfully addressing those problems:²⁰

²⁰ Most of these policies are discussed in detail in section four of this report.

- ▶ Creation of the Basque Government Venture Capital Fund (*Fondo de Capital de Riesgo del Gobierno Vasco*, EZTEN) to respond to the challenge of developing new mechanisms for financing strategic projects.
- ▶ Creation of the Basque Foundation for Quality Improvement (*Fundación Vasca para la Mejora de la Calidad*, Euskali), to respond to the need to compete on quality, since it was no longer possible to compete on price.
- ▶ The launch of the Basque Technology Plan (*Plan Vasco de Tecnología*), to respond to the challenge of improving technology to implement differentiation strategies to provide new or improved products for the market (innovation).
- ▶ The launch of the Strategic Reorientation and Operational Techniques (*Reorientación Estratégica y Técnicas Operativas*, RETO) programme, to build strategic capacity in Basque enterprises.
- ▶ And the launch of the strategic partnerships programme, to address the challenge of internationalization (mainly for the European Market) (Aranguren, 2010).

Analysis of the clusters also convinced authorities of the need to encourage the creation of cluster associations (CAs). In some clusters identified by Porter's consulting firm, no CA was created because of a lack of interest on the part of the enterprises and agents involved, while in other clusters not identified in Porter's study, the creation of a CA was supported because key actors saw the value of the cluster methodology and took on the challenge (Aranguren, 2010).

Jon Azua, who promoted the CDP (and other important PDPs in the ACBC), notes²¹ that the CDP was designed as part of a broader, medium- and long-range strategy in the country, for which maximum government support was necessary. Within that strategy, feedback received by policy makers, implementers in enterprises and key actors played an important role in the modification and adjustment of the model (policies and institutions) based on the needs of the businesses. Given this need and the fact that most ACBC enterprises are SMEs (and it therefore is not possible to talk with all of them), clusters were seen as laboratories that could produce information for shaping and assessing policies, and for evaluating the performance of institutions that provided support for businesses.

21 Personal interview conducted in March 2016.

According to Azua, the approach promoted by ACBC authorities differed in some important ways from Porter's original CDP proposal. First, Basque authorities considered it important to distribute wealth as it was created, not to create it first and then distribute it. In other words, it was considered important to address social and economic dimensions simultaneously. Second, there was a different view of the role of government, as specific policies were implemented for certain territories. For example, it was considered important to create public societies in certain regions, to address problems of unemployment, with the participation of municipal and regional governments and the Basque Government. In most cases, these societies ceased to exist once they achieved their goals. Third, although Basque authorities agreed with the inclusion of an export variable among the criteria for selection the clusters to be promoted, they also considered it important to promote local clusters that created jobs. In short, as Azua maintains, the Basque Country's industrial strategy, which included the CDP, was designed and implemented by the Basques themselves, while Porter's contribution was experience and guidance on the topic of clusters.²²

Along with implementation of the CDP, the Basque authorities also considered it important to promote formalization, the creation of a different labour discipline, achievement of stable socio-labour relations, a commitment to society and the development of value chains.

The development of an authentic public-private relationship that would promote dialogue and mutual trust was considered crucial. With regard to the fiscal capacity for developing the country, for example, it was necessary for businesses to understand the need to formalize their fiscal situation so as to be able to support the government and for the government to be able to support businesses. In order to achieve that, the model had to be very participatory (Basque government, provincial governments and municipalities), which made it easier to establish closer relationships with people; allowed greater control over resources used; reduced the likelihood of corruption; facilitated policies more sensitive to people's needs; and allowed for greater accountability. It was also considered necessary to increase the ability of local governments and public institutions to manage resources, and later to increase monetary resources to those governments and institutions. In short, the aim was to devolve resources, responsibilities and challenges to provincial governments and municipalities.

According to Azua, from the outset the ACBC strategy that included the CDP had a medium- to long-range vision, which implied that political leaders understood that

²² At Jon Azua's request, the Basque government named Michael Porter an ad honorem adviser on competitiveness, a position he accepted.

achieving the goals would take time, and it did not matter as much “who would take credit” for a specific project. It was therefore necessary to seek inter-institutional programmes and public-private relationships that allowed the credit to be shared. In this way, “each participant in the project felt that they had played a key role in its design and implementation. In other words, each participant felt ownership of the project.” Azua argues that the design of the strategy required a clear vision of three specific points: (i) clarity about the problems to be solved; (ii) good understanding of the current situation; and (iii) ambitious goals.

In the creation of cluster associations, Azua asserts, the goal was not simply to have an association, but to establish a mechanism for cooperation among the enterprises in the cluster and between them and other key actors. The associations made cooperative processes, or competitive partnerships, necessary. The CDP did not replace the strategy of the country or the enterprise, but helped ensure a common vision and common criteria for addressing challenges and finding solutions. In short, the goal is not the creation of cluster *associations*, but the *clustering* of economic activities. The idea is to break down sectoral barriers, bringing different value chains, technology platforms and other key actors together within a cluster. This, according to Azua, was seen as the way to create wealth for the country as a whole.

c. How were Cluster Associations created in the ACBC?

The first step in creating cluster associations was to identify a group of large companies that could serve as trailblazers for many SMEs. These enterprises would push other, smaller enterprises to improve their productivity by increasing the quality of their products, adding characteristics that would make them more attractive to customers, developing technology for processes or increasing the efficiency of production. This is extremely important, because a cluster’s main activity is to increase the innovative capacity of the participating enterprises, followed by their internationalization.

Once the trailblazers were identified, “desk work” began with the help of a consulting firm. This involved conducting interviews and preparing documents that provided a better understanding of the sector at the global level (specifically, for the different value chains in which the enterprises that might participate in clusters later operated). This information was then presented to the trailblazing companies to encourage them to form a cluster. This took approximately three months.

At the same time, the consulting firm organized meetings with the trailblazing companies to identify the challenges the companies considered the ACBC faced. Based on the results of the studies of international and domestic challenges, the creation of



a cluster was proposed. Once the idea was approved, an executive committee was created with the trailblazing company, followed by working groups of experts and functionaries from the trailblazing companies to address the challenges identified. Each of these working groups was led by a trailblazing company. Working groups were created on issues such as supply, demand, technology and purchasing. Six-month time frames were proposed for these working groups to present proposals for addressing the identified challenges. All of this prior effort could take up to a year before the cluster began to operate on its own, without support from the consulting firm.

The Energy Cluster offers an example of how these working groups operated in a specific cluster.²³ This cluster was created in the late 1990s. Thirty companies were identified initially and encouraged to form a cluster. After several years, during which the cluster's work focused on addressing problems in the value chain in which the energy company Iberdrola participated, a more dynamic approach was taken beginning in 2008, when the cluster had 70 members. As part of this new approach, the challenges facing the ACBC's energy sector were analysed, and new working groups were created to address challenges in the various value chains in which the sector's enterprises participated. One leading company per group or working group was also identified. The most important working groups included those related to electricity grids, wind and solar energy, ocean wave energy, electric vehicles, energy storage and energy efficiency. The main activities to be implemented by these working groups were aimed at increasing the innovative capacity of the companies in the cluster and promoting their internationalization.

One important aspect of cluster creation was that the trailblazers and other key actors invited to become members of the clusters did not receive a detailed explanation of the theoretical concept of a cluster; rather, they were told that having identified the most pressing challenges or problems facing enterprises in their value chains, a joint effort involving businesses (competitors, suppliers and customers) and other key actors (such as public institutions, technology centres, professional training centres and banks) would make it possible to find better solutions to these problems and achieve better outcomes.

If the idea of forming a cluster was accepted, the ACBC government sweetened the pot by offering more fiscal incentives to the companies that belonged to the cluster, mainly for R&D&I activities. Because businesses in the ACBC were accustomed to working collaboratively, it was not difficult to sell the idea of clusters, with support from the government, which financed the hiring of a consultant who assigned four full-time

23 According to an interview with José Ignacio Hormaeche, director general, Energy Cluster.

staff members during the year (or period) during which the cluster was created and began operation. These staff members were responsible for preparing studies about international and domestic challenges, the working groups' agendas, monitoring the working groups' activities, establishing the cluster organization, helping with the selection of staff for cluster administration, and related tasks.

Where business organizations already existed, the possibility of using them as the basis for creating clusters was assessed. If such organizations did not exist, after several months of work the trailblazing companies were offered the possibility of creating a cluster as an association, and it was explained to them that the government would finance the cluster's initial operation. Although the ACBC government financed 100 per cent of the costs of creating a cluster association and beginning its operation (first studies on challenges and organization costs), the subsidy decreased over time, so the government's contribution was steadily reduced. Cluster association functionaries who were interviewed said the members must pay an initial fee to register the cluster association and then a periodic fee for its operation.

Given that at the end of the process the cluster associations had to coexist with other business associations, it was very important to clarify the role of the cluster associations from the start, to avoid duplication and minimize any initial opposition from other organizations. Public officials, mainly from the Basque Business Development Agency (known as SPRI for *Sociedad para la Promoción y Reconversión Industrial*) and the rest of the current Department of Economic Development and Competitiveness, played a very important role in the successful execution of this task.

In many cases, the companies in the cluster were established in technology parks created by the ACBC government, which provided them with industrial land on favourable terms, access to credit, and a location close to businesses in the same cluster (agglomeration). In addition, many technology centres were established in the technology parks, which facilitated the successful operation of the clusters by creating knowledge spillover. A key factor in the operation of clusters in the ACBC is that the trailblazing companies, SMEs, representatives of technology centres and public institutions (for example, SPRI) and others also participated in the working groups of each cluster association. The idea is to solve problems to make businesses more competitive and productive, by both eliminating obstacles to their growth and strengthening their ability to innovate and to compete in open markets. This requires a significant collaborative effort among cluster members, as well as between public institutions responsible for offering incentives and support programmes for businesses. The collaborative spirit that is increasingly developed within the cluster is also an important

seed for the development of joint business projects involving various companies that are part of the same sector or participate in the same value chain.

From the discussion above, it is clear that the creation and operation of cluster associations in the ACBC is an example of private-private and public-private collaboration in which the initial initiative was promoted by the Basque government, with support from the private sector and later from other key actors, such as technology centres and some technical and professional training centres.

One topic of interest is the participation of trade unions in the design and implementation of the industrial policy, and more specifically in the policy of cluster formation. According to trade union leaders, there has been no explicit participation by trade unions in the formulation of industrial policy in the ACBC, because they see it as a government-designed policy and because several trade unions were associated with political groups, which made social dialogue difficult.²⁴ Nevertheless, empirical evidence indicates that trade unions in Euskadi have played an important role in promoting the ongoing improvement of worker employability throughout the recent period of productive transformation. Zubero (2010) highlights the creation in 1995 of the Basque Foundation for Continuing Professional Development (*Fundación Vasca para la Formación Profesional Continua*, HOBETUZ) as a tripartite policy to encourage ongoing training for workers in Euskadi. This foundation was created through an agreement between the Basque Business Confederation (*Confederación Empresarial Vasca*, CONFEBASK); the ELA, CCOO, UGT, and LAB trade unions; and the Basque government. The foundation's goal is to address all aspects of ongoing worker training in the ACBC. The HOBETUZ web page notes that among its objectives, the foundation "takes on the management and direction of continuing training and the overall responsibility of promoting, among companies, workers and educational centres, interest in continuing professional development and the conditions necessary for this activity to achieve maximum scope and effectiveness. We work to make continuing professional development more effective, connecting it closely with the requirements of businesses and the training needs of workers."

The evolution of the educational level of the workforce in Euskadi, discussed in the second section of this report, appears to confirm that HOBETUZ has moved successfully toward achievement of its goal.

²⁴ Interviews with Joseba Villareal of the ELA trade union; Unai Sordo of the CCOO trade union; and Jesús García de Cos of the UGT trade union.

Trade union groups (especially CCOO and UGT) also maintain a close relationship with Department of Labour authorities to address issues related to layoffs, labour complaints, participation in the labour council and the social dialogue round table.

Trade union leaders agree that clusters have been an important source of new jobs in Euskadi, although they say they cannot judge the quality of these new sources of employment. The perception among some of these leaders is that the industrial policy has promoted the creation of more part-time jobs, rather than full-time jobs, and more outsourcing of services to other companies, which to some extent indicates flexibilization of labour contracting. Nevertheless, there is no evidence that such flexibilization has been promoted by the industrial policy itself, rather than by the evolution of technology and market conditions.

One important point is that during the process of restructuring of companies in the 1980s, trade unions played a very active role in defence of workers' interests, achieving a very strong social protection policy that facilitated industrial reconversion. The characteristic of the process of negotiation conducted by labour organizations during the industrial reconversion was more *reactive* than *participatory*, and through their negotiations they were able to ensure that the reconversion did not harm workers. This was possible, in large part, because most companies that were reconverted were state-run and had trade unions. The auxiliary industry did not enjoy this advantageous negotiating situation equally, as it was characterized by relatively small enterprises that did not have the same degree of labour organization as large enterprises.

d. How does a cluster association function?²⁵

Each cluster subject to industrial policy is organized as a not-for-profit association under the provisions of Law 19/1977 and Organic Law 1/2002, which regulate the right to organize, and Law 7/2007, which governs associations in Euskadi.²⁶ The purpose of each association is to promote and raise awareness about the productive activity in which it is engaged, as well as to develop an appropriate framework for carrying out that activity in Euskadi. To achieve those goals, the association can establish specific or general agreements for collaboration or liaison with as many public or private entities as it considers appropriate.

²⁵ Based on interviews with directors of cluster associations related to energy, the maritime sector, aeronautics, machine tools, food, telecommunications, computing and electronics (GAIA), the environment and the automotive sector.

²⁶ At least the clusters discussed in this study, which did form associations.

