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BASQUE INSTITUTE
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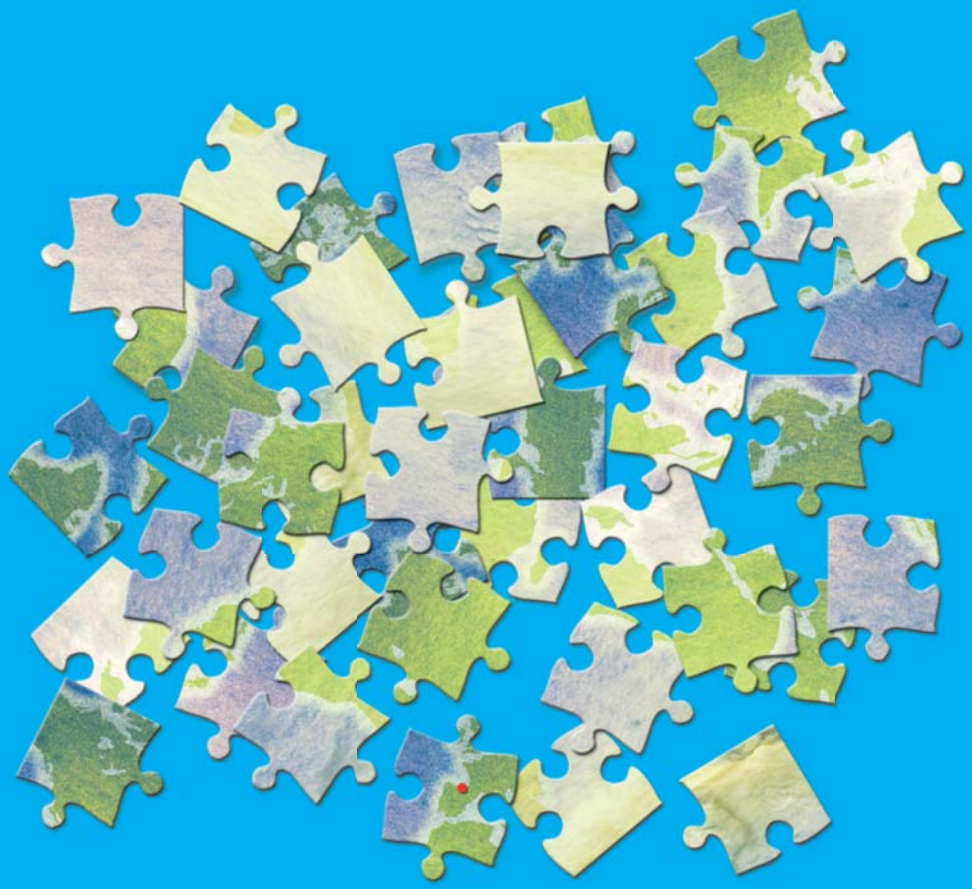
The Basque Country Competitiveness Report 2011

Leading the New Complexity

Executive summary



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2011
Orkestra - Basque Institute of Competitiveness
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With the collaboration of SPRI-Basque Government, Provincial Council of Gipuzkoa, Kutxa, Repsol Petronor, Euskaltel, Boston Consulting Group, Ente Vasco de Energía, Iberdrola and Gamesa.

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© Publicaciones de la Universidad de Deusto
Apartado 1 - E48080 Bilbao
e-mail: publicaciones@deusto.es

ISBN: 978-84-9830-320-9
Legal register: BI - 2.704-2011

Printed in Spain

Printed on recycled paper

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1
Introduction

The Basque Country Competitiveness Report 2011, the third prepared by Orkestra-Basque Institute of Competitiveness, presents the results of the inquiry into the competitiveness of the Basque Country in the time since the publication of the previous edition, in 2009. The previous edition was released at a time when the economic crisis that followed the near-collapse of the international financial system in 2008 indicated a possible paradigm shift in our models of the way markets work and the organization of production and demand at the global level. The data available at the time were essentially circumscribed to a range of more or less plausible scenarios, but which were still insufficient, not only for analyzing the significance of what was happening, but also for positing any early conclusions about their implications for the medium and long term for different regional economies.

Various short-term trends and structural changes converge and affect the competitive environment

Two years later, the global economic environment remains uncertain and the macroeconomic environment is in a permanent state of agitation, forcing public administrations to adjust programs and adopt austerity measures, which was unthinkable until very recently; this in turn, has brought about consequences both in terms of employment and welfare levels, as well as in the capacity for economic growth. At the same time, the difference is that it is now possible to identify short-term trends — the adverse environment due to the major recession that impacted most developed economies — and those which involve structural changes whose origins go back further in time.

The result is that both — short-term trends and structural changes — have implied profound changes in different areas of the hegemonic political and economic order over the past thirty years; changes affecting, among other things, production, consumption, geopolitics, conflicts, management and governance in the public and the private spheres, etc.

The aforementioned structural trends are leading to what the Report terms the *new complexity,* characterized by profound changes in global economic parameters and relations that affect the competitive environment in which firms and regions bid for leadership and the well-being of their citizens over the coming years. This new complexity must be understood in order to compete, but achieving higher levels of well-being will depend on the ability to lead it.

The Basque Country previously demonstrated that it could successfully lead an economy based on efficiency, and the challenge of evolving from the *competitive stage*

of efficiency to the *competitive stage of innovation* is well internalized by the agents of competitiveness. It is now time to define the strategy for leadership in the emerging complexity characterized by:

- globalization of many aspects of the economic, political and social reality, beyond the flows of trade, capital and people;
- fragmentation of production processes into value chains of global reach that distributes activities, rather than sectors as we once knew them, throughout the world;
- the adjustment context, slow growth and austerity in most of the Organization for Economic Cooperation and Development (OECD) countries;
- redefinition of the global economic and political geography, with the emergence of a handful of countries, heretofore considered peripheral (and which in the Report are grouped under the heading Global South), as economic and political actors who are claiming a new role in the global order;
- complex demographic trends characterized by an aging population in many OECD countries and all types of migratory movements;
- centrality of innovation, technology and talent as facilitators of economic dynamics; and,
- uncertainties relating to global issues such as: climate change; the quality, scarcity and price of natural resources; the food crises; the cost and type of energy available, etc.

The emerging competitive landscape differs from the one we knew until a few years ago and will require halting inertia and making tough decisions in an environment characterized by austerity

The publication of this Report comes at a time when the Basque economy is just showing signs of emerging from a period of severe economic contraction, in a context of great global uncertainty. When the developed countries as a whole have overcome the crisis, the landscape will be substantially different from the one we knew until a few years ago and in the meantime major changes and innovations will have occurred in an environment that will be characterized by austerity. Efficacy and efficiency in the use of public and private resources, after years of relative expansion, will be key elements in constituting any strategy that aspires to sustainable leadership in the new competitive environment.

In the context described above, the Report pursues three objectives:

1. to analyze the state of competitiveness of the Basque Country in an environment characterized by a new complexity;
2. to analyze the critical factors that pose challenges to the competitiveness of the Basque Country;
3. to reflect on the design and implementation of competitiveness policies conducive to leadership.

In order to address each of these objectives, the Report has been structured as follows.