The government and administration of the cluster are the responsibility of the general assembly of members, which is the highest-ranking body, and the board of directors, which is responsible for ongoing management. All members of the cluster belong to the general assembly, which meets at least once a year. The board of directors is the representative body that handles management tasks and represents the association's interests, according to the general assembly's directives. The board of directors consists of cluster associates and other members of interest to the association. The board of directors is usually comprised of a president, vice-president, secretary and treasurer, as well as board members, who receive no remuneration. They are named by the general assembly for a term of two to four years, with the possibility of being re-elected once. There is a custom of changing a percentage of board members each year. The board of directors generally meets monthly or as often as necessary to ensure the cluster operates smoothly and achieves its goals.²⁷

The choice of board members is very important. They are chosen from among the representatives of the associated enterprises. Those enterprises, in turn, are involved in the productive activities of interest to the cluster, and are chosen based on size, always ensuring that they include trailblazing groups (that is, large enterprises that can provide local impetus because of the volume they subcontract). In some cases, the board of directors also includes other key actors, such as representatives of the technology centres, occupational training centres, Basque Network of Science and Technology, banks and the SPRI, as well as representatives of provincial governments and the ACBC government.

The clusters have an organization similar to that of a company, in which, besides the board of directors, there is an executive team charged with handling tasks mandated by the board and the work committees. This team is led by a manager, and in most clusters (78.6 per cent) consists of fewer than 10 employees (Figure 5).

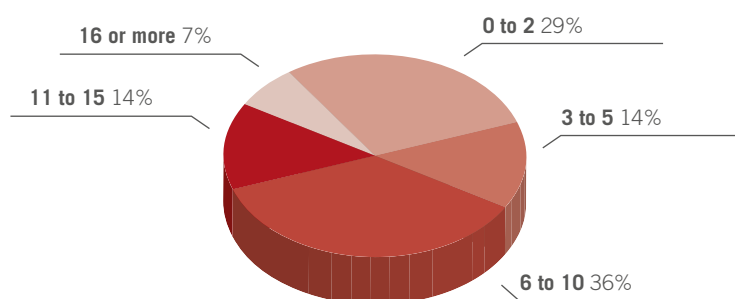
The cluster work unit is the work committee, in which thematic groups are established based on the needs of the companies, around central issues that the cluster wants to address in order to increase competitiveness, always focusing on the value chain(s) in which its member companies operate.²⁸ Topics of interest include technological improvements, productive linkages, R&D&I activities, participation in fairs and conventions, inter-cluster work and internationalization. Besides these thematic

²⁷ For a detailed description of the functions and responsibilities of the members of the general assembly of members and board of directors, see, for example, the case of the Maritime Forum: <http://www.adimde.es/es/presentacion/nosotros>.

²⁸ For example, the services cluster (GAIA) has three main work committees: electronics, software and games, as well as thematic groups in the areas of training, smart cities and partnerships.

groups, the cluster generally participates in other thematic groups with other clusters and with research and innovation centres. The idea is to empower the associates of the cluster to lead actions in the areas of greatest concern to them.

Figure 5. Size of administration of cluster associations in the Basque Country - Number of employees



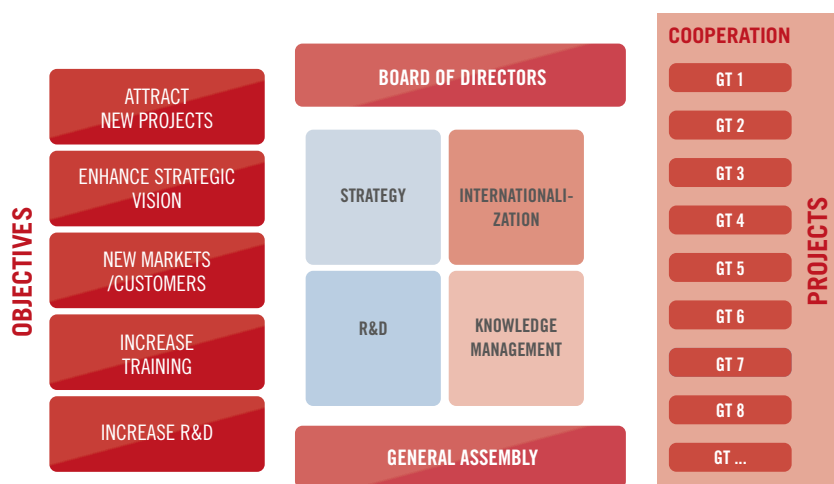
Source: Figure 5.2 in Aranguren, de la Maza, Parrilli and Wilson (2009).

The members of the thematic groups are representatives from the companies, and when the topics are specific, those representatives are generally the people in charge of those areas in their respective companies. Both company managers and heads of areas participate in the work committees. There is no remuneration for participation in the thematic groups or the work committees; the idea is to work for the common good, contributing knowledge, supervision, planning and other skills. The thematic groups generally meet formally three or four times a year, although the tasks delegated to those groups by the work committees are planned, organized and carried out between meetings, so there is fairly active contact among members of the thematic groups as they work toward their goals. A thematic group reports its results to the work committee that created it, and the president of the work committee is responsible for communicating with the cluster's board of directors.

The cluster association as such does not provide individual services to its members; rather, it focuses on the work of the thematic groups that are formed to resolve problems in value chains (Diagram 1). It also provides competitive intelligence information and information about international events to its members, and organizes enterprise missions that include government ministers or even the president, if necessary. The idea is to support collaborative efforts among the cluster participants to increase their competitiveness, always focusing on the value chain in which the cluster's participating companies operate. For example, one extremely important area is the identifica-

tion of human resource needs in the companies and who can satisfy them. In this area, one important role of the clusters has been the creation of specialized courses at universities, in specific areas of interest to the companies in the cluster. The aeronautics cluster created an aeronautics course involving a group of businessmen, the local government of Vizcaya, the Savings Bank and the Bilbao Engineering School, in the P.V. Public University. The automotive cluster created the Automotive Intelligence Centre (AIC), the third and last phase of which began operation on 9 March 2015.

Diagram 1. Organizational and working structure of an ACBC Cluster Association



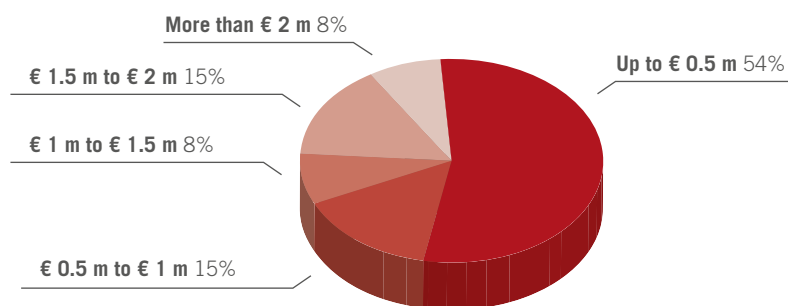
Source: Automotive Cluster of the Autonomous Community of the Basque Country.

The cluster administration supports its associated companies participating in R&D&I projects, but collectively. In other words, it encourages actions by various companies. The support may consist only of providing information about funding opportunities for projects through competitive grant processes, or, based on a proposal, it may help with the formation of a consortium to compete for those funds. Guidance is also provided about the content and scope of the projects, focusing on aspects such as the proposal and administrative issues related to the grant proposal. In some cases, the cluster administration acts as project coordinator or as a subcontracted entity. According to the performance evaluation of ACBC cluster associations carried out by Aranguren, de la Maza, Parrilli and Wilson (2009), "the CAs have focused their members' cooperative efforts for the intensive development of projects related to innovation", mainly "actions that include the promotion of joint R&D projects, on the one hand, and analysis of and reports on trends in technologies, on the other" (p. 69).

The experience of clusters in the ACBC highlights the importance of the participation of a variety of companies (competitors, clients and suppliers) within the same cluster in creating knowledge and building trust. In the opinion of the employees of companies that are members of a cluster, sharing problems, seeking common solutions and promoting partnerships among companies to enter markets or offer a more competitive supply is a strategy that has proven very appropriate.

The financing of cluster activities stems mainly from contributions of cluster member companies (member fees) and the sale of services; contributions from the Basque Government are less significant. Although contributions from the Basque Government were very significant at first, they currently represent about one-third of the cluster budget. To obtain resources from the Basque Government, the cluster administration must submit an annual work plan to the government. Once it is approved, it has the right to receive a first instalment of state funds; the second instalment is received when the final report on its work is submitted and has been approved by Basque authorities. The annual operating budget of ACBC cluster associations varies, but most (53.8 per cent) are up to 500,000 euros; only eight per cent of the CAs have financing exceeding two million euros annually (Figure 6).

Figure 6. Annual budget of cluster associations in the Basque Country
- in thousands of euros



Source: Figure 5.3 in Aranguren, de la Maza, Parrilli and Wilson (2009).

e. What advantages do member companies obtain from participating in a cluster association?

Belonging to a cluster provides a series of advantages for improving performance of companies, mainly in the areas of competitiveness and productivity. Other key actors, such as technology and training centres and public institutions, who participate in



clusters also benefit. All of which results in development of productive capacities and sustained growth of the long-term competitiveness of the companies and the economy of the country as a whole, with concomitant advantages in creating jobs and combating poverty. Clusters have also been and continue to be factors in the large number of Basque companies certified under ISO, OHSAS, EFQM or specific equivalent international systems.

In a highly competitive global environment, businesses must make a constant effort to improve. They must be open to change, add value where they did not do so before, work in multi-localized environments, promote the training and talent of their personnel, invest in R&D, be able to adapt to their customers' needs, have labour relations that facilitate these tasks, and overcome resistance to and lose their fear of doing all these things. In the ACBC, the operation of cluster associations, and cooperation with other businesses and actors that are key members of the cluster, have been instrumental in facilitating this type of ongoing improvement.

For *companies*, cluster associations have generally proven to be useful for successfully facing challenges in the value chains in which they participate. For example, if a company wants to participate in a consortium, the cluster association is a valuable tool in helping achieve that goal. Cluster associations and their members also become antennae for obtaining valuable information at the international level, because its members participate in international events. Another advantage of belonging to a cluster association is the support that companies receive in the identification of human resources needs and the identification of who in the academic or vocational training sector could help address those needs. Belonging to a cluster association also facilitates access to fiscal incentives that various government authorities may grant to companies for R&D&I activities. Belonging to a cluster association also gives member companies greater awareness of their sector, greater concentration of know-how and specialization in the environment in which they operate, better access to resources available in their area, access to first-hand strategic information, greater ability to identify new customers and enter new markets, the ability to shorten the innovation cycle, an increase in added value offered to customers, the ability to share risks through cooperation, and other advantages.

For *non-company* members of cluster associations, such as technology centres, technical or occupational training centres or banks, belonging to a cluster association means access to first-hand information about the needs of member companies of specific clusters. This enables those other actors to better support the companies by more efficiently designing the supply of services that they can offer, using a demand-based approach. This significantly reduces transaction costs, by eliminating typical

information asymmetries between the needs of businesses and the supply of services by various organizations (for example, banks).

For *government authorities* (for example, SPRI), belonging to a cluster allows greater understanding of the support needs of businesses – that is, support in overcoming obstacles to improving productivity and capacity for innovation and, therefore, competitiveness, that will enable them to successfully address the challenges they face in the value chains in which they participate, both globally and locally. For example, the knowledge acquired by SPRI representatives in cluster associations enables them to apply better criteria in the design and implementation of PDPs; a particularly important one involves incentives for promoting business investment in R&D&I activities. Participation in a cluster also enables government officials to better understand the importance of coordinating efforts among different public institutions that support businesses to increase their competitiveness, which translates into greater efficiency in inter-institutional cooperation (public-public cooperation). In short, the ACBC's experience shows that cluster associations are among the best interlocutors about what is happening in the world in the area of competition as well as technology, and for collectively addressing the challenges that businesses face in increasing their competitiveness, including the allocation of resources for some of these purposes.

f. Mechanisms for monitoring and feedback²⁹

Every year, the Euskadi government publishes guidelines for clusters to request assistance. Upon submitting a request to the annual call for proposals by the SPRI Cluster Assistance Program, each cluster association presents a form with its annual action plan, detailing the actions it will carry out during the year in areas such as strategy, technological monitoring and competitive intelligence, internationalization, technological and non-technological innovation and people. It must also present a cluster association strategic plan to SPRI.

Clusters submit two types of information to SPRI. One is to demonstrate that the cluster meets minimum requirements for receiving assistance; the other provides a rationale for the amount of money it expects to receive during the year.

Besides the annual action plan (which details the actions to be carried out during the period to stimulate cooperation among members and offer a joint response to common strategic challenges), the request for assistance asks for economic-finan-

²⁹ Based on interviews with SPRI and cluster officials.

cial information (bookkeeping statements and balances, detailing the sources and amounts of financing), a list of the associated companies and members, information about annual sales, number of employees, exports as a percentage of sales, and percentage of sales revenues invested in R&D&I, as well as information about the payroll, wages and work hours. Based on the information provided by the different clusters, the authorities establish the amount of assistance allocated to each cluster. This information is also used later to measure the outcomes of the clusters.

During the semester following submission of the request to the assistance program, SPRI asks each cluster for a thorough report on the activity carried out during the period. Progress of the clusters is measured annually, based on the rationale and completion of the actions indicated by each cluster in its request for assistance from the ACBC Government.

In the annual activity report, SPRI gathers information about the actions finally carried out and their scope, the number of businesses and members of the cluster that have taken part, and their participation in financing them, final expenses and the hours dedicated to the efforts by the cluster association management team, as well as indicators of participation and outcomes. SPRI sometimes also gathers information about the methodology and technological oversight and competitive intelligence systems used by each cluster, its internal evaluation systems or its association fee schemes.

The relationship between the ACBC government and the clusters is channelled through “cluster liaisons”: SPRI technical personnel responsible for the relationship with the cluster, and through whom closer monitoring of each cluster’s activity is conducted. SPRI appoints a liaison for each cluster association; that person participates in association’s council or board of directors as representative of SPRI and of the Department of Economic Development and Competitiveness. These boards meet approximately every two months, and the liaisons also maintain direct and ongoing contact with the cluster manager.

Besides the “cluster liaison”, there are periodic meetings with the clusters to review results of reports submitted to SPRI by the clusters. In the case of requests for assistance and activity reports, meetings are held to share the score they receive. The reports prepared by SPRI about the topics mentioned above (technological oversight, evaluation, fee schemes) are shared with the managers of all the clusters (generally in meetings with them) for collective learning and improvement.

Based on the information provided by the clusters, SPRI prepares reports for Euskadi authorities, indicating any adjustments needed in the cluster-support policy. There is also ongoing dialogue between SPRI and the Department of Economic Development

and Competitiveness, especially about the process of evaluating the annual round of applications to the cluster assistance Program. The review of the cluster policy in Euskadi over the past two years has led to a reorientation of policy to adapt it to strategic objectives, focusing on the need to increase its scope and pay special attention to SMEs, to increase their potential socio-economic impact.

With the same goal of ongoing improvement, SPRI has launched and is leading the European CLUSTERS3 project, one of 61 proposals chosen by the European Union (out of 264 submitted to the INTERREG EUROPE programme) for improving public policies for supporting innovation and research and development.

g. Relative importance of clusters in the ACBC economy

According to Aranguren et al. (2012), there are 21 cluster associations recognized by the Basque Government in the ACBC. Eleven are considered the principal or consolidated group (first group, with white background, in Table 3) and 10 are in the process of consolidation or of obtaining recognition (grey background) from the Basque government under its cluster promotion policy.

Based on information from the Basque Statistics Institute (Eustat), Aranguren et al. (2012) estimate the relative importance of CDP in the ACBC for 2006, by analysing the relative weight of the 11 consolidated cluster associations in Basque industry, along with some characteristics of the member enterprises of these 11 clusters compared to all industrial enterprises (Table 4). The authors find that the clusters have varying numbers of members, ranging from eight (ACEDE) to 240 (GAIA). In all cases, the members are mainly enterprises, although they also include technology centres, training centres and public institutions.

**Table 3. Clusters recognized under the cluster policy of the Autonomous Community of the Basque Country**

Activity	Cluster Association	Creation	Number of members	Public support
Appliances	ACEDE	1992	8	Basque government (Industry)
Automotive	ACICAE	1993	130	Basque government (Industry)
Energy	Energy Cluster	1996	88	Basque government (Industry)
Aerospace	HEGAN	1997	37	Basque government (Industry)
Maritime	Basque Maritime Forum	1997	163	Basque government (Industry)
Machine tools	AFM	1992	86	Basque government (Industry)
Paper	Paper Cluster	1998	20	Basque government (Industry)
Environment	ACLIMA	1995	82	Basque government (Industry)
Port of Bilbao	UNIPORT	1995	144	Basque government (Industry)
Telecommunications	GAIA	1996	240	Basque government (Industry)
Audiovisual	EIKEN	2004	43	Basque government (Industry)
Transportation & logistics	CLUSTERTIL	2005	88	Basque government (Transportation)
Food	Food Cluster	2008	31	Basque government (Industry)
Graphic arts	Sectoral Association	2009	34	Basque government (Industry)
Metallurgy	Sectoral Association	2009	68	Basque government (Industry)
Biosciences	Biobasque	2006/2009	25	Basque government (Industry)
Habitat	HABIC	2009	70	Basque government (Industry)
Smelting	Sectoral Association	2009	16	Basque government (Industry)
Construction	Sectoral Association	2010	56	Basque government (Industry)
Manual tools	Herramex	2010	28	Basque government (Industry)
Steel production	Siderex	2010	64	Basque government (Industry)

Source: Table 6.8 in Aranguren et al. (2012)

The 11 principal cluster associations accounted for six per cent of the businesses and generated 28 per cent of employment and 32 per cent of value added in industry in the ACBC. The businesses in these 11 clusters exported 41 per cent of their sales and sold 77 per cent outside the ACBC; according to the authors, these percentages were well above average for Basque industry. Another notable characteristic of the principal CAs is the low percentage of businesses with foreign capital (or foreign multinationals). That proportion is 16 per cent and 15 per cent, respectively, for the automotive

and energy clusters; 12 per cent for the aerospace cluster; five per cent in the paper cluster and five per cent in the maritime cluster (Aranguren, de la Maza, Parrilli and Wilson, 2009).

In R&D, the businesses in the clusters on average show higher investment than the average for businesses in the ACBC. According to the second report on competitiveness prepared by Orkestra (2009), 32 per cent of the businesses belonging to the 11 principal cluster associations invest in R&D activities, contrasting with an average of less than one per cent for businesses in the ACBC. Of the 11 principal clusters, six stand out for the high percentage of their businesses that invest in R&D. These are electronics, where 60 per cent of its businesses invest in R&D; automotive (48 per cent), machine tools (48 per cent), telecommunications (43 per cent); energy (42 per cent); and aeronautics (41 per cent). In addition, while overall investment in R&D by industry in the ACBC represents 1.2 per cent of sales, in the businesses in the 11 cluster associations analysed, the figure is twice that amount (2.4 per cent).

In short, according to the authors, “the businesses belonging to cluster associations stand out for the growth of their sales and for their indicators of internationalization and innovation. Due to their quantity and their quality, these businesses play a critical role in the [Basque] economy” (p. 227).

These results are consistent with those shown by Uriarte (2015) for 2013. According to Uriarte, together the businesses in cluster associations had a turnover of 38,215,000,000 euros that year,³⁰ with the 11 principal clusters accounting for 93.5 per cent of that amount. These same 11 clusters had more than 1,000 members (1,037) and generated nearly 100,000 direct jobs (approximately 10 per cent of the employed population of the ACBC during that year).

Some of those who study the ACBC's CDP also say that thanks to this policy, the traditional lack of regional industry-government relations has been replaced by a dynamic of dialogue and interaction between a competent and committed government and more proactive and self-organized industrial sectors and SMEs (Ahedo, 2004).

³⁰ Departamento de Desarrollo Económico y Competitividad, Euskadi-Basque Country, *Su mejor aliado*, 2014, Vitoria-Gasteiz: Gobierno Vasco, March 2014.

Table 4. Relative importance of the 11 consolidated clusters in the Autonomous Community of the Basque Country (2016 figures)

Cluster Association (CA)	Activity	No. Companies	Employment	GVA m€	Sales	Var. Sales 2003-2006	Exports	% of exports	Size	Productivity	% companies with R&D	I+D s/ sales (%)
ACEDE	Appliances	10	6,806	340,073	1,349,029	7.0%	526,121	39%	681	50	60%	2.2%
ACICAE	Automotive	79	14,366	802,913	2,602,082	20.7%	1,509,208	58%	182	56	48%	2.1%
ACLIMA	Environment	76	5,198	548,774	1,832,102	38.3%	219,852	12%	68	106	24%	1.6%
ADIMDE	Maritime Sector	128	5,608	252,915	755,616	51.4%	279,578	37%	44	45	10%	6.9%
AFM	Machine Tools	67	4,829	236,377	772,304	21.6%	509,721	66%	72	49	48%	4.8%
EIKEN	Audiovisual	38	1,209	151,212	-	-	-	0%	32	125	21%	2.1%
Energy	Energy	69	11,740	1,584,031	8,976,060	56.2%	2,244,015	25%	170	135	42%	1.1%
GAIA	Telecommunications	196	8,883	212,260	522,178	39.0%	203,649	39%	45	24	43%	5.6%
HEGAN	Aeronautics	32	2,343	130,344	512,583	1.4%	379,311	74%	73	56	41%	13.7%
Paper	Paper	14	1,969	149,943	594,658	8.1%	208,130	35%	141	76	36%	0.5%
Uniport	Port of Bilbao	95	6,673	865,950	6,817,683	64.6%	1,840,774	27%	70	130	7%	0.2%
Total CAs		804	69,624	5,274,792	24,734,295	30.8%	7,920,360	41%	87	76	32%	2.4%
Total Industry		14,202	250,862	16,624,164	57,760,863	32.0%	17,121,447	30%	18	66	4%	1.1%
CAs / total industry (%)		6%	28%	32%	43%	96%	46%	-	-	-	-	-

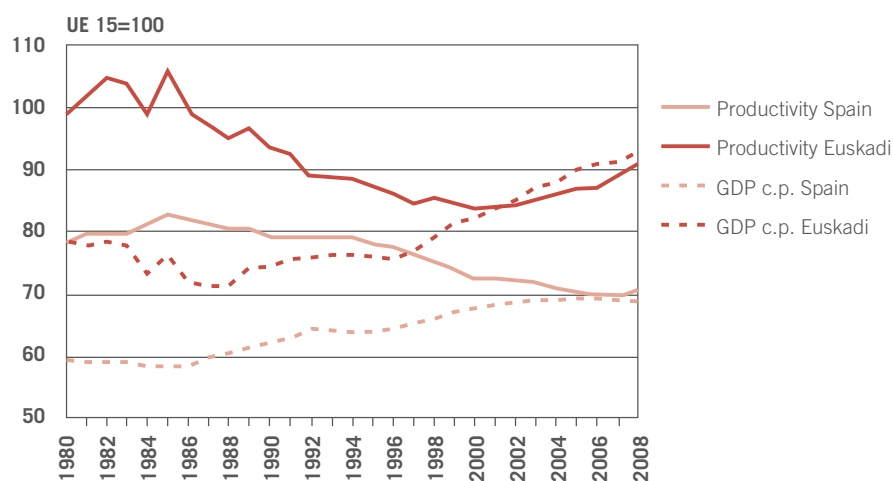
Source: Table 6.9 of Aranguren et al. (2012)

Alberdi (2010) states that although in 2008 the ACBC levels of labour productivity were below the average for the more developed part of Europe (EU 15), it showed significant growth in that area beginning in 2000, just a few years after implementation of the CDP, whose positive outcomes in productivity have been noted above. It is important to remember that this recent trend in the ACBC is not true of the Spanish economy as a whole (Figure 7).

As a final point in this section, it should be noted that in the opinion of ACBC authorities and key actors interviewed as part of this study, several pillars of the ACBC development model explain the success of the CDP: (i) having a clear, well-defined, long-range productive development policy (or industrial policy) and a group of defenders of that policy who are very active over the years; (ii) having solid public institutions with adequate personnel for implementation of the CDP; (iii) having the ability to adapt the

CDP to changing circumstances (flexibility); and (iv) enjoying macroeconomic independence from Spain's national government (Economic Agreement), which has given ACBC authorities the financial resources necessary to implement the CDP and other PDPs very actively. The following sections discuss some of these pillars in greater detail.

Figure 7. Per-capita GDP and average productivity of the ACBC (Euskadi) and Spain, compared to the European Union (UE 15 = 100 in 2000 euros)



Source: Figure 18 in Alberdi (2010).



IV. Productive development policies complementary to the CDP in the ACBC

This section describes and analyses certain productive development policies complementary to the cluster development policy, which were implemented by ACBC authorities; these policies are related to research, development and innovation; development of human capital; promotion of quality management; incentives and programmes of support for businesses;³¹ and the role of four key institutions: SPRI, EUSKALIT, ORKESTRA and IKERBASQUE.

To better understand the context in which the ACBC has implemented these productive development policies, it is helpful to review the concept of territorial competitiveness described by Porter (1980).³² According to Porter, the standard of living or prosperity of a region or country is determined by how productively it uses its human resources, capital and natural resources. The author states that productivity is, therefore, the appropriate definition of competitiveness. Productivity depends on both the value of the products or services (singularity and quality) and the efficiency with which they are produced. What really matters, in Porter's opinion, is not which industries compete in a region or country, but how businesses compete in those industries. Ultimately, the productivity of a region or country is the reflection of what both domestic and foreign businesses decide to do in that locality. The regions or countries therefore compete to offer the best productive environment for business. It is important to understand that the public sector and the private sector play different, but interrelated, roles, and that it is only through their collaboration that it is possible to create an economy of high productive performance and job creation.

According to Porter's concept of territorial competitiveness, although it is important to have a solid macroeconomic, political, social and legal environment to increase competitiveness, what really matters is improving the economy's microeconomic capacity and

31 Readers interested in a broader analysis of these issues may see, among others: Ekonomiaz (2010), Aranguren et al. (2012) and Uriarte (2015).

32 In Michael Porter's opinion, the ACBC is the region that began and best implemented the idea of territorial competitiveness (Basque Cluster Day, 6 November 2015; <http://www.spri.eus/es/actualidad-spri/contenidos-de-jornadas/ris3euskadi-todo-lo-que-sucedio-en-el-basque-cluster-day-videos-y-presentaciones>).

the sophistication of local competition. To do so, it is necessary to increase the ability of businesses to innovate, which requires a sophisticated process of developing a national innovation system.

a. Creation of an innovation ecosystem

Analysis of the regional innovation system (RIS) and its development is useful for a better understanding of how the change in the productive structure of the Basque economy was produced over the past 35 years, giving rise to the economic growth shown in Figure 1. According to Tödtling and Trippl (2005), an RIS consists of 1) a subsystem for creation and dissemination of knowledge, or regional support infrastructure (for example, public and private research laboratories, universities, continuing training centres); 2) a subsystem for application of know-how, or regional production structure (enterprises); 3) a political subsystem of governmental organizations and regional development agencies; 4) a socio-economic and cultural framework; and 5) a series of relationships with other regional, national and global systems for the transmission of knowledge.