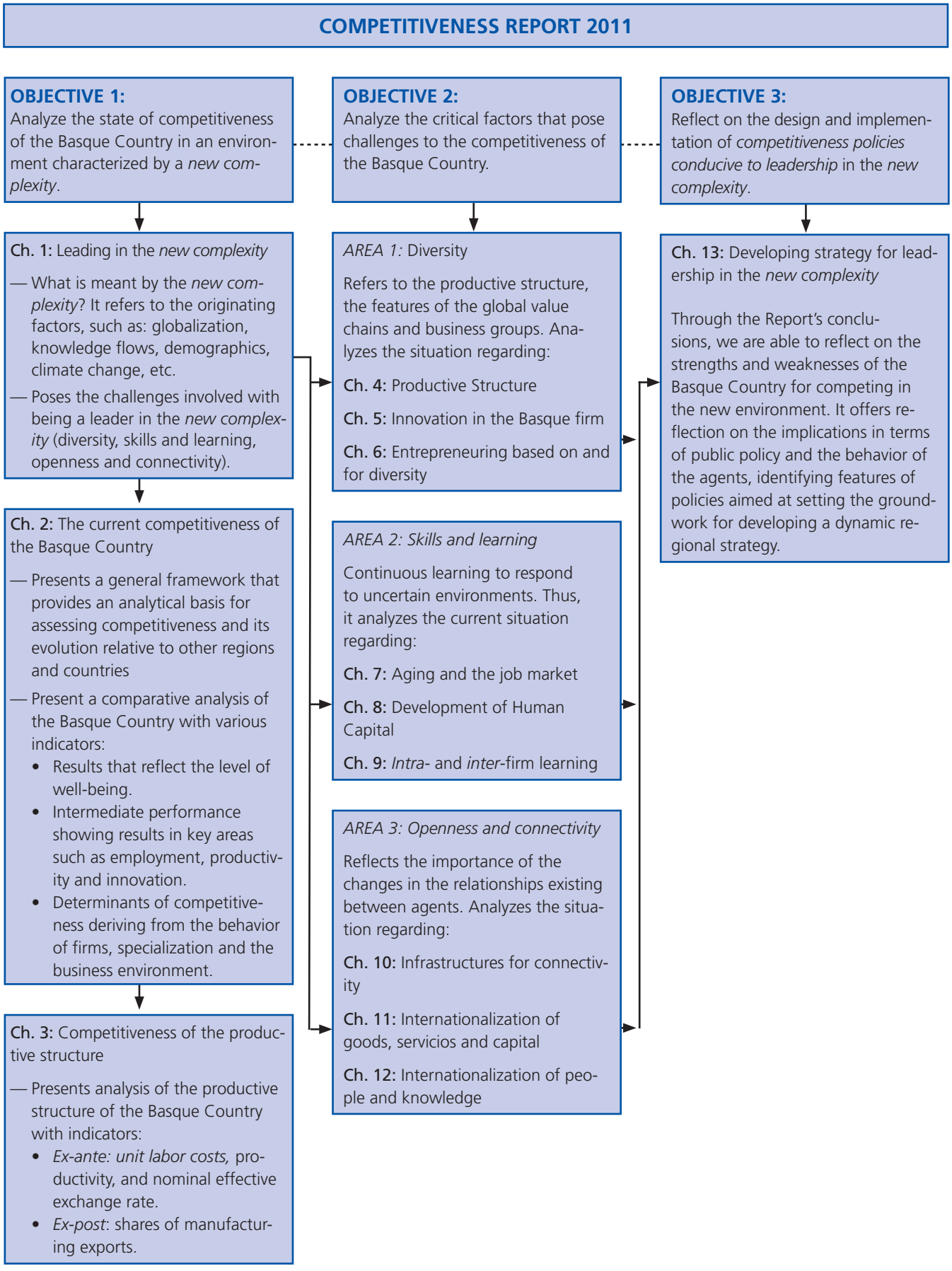
The analysis of the state of competitiveness in the Basque Country is developed over three chapters. The first chapter introduces the features of the new complexity, outlining the challenges it poses and the opportunities it offers to territories, govern-

ments, firms and other agents of competitiveness. Having established the analytical framework, the Report presents an overall diagnosis of the current competitiveness of the Basque Country with respect to other comparable European regions (Chapter 2). Finally, the first section of the Report ends with an assessment of the competitiveness of the productive structure of the Basque Country within the framework of the current debate on the relationship between the evolution of labor costs and productivity (Chapter 3).

To address the second objective, the Report is structured into three areas (Chapters 4-12): Area 1: the *diversity* of the economy and its agents; Area 2: the *skills and learning* that characterize individuals and organizations; Area 3: *openness and connectivity,* both internal and external.

The third objective of the Report — to reflect on the design and implementation of competitiveness policies conducive to leadership — is dealt with in the last chapter (Chapter 13). That is where the main conclusions of the diagnoses in the Report are presented, along with a series of reflections on designing and implementing policies that would contribute to the leadership of the Basque Country in the context of the new complexity of the global economy. (See Illustration 1 for a summary of the objectives, analytical framework and content by chapter for the whole Report.)

ILLUSTRATION 1 Objectives and Analytical Structure of the Report



2
The competitiveness of the Basque Country in the new complexity

2.1. The new complexity

There is a growing consensus that there is now emerging in the sphere of global economic relations a new complexity which frames the analysis, policies and behavior of economic actors, including firms, public policy-makers and civil society as a whole.

The evolution towards this complexity has been gradual and is the confluence of several trends that can be grouped into three main categories:

- complexity arising from globalization;
- complexity arising from trends in the availability of natural resources, demographic structure and patterns in global demand; and,
- complexity arising from the need to reconcile diverse goals in economic policy.

2.1.1. Complexity arising from globalization

This refers to a diverse group of trends associated with what the Report calls processes of *global globalization,* (any apparent redundancy notwithstanding) which go beyond conventional economic relations and include many other areas of relations among people, organizations, and territories. In terms of the resulting economic geography, a functionally fragmented global production system is emerging. In this system firms and territories tend to specialize in certain 'phases' (as opposed to 'sectors') of different productive processes, in function of the relative availability, quality and cost of the resources and inputs needed to develop these phases. In each of the different stages of this fragmented production it is expected that the agents of competitiveness – firms, public administrations, intermediate organizations, systems of innovation, science and technology, etc. – bring the necessary knowledge and innovation capacity for a coordinated and competitive development of the value chain. In this sense, firms and territories compete to develop and expand the value-added captured in the phases in which they are engaged, which implies that regional policy should aim to align the agents of territorial competi-

TABLE 1 Complexity associated with globalization

Factor	Trends	Some implications
Globalization	— Profound changes in international trade and the geography of production and innovation. — Accelerating technological change and innovation. — More permeable relations between sectors and businesses. — Local relevance in global dynamics. — Shift of demand toward the *Global South* and expansion of its businesses in the developed countries. — Importance of learning in open innovation systems. — Multipolar and multilevel forms of governance.	— Specialization of territories and businesses in tasks within global value chains. — Growth of inter-industry and intra-business trade. — Need to develop a *related variety* in production activities and to seek opportunities in *new industry*. — Growing competition from enterprise from the *Global South* coupled with opportunities for cooperation. — Need for innovation systems to advance toward the frontiers of knowledge while developing *mixed strategies* for innovation. — Need to develop processes of participative planning and continuous policy assessment.

tiveness in the search for a larger and more sophisticated insertion in global value chains.

A complex new reality is therefore appearing in: (i) productive relations within businesses, between businesses themselves according to their customer-supplier relationships, within clusters and between value chains; (ii) the relationship between businesses and other agents of competitiveness; (iii) the ways to innovate; and (iv) among the different levels of territorial government, constituting a new multilevel governance the redefines the citizen's and civil society's relationship with government.

2.1.2. Complexity associated with trends in the availability of natural resources, demographic structure and patterns of global demand

This refers to the restrictions, and consequent development opportunities for entrepreneurial initiatives, in economic activity due to changes in the parameters of the means available to achieve the growth and well-being. These changes affect the environment in which firms, governments (of different territorial levels) and other public and private agents operate, posing challenges while offering opportunities.

Trends in the availability of natural resources will demand from business and governments innovative responses that enable them to meet the attendant challenges and opportunities. These responses will require the concerted efforts of society as a whole to increasingly internalize the heretofore-considered externalities and social costs of a production model which performed poorly in dealing with relative shortages of natural resources and energy, and failed to address the impact of economic activity on climate. Regarding the trends associated with changes in the demographic structure, they will necessitate increased productivity and the ability to attract and retain talent, above all if the potential scarcity of labor assets is concentrated in age groups necessary for innovation and competitiveness. Finally, changes in global demand patterns will require the development of sophisticated levels of innovation to meet the demand from the middle classes in emerging countries, forcing business to rethink its sourcing and localization strategies.

TABLE 2 Complexity associated with natural resources, demographic structure and global demand patterns

Factor	Trends	Some implications
Natural and energy resources	Changes in: — Availability of natural resources. — Demand patterns associated with climate change. — Tensions in availability and prices of fossil fuels. — Exploration of new energy sources.	— Global geopolitics and security. — Cost of energy and of other commodities as input. — Technological development, renewable energies and activities coherent with climate change and eco-efficiency. — Importance of energy distribution. — Search for new efficiencies for energy-intensive activities (transport, metallurgy).
Demographic structure	— Aging population in the developed world. — Diverse types of migrations, including talent migration on the global scale.	— Rising dependency ratios. — Potential scarcity of labor assets. — Need to increase productivity. — Opportunities to develop innovations based on aging. — Increase in demand for health and other services. — Need to attract and hold onto talent.
Patterns of global demand	— Weak growth of consumption in Western countries. — Entrance of emerging countries in the global market. — Shift of the critical mass of consumer demand toward the emerging countries.	— Adaptation of products and services to meet the needs and preferences of the most dynamic markets. — Need to develop *frugal innovation*. — Redefinition of supply and localization strategies by businesses.

2.1.3. Complexity arising from the need to reconcile goals in the definition, design and assessment of economic policies.