The RIS approach has been used by Navarro (2010) in an analysis of the challenges for the Basque Country after three decades of development of the innovation system and policies. Navarro states that, as in any other region or country, the ACBC's innovation system is the fruit of an evolutionary process that sought to create competitive advantages through the definition and development of innovation strategies and policies. The RIS may have failures or problems that must be corrected through public intervention (Edquist, 2001 and 2008; Chaminade et al., 2009). Navarro distinguishes three groups: (i) failures in the components of the system; (ii) failures in interrelationships between the components; and (iii) failures of the system dynamic (of lock-in or transition).

Arundel and Hollanders (2008) suggest drawing a clear distinction among these three types of indicators when analysing an innovation system: innovation *inputs*, innovation *outputs*, and economic *outputs*. This last refers to the economic effects of innovation. This approach is useful because “the analysis of the innovation system must be linked to that of economic performance, since the ultimate function of the innovation system is not to maximize the quantity of innovation but the economic welfare (and other kinds of welfare), and the analysis of innovation systems must be concerned with how innovation takes place, but also how it is transformed into economic performance” (Lundvall et al., 2009, p. 139).

As a starting point for the following analysis, it should be remembered that the ACBC has a long-standing entrepreneurial and labour culture, which has been transformed and modernized over time (Jauregizar).³³ This transformation has been associated with a change in the paradigm of how to support Basque enterprises, shifting from a traditional, sector-based approach to a value chain approach, where the goal is to increase productivity through incentives to encourage enterprises to invest in R&D&I activities. These incentives and other support policies have made it possible to increase investment in R&D&I from 0.069 per cent of GDP in the 1980s to 2.06 per cent of GDP in 2012.

The development of an innovation ecosystem has played a crucial role in the economic transformation of the ACBC. This ecosystem has been developing within a strategic vision of economic development of a territory or region (Porter's approach), in a globalized environment. According to Jauregizar (2015), important factors in the development of this ecosystem included actions by the Basque authorities to foster human talent and creativity; coordination between the public and private sectors; cooperation among agents of the productive system (enterprises, research centres and universities); the existence of interface mechanisms; the generation of learning processes for development of a "productive culture"; the valuing of science, technology and innovation; political autonomy with financial capacity; and international connectivity.

The ACBC innovation system is characterized by strong institutions that support applied research, a high degree of public-private collaboration and a low level of public research (OECD, 2011). Most agents of the Basque innovation system are part of the Basque Network of Science, Technology and Innovation. This network can be divided into three subsystems (Diagram 2): (i) the scientific and university subsystem (including universities and research centres of excellence); (ii) the innovation and technological development subsystem (such as technology centres, enterprises' R&D units and health R&D units); and (iii) the innovation support subsystem (technology parks and intermediaries).

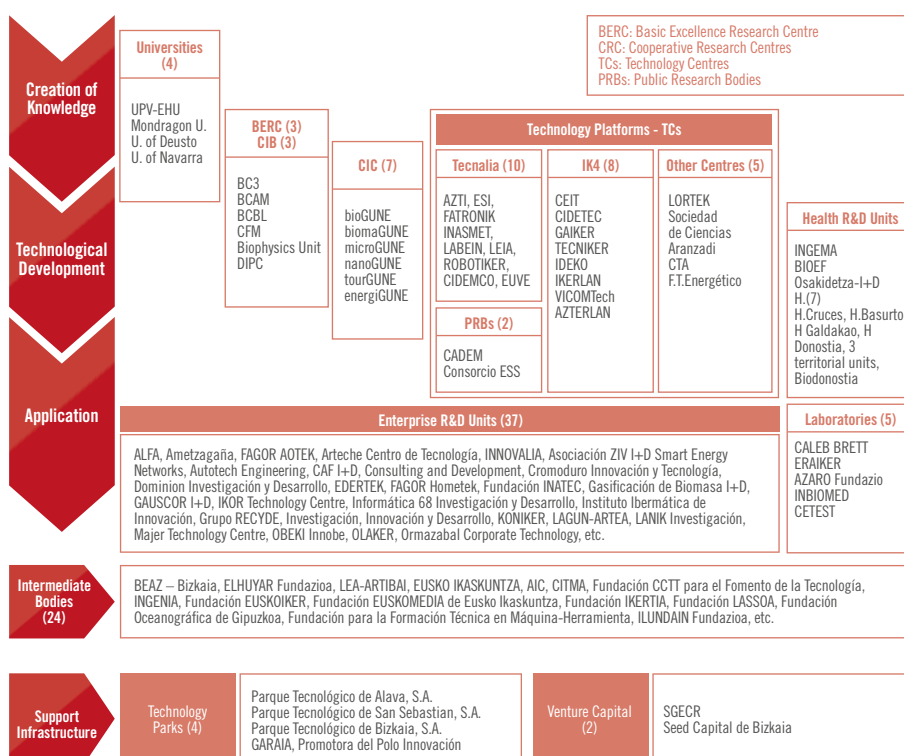
Participants in the innovation ecosystem include 1,755 Basque enterprise groups and approximately 1,500 businesses that invest in R&D.³⁴ The ACBC's industrial policy has focused on promoting strategic partnerships between enterprises of very different sizes around the concept of improving competitiveness within the value chains in

³³ Interview with Joseba Jauregizar, director general of TECNALIA and former director general of technology in the ACBC Department of Industry.

³⁴ Estimates by Jauregizar based on 2011 Eustat figures.

which those enterprises operate (Aranguren, 2010). The CDP has been a very powerful tool in development of the innovation ecosystem, because clusters are considered instruments for inter-enterprise cooperation throughout specific value chains.

Diagram 2. Subsystems of the Basque Network of Science, Technology and Innovation



Source: Compiled by authors based on OECD (2011)

One key characteristic of the development of the innovation ecosystem in the Basque Country has been the vision of grouping SMEs in enterprise groups and clusters to compete more effectively at the global level. Figures in Table 5 show the relative importance of SMEs in six of the ACBC's 11 priority clusters.³⁵ In all of the clusters except one (electrical appliances), SMEs represent more than 70 per cent of the enterprises

³⁵ It was only possible to obtain information about enterprise size, by number of employees, for all member enterprises of these six clusters.

in the cluster associations. Considering the distribution of enterprises throughout the ACBC, it is clear from the figures in Table 5 that larger enterprises are over-represented in the six clusters analysed, because in the ACBC overall, medium and large enterprises represent 4.4 per cent and 0.8 per cent, respectively. It is important to keep in mind, however, that the presence of medium and large enterprises is key for creating synergies where they are the leaders of cluster associations (Aranguren, de la Maza, Parrilli and Wilson, 2009).

Table 5. Composition of cluster associations, by size of member enterprises 1/ - Figures in percentages

Enterprise size 2/	Clusters					
	Appliances	Automotive	Machine Tools	Audiovisual	Aero-space	Telecommunications
Microenterprise	0	3	14	38	18	36
Small	11	12	56	50	59	40
Medium-size	22	58	26	6	15	20
SMEs	33	72	96	94	91	96
Large	67	26	4	6	9	4
TOTAL	100	100	100	100	100	100

1/ Only includes clusters for which it was possible to obtain information about the size of member enterprises by number of employees

2/ According to OECD (2009) classification

Source: Compiled by authors based on data from Aranguren, de la Maza, Parrilli and Wilson (2009)

The approach of promoting cooperation between large enterprises and SMEs in the area of innovation has borne significant fruit in the involvement of SMEs in R&D activities. According to a report on the Basque Country by the OECD (2011), the ACBC is an unusual case because of the low percentage of R&D conducted by large enterprises (28 per cent), which contrasts with developed countries such as Germany, the United States and Japan, where large enterprises are responsible for 85 per cent or more of R&D. In the ACBC, most R&D activities are carried out by SMEs (72 per cent). In addition, according to EUSTAT data for 2014, 69 per cent of total personnel dedicated to R&D in enterprises in Euskadi were employed by SMEs, and SMEs also accounted for 62 per cent of internal spending on R&D.

In 2005, there were 18 Technology Centres (TCs) in Euskadi, promoted by Basque authorities and dedicated to various areas of knowledge, created in universities, sector-based associations or enterprise groups during the preceding 25 years. Their main activity has always been to respond to the demands of enterprises, carrying out technological projects in their areas of interest. These centres were promoted by provincial governments in Euskadi during the crisis of the 1980s. Most are foun-

dations, associations or cooperatives. The strategy of the Basque authorities was to invest public resources to bring laboratories together under private management and turn them into technology centres. Grants were provided for infrastructure and other expenses that these centres incurred. These technology centres have been important not only in providing support for the R&D efforts of enterprises in Euskadi, but also in training people who work in the centres and who later join the staff of enterprises. The technology centres have also been important in helping enterprises define R&D&I projects that later are presented to ACBC authorities for financing.

In the early twenty-first century, to increase the critical mass of research, ACBC authorities promoted the grouping of technology centres around two similar corporations (or technology platforms), in an effort to increase their capacity, efficiency and critical mass and reach maximum levels of excellence. These groups were also aimed at avoiding duplication of efforts among the technology centres. The two corporations are Tecnalía³⁶ and IK4³⁷ (see Diagram 2). Both are partnerships of technology centres in Euskadi whose mission is to generate, capture and transfer scientific-technological knowledge and make it available to enterprises that can use it to round out their technological capacities, facilitating greater competitiveness through the creation of value. According to Jauregizar (2015), between 2012 and 2013, these two corporations had 3,231 people, of whom 80 per cent had first degrees and 20 per cent held doctorates. Both institutions help Euskadi enterprises turn knowledge into production, creating business opportunities for these enterprises.

Tecnalia advises on technology-based innovation strategies, where the goal is the growth and diversification of enterprises. Based on knowledge of technology and business management, it helps enterprises identify and develop new business initiatives, detecting opportunities and turning them into tangible outcomes. Tecnalia supports enterprises in their efforts to develop new products or improve existing ones. As Tecnalia director Joseba Jauregizar³⁸ put it, the corporation helps turn knowledge into Gross Domestic Product to improve people's lives, creating business opportunities in enterprises. The R&D projects that this institution supports are flexible and can be

36 This corporation was established in 2001 as a strategic partnership at the initiative of Inasmet, Labein and Robotiker, who joined forces to expand, making Tecnalia more competitive in the market and enabling it to attain the critical mass it needed to compete. The corporation currently consists of the technology centres AZTI, NEIKER and Tecnalia Research & Innovation. For more details, see: <http://www.tecnalia.com/es/estrategias-innovacion/index.htm>

37 This corporation was established in 2005 and consists of nine private technology centres: AZTERLAN, GAIKER, LORTEK, CEIT, IDEKO, TEKNIKER, CIDETEC, IKERLAN and VICOMTECH. For more details, see: http://www.ik4.es/es/alianza_ik4.asp

38 Interview conducted in 2015.

adapted to the needs of each organization, with a clear orientation toward the market and the creation of value.

Tecnia's board of directors consists of representatives of 26 enterprises, 10 public institutions (for example, the University of the Basque Country and the Basque government), eight people who are well known in their fields, and six representatives of municipalities and business associations. From an organizational standpoint, Tecnia is structured in the following divisions: Sustainable Construction, Energy and Environment, Technological Services, Industry and Transportation, Health, Innovation Strategies, ICT-European Software Institute, and Natural Resources. Based on this organization, it works in the areas of Advanced Manufacturing, Energy, Biosciences and Health, as well as in niches of opportunity in the ACBC in Food, Ecosystems, Urban Habitat and Leisure, Culture and Creative and Cultural Industries. This corporation has a Campus of International Excellence through a strategic partnership with the University of the Basque Country (EHU-UPV) and the Donostía International Physics Center (DIPC).

Tecnia has a staff of 1,434 people (56 per cent men and 44 per cent women) of 29 nationalities, with an average age of 41, of whom 202 have doctorates. The corporation currently has five Groups of Research Excellence (GREs) in operation: Marine Energy, Green Concrete Design, Neuro-rehabilitation, Advanced Surfaces and Robotics. Four other GREs are in the process of obtaining the seal of excellence: Big Data, Computer Vision, Ingredients-Bioprocesses, and Cyber Security and Safety.

Tecnia also has organized two technology clusters, which are teams that integrate all of Tecnia's capacity in key enabling technologies (KETs). These two clusters work on Nanotechnologies (110 experts who develop new applications in this field for sectors such as industry, construction, energy, environment, and health) and in ICTs (310 experts whose mission is to increase Tecnia's ICT potential).

Tecnia is not only a technology platform of the Basque Country; it also participates in European technology platforms, such as "Manufacture, Artemisia, SmartGrids", and in public-private partnerships such as "Factories of the Future, Energy Efficient Building". The corporation is also a member of the Knowledge and Innovation Communities (KIC), which are strategic initiatives of the European Institute of Innovation and Technology, and is a member of the steering committee of EARTO, an initiative that represents more than 350 research centres in Europe.

As part of its organization, Tecnia has created Tecnia Ventures S.L. to add value to its own R&D and manage the life cycle of innovative technology assets to maxi-

mize their impact. Tecnalia Ventures S.L. has an Incubation Acceleration Programme aimed at turning technologies into technology-based business opportunities.

Financially, Tecnalia covers its needs as follows: 53 per cent of its resources come from contracts for the sale of services to businesses, 32.5 per cent from competitive public programmes (mainly the European framework programme) and 14.5 per cent from non-competitive ACBC funds. The corporation's annual income was 99.4 million euros in 2014, and it had a portfolio of 4,050 client enterprises. In that year, Tecnalia applied for 29 patents and had a portfolio of 88 patent families with 308 active patents.

The case of IK4 also merits a detailed discussion. The corporation is a private partnership of nine technology centres that share strategies and combine efforts without giving up their independence. These centres are organized by technological specialization. IK4's scientific-technological areas include biotechnology and biomaterials, energy, industrial management and production, materials and processes, mechatronics, environment and recycling, micro- and nanotechnology, and information and communication technologies (Table 5). All of the centres that participate in IK4 have close ties with the trailblazing companies and SMEs. IK4 also has a close relationship with other technology centres and universities around the world and participates in global knowledge networks.

Director General, José Miguel Erdozain,³⁹ states that IK4 has adopted a federal governance model, with an assembly of members, a board of directors and a strategy committee. The board of directors consists of a president, a vice-president, a representative of the Basque government and the directors general of the technology centres that are members of the corporation. The strategy committee is an internal advisory body made up of qualified representatives of the members, respected outside experts, and any entity that the corporation considers to be of interest (approximately 35 to 40 people). This committee supports the corporation's strategic director, providing advice on specific issues, evaluating outcomes in terms of advances in know-how, advising on the annual updating of the strategic plan in the form of operating plans, and producing oversight and evaluation reports. It must also engage in outreach for IK4 and reinforce the partnership's orientation toward creating value and contributing to social and economic development. Finally, IK4 has an administrative organization consisting of a director general and a small support staff (approximately six people).

In 2014, IK4 had 1,275 researchers, 358 of whom (28 per cent) had doctorates. Their activity centres on creating knowledge (38.8 per cent), as well as the transfer of knowl-

³⁹ Interview conducted in 2015.

edge (61.2 per cent), and most of their daily work involves R&D&I activities (93.8 per cent). In terms of business success, in 2014, IK4 had revenues of 101.8 million euros, 61 per cent of which came from billing the enterprises with which it had contracts. To supplement its funding, IK4 receives public funds through competitive processes and government grants. In 2014, IK4 conducted 710 R&D projects for enterprises, mainly SMEs, and applied for 26 patents, 18 of which were granted. The corporation's scientific production is impressive. In 2014, it included 449 publications-communications; 198 indexed articles, according to the *Science Citation Index* (SCI o ISI); 239 communications in national conferences; five cases of participation in international conferences; 12 chapters in international books; and 47 doctoral dissertations related to projects.

Through technology transfer, IK4 generated revenues of 56 million euros in 2014 for R&D&I activities contracted by enterprises.⁴⁰ These services were mainly provided to enterprises in Euskadi (84 per cent), as well as in the rest of Spain (13 per cent) and Europe (3 per cent). Technology transfer has made IK4 a leader in Europe in generating resources through private R&D&I. The corporation also participates in many European programmes through the FP7 Framework Projects (244 projects with 185 Basque enterprises) and Horizon 2020 Projects (65 projects with 36 Basque enterprises). Through these initiatives, IK4 seeks to influence European work programmes in the strategic areas of partnerships and collaborating enterprises, and to collaborate with leading research centres in Europe and access resources that complement its commitment to research.

In essence, IK4's work consists of capturing more resources and making the work of its member technology centres more efficient. In fact, for technology centres in Europe, it is sometimes easier to access resources through IK4 than individually, because of problems of scale. IK4 also has greater lobbying ability and it is more attractive for professionals to work with a group of technology centres than with just one.

40 This figure is part of the 101 million euros cited in the preceding paragraph.

Table 6. Description of technology centres that make up IK4 in the Autonomous Community of the Basque Country (figures from 2014)

Technology Centres	Number of employees	Number of PhDs	Annual sales in millions of euros (2014)	Areas of specialization
Azterlan	95	8	10	Engineering and smelting processes, next-generation metallic materials, sustainability and environment, advanced conformation processes.
CEIT	225	116	14.4	Materials, applied mechanics, electronics & communications, environmental engineering, microelectronics & microsystems, biomedical engineering.
CIDETEC	121	58	9.7	Energy, surface treatments and new materials.
GAIKER	117	16	8.7	Biotechnology, environment and recycling, plastics and composites.
IDEKO	93	24	8.6	Transformation processes, intelligent software, mechanical design, production management, microtechnology & ultra precision, strategic innovation.
IKERLAN	191	58	17.9	Embedded system, electrical and electronics systems, structural reliability and mechatronics, microsystems for industrial environments, electrical storage and thermal management, intelligent maintenance systems.
LORTEK	60	13	3.9	Processes, materials and joint design; joint calculation and simulation; mechanical design & automation; control & evaluation; innovation & organizational management.
TEKNIKER	273	35	21.2	Intelligent systems, precision engineering, maintenance & reliability, systems control & identification, micro- and nanotechnology, electromagnetism & power accelerators.
VICOMTECH	100	30	7.4	Digital television & multimedia services, e-health & biomedical applications, e-tourism & heritage, 3D animation & interactive virtual environments, industrial applications.

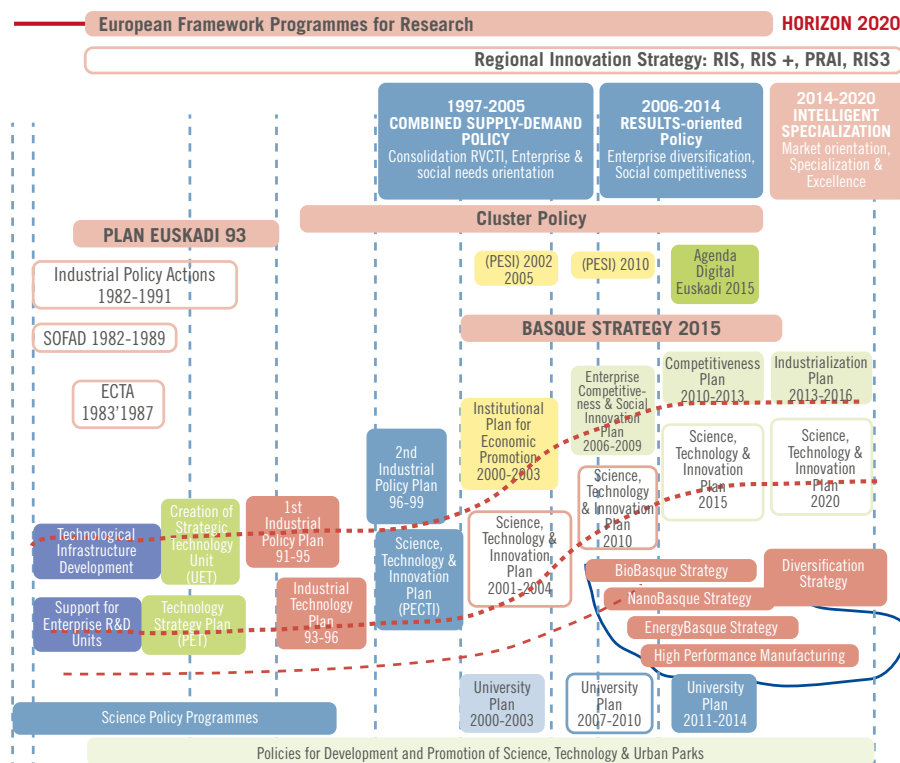
b. The R&D&I strategy

The effort by ACBC authorities to develop an efficient innovation ecosystem has required the planning and implementation of various tasks, first to lay the groundwork for the ecosystem, then for each of its components, and later to promote interaction among them (collaboration). Diagram 3, prepared by one of the main promoters of this effort, Joseba Jauregizar, gives a clear idea of the long and difficult road to that

goal. The dotted lines show the evolution of industrial policies (the thinner lines) and Science and Technology policies (the thicker line), respectively.

Diagram 3. Evolution of the strategy for development of an innovation ecosystem in the Autonomous Community of the Basque Country, 1980-2015

EVOLUTION OF THE STRATEGY



Source: Jauregizar (2015).

According to interviews with key actors, the industrialization strategy based on R&D&I in the ACBC began between 1975 and 1980, a period marked by approval of the Autonomy Statute and a serious industrial crisis, high unemployment and a declining economy. There was just one public university (University of Deusto) and a professional association of engineers. There was a serious lack of all kinds of infrastructure. There was also a lack of the governance abilities necessary for a great economic trans-

formation, although for the first time there were resources for designing public policy according to the criteria of ACBC authorities (Economic Agreement).

One of the main tasks was the development of technology infrastructure, which did not exist in the ACBC. To create technology centres (TCs), work began with five centres of technological development that were in their infancy. They were provided with financial support, and assistance was provided to turn them into research centres; now they are considered models in Europe. This work took as an example the experience of Germany, where technology centres were designed to create and transfer knowledge to businesses. The state assistance received by the TCs in the ACBC included resources for hiring researchers, and cadres of researchers were trained in European universities. Support programmes were also established to enable researchers from these centres to conduct various processes of industrial reconversion in sectors such as the naval, steelmaking and equipment industries. During this process, some enterprises closed and others were restructured. That was the beginning of the ACBC's focus on industrial reconversion as a development strategy.

In the 2000s, the TCs worked with an average of 1,000 enterprises a year, helped create 180 new technology-based enterprises and trained more than 2,000 researchers, who later went to work in private enterprise (Porter, 2012). These TCs generally were located in technology parks.

In the late 1980s, the Technology Strategy Plan for Industry was developed. As part of this plan, there was discussion of what global industry produces and how some of those things could be made, based on the ACBC's strengths. This analysis highlighted the need to create the Society for Industrial Promotion and Reconversion (*Sociedad para la Promoción y Reversión Industrial, SPRI*), now called the Basque Agency for Enterprise Development (*Agencia Vasca de Desarrollo Empresarial*), and led to the definition of sectors to be supported.

At that time (beginning of the 1990s), when Jon Azua was vice-president, a General Framework for Industrial Policy was proposed, which placed industrial development at the centre of ACBC development policy. During that administration, Michael Porter of Harvard University was contacted and the cluster development policy was born. The process was marked by extensive debate and criticism. Nevertheless, as described in this study, it is clear that the outcomes of the model's implementation, taking into account the need to constantly adapt it to changing situations, have proven its promoters correct.

Technology parks (TPs) are another significant component of Euskadi's technology infrastructure. They became the location of technology centres, advanced enterpris-

es and incubators. The TPs have been financed by provincial governments and the Basque Government, through the Administration Council, which promotes investment in the parks. Each TP has a public administrative group that sells space to enterprises, as well as installations. The main incentive for businesses to set up shop in the technology parks is to have access to a technology centre, incubators and other key actors for increasing enterprise productivity.

During the 1990s, as part of the industrial development strategy, ACBC authorities implemented programmes that allowed the restructuring of various enterprises in key sectors, as well as the redistribution of labour. In the latter case, workers who lost their jobs were retrained and support was provided to help them find new job opportunities.⁴¹ Clusters were established to increase competitiveness.

One important characteristic of the technology development policy was that it focused on identifying the technologies most relevant for industries, rather than for the scientific world. Here the Department of Industry played a key role, mainly through the SPRI. These efforts were later supported by other initiatives, such as the regional innovation strategies of the European Union (EU), thanks to Spain's integration into the EU in 1986.

Beginning in the second half of the 1990s, other industrial development programmes were implemented to promote more investment, growth and job opportunities in the ACBC. During this period, the first Science and Technology Plan was developed, along with university plans that incorporated the concept of innovation into higher education, and other plans to encourage business competitiveness (Diagram 3).

c. Development of Human Capital

For many years, the ACBC has focused on the education of its population as a mechanism for economic and social progress. In 1930, when the ACBC already had close to one million inhabitants, the region had higher literacy levels and more workers with a technical education than the rest of Spain. In 1899, a public engineering school was established in Bilbao, and in 1916, the Jesuits founded a private university that concentrated on teaching business (Commercial University of Deusto). By that time, many Basques were being educated and working abroad (Porter, 2012).

De la Rica and López (2010) describe the development of education and ongoing training in the ACBC since 1986, when Spain joined the European Union. The authors

⁴¹ For a detailed description of these types of programmes, see Zubero (2010).

state that in 1986, the ACBC's literacy level was relatively high, only 1.58 per cent below the average for Spain (6.65 per cent). In that year, 11 per cent of the population had a university education and there was little gender bias, as 46 per cent of those professionals were women.

According to the authors, the educational level of the economically active population improved considerably during the period under study; the most significant and positive increase was in the proportion of people with higher education, which rose from 22 per cent in 1999 to 28 per cent in 2007.

In analysing levels of coverage by educational level, de la Rica and López note the increase in early childhood and primary education between 1986 and 2010, especially in early childhood education, where there was an increase in enrolment (ages 3 to 5) despite a drop in the number of students in the ACBC's educational system because of a decrease in the birth rate during that period. Another dynamic educational segment is professional or technical training, which has been made a priority because of the increasing specialization of the labour market in the Euskadi economy, as described below. Finally, there has also been a significant increase in the proportion of the population over age 16 with a university education. According to the authors, that group has increased by nearly 250 per cent in the ACBC.

Results of the PISA evaluations clearly show strengths in the ACBC in the area of education. Figures presented by de la Rica and López (2010) for 2003 show that reading comprehension and mathematics results for the ACBC are similar to the OECD average and higher than the average for Spain, although the same is not true for science scores. In 2012, the results were better for Euskadi than for the OECD in all areas. In mathematics, the ACBC scored 505, higher than the OECD (494) and Spain (484). In sciences, Euskadi scored 506, compared to 496 for Spain and 501 for the OECD. In reading comprehension, the ACBC's score was similar to the OECD average (498 and 496, respectively⁴²), but higher than that of Spain (488).

Although there are no impact evaluations of continuing professional development programmes for teachers and development of educational innovation programmes, it seems that the increase in educational quality of young people in the Basque Country could be related to the implementation of continuing development plans for teachers (IRAPREST) from 1990 to 1996, as well as the GARATU plans (1996-2000) and educational innovation programmes (2000-2006). In other words, the improvement

⁴² There is no statistically significant difference.

can be attributed to appropriate teacher training, particularly continuing education and learning the use of new technologies.