Society, and as a reflection of the former, the political system including local, national and international governance, are increasingly taking into consideration the improvement of well-being as a goal that goes beyond the maximization of GDP or per capita income. Successive initiatives (by Sarkozy, Cameron, Stiglitz, among others) have sought to combine traditional growth and its measure with social and environmental sustainability. From another viewpoint, a recent article by Porter and Kramer (2011)[1] developed the concept of *shared value* to highlight the synergy, rather than antagonism, between the pursuit of private benefits and a broad range of collective goals shared by society. The different approaches agree on the necessity to overcome the primacy of the short term and understand that the interests of shareholders must not conflict with the aspirations of society as a whole (stakeholders).

In this manner, we can summarize the new complexity on three main levels:

- increased complexity in relations (in space, types of agents, and types of activities)
- recognition of the limits of environmental, energy and demographic resources; and,
- the need to integrate well-being-related objectives into the analytical framework of competitiveness traditionally focused on economic growth.

[1] Porter, M.E. and Kramer, M.R. (2011): "Creating Shared Value", *Harvard Business Review*; Jan/Feb, Vol. 89, Issue 1/2, p. 62-77

TABLE 3 Complexity arising from the need to reconcile public policy objectives

Factor	Trends	Some implications
Need to reconcile objectives	— Recognition of the need to reconcile the objectives of business with those of greater society. — Greater awareness of the fact that economic development can be incompatible with environmental sustainability and socially acceptable well-being parameters.	— Need to overcome the primacy of the short term. — Need to incorporate concepts of environmental and social sustainability in the form of measuring growth.

The challenge is to spur innovation and creativity and to advance toward the frontiers of knowledge

Like all its neighbouring economies, experienciencing macroeconomic adjustment, which apart from its social repercussions, limits agents' room for manouevre, the Basque economy finds itself at a crossroads; in an increasingly complex and changing context, the keys to which differ from those prevailing in the previous scenario. The challenge, as mentioned in the previous Report, is to lead in the emerging stage of innovation, aware that the transition from one stage to another is complex, that it requires a break with old habits, and that it will take time. In any case, it is a transition in which *business as usual* is not an option. In order to lead the new complexity it is not enough to do — albeit better — what one has already been doing well and is good at; rather the challenge is to spur innovation and creativity and to advance toward the frontiers of knowledge. To achieve this, society and all actors relevant to competitiveness must understand their possibilities of joining spatially and functionally fragmented global value chains. They should understand as well their possibilities of moving towards more complex forms of specialization, by applying innovation and knowledge. In undertaking this transition, they also need to be aware of their strengths and weaknesses, as well as the paths to success.

The Report seeks to clarify some of these paths and deals in depth with concepts such as related variety, new industry, joint innovation, smart specialization, platforms, global value chains, etc.

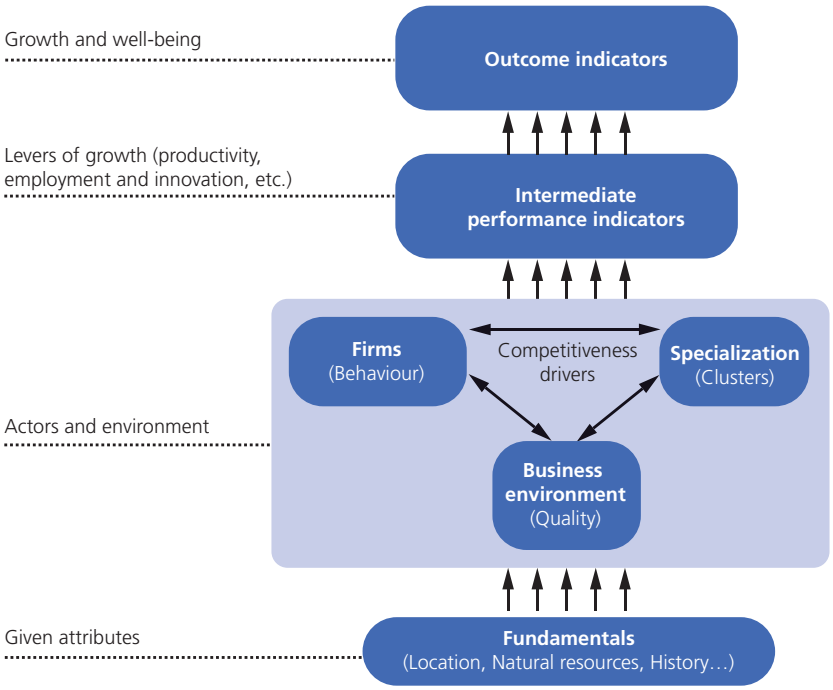
2.2. The competitiveness of the Basque Country

After presenting the features of the new complexity, the Report examines the Basque Country's regional competitiveness by means of comparative regional analysis and by analysis of its production system.

With regard to the former, the Report adapts a framework developed by Orkestra for the European Cluster Observatory, an online platform of the European Union, which provides a single access point for information on and analyses of clusters and regional competitiveness in Europe. This project is funded by the *Europe INNOVA* program of the Directorate-General for Enterprise and Industry of the European Commission. The set of indicators obtained, with successive improvements in the coming years, will enable Orkestra to keep track of the evolution of the competitiveness of the Basque Country in its future Competitiveness Reports.

Secondly, the assessment of the competitiveness of the Basque productive system is based on an analysis of indicators of price, labor costs and productivity (*ex ante* competitiveness), and export quotas (*ex post* competitiveness).

ILLUSTRATION 2 Regional Competitiveness Framework of the European Cluster Observatory



2.2.1. Comparative regional analysis

The analytical framework used in the Report structures on three levels the factors that reflect regional economic activity and determine its competitive success (see Illustration 2). Outcome indicators are at the top of the framework; they indicate final performance, and measure the level of well-being of the population. Accordingly, intermediate performance indicators (employment, productivity, innovation etc.) are important to achieving those outcomes. Finally, the so-called determinants of competitiveness are of critical importance to the processes that generate outcomes at the two previous levels and are divided into three groups of indicators: the behavior of business; the specialization of the territory and its clusters; and the quality of the business environment.

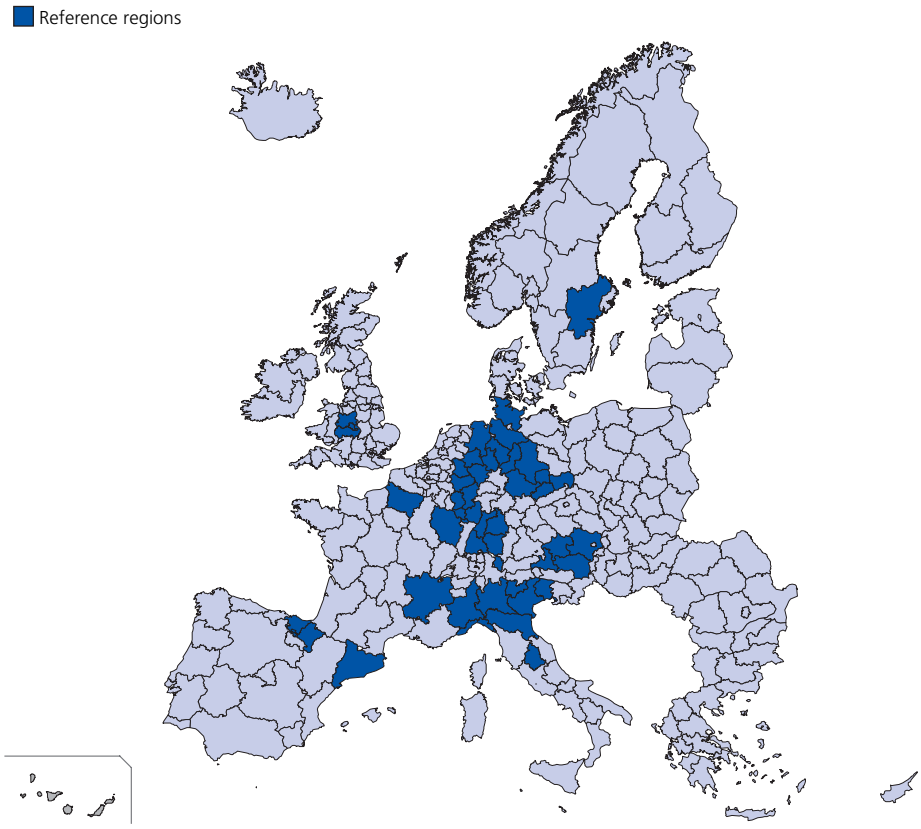
For each of the three levels that make up the regional competitiveness framework of the European Cluster Observatory, the Report presents a comparative analysis of the Basque Country with respect to all European regions. This same analysis was done with respect to a group of thirty *benchmark regions* identified by Navarro et al (2011)[2],whose economic structure is similar to that of the Basque Country (See Map 1). Finally, it analyzes in further detail the evolution of the Basque Country over the last decade, comparing it with three benchmark groups - Spain, EU-15 and EU-27. This provides an overview of trends and the most recent snapshot, based on the available data.

The competitiveness analysis is performed with respect to European regions and particularly those regions with greater similarity in terms of geo-demographic and economic structure

[2] Navarro. M. (dir.), Gibaja, J.J., Franco, S., Murciego, A. & Sáenz, J. (2011): *Indicadores de innovación y benchmarking. Reflexión y propuesta para el País Vasco*. Zamudio: Innobasque.

MAP 1 Reference Regions for the Basque Country

NUTS	Name
ES21	Basque Country
ITC1	Piedmont
AT31	Upper Austria
ITD3	Veneto
DED	Saxony
AT12	Lower Austria
ITD4	Friuli-Venezia Giulia
DEF	Schleswig-Holstein
ES51	Catalonia
AT22	Styria
AT34	Vorarlberg
DEC	Saarland
DEG	Thuringia
ITC3	Liguria
UKG	West Midlands
ITD5	Emilia-Romagna
DE9	Lower Saxony
FR22	Picardy
DE1	Baden-Württemberg
DEA	North Rhine Westphalia
ITC4	Lombardy
FR71	Rhône-Alpes
FR41	Lorraine
ITD2	P. A. Trento
SE12	East Middle Sweden
DEE	Saxony-Anhalt
ES22	Community of Navarre
AT32	Salzburg
DEB	Rhineland-Palatinate
ITE2	Umbria



Source: Navarro *et al.* (2011).

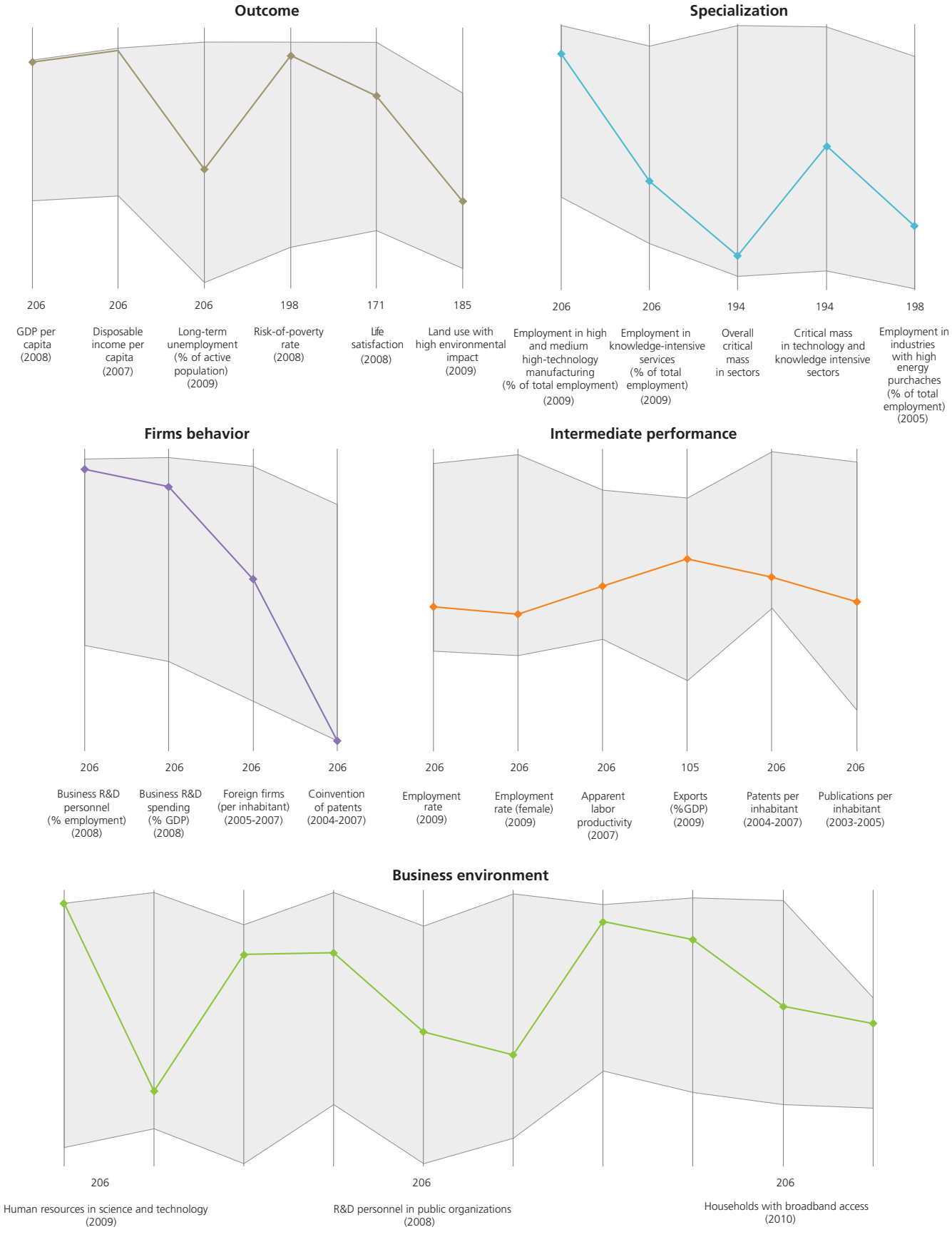
Graph 1 is a comparison of the Basque Country's position according to the different indicators. Each of the diagrams shows the position of the Basque Country (colored line) with respect to the benchmark regions (shaded area) and with respect to all European regions, whose number is indicated below. Note that the top edge of the shaded area corresponds to the highest ranking among the benchmark regions, and the lower edge, the lowest.

2.2.1.1. *Outcome indicators*

The Basque Country performs well in the economic and social dimensions, except in regard to long-term unemployment

The Basque Country performs well with respect to indicators of this type. In those which reflect the economic dimension (GDP per capita and disposable income per capita) and in some of those which reflect well-being-related social dimensions (risk of poverty and life satisfaction), it is within the top 20%, both when compared to European regions in general and when compared to the benchmark regions.

GRAPH 1 Basque Country: comparative diagram of positions in the different indicators



However, the results are less encouraging in the cases of two other indicators of social well-being: the rate of long-term unemployment and the high environmental impact on land, which is a proxy, not exempt from criticism, of the environmental cost of growth.

Finally, the analysis of the evolution of the output indicators shows that, although the impact of the economic crisis on the Basque Country was greater than the European average, GDP per capita levels are still above the European average and long-term unemployment just below it.

2.2.1.2. *Intermediate performance indicators*

Results in the intermediate performance indicators are poor, although certain improvements are now being noted

In comparison with the above indicators, here there is a significant shift in the relative position of the Basque Country. In intermediate economic performance indicators (employment and unemployment rates, productivity, exports), among European regions the Basque Country ranks in the middle, a situation that is even more worrying when compared with the benchmark regions. The same applies to the innovative performance indicators (patents and publications).

The analysis of the evolution of intermediate performance indicators shows that the impact of the crisis on employment has been more pronounced in the Basque Country than in the rest of Europe. The same analysis indicates, however, that the evolution of patent applications has been positive in recent years, although the proportion of high-tech patents out of the total remains significantly lower than the European average.

The analysis seems to confirm the persistence of the so-called *innovation paradox,* that is, the apparent contradiction between the Basque Country's strong economic performance and its less strong performance in innovation. However, the Report notes a recent study by Orkestra in which Navarro et al (2011)[3] argue that this paradox has virtually disappeared. This would be the result of the combined impact of the Basque Country's worsening economic performance in recent years, due to the crisis, and the fact that, nonetheless, over the same period, the innovation effort does not seem to have slackened. This is an issue that Orkestra will continue to analyze, due to its major implications (See Box 1).

2.2.1.3. *Determinants of competitiveness*

Firms' R&D behavior is very positive, however their performance in the co-invention of patents shows a certain degree of insularism

These indicators are critical elements in the theoretical framework developed, as factors that determine the performance of a territory in the outcome indicators and also because they can be influenced, through public policy The set of indicators used is divided into three groups: (i) corporate behavior, (ii) sectoral specialization and clusters, and (iii) quality of the business environment. The Basque Country performs well in indicators such as employment and R&D spending, and relatively poorly in others such as patent co-invention and cluster strength at the European level.

[3] Navarro. M. (dir.), Gibaja, J.J., Franco, S., Murciego, A. & Sáenz, J. (2011): *Indicadores de innovación y benchmarking. Reflexión y propuesta para el País Vasco.* Zamudio: Innobasque.