Another way of analysing the results of the PISA evaluations is to examine the percentage of 15-year-old students who are at or below performance level 1.⁴³ According to the most recent figures for mathematics skills published by the OECD for 2012, Euskadi ranks well among the 65 countries evaluated. According to the ISEI-IVEI reports for 2012, the percentage of students at or below performance level 1 on average in the OECD is 23 per cent, while it is 15.5 per cent for Euskadi and 23.6 per cent for Spain. The results of the PISA tests for science and reading comprehension are similar. For sciences, while the average for the OECD is 17.8 per cent, the averages for Euskadi and Spain are 11.7 per cent and 15.7 per cent, respectively. In reading comprehension, while the OECD average for levels 1b, less than 1b and less than 1a is 18 per cent, the ACBC average is 14.4 per cent and the average for Spain is 18.3 per cent.

In September 1995, the ACBC signed a series of agreements on continuing education in which trade unions, business organizations and the Basque government participated. These accords led to the creation of the Basque Foundation for Continuing Professional Development, whose purpose is to promote and manage professional development in Euskadi. The results of this initiative have been impressive. In 2007, 13.2 percent of the population (ages 25 to 64) had participated in some training activity, compared to 4.3 per cent in 1995. Euskadi ranked fifth in Europe, behind Denmark, the Netherlands, Finland and Slovenia, and well ahead of the average for Spain and for the European Union (De la Rica and López, 2010).

From this discussion, it is clear that efforts by Basque authorities over the past 25 years to improve human resources have borne fruit, providing Euskadi with not just the most skilled but also higher-quality human resources. This strategic investment has unquestionably been a pillar in the successful implementation of the CDP and its economic and social achievements.

d. Promotion of quality management

In 1992, ACBC authorities created the Basque Foundation for Quality Promotion (EUSKALIT). This institution is another example of a public-private alliance similar to others that exist in the European Union, which tend to promote quality management in their countries. EUSKALIT is a catalyst organization for total quality management, not

⁴³ "PISA considers that the student who is at level 1 or below is at risk of not being able to face his or her educational, labour and citizenship challenges after compulsory education with sufficient guarantee of success" (p.4).

only in Euskadi enterprises, but also in public institutions, NGOs and social organizations. The Basque government is on the board in a non-voting capacity. Approximately 25 institutions organized to create EUSKALIT as a private foundation with support from Basque authorities.

The foundation's funding currently comes from private or social organizations (60 per cent) and contributions from the Basque government (40 per cent). EUSKALIT's main actions include: (i) identification and dissemination of best practices in quality management, (ii) training/action based on consultants who promote the transformation of organizations and enterprises, and (iii) outside evaluation and recognition through a club of ad honorem evaluators (approximately 2,000) who are quality management professionals. Each year, about 20 Euskadi organizations of all types receive awards for quality management. This recognition is an incentive for organizations and enterprises in the ACBC to make efforts to improve their quality management. Clusters have contributed to quality management, according to people interviewed for this study, because the trailblazing companies, once certified in quality management, demand that their suppliers (mainly SMEs) have certifications of quality, thus promoting a culture of quality in the Basque economy.

e. Support programmes for enterprises

Basque Government authorities, especially in the Department of Industry and Energy, have played a very important role in promoting the development of productive activity in Euskadi, coordinating efforts with different public and private actors and allocating resources to programmes for improving the innovative capacity of Basque enterprises (Aranguren et al., 2012).

Since 1982, and for more than 35 years, Euskadi authorities have designed and implemented a group of support programmes for enterprises, which have been analysed by Aranguren et al. (2012). According to the authors, these programmes can be studied in three distinct time periods: 1982 to 1989, 1991 to 1998 and 2000 to 2008.

Between 1982 and 1989, industrial policy was led by Javier García-Egocheaga, a lawyer from the Comercial de Deusto with experience in private enterprise and public administration. The main programmes of this policy during the first part of this period involved restructuring industrial sectors and enterprises, which mainly consisted of SMEs. As the economic recovery spread, other programmes came to the fore in budget allocations for Department of Industry support to enterprises during this period. These included the policy for jump-starting industrial activity, programmes for supporting change and technological innovation, and energy saving and development.



According to the authors, although the programmes during this period did little to help with sectoral concentration or reorganization, they were important in starting dialogue between enterprises and Basque authorities (Administration) and for beginning inter-enterprise cooperation. The Department of Industry took advantage of this groundwork later to launch other programmes as part of its CDP.

As part of the project for jump-starting industrial activity, ACBC authorities designed and implemented an important series of programmes through the Department of Industry. First was financial support for enterprises through subsidies for employment and investment, as well as preferential credit for investment. By 1984, all of the financial aid programmes were channelled through SPRI. The financing focused on creation of new enterprises and support for technological projects in SMEs. Second was support for enterprises through a policy of supplying industrial land and infrastructure, in collaboration with provincial and municipal governments. Third, with support from local governments, was creation of Enterprise and Innovation Centres (EICs) aimed at supporting new enterprise projects. Fourth was establishment of the Nervión Urgent Reindustrialization Zone to promote industrial activities in the communities most affected by industrial reconversion.

SPRI played a very important role by implementing other programmes to foster changes in attitudes, structures and strategies in Basque enterprises. These programmes included: (i) the internationalization of businesses through exports –Baskexport– and the creation of export consortia, technology transfer and the opening of SPRI offices abroad; (ii) information, business training and management improvement programmes; and (iii) creation of the Venture Capital Management Society (*Sociedad Gestora de Capital Riesgo*, SGECR) in 1985. This pattern of designing and implementing programmes to meet enterprise needs, which began during this period, became a constant for future Basque Government teams (Aranguren et al., 2012).

Efforts by Basque authorities to promote change and innovation during this first period under study, according to the cited authors, focused on encouraging R&D activities by enterprises, with a supply-and-demand approach. On the demand side, support was provided for creation of enterprise R&D units and the adoption of new technologies, while supply side efforts focused on technology centres and technology parks. The Basque government committed to financing half the budget of the five technology centres included in the policy (CEIT, Inasmet, Ikerlan, Tekniker and Labein). The Bizkaia Technology Park was established in 1985. Because of characteristics specific to the ACBC and the experience of those responsible for the innovation policy, this policy was much more technological than scientific and was especially oriented toward industry. This policy was the result of a serious study of successful experiences and models

in other countries: “the German *Fraunhofer* network and institutes for technology centres; the British science park model for the Zamudio technology park; guidance from the Stanford Research Institute for implementing various training programmes and the Technological Strategy Plan (Moso, 2000; Olazarán et al., 2005; Navarro and Buesa, dir., 2003; López et al., 2008)”. (p. 158).

Finally, during this period, SPRI promoted a series of horizontal programmes to encourage change and innovation. One notable example was the IMI programme for training workers and wider society in new technologies and the introduction of new technologies in enterprises. Others included the TEKEL programme for training workers in new technologies; the CN-100 and ECTA programmes for encouraging the acquisition of new technologies by enterprises; and the SPRITEL and SPRINET programmes for creation of the first telematic network in Spain and a broadband network for the University of the Basque Country.

This set of policies, aimed at support, change and innovation, enabled the ACBC to create a technological infrastructure (network of technology centres and parks), disseminate enterprise R&D activities, improve job training, increase the sophistication of demand, and contribute to the dissemination of knowledge and the use of new technologies in enterprises and in wider society. Despite these significant outcomes, there were still some problems of coordination in the implementation of these policies, especially between different administrative bodies (Basque government and provincial governments), which resulted in duplication of efforts and inefficient use of resources (Aranguren et al., 2012).

During the second period under study (1991-1998), Aranguren et al. (2012) argue that the ACBC’s industrial policy was marked by greater political power, thanks to the leadership of Jon Azua, vice-president and Industry Councillor (1991-1995). As the key promoter of the new industrial policy, Azua took up the challenge of designing a policy that not only addressed the country’s immediate problems, but also defined a comprehensive growth strategy for the future, based on the concept of competitiveness, whose programmes and guidelines for action are still in place. One important characteristic of this new industrial policy was its positioning as the backbone of the rest of the ACBC’s public policies, thus making industrial policy the highest political priority.⁴⁴ This also implied that industrial policy would be subjected to public scrutiny in the Basque Parliament (Gobierno Vasco, 1991: 355; Gobierno Vasco, 1993). A high-level technical team was also established, to which Azua named people with

⁴⁴ Azua’s new industrial policy is set out in the General Plan for Industrial Policy Action (*Plan General de Actuación de Política Industrial*) for 1991-1995 (Gobierno Vasco, 1991).

extensive experience in private enterprise and public administration. After he left, his successor maintained the same industrial policy. This quote from a speech by the then-president of the Basque government, cited by Aranguren et al. (2012), gives a clear idea of the importance that the government placed on the industrial policy:

“It is very clear to us that our wealth does not come from services, it does not come from tourism; it comes from where it has always come: from work, from the real economy, from industry, basically (...), we have brought about an authentic industrial revolution and an authentic revolution in business culture. We have turned our industrial fabric inside out completely, after having painfully renounced what had been our classic activities: the great steel mills, the tall kilns, everything that was the great wealth of the left bank (...) We have replaced all of that with a new industry, with extremely high technology (Bizkarguenaga, 2001: vol. I, 403-409).” (p.161).

The new industrial policy framework was defined by three key areas: (i) industrial restructuring and assistance to existing enterprises and sectors that were in difficulties, (ii) promotion of new activities, and (iii) attracting foreign investment in strategic sectors. All of these fell under the umbrella of the Programme of Competitiveness developed in clusters, following Michael Porter’s approach. The first policy area was justified by the crisis of 1991. The second supported the improvement of industries and enterprises that already existed in the ACBC. The third key area was aimed at attracting and promoting new, larger business projects through a programme with subsidies and fiscal benefits of up to 40 per cent of the initial investment amount (GARAPEN Programme, implemented in collaboration with provincial governments). This effort was very important for the ACBC’s entry into the aeronautics industry, a sector previously unknown in the community.

During this period, the Cluster Development Policy was designed and implemented, based on a study analysing the competitive position of the Basque economy and its future potential in an open and globalized economy, conducted by Monitor Company, Michael Porter’s consulting firm. The effort began with nine principal clusters, most of which were the heirs of traditional industries, although they included several new sectors, promoting the creation of thematic groups with the participation of representatives of industrial sectors, the administration and other institutions, such as profes-

sional development.⁴⁵ During this period, some programmes implemented by earlier administrations were maintained and others were changed, all in accordance with the new General Plan for Updating of Industrial Policy 1996-1999.

The policies adopted during the period under study sought to improve the economic environment in five specific areas: (i) improving public administration (making it more effective and efficient), (ii) increasing available physical and technological infrastructure, (iii) improving business access to financing, especially through new means such as venture capital and seed capital, (iv) strengthening the trailblazing role of companies and public administration, and (v) promoting other, more horizontal, policies, such as a single point of contact for paperwork, a fiscal approach and professional development. According to this vision, the goals of the structural change were to increase the size of businesses, the intensity of their use of R&D&I and their internationalization, and improve their financial structure. One new approach was the promotion of cooperation among businesses, especially those that began to work as part of clusters.

As in the preceding period, although there are no impact evaluations of the programmes implemented, the opinion of experts, according to Aranguren et al. (2012), is that the industrial policy applied between 1991 and 1998 had a positive effect. In terms of innovation policy, the assessment by Navarro (2009 and 2010), based on input and output indicators in this area, concludes that the efforts during that period were very successful. Those efforts ended up creating the R&D infrastructure that the country needed (technology centres and parks), as well as a critical mass of specialized human and material resources. The importance of this infrastructure was demonstrated by recognition received from the European Commission, because of the creation of 17 spin-offs by the Technology Centres.

Aranguren et al. (2012) note that during this period, there was improvement in the coordination of efforts among various public entities and in the management of public resources used in industrial policy, thanks to increasing emphasis on horizontal policies and willingness to establish stable channels of communication and collaboration between authorities and local economic and social agents, in which the clusters played an important role. Nevertheless, those results were not as robust as expected; that was achieved to a greater extent during the next period (2000 to 2008). The innovation policy also focused almost exclusively on R&D activities, without consid-

⁴⁵ For more information, see Monitor Company (1991), Gobierno Vasco (1991), Torres and Langendijk (2000), Aranguren and Navarro (2003), and Azua (2006).

ering other innovation-related activities; it was a highly technological policy in which universities were not explicitly included.⁴⁶

During the 2000 to 2008 period, policies implemented by Euskadi authorities sought to promote the competitiveness, innovation and internationalization of Basque enterprises. The policies inherited from the previous administration were maintained, thanks to the continuity of personnel on government teams. During this period, industrial policy efforts focused more on innovation and internationalization, as the importance of industrial reconversion faded. The budget line item in the Department of Industry during this period was technology, innovation and information society. Other important programmes included internationalization and quality and innovation in management. Efforts during this period were more horizontal, systemic and participatory than during previous periods (Aranguren et. al, 2012).

During this period, two important plans were adopted as part of the ACBC's industrial policy: the Institutional Plan for Economic Promotion 2000-2003 and the Enterprise Competitiveness and Social Innovation Plan 2006-2009. These plans had three major objectives: convergence with the European Union, social and territorial cohesion, and modernization and quality of life. According to these plans, "competitiveness was a means for building a more prosperous society ... in this new era of globalization that meant seeking particular and specific advantages and intangibles, that would be difficult to imitate, on which to differentiate and build a sustainable competitive advantage that would guide the Basque economy to a competitive state led by innovation". (p.174)

A Forum on Competitiveness was held in 2004 to develop the Enterprise Competitiveness and Social Innovation Plan 2006-2009. Various economic and social agents participated and defined a vision for the country for the year 2015, along with a model of competitiveness and some instruments and action areas. Innovation was the basis for the model of competitiveness. This continued to give the industrial policy a privileged place in the Basque Government's actions. During this period, SPRI continued to play an important role in implementing support programmes for enterprises, including the CDP, which continued without major changes. Clusters supported by the Basque authorities also became interlocutors and key agents for the dissemination and implementation of the horizontal policies promoted by Euskadi, particularly in the areas of quality and internationalization, as well as innovation policy. During

⁴⁶ For more details about policies for innovation during this period, see Moso (2000), Moso and Olazarán (2002), Navarro and Buesa, dirs.(2003), Navarro (2009 and 2010), Olazarán et al.(2005 y 2009), Plaza and Velasco (2001), Zubiaurre (2002) and OECD (2011).