BOX 1 Can we still speak about the Innovation Paradox?

In our second Competitiveness Report, we advanced an idea that has been fruitful in the economic debate in the country over these last two years: the so-called innovation paradox, understood as the apparent contradiction between the Basque Country's strong economic performance and its relatively mediocre innovation performance. The analysis carried out in the second chapter of the Report seems to confirm that the innovation paradox remains, since economic performance, measured in terms of GDP and disposable income, is very much above the results of innovation intermediate performance measured in terms of patents and publications.

However, in another recent Orkestra publication, Navarro et al. (2011) put forward the idea that the innovation paradox would have practically disappeared. There are methodological reasons that might explain this discrepancy, since the study bases its conclusions on composite indicators including additional variables that show somewhat worse results in the economy (productivity and employment rate) and better in innovation (employment in high- and medium-high technology manufactures and intensive knowledge services).

The question about whether the paradox is still present cannot be completely clarified and it is a theme that at Orkestra we will continue analyzing, given its important implications.

The possibility that the paradox is really disappearing is not unhinged, especially bearing in mind that in the last two years a relative worsening in the economic performance indicator has come about in the Basque Country, and consequently, the lead the Basques had in this respect is now shorter. However, during the crisis the innovation effort being made in the Basque Country does not seem to have been reduced – as, for example, is shown by the growth of R&D expenditure. This fading innovation paradox phenomenon is not at all unusual. Denmark, for example, has been repeatedly mentioned in the literature as an example of innovation paradox, a paradox whose economic and innovation performance indicators do not bear out.

The Danish innovation paradox tended to justify itself claiming that due to its sectoral specialization (low-tech sectors such as food) and company composition (mainly SMEs), the prevailing innovation and learning mode was DUI, based on experience, which statistics do not normally offer appropriate indicators for. Nowadays, however, even with traditional indicators based on the STI innovation and learning mode that is based on scientific and technological knowledge, Denmark is clearly above the European average. This seems to indicate that once a certain level of development has been passed, it is not possible to maintain economic leadership with some weakness in STI innovation and that the most successful innovation strategies are mixed, that is, those that combine different innovation modes (although the degree of combination can vary between some territories and others).

In the case of the Basque Country, it has also been argued that the innovation paradox could be put down to the fact that, because of its sectoral specialization and type of firm, its innovation mode should be more DUI than STI type. In Chapter 5 of the Report, this apparent strength in the DUI innovation mode in the Basque Country is questioned. Moreover, everything points to the fact the advance in innovation in the Basque Country in recent years is due more to the commitments made to R&D, than to organizational and marketing innovations. If, as previously indicated, the most successful innovation strategies are those combining both approaches, we cannot base our progress on only one of them. Regardless of whether the innovation paradox is maintained or not, the *new complexity* requires being capable of taking on mixed innovation strategies.

Illustration 3 summarizes some of the indicators analyzed. It shows the values of these indicators in the Basque Country from the last available year and from four or five years earlier, in order to track their evolution. The indicators whose evolution has been negative in the two years considered are shown in red. It also shows how the Basque Country ranks among all European and benchmark regions. The cases in which the Basque Country stands in lower half of the ranking are also shown in red.

In order to identify the factors underlying the findings of the diagnosis, as well as an overview of the key indicators presented, it is necessary to analyze further the different elements that determine the competitiveness of the Basque Country. The remainder of the Report deals with this task.

ILLUSTRATION 3 Summary of Indicators

OUTCOME INDICATORS	Figure		Ranking	
	2005	2010	European Regions	Reference Regions
GDP per capita (PPP)	29,726	32,778	18/206	2/30
Risk of poverty (%)[1]	9.6	9.4	12/198	4/30
Long-term unemployment (%)	1.82	3.8	107/206	19/30

INTERMEDIATE PERFORMANCE INDICATORS	Figure		Ranking	
	2005	2010	European Regions	Reference Regions
Employment rate (%)	65.4	65.1	107/206	23/30
Unemployment rate (%)	7.3	10.5	161/206	26/30
Apparent labor productivity	60.6	69.4	93/206	20/30
EPO Patents per million inhab.[2]	51.4	41.6	87/206	27/30

Competitiveness drivers

FIRMS BEHAVIOUR	Figure		Ranking	
	2005	2008	European Regions	Reference Regions
Business R&D spending (% GDP)	1.15	1.6	26/206	6/30
Patent coinvention (% total)	1.8	3.1	199/206	30/30

SPECIALIZATION	Figure		Ranking	
	2005	2009	European Regions	Reference Regions
Employment in high and medium-high manufacturing (% total)	9.6	9.1	23/206	7/30
Employment in knowledge-intensive services (% total)	30.7	33.1	122/206	20/30

BUSINESS ENVIRONMENT	Figure		Ranking	
	2005	2009	European Regions	Reference Regions
Human resources in science and technology – core (% active pop.)	23.9	25.0	10/206	1/30
Students in tertiary education (% pop. aged 20-24)	68.4	70.1	48/206	6/30
Public R&D spending (% GDP)	0.33	0.38	123/206	22/30
Households with broadband access[3]	30.0	63.0	87/206	18/30

[1] Risk of poverty rates for 2009
[2] Patent figures for 2004 and 2007
[3] Broadband access figures for 2006 and 2010

2.2.2. *Ex ante* and *ex post* competitiveness of the productive structure

Well-being and competitiveness depend on productivity

As mentioned above, in the context of the current, albeit always relevant debate regarding the relationship between the evolution of labor costs and productivity, the Report includes an assessment of the competitiveness of the Basque productive structure with significant findings.

The analysis of the competitiveness of the productive sector of a territory can be carried out either based on the costs and prices that determine the competitiveness of its products (*ex ante* competitiveness), or on the evolution of the territory's exports with respect to the exports from all those territories with which it competes (*ex post* competitiveness). The Report examines the level and evolution of these competitiveness indicators, both *ex ante* and *ex post*, for Basque manufacturing industry.

2.2.2.1. Ex ante *competitiveness*

Out of total costs, among the most important are labor costs. In this regard, the most relevant indicator for competitiveness analysis is that which measures the labor costs per unit of output (unit labor costs or ULC). These costs are the ratio of

hourly labor costs (HLC) to productivity. However, the final price of a product in international markets depends not only on costs and prices but on the exchange rate as well.

In Spain and the Basque Country, the evolution of labor costs are hindering competitiveness

In the period 1995-2007, HLC rose faster than productivity in both the Basque Country and Spain, which led to a rise in ULC. In itself, this increase, since it was higher than in the EU-15, the enlargement countries and the US, diminished the competitiveness of Basque and Spanish manufacturing. This process was accentuated during the crisis, due to the larger drop in manufacturing productivity in the Basque Country (see Table 4).

The loss of cost competitiveness worsened due to the evolution of the exchange rate between 2000 and 2008

The loss of cost competitiveness worsened in the period 2000-2008 due to appreciation of the nominal effective exchange rate. However, 2008 and 2010 saw a slight respite, because of a slight inflection and subsequent depreciation in the nominal effective exchange rate index. Since late 2010, however, the trend has shifted back toward currency appreciation, due to the weakness of the dollar.

The analysis of the comparative levels of these variables, from the latest year for which data are available, shows that HLC in the Basque Country are lower than in the EU-15 countries and Germany — a key country as the main competitor of the Basque industry within that group — although they are higher than the Spanish average, and above all, than that of the enlargement countries. This point is important because some of these countries are direct competitors of Basque manufacturing, and thus indicates the need for differentiation in the type of goods offered. Moreover, since the Basque Country is in an intermediate position in terms of length of workday, the results barely change when we calculate in labor costs and productivity per hour worked or per worker (see Table 5).

TABLE 4 Annual rate of change of hourly labor costs and productivity, and of unit labor costs, in manufacturing

	1995-2007						2007-2008		2008-2009	
	Basque Country	Spain	Germany	EU-15	EU-10	USA	Basque Country	Spain	Basque Country	Spain
HLC	3.26	3.21	2.48	2.82	6.74	3.92	5.97	5.27	—	2.13
Productivity	2.05	0.86	3.10	2.81	7.51	4.39	0.12	–1.46	–8.81	–0.75
ULC	1.21	2.35	–0.62	0.01	–0.77	–0.48	5.85	6.74	—	2.88

Source: IVIE, based on EU KLEMS (2009), Eustat and INE.

TABLE 5 Analysis of the comparative level: Hourly Labor Costs, Productivity and Unit Labor Costs

2007	Basque Country	Spain	Germany	EU-15	EU-10	USA
Hourly Labor Costs HLC (PPP-$)	25.9	21.4	32.6	28.3	9.2	31.9
Productivity (PPP-$)	41.2	33.4	48.8	41.6	17.3	49.8
Unit Labor Costs (%)	73.0	88.2	76.1	76.4	61.0	61.8

Source IVIE, based on EU KLEMS (2009), Eustat and INE.

With regard to productivity, the opposite happens. As a result of the interplay between HLC and productivity, ULC in the Basque Country, although lower than in the EU-15 and Germany, are much higher than those of the enlargement countries.

To avoid the handicap in labor costs versus the enlargement countries, and capitalize on the advantage over Germany and EU-15, supply differentiation must be promoted

The implications of these differences in ULC for the competitive position of Basque manufacturing depends on whom it is actually competing with, which in turn is determined by the degree of differentiation and sophistication of its products. As mentioned above, the only way to overcome the Basque Country's almost insuperable handicap in ULC in competing with the enlargement countries is by differentiating its products. Thus the main recommendation for business and competitiveness policymakers would be to foster export supply differentiation.

In the ongoing effort required to control ULC, the scope for action in HLC is clearly narrower than it is for productivity. In order to achieve the necessary coordination in the evolution of these two variables, it will be advisable to increase company employee participation by involving them in, and making them co-responsible for, productivity growth. And in order to act on the latter, moving beyond traditional R&D, the Report argues in favor of acting in the sphere of organizational improvement, worker training, information and communication technologies (ICT), design and engineering, as well as in other areas of intangible assets. In all of these, the analysis shows the room available for improvement in the Basque Country.

2.2.2.2. Ex post *competitiveness*

Despite the increased labor costs and exchange rate appreciation, Basque exports saw gains in terms of global market share

If instead of focusing on ULC — as an indicator of *ex ante* competitiveness — the Report examines manufacturing export shares out of world exports — as an *ex post* competitiveness indicator — the analysis shows that, contrary to what the greater rise in ULC and appreciation of the nominal effective exchange rate experienced by the Basque Country would suggest, the Basque Country's share of manufacturing exports grew significantly from 2000 to 2008.

The positive performance in terms of export shares can be explained by three main factors: (i) the changes in export shares, which were calculated in monetary rather than real terms, so that the appreciation of the euro between 2000 and 2008 leads to greater value for the same volume of exports; (ii) the sectoral composition of manufacturing exports in the Basque Country, more concentrated in sectors with higher export growth; and (iii) advances in the quality and value of Spanish and Basque exports, not reflected in their prices.

During the crisis, the slump in exports from the metals and metal products sector reduced the share of manufacturing exports

By 2009, however, the Basque Country's share of manufacturing exports fell to 0.18%, from 0.20% in 2008, but still remains above the 0.17% of 2000. This sharp drop is due largely to the slump in exports from the metals and metal products sector. As opposed to the rest of Spain, where the construction sector was primarily responsible for the fall in gross value added (GVA) of the market economy, in the case of the Basque economy, the drop came about mainly due to the iron and steel and metal products sector, although this showed some signs of recovery in 2010.

In this regard, public policies and company strategies should seek to act upon those factors which would enable ex post competitiveness to grow faster than one would expect from the *ex ante* competitiveness indicators: improving the quality and composition of exported products and orienting exports toward geographic markets that show a higher than average growth of world trade.

In summary, from the overall diagnosis of the analysis of the Basque Country's competitiveness compared with the rest of European and benchmark regions, and of *ex ante* and *ex post* competitiveness, the Report concludes that the region is in a strong position in terms of economic performance indicators, although there remains room for improvement in environmental and social-cohesion indicators. The Basque Country ranks significantly lower in the intermediate economic and innovation indicators. It is also noted that the Basque Country has lost competitiveness in costs and that only by increasing its productivity and differentiating its products will it be able to overcome this disadvantage.

3
Challenges for the competitiveness of the Basque Country

Following the diagnosis of the Basque Country's competitiveness and its productive structure, the Report addresses the challenges for competitiveness in the environment of emerging complexity and divides them into three Areas:

- the diversity of the economy and its agents, which form the foundation for development;
- the skills and learning level that characterize people and organizations; and
- the openness and connectivity, internal and external, of the territory and its actors.

3.1. Area 1: Diversity

One of the key challenges in the *new complexity* is to develop and manage the diversity of the economy and its agents. In the Report, the concept of diversity is conceptualized as:

- the heterogeneity of the productive structure;
- strategic diversification by means of innovation; and
- the incorporation of new activities, products, markets and economic sectors by means of entrepreneurial activity.

As happens with financial investment, diversification of the productive structure reduces the risk of shock or asymmetric disturbances. However, according to the most avant-garde analyses on the matter, productive diversification is beneficial only when it is based on related variety, that is, when the activities are similar or share similar knowledge bases. In order for knowledge and innovations to flow from one activity to another, the cognitive gap between them must be relatively small: related variety facilitates the flow and absorption of knowledge, and enables it to yield significant fertilization and innovation.

3.1.1. Productive activity and competitiveness policies

The first issue discussed is the evolution of the basic classification units of productive activity and of competitiveness policies: the firm, the sector and the cluster.

The growing economic complexity is reflected in the insufficiency of the units or concepts heretofore employed to classify economic activity and competitiveness policies.

The roles of the firm, sector and cluster, as units of analysis and organization of relevant financial transactions, are undergoing profound transformations.

3.1.1.1. *Firm*

For the basic unit of competitive analysis and object of study of the Orkestra Strategy Department, the complexity environment is characterized by the emergence of two seemingly contradictory trends: economic globalization and regionalization, and outsourcing and unbundling of business activities. These trends would demand the use of statistics and analysis including factors that were previously not so necessary to bear in mind.

For example, to reflect the regional situation properly, on-site data are preferable, indicating whether they refer to the main site, which is information statistics do not usually provide. Accordingly, to capture the realities resulting from the processes of globalization and unbundling of activities, it is essential to have data sorted by groups of firms. Policies cannot ignore these realities, since the so-called *site effects* and the true capacities of the businesses within their geographical domain are linked to them.

Shareholding ties among firms are more common in the Basque Country than in other regions

In this regard, the Report highlights that in the Basque Country shareholding ties between firms, both backwards and forwards, are more common than in other regions. This is seen in the presence of industrial corporations among the shareholders of Basque firms and in shares held by the latter in other firms (See Table 6). This phenomenon is especially prominent in larger firms, manufacturing industry and hi-tech sectors. In addition to continuing to facilitate these business-group creation processes, efforts should be made to further exploit the potential — and, according to some studies, now minor — pull effect of such groups, especially in the spheres of innovation and internationalization.

98.9% of Basque companies are small, 1% medium-sized and only 0.1% are large

In different parts of the Report it is shown that the relatively small size of Basque companies is an obstacle for innovation incorporation and development, for example, or for exporting capacity to non-traditional markets.

3.1.1.2. *Sector*

The competitive success of manufacturing firms depends increasingly on the service activities that they develop or incorporate. The concept of *new industry* reflects this new situation

All the analyses reveal the blurring of inter-sectoral boundaries and the need to rethink the classifications of economic activity employed in this area. Especially noteworthy is the growing overlap between industry and services. Due to increasing globalization and relocation, as well as advances in ICT, the competitiveness of industrial firms in advanced countries depends increasingly on the tertiary activities they incorporate: both in the pre-production (design and R&D, principally) and the post-production stage (marketing, maintenance, training, customer service, etc.).

In many cases, tertiary activities such as those referred to above are carried out within the industrial firm, but, in response to a philosophy of open innovation, they are increasingly prone to be outsourced to specialized businesses. Thus, business-related services firms (also called producer services) have grown to play a major role in advanced societies. Analysts are already talking about the *new industry,* a term that encompasses such services. Outstanding among these new producer services, are knowledge-intensive services, which, according to some studies, today have the capacity to play a structuring role equivalent to that of capital goods in the latter half of the 20th century. From this it follows that competitiveness policies should broaden their scope to include not only manufacturing firms, but also this other type of firm;

TABLE 6 Firms with industrial corporations among their shareholders or with shares in industrial corporations (%)