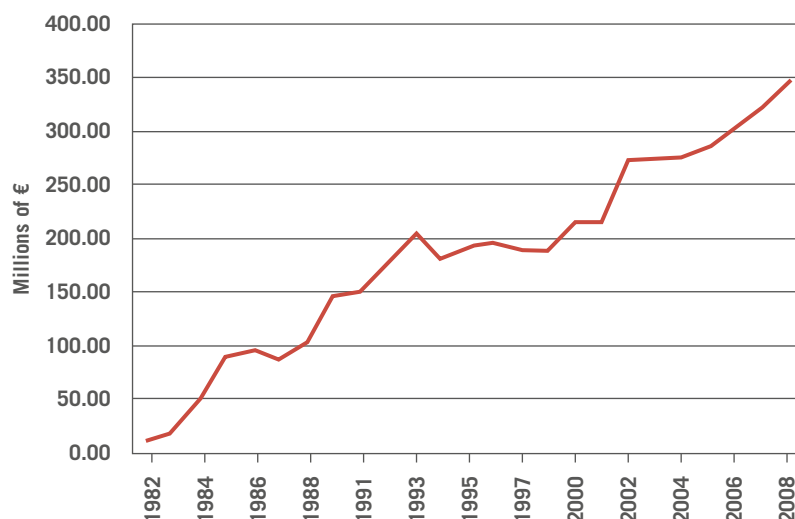
this period, officials from the Department of Industry began participating regularly in meetings of the boards of directors of cluster associations. As Aranguren et al. (2012) put it, “in general, enterprises that are integrated into cluster associations have better outcomes in human resources training, R&D activities and internationalization than enterprises that are not, as well as faster growth in their sales (Aragón et al., 2006 y 2010; Aranguren et al., 2007, 2009 y 2010; Aranguren, 2010; Orkestra, 2009)” (p. 178). Results obviously vary from cluster to cluster.

During the same period, emphasis was placed on information and communication technologies, as well as on the information society. Quality improvement efforts also continued, through a new Quality Plan, implemented by Euskalit, which continued along the lines established by previous administrations. According to Aranguren et al. (2012), all of these efforts resulted in significant progress in internationalization, dissemination of new management systems and quality certification among businesses, and growth in R&D activities and inputs for innovation in general.

During the three periods studied, one constant in programmes for supporting enterprises has been financing, regardless of the economic cycles that have affected the Basque economy since 1980 (Figure 8). This ongoing effort is reflected in an annual growth rate of 13.3 per cent in Department of Industry expenditures on support programmes for enterprises from 1982 to 2008, inclusive.⁴⁷

⁴⁷ According to estimates by Orkestra, reported by Aranguren et al., while Euskadi authorities spent 12 million euros on these types of programmes in 1982, that figure had risen to 349 million by 2008.

Figure 8. ACBC Department of Industry expenditures on various support programmes for enterprises, 1982-2008 (figures in millions of euros)



Source: Compiled by authors based on Figures 5.2, 5.3 and 5.4 in Aranguren et al. (2012)

As noted above, one characteristic of support for enterprises in the ACBC is the work done by Basque authorities at the three levels of government –the Basque Government, provincial governments and municipal governments. Although this requires great effort for coordination, which has been achieved over the years, it also demonstrates the advantages of decentralization. For example, the provincial government of Bizkaia, which along with other provinces administers 15 per cent of the ACBC’s public resources, designs and implements programmes for economic promotion in coordination with the Department of Industry.⁴⁸ These programmes address the following areas: (a) enterprise creation, (b) industrial investments, (c) innovation, (d) internationalization, and (e) tourism.⁴⁹

For each of these areas, there are programmes for enterprise promotion, innovation and the internationalization of Basque enterprises. These include programmes for teaching entrepreneurship to young people between ages 12 and 18, in which approximately 1,000 students from Bizkaia schools participate; grants (one to two years)

⁴⁸ This coordination works through both informal and formal channels. In the latter case, it is done through participation in working groups established by the Basque government.

⁴⁹ Interview with Gorka Estebez and Txema Bilbao, director general and subdirector general of economic promotion in the province of Bizkaia.

to enterprises for studies, business plans, development of prototypes, initial rental, and other purposes; partial financial support for business incubators in universities, technology centres and industrial parks; venture capital in the form of a public society, where the society can buy shares and make loans to enterprises, with participation in their management; and accompaniment through the BEAZ programme for start-ups, until they become established (generally two years). This programme provides guidance to new enterprises on the assistance and incentives available in the ACBC and how to apply for them. In all cases, the programme focuses on promoting the ideas of innovative businesses or enterprises. This type of initiative clearly shows the interest of Basque authorities in developing a closer relationship with enterprises so as to better understand their needs and provide them with more effective assistance.

Several important lessons can be derived from the discussion above. First, the ACBC policy of supporting enterprises' efforts to improve their productivity and competitiveness has been a constant, growing effort during successive administrations. Second, it is clear that Basque authorities have been reasonable and flexible in adapting support programmes for enterprises to changing circumstances, modifying some, eliminating others and creating new programmes. This is possible because of the feedback received through the participation of Basque authorities in cluster associations. Third, although there are no impact evaluations of these programmes, as Aranguren et al. (2012) state, it would be difficult to deny the positive impact of these programmes on the performance of the enterprises and the beneficiary sectors. Fourth, regardless of the economic cycles affecting the Basque economy since the 1980s, ACBC authorities have invested significant and increasing amounts of money in enterprises' efforts to increase their ability to innovate and their overall competitiveness. Fifth, Department of Industry officials have successfully coordinated the implementation of these programmes, not only with organizations and enterprises, but also with other Basque government agencies, as well as with provincial and municipal governments. Sixth, there is a significant effort to develop a close relationship between government authorities in different entities (SPRI, provincial governments, and others) and enterprises to resolve their problems and improve their competitiveness. Seventh, the design of many programmes and instruments is based on international experience in this area. Eighth, support has been provided to enterprises both to improve their ability to innovate and for restructuring or industrial reconversion. Ninth and last, important programmes have been implemented to improve the quality of human resources (teachers, professors and workers), as well as for the development of technology platforms (technology centres and industrial parks), which are extremely important for improving enterprise productivity. All of these programmes have been supported with both vertical and horizontal policies, with increasing emphasis on the latter.

In summary, analysis of the evolution of support programmes for enterprises implemented by the Department of Industry and other Basque government agencies over the past 35 years suggests that to achieve appropriate productive transformation, it is necessary, among other things, to invest sufficient resources in supporting the efforts of businesses to increase their competitiveness, through PDPs and CDPs. In the ACBC, this has been possible in part, as discussed below, thanks to macroeconomic stability and appropriate fiscal space (Economic Agreement). It is also clear that Basque authorities have been flexible enough with these types of programmes to adapt them to enterprises' changing needs, thanks to feedback received from the cluster associations.

f. Some key institutions

The Society for Industrial Reconversion and Promotion (SPRI)

Between 1980 and 1983, Javier Garcia-Egocheaga, who was councillor (minister) of industry at the time, put in place the basic structure of the Department of Industry, with a central organization in the seat of the Basque government, where the executive team (two vice-councillors and six area directors) was located, along with three territorial delegations and two public agencies that played a key role in implementing industrial policy, the Society for Industrial Reconversion and Promotion (*Sociedad para la Promoción y Reversión Industrial*, SPRI) (SPRI, 1981) and the Basque Energy Agency (*Ente Vasco de la Energía*, EVE) (EVE, 1982). SPRI's purpose was to help promote industry, encourage the creation of new enterprises and the expansion of established ones, foster cooperation among enterprises, arrange Basque government financial support for industrial restructuring, and implement technology projects (Aranguren et al., 2012).

SPRI is a publicly funded association established as a corporation. It was initially created with a contribution of 60 per cent from the Basque government and 40 per cent from financial institutions (savings banks), but the Basque government currently accounts for 90 per cent of the capital. SPRI operates within the Department of Economic Development and Competitiveness.

Since its establishment, SPRI has played an important role in promoting the cluster concept, as well as in supporting the creation and operation of cluster associations and designing policies and plans to support industrial restructuring. SPRI focused on areas that were not covered by the restructuring programme promoted by Spain's

national government.⁵⁰ SPRI created other public organizations to help with the merger of enterprises and the quest for new technologies. SPRI also established an agency to promote Basque exports, internationalization and the development of tools to encourage entrepreneurship in the ACBC, including handbooks and training courses on how to start a business and manage an enterprise (Porter, 2012).

SPRI is responsible for managing incentives to encourage enterprises to engage in R&D&I. According to SPRI authorities, the institution allocates 150 million euros a year to this, out of a total budget of 400 million euros. Promotion of R&D&I activities involves two areas of action: (a) Support for enterprise R&D&I, and (b) support for R&D&I through the Basque Network of Science, Technology and Innovation. The innovations that have received the most support are technological (new or improved products or processes), although for more than a decade, increasing support has been provided for non-technological innovations (organization and commercialization), especially those that improve management and increase the diversification of products and markets.

Through the first action area, support is provided for individual projects or collaborative efforts among various enterprises, although enterprise projects can also be financed through the second action area. In 2015, there were 1,400 projects supported through the first action area and 300 enterprise projects financed through the Basque Network of Science, Technology and Innovation.

One important factor in the success of the PDPs promoted by SPRI through its programmes of incentives for R&D&I is that although the aid to enterprises is non-recoverable, it does not finance more than 55 per cent of a project. In other words, slightly more than half of an R&D&I project is financed by the Basque government and the rest by the enterprises participating in the project. The use of resources by the enterprises, according to the project proposal, is also monitored. Nevertheless, there are no studies of the impact of R&D&I programmes in the ACBC, although authorities have expressed interest in beginning this process.

Besides managing instruments aimed at increasing enterprises' ability to innovate, SPRI currently plays a fundamental role as a key actor on clusters' boards of directors. All Basque government representatives on these boards are currently SPRI officials. This gives Basque Government authorities a first-hand understanding of the kind of support enterprises need to increase their competitiveness in the value chains in which they operate.

⁵⁰ In other words, industries other than iron, shipbuilding and capital goods.

SPRI also plays a key role in promoting inter-cluster activities, which are crucial for making the Basque economy more competitive. Examples in this area include joint efforts by the Advanced Manufacturing, Energy and Bioscience for Health clusters.

Orkestra

In 2006, John Azua and Jose Luis Larrea crystallized the creation of an independent economic research centre, Orkestra, to address issues related to the ACBC's real competitiveness and collaborate with studies and advice on the design of public policies (www.orkestra.deusto.es). In other words, Orkestra became an agent of change through research. This organization is a public-private cooperation effort. Orkestra is a research institute at the University of Deusto that engages in processes of analysis and change within the framework of challenges to Euskadi's competitiveness, in a context of increasing global complexity.⁵¹ One characteristic of Orkestra is its horizontal organizational model, consisting of an interdisciplinary team of 32 professionals from the ACBC and other countries, such as Argentina, Australia, Spain, Holland, Italy, Mexico, Norway and the United Kingdom. Twenty of these professionals have doctorates in their fields. This effort has mixed financing, with contributions from the Basque government and provincial governments, enterprises and competitive grants.

Orkestra's activities are carried out within a strategic framework, and it acts as a link between excellence in research and its application for increasing competitiveness, working with public administrations, enterprises and civil society. The institution promotes productive transformation through the creation of joint knowledge and by connecting the abilities of different actors in Euskadi, to create sources of employment and increase the welfare of ACBC society. In the area of research, Orkestra prepares articles for scientific journals, working papers, academic communications, books and reports, as well as chapters for books edited by organizations in the country or elsewhere. Besides research, it engages in the dissemination of knowledge and supports public policy making. In 2014, for example, Orkestra organized 13 events (including conferences, seminars, workshops and meetings) with the participation of more than 650 professionals, representatives of enterprises, political decision makers and socio-economic agents. It also works on specialized leadership training for competitiveness.

⁵¹ In effect, Orkestra is a University Development Unit of the Deusto Foundation, which belongs to the University of Deusto in Euskadi.

Ikerbasque

Another extremely important actor in the ACBC'S innovation ecosystem is Ikerbasque, which is responsible for encouraging the production, promotion and dissemination of scientific knowledge in the Basque Country. According to its annual report for 2013, 248 Ikerbasque researchers were participating in research projects with outside financing, and 21 young researchers had joined Basque universities and research centres. Ikerbasque also has attracted 130 permanent researchers from 20 countries to the ACBC, where they work permanently in universities and research centres. Ikerbasque also produces scientific publications; in 2013, it had 670 indexed articles, according to "ISI Database journals". In that year, Ikerbasque researchers also generated more than 16 million euros.



V. Fiscal space for Productive Development Policies

One fairly unique characteristic of Euskadi's development model has been a high degree of autonomy and fiscal discretion and a process of downward decentralization (from the national government to provincial and municipal governments). In the area of public finances, the ACBC has a system that enables it to collect all taxes and administer slightly more than 90 per cent of those revenues, with the remainder going to Spain's national government.⁵² Of the resources managed by ACBC authorities, 70 per cent are administered directly by the Basque government, 15 per cent by provincial governments and 15 per cent by municipal governments.