	Firms with industrial corporations as shareholders (%)						Firms with shares in industrial corporations (%)					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
Andalucía	6.8	7.5	6.1	7.6	5.8	6.2	4.1	4.8	4.0	4.5	4.5	4.6
Aragón	8.0	9.0	7.7	9.4	7.8	7.9	5.1	6.2	5.2	5.8	6.0	6.3
P. Asturias	6.9	7.9	7.1	8.3	6.7	7.4	4.8	5.9	5.3	5.9	5.9	6.0
I. Baleares	9.5	10.4	8.5	9.6	8.2	8.1	5.8	6.4	5.5	5.9	5.8	5.7
Cataluña	10.6	11.5	9.2	10.4	8.8	9.0	6.7	7.6	6.3	6.8	6.6	6.8
Ceuta	10.4	10.9	8.4	10.2	6.5	6.7	10.6	11.3	8.1	8.2	8.0	7.5
Castilla-León	6.6	7.3	6.1	7.7	6.1	6.2	4.3	5.1	4.5	4.8	4.8	5.0
Castilla-La Mancha	4.5	5.1	4.3	5.8	4.0	4.4	2.7	3.5	3.1	3.5	3.5	3.7
Extremadura	6.2	6.8	6.2	7.9	6.0	6.6	3.9	5.5	5.0	5.7	5.7	6.2
Galicia	7.8	8.8	7.6	9.4	6.9	7.2	5.2	6.4	5.6	6.2	5.6	5.8
I. Canarias	9.0	9.6	8.1	9.0	7.0	7.2	5.6	6.4	5.4	5.8	5.6	5.6
C. Madrid	12.6	13.6	10.8	12.3	10.5	10.6	8.4	9.2	7.7	8.2	8.0	8.1
Melilla	6.6	7.3	5.4	7.1	4.2	5.3	4.8	5.5	4.1	4.2	4.6	4.3
Murcia	5.9	6.8	5.6	7.2	5.2	5.6	3.9	5.0	4.3	4.6	4.4	4.6
Navarra	9.6	10.3	8.6	10.3	9.4	9.7	7.5	8.7	7.4	8.2	8.4	8.4
Basque Country	11.9	13.0	10.8	13.0	11.1	11.3	8.6	10.4	8.6	9.2	9.2	9.4
La Rioja	9.4	11.0	8.9	10.5	8.7	9.0	6.8	7.8	6.7	7.4	7.8	8.0
Cantabria	7.8	8.9	7.3	8.4	6.8	6.7	5.6	6.3	5.4	5.8	5.6	5.6
C. Valenciana	6.8	7.6	6.1	7.3	5.6	5.9	4.9	5.7	4.7	5.0	4.9	5.0
Total	**9.0**	**9.9**	**8.0**	**9.4**	**7.7**	**7.9**	**5.9**	**6.8**	**5.7**	**6.2**	**6.1**	**6.2**

Source: SABI-Informa, DVD, December 2005-2010. Prepared by the Authors.

and among the activities they promote, not merely production and R&D, but also measures to support design and marketing.

3.1.1.3. *Cluster*

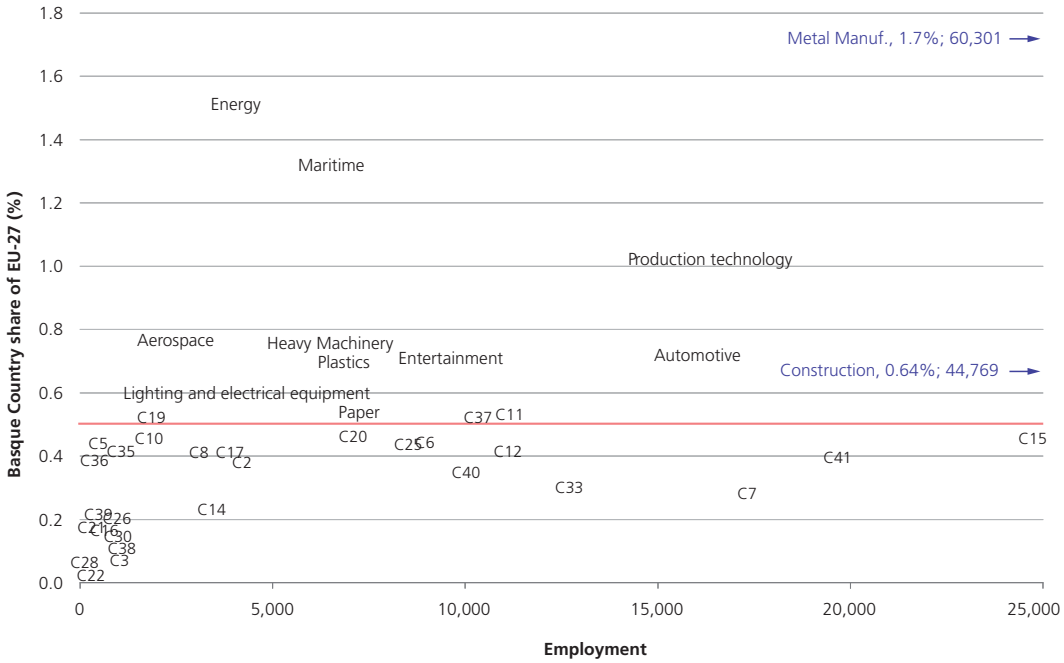
The success of clusters is closely linked to how they integrate into global value chains

In recent years, there has been a growing emphasis on a cross-concept of clusters (the so-called platforms) as well as, in the case of vertical clusters, on a geographical broadening of their analysis and operations, focusing more on their integration in global value chains. The former appears to be in response to changes in the relative importance of factors arising from advances in ICT and globalization, and thus instead of the traditional cluster focus on exploiting economies of scale, production, vertical ties and specialization, the new emerging logic emphasizes economies of scope, in the market, crosswise or transversally, and in heterogeneity and diversity. Graph 2 shows the degree of specialization of several Basque clusters within the EU-27, and their economic impact measured in terms of employment. It can be observed that economic activities related to manufacturing stand out, which could be partly explained by the region's industrial legacy.

Cluster associations in the Basque Country correspond to cluster realities based on both value chains (aeronautics, automotive, paper, electrical appliances) and more transverse realities (environmental, logistics and mobility) and projects to exploit interactions, such as the electric car — an example of knowledge co-generation among automotive, energy and electronics, and ICT clusters — have been launched.

With regard to the greater focus on integrating clusters in global value chains, the Report highlights the need to understand the particular type of value chain best fitted to

GRAPH 2 Map of clusters in the Basque Country



Source: European Cluster Observatory. Prepared by the Authors.

Note: The straight horizontal line at 0.5 indicates the share of employment in the Basque Country with regards to the total number of regions in the ECO database. Employment in the metal-manufacturing and building clusters exceeds the scale of the graph, and so it is specifically presented in the graph. Only names of clusters with a degree of specialization clearly greater than this average share are included, since those are the ones that the Basque Country specializes in. The corresponding names for the remaining codes are as follows:

C1 Aerospace; C2 Agriculture; C3 Apparel; C4 Automotive; C5 Biotech; C6 Building equipment; C7 Business services; C8 Chemical; C9 Construction; C10 Construction materials; C11 Distribution; C12 Education and knowledge creation; C13 Entertainment; C14 Farming; C15 Financial services; C16 Footwear; C17 Furniture; C18 Heavy machinery; C19 Instruments; C20 IT; C21 Jewelry; C22 Leather; C23 Lighting and electrical equipment; C24 Maritime; C25 Media and publishing; C26 Medical devices; C27 Metal manufacturing; C28 Oil and gas; C29 Paper; C30 Pharmaceuticals; C31 Plastics; C32 Energy; C33 Processed food; C34 Production technology; C35 Sporting and recreational goods; C36 Stone quarries; C37 Telecom; C38 Textiles; C39 Tobacco; C40 Tourism and hospitality; C41 Transport and logistics.

an activity. Hence the need for a typology that distinguishes between captive, hierarchical, modular, relational and market value chains[4], both in order to understand this integration and so that public policies foster different learning processes according to the type of chain, and steer the transition away from the least favorable ones and toward the most favorable.

Territories like the Basque Country, with related variety in their production structure, achieve higher growth rates in productivity

Finally, as mentioned above, recent literature has moved beyond the traditional dichotomy between specialization and variety, within the latter distinguishing between unrelated variety and *related variety.* Of the three possible strategies (specialization, unrelated variety and *related variety*) the latter delivers the best results in terms of innovation and growth. The three Basque provinces (especially Gipuzkoa) are seen to

[4] "Market" global chains are those whose components act separately, without any lasting relations or deep mutual knowledge. In "modular" chains, mutual knowledge of the agents comprising the chain is greater and transactions normally rest on products of greater quality. In the "relational" value chain, as the products incorporate an important complexity, so that the competences possessed by each of its different components must combine and complement each other. In "captive" and "hierarchal" chains, a large multinational company plays a dominant role, controlling the knowledge. In the hierarchal chain this takes place through total internationalization of the steps in the chain, while in the captive chain, the supplying company retains the control, even if it still remains formally independent.

score particularly high in terms of related variety and this appears to be an important factor in their strong performance in terms of innovation and economic growth.