This independence in the management of resources is better understood in light of history. Before the Economic Statute of the early 1980s, the entire public sector was centralized in Spain, and in the opinion of several interviewees, the ACBC therefore did not appear in Spain's public expenditure policy. The Economic Statute allocated a significant amount of public funds to Euskadi, enabling ACBC authorities to decide how to invest over the past 35 years, according to the programmes described in the preceding sections. Without these resources, it would have been impossible to implement the entire industrial policy and achieve economic transformation in the ACBC. Fiscal independence also cleared the way for impressive institutional growth in the ACBC to facilitate support for Basque enterprises.

According to Uriarte (2015), the ACBC's fiscal situation is characterized by relatively healthy public finances, the absence of financial support from the Spanish government, a low public delinquency rate and little public debt. The author notes that Euskadi's rating for debt issues is better than that of Spain and other autonomous communities, according to international credit rating agencies (for example, Standard & Poor's, Moody's and Fitch). In 2014, the ACBC's public debt-to-GDP ratio was just 13.9 per cent, compared to an average of 22.4 per cent for the Spanish autonomous communities. Euskadi is also characterized by relatively healthy administration (control of public resources, with little waste and corruption).

⁵² In fact, of the total amount of tax revenue collected by Euskadi authorities, the amount transferred to Spain's national government under the Economic Agreement is equivalent to 6 per cent of the GDP of the ACBC.

In short, Euskadi's experience indicates the importance of having an appropriate fiscal space for financing the design and implementation of industrial policies to support improvement in enterprise productivity and competitiveness and the necessary investment in human and technological resources. This economic space demands an appropriate level of tax collection and administration of public resources.

VI. Conclusions and lessons learned for Latin America and the Caribbean

The main objective of this study has been to describe how ACBC authorities have designed and implemented productive development policies (PDPs) over the past 35 years, including, most recently (early 1990s), the Cluster Development Policy (CDP), and to analyse the way in which these policies have contributed to inclusive growth with more and better jobs in Euskadi.

The design and implementation of these policies began in the early 1980s, at a time of serious economic crisis and the beginning of significant opening to international trade (mainly the European market). ACBC authorities decided to promote PDPs and, within them, the creation of clusters in various productive activities to increase technological development, innovation and the internationalization of enterprises. This was done with the aim of increasing economic growth and improving living conditions for the ACBC's population.

The PDPs discussed in this document, which interact with each other and with the CDP, involve science, technology, innovation, quality and development of human resources. These policies have had a decisive positive impact on the productive and competitive capacity of Basque enterprises. They also serve as an important complement for implementation of the CDP. The CDP has had its own characteristics in the ACBC, and evidence indicates that clusters have been an important ingredient in attaining higher, sustained and inclusive growth in the ACBC.

Euskadi's experience in the design and implementation of PDPs shows the importance of these policies in transforming productive structures through relatively rapid and constant technological change, promoting innovation, the creation of more and better sources of employment, and more sophisticated occupational structures that result in an increase in income and a decrease in poverty.

The ACBC's institutional, macroeconomic, political and social characteristics have shaped the direction and content of PDPs over the past 35 years. Although those characteristics are specific to the ACBC, and the PDPs implemented by Euskadi therefore cannot be replicated literally in other contexts, some lessons can be drawn from

the experience to help developing countries, such as those in Latin America and the Caribbean, formulate and implement PDPs and CDPs that would improve their possibilities of achieving higher, sustained, inclusive and environmentally friendly growth.

Lessons learned

The lessons about the design and implementation of PDPs that can be learned from the experience of the ACBC fall into two groups. First, there are those related to PDPs implemented as a complement to the CDP, and without which the CDP would not have produced the outcomes demonstrated by the empirical evidence analysed. Second, there are lessons stemming from Euskadi's experience in the design and implementation of the CDP over the past 25 years.

Importance of a vision for the country: One key characteristic of the design and implementation of the PDPs in the ACBC is that there was a vision for the country that enabled Basque authorities to align, modify and change these policies in pursuit of a specific objective: improving the welfare of the Basque population. This vision for the country took into account the initial conditions of Euskadi (economic crisis, unemployment, and so on); the need to promote high, sustained and inclusive economic growth; and the imperative of competing in a global marketplace.

Productive Development Policies: As part of the country's strategy for achieving productive transformation that would facilitate higher, sustained and inclusive growth, Basque authorities designed and implemented a series of PDPs a decade before the design and implementation of the CDP. They also complemented the CDP with other PDPs that were identified while the CDP was being implemented. The latter was done through a process of diagnosis, evaluation and ongoing reform, with the participation of Basque authorities, enterprise members of clusters and other key actors, such as academics.

Education and vocational training policy: From the outset, an effort was made to increase not only the quantity of human resources demanded by national productive activities, but also the quality of the ACBC's human resources. Educational programmes were conducted for teachers and students, as well as for workers. These programmes included schools, professional associations, universities and training centres. Dual education (students within enterprises) has been an important component of this strategy.

Technology and Science Policy: Because most Basque enterprises are SMEs and lack the human resources and infrastructure necessary for significant innovation, programmes were established to develop centres for creation of knowledge (for exam-

ple, universities) and centres of technological support for enterprises (technology centres and technology platforms), which were later complemented with strategies to connect SMEs with large trailblazing companies (CDP). These technology centres and technology platforms work with enterprises on innovation activities, resulting in the development of long-term competitive advantages that make the enterprises more competitive. Because there was a country strategy, the number of technology centres that had to be created in the ACBC was relatively small. Thanks to that and to government support, these institutions now have infrastructure, human resources and management models that meet international standards. In some cases, they have also become world-renowned models.

Innovation Policy: Because enterprises need incentives to invest more in R&D&I, fiscal incentive programmes were established to partially finance such initiatives, especially when projects were presented by consortia involving various enterprises in the same cluster and Basque technology support centres. The innovation efforts were scaled up by mobilising significant resources that increased R&D spending as a percentage of GDP from less than 0.06 per cent in the early 1980s to more than two per cent in 2011, slightly above the EU average.

Quality Management Policy: Because Basque enterprises had to compete on quality and innovation more than on prices or low costs, a policy was established to foster quality management, not only in enterprises but also in the institutions supporting them. It was crucial to have an institution to lead this process, as shown by the experience of the Basque Fund for Quality Management (EUSKALIT).

Stable macroeconomic policy and fiscal space: The experience of the ACBC highlights the importance of a stable macroeconomic environment and fiscal space that makes it possible to finance different PDPs over time, particularly policies that tend to increase investment in R&D&I, improve product quality, and increase the quantity and quality of human resources.

Institutional structures: ACBC authorities created the institutional structure necessary for the design and implementation of PDPs. This institutional structure has been very important for facilitating adjustment of PDPs as circumstances change, as well as for the continuity of the PDPs from one administration to the next. Examples of this institutional structure include the Secretariat of Industry, the Society for Industrial Promotion and Reconversion (SPRI), the Basque Government Venture Capital Fund (EZTEN), the Basque Foundation for Quality Improvement (EUSKALIT), IKERBASQUE, ORKESTRA, the Cluster Associations, and the network of technology centres and parks.

Cluster Development Policy: Euskadi's experience with the CDP shows the policy to be a powerful and effective tool for achieving close collaboration between diverse actors over the years, so as to ensure the provision of the *public inputs* necessary for production, to help *internalize within the cluster the externalities of the transfer of technologies and knowledge* necessary for improving products and processes, and to promote a joint process of ongoing learning and improvement.

Selection of clusters: ACBC authorities decided to implement the CDP by supporting productive activities that met certain requirements, to promote both economic growth and social development in Euskadi. These requirements included supporting activities in which the ACBC had experience, which had greater potential to compete internationally (export potential), and which could create new sources of employment (more and better jobs). In this selection process, it was important to identify and take advantage of Euskadi's strengths, building on what already existed and on what people in the ACBC knew how to do, and to clearly define other selection criteria based on the economic and social challenges to be met through the CDP and complementary PDPs.

Institutional governance and arrangements: Because of the importance of public-private and public-public coordination, ACBC authorities decided to promote the creation of *cluster associations* consisting of competing companies, clients and suppliers in one or more value chains, as well as support institutions, such as technology centres, government institutions (for example, SPRI) and other key actors (namely, banks). These associations have received (partial) financial support from the Basque Government for their operation and have developed favourably during the past 25 years.

Identification of key public inputs: Once the activities to be supported through the CDP were defined, an important step was to carry out assessments, with the participation of the actors involved, of key *public inputs* that should be offered to enable enterprises and clusters to achieve their goal: productive transformation of the Basque economy to promote high, sustained and inclusive economic growth.

Selection of key actors for implementation of the CDP: The selection of productive activities to be supported, as well as assessments of public inputs needed, made it possible to identify key actors for the implementation of the CDP. These actors include enterprises (competitors, customers and suppliers; large – trailblazers – and small) and other organizations (universities, technology centres, professional training centres, public institutions, local governments and the national government).



Feedback system: One of the most important characteristics of the cluster associations (CAs) has been that they constitute a mechanism that allows government authorities to approach enterprises (especially small ones) to identify their principal problems of competitiveness and design and implement PDPs according to these needs. The active participation of Basque authorities (and other key actors) in the CAs, as well as the annual reports presented by the CAs to the Basque government, provide necessary feedback for designing and implementing PDPs in accordance with the needs of enterprises, thus ensuring that these policies are flexible enough to adapt to changing circumstances. This means modifying some programmes, eliminating others and creating new programmes, depending on the needs of enterprises and the overall productive development strategy. Finally, this feedback mechanism has also been important for ensuring that the CDP is an ongoing policy supported by authorities in successive administrations.

Sectoral support for value chains: The cluster approach created the conditions necessary for increasing enterprise productivity through innovation, in both technological and non-technological areas. There was a shift from a traditional approach of supporting sectors to one that involved promoting cooperation among companies that participate in one or more value chains (competitors, clients and suppliers), where public-private relationships and relationships between companies and other key actors (such as technology centres, universities and banks) have been crucial for achieving results.

New public-private coordination: Implementation of the CDP in the ACBC has allowed Euskadi authorities to create a dynamic of dialogue and interaction between government (national and local) and productive sectors (including SMEs), which did not exist previously, and the results of which appear to be reflected in a higher level of economic growth and welfare for the inhabitants of the ACBC. In essence, the CDP facilitated public-private collaboration and made it possible to take advantage of technology and knowledge spillovers.

Importance of clusters for economic growth: The evidence presented in this study of the importance of cluster associations for the ACBC economy suggests that the creation of clusters can be an appropriate mechanism for fostering inter-enterprise and public-private cooperation, and collaboration among other key actors, which are necessary for increasing the competitiveness and growth of enterprises through sustained improvement in their ability to innovate.

Clusterization of the economy: The ACBC's experience with CDP indicates the importance of considering *cluster creation* a tool or instrument for economic and social development. In other words, it is not just a sectoral policy whose only goal is to make

certain productive activities more competitive. The CDP designed and implemented in the ACBC, along with the other complementary PDPs, were motivated by a common strategy, in which there was a stable commitment to implementation and to the constant adaptation of these policies to changing conditions, in an effort to make *collaboration* a common denominator of the activities of citizens of Euskadi.

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Appendix 1

List of people interviewed in the Autonomous Community of the Basque Country

NAME	POSITION / INSTITUTION
Aitor Cobanera	Director of Technology, SPRI
Aitor Ruiz	Dir Knowledge Mgmt, ACICAE
Alberto Alberdi Larizgoitia	Head of Econ Studies, Basque Govt
Alberto Vigón	Director of Communication, Velatia
Alexander Arriola	Director General, SPRI
Ana Díaz	LIIS Coordinator, NSF
Ana Fernández	Angulas Auinaga
Angel Santurtun Parbole	Cabinet Chief, ADIMDE
Antxon López Usoz	President, AFM
Cristina Urtiaga	Services Cluster, GAIA
Fernando Sierra	Director, EUSKALIT
Germán Ormazabal	Director, Velatia
Gorka Estebez Mendizabal	Director, Bizkaia Provincial Govt
Gotzon Bernaola Ariño	Programme Director, Innobasque
Guillermo Dorronsoro Artabe	Dean, University of Deusto
Igor Aranguren	Coord of Internationalization, Aclima
Iñaki Tellechea	Staff, SPRI
Jaime Fernández Alcedo	Managing Director, FMV
Javier López De La Calle	Director, Basque Maritime Forum
Javier Muñecas Herreras	Labour Societies of Euskadi
Javier Sotil	President, Mondragón
Javier Zarraonandia Zuloaga	Vice-Councillor of Industry
Jesús García de Cos	UGT Trade Union
Joaquín Nieto Sáinz	Director, ILO Spain Office
Jon Ander Egaña	Manager, Euskadiko
Jon Azua	President, Enovatinglab
Jone Nolte Usparicha	Labour Societies of Euskadi
Jorge Zubiaga Carles	President, Basque Maritime
José Antonio Garrido	President, Metropoli-30

(continues...)

NAME	POSITION / INSTITUTION
Jose Ignacio Hormaeche	Director, Energy Cluster
José Juez Langara	Director, Hegan
José Luis Jiménez Brea	Coordinator, Basque Group, E.C. Club of Rome
José Miguel Erdozain	Director General, IK4
Joseba Jauregizar	Director General, Tecnalia
Joseba Villarreal	ELA Trade Union
Josetxo Hernández	President, ASLE
Juan José Goñi	Futurocultor
Ma. Angeles Elorza Zubiria	Sec Gen, Acción Exterior
Mari Jose Aranguren	Director General, Orkestra
Martín Fernández Loizaga	Deputy Director, Hegan
Mikel Alvarez Yeregi	Councilman, Bilbao Municipal Govt
Pedro Luis Uriarte	President, Emase
Txema Bilbao Intxaurraga	Subdir Gen, Bizkaia Provincial Govt
Unai Sordo	Sec Gen CCOO Euskadi
Vicente Atxa Uribe	Rector, U Mondragón
Xabier Ortueta	Director General, AFM



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