Smart specialization strategies must be based on the region's related variety

In this regard, the Basque Country's competitiveness strategy should seek to sustain and exploit this high degree of related variety, rather than strategies of pure specialization or diversification. This is coherent with the recent European Commission recommendations for *smart specialization* strategies, which, for instance, do not refer simply to promoting bio-, nano- and other generic technologies, but rather to focusing these technologies on specific areas associated with the productive structure of the territory.

3.1.2. Innovation in the firm

The second element addressed in this Area is the analysis of corporate innovation strategies.

Innovation is a critical factor in the competitiveness of modern economies. Firms must tackle emerging new challenges and an increasingly complex world through innovation, and therefore must define their innovation strategies. But there is no single way to innovate, and firms' innovation strategies may be diverse and complex. In-depth research into the internal innovation processes of Basque firms (e.g., through corporate strategy analysis, case studies, etc.), however, is scarce.

In an attempt to better understand the phenomenon of innovation in firms, the Report, in measuring innovation, moves beyond traditional indicators such as R&D and patents, with their bias toward science and technology, based on the premise that a better understanding of heterogeneity in firms' innovative behavior, its determinants and outcomes, will assist in the design and implementation of innovation policies.

The percentage of firms with innovative activities is slightly below the European average as is the case with their innovation spending

One of the indicators most widely used internationally to measure the innovative capacity of a territory is the *proportion of innovative firms*. The data, as shown in Table 7, show that the percentage of innovative firms is 47%, slightly below the EU-27 average (52%), as is their innovation spending. This indicator, however, provides no information on the intensity and quality of innovation, leaving the need for the concurrent use of other indicators. The *innovation spending* indicator provides information on the intensity of firms' innovative activity in terms of spending on innovation out of total billing. Innovation intensity among Basque firms is slightly lower than the EU-27 average, 1.7% and 1.8%, respectively. These two indicators show that Basque firms' commitment to innovation, although somewhat lower, is quite close to the EU-27 average. The next step, then, is to analyze what is happening with the other — non-innovative — half, and try to determine how many of those which are not innovating could be doing it.

The percentage of Basque firms that receive public funding for innovation is higher than any European country

Another important element to include in innovation analysis is the involvement of public bodies, measuring the scope of support. The data show that 47.2% of Basque firms with innovative activity received some form of public funding for innovation, a high figure when compared to other European countries. This figure indicates the breadth of the financial support for Basque enterprise's commitment to innovation from the various public bodies. However, the task remains to attain (and demand) the expected results of this public effort. This will require close monitoring and ongoing assessment of the effectiveness of public innovation support policies and for the definition of medium- and long-term corporate strategies.

TABLE 7 Share of firms with innovating activity by company size, 2006-2008 (companies with 10 employees or over and basic sectors)

	BASQUE COUNTRY				EU-27			
	Innovating	Technological and non-technological	Technological only	Non-technological only	Innovating	Technological and non-technological	Technological only	Non-technological only
Total	**46.9**	**21.7**	**19.0**	**6.2**	**52.2**	**28.5**	**11.2**	**12.5**
Small firms	42.5	18.4	17.3	6.8	48.2	24.8	10.6	12.8
Medium firms	66.2	36.3	26.5	3.4	64.6	39.3	13.5	11.8
Large firms	85.5	54.3	31.2	0.0	81.4	59.7	13.1	8.6

Source: Eustat. Encuesta de Innovación Tecnológica (Technological Innovation Survey) and Eurostat. CIS 2008.

Note: Data on the EU-27 excludes Greece and the United Kingdom .

There is a high percentage of Basque firms that engage predominantly in technological innovation versus the non-technological, and the proportion engaging in process innovation is above the European average

In addition to the commitment of firms and institutions to innovation, it is necessary to understand the *innovative behavior* of firms, since they can engage in different types of innovative activities. A primary classification distinguishes between technological (product or process innovations) and non-technological innovation. As in most European countries, most innovative firms in the Basque Country combine both types of innovation. However, the Basque Country stands out for a high percentage of firms that engage exclusively in technological innovation versus a low percentage of firms who engage only in non-technological innovation. Numerous studies show that combining both types of innovation, so-called *mixed innovation strategies,* gives better results for businesses, so a major challenge for Basque firms is to introduce more non-technological innovation without neglecting technological innovation.

The breakdown of technological innovation into product and process innovation also shows a prevalence of the combination of product and process innovation at both levels, the Basque Country and the EU-27. However, in the case of the Basque Country, the percentage of firms who engage in process innovation exclusively is high, suggesting that management remains focused on quality and efficiency in production processes, on "doing better what they have already be doing well," a phenomenon referred to above, rather than on product differentiation. As these findings would suggest, the analysis of the degree of newness of innovations shows that the percentage of Basque firms that launch new innovations within the firm or on the market is below the EU-27 average, as can be seen from Table 8.

Most innovative Basque firms are positioned in the market as followers of innovation rather than leaders

Thus, from these findings we can conclude that compared with the EU-27 average, a higher percentage of Basque innovative firms conform to a model of incremental innovation (continuous yet less substantial innovation), as opposed to a model of radical innovation (few yet drastic changes); their strategy is one of following on, introducing product or (especially) process innovations that already exist. This means that Basque firms' capacity to extract value remains limited, as seen in how, in percentage terms, the turnover of Basque firms associated with products new to the firm or the market lags behind the EU-27 average. This situation merits careful thought and it has implications both for public innovation support policies and for the definition of medium- and long-term corporate strategies.

The challenge for businesses and the innovation system as a whole is to turn all types of innovation — technological and non-technological innovation, product and process —

TABLE 8 Share of firms with new innovations for the firm or for the market over total number of firms, 2006-2008, by firm size (firms with 10 employees or over and basic sectors)

	BASQUE COUNTRY		EU-27	
	New for firm	New for market	New for firm	New for market
Total firms	**9.1**	**12.3**	**17.0**	**14.3**
Small firms	**7.2**	10.4	14.3	11.9
Medium firms	18.6	19.1	24.6	20.6
Large firms	21.0	40.6	40.1	36.3

Source: Eurostat. CIS 2008 and Eustat Innovation Survey.

into goods and services that can be bought and sold in global markets and/or improve productivity.

The most successful strategies are those that combine different types of innovation

In this endeavor, key to attaining leadership in the new complexity, there must be a firm commitment to knowledge and its incorporation in processes and products. And the collective goal should not be so much the capacity to "push" the boundaries of knowledge to new limits — a capacity which, no matter how desirable it may be, from the outset presents major obstacles — as to "stand" at the frontier of knowledge in order to incorporate such knowledge in creating solutions derived from cross-fertilization between technologies and products, identifying the emerging needs of global communities, sorting out production, process design and objectives, etc.

It is essential "to stand" at the frontiers of knowledge to develop relevant innovations for the market

3.1.3. Entrepreneuring based on and for diversity

The final component of the Area of diversity focuses on entrepreneurial activities.

The diversity of an economic system is a hallmark of the evolution of a territory toward competitive stages associated with innovation- and knowledge-based societies. Entrepreneurship, being both cause and consequence of the diversity of the ecosystem in which it operates, is one of the engines that drives such transformation. Besides encouraging more efficient use of available resources, creating jobs and coordinating the needs of the different economic agents, entrepreneurship serves as a vehicle for introducing new knowledge, that is, knowledge no other firm exploits, into the market. By facilitating the incorporation of new scientific and technological developments as well as the regeneration of the productive fabric, entrepreneurship contributes to regional diversity.

Entrepreneurial activity is both cause and consequence of business and institutional diversity of the ecosystem in which it operates

Entrepreneurship also reflects the diversity of its economic environment, since usually it is the entrepreneur who arbitrates between agents with differing interests. This function is of a different nature in the context of intersectoral diversity, since in this case the synergies of the knowledge derived from diverse economic sectors create new knowledge which in turn drives the creation of new businesses. Finally, this diversity is also reflected in the range of financial, social and governmental entities, which is vital for high-performance entrepreneurial activity.

Over the past decade, promoting entrepreneurship has become a key component of economic policy in Europe, at both the national and territorial levels. In the Basque Country, for example, the various levels of government have implemented numerous policies to encourage entrepreneurial activity. Despite these efforts, entrepreneur-

There has been a decline in entrepreneurial activity and the growth prospects for new businesses

ship has suffered a slight decline over the past three years, concurrent with a sharp downturn in the prospects for growth (See Graph 3). While these trends are influenced largely by the current economic crisis, innovation indicators for start-ups show that the efforts to generate knowledge have not resulted in any significant growth in new technologically-based business projects.

Basque entrepreneuring shows weak orientation toward external markets

Likewise, following a period of improvement, over the last three years start-ups have become less oriented toward external markets. These findings suggest that the economic crisis is just one of the causes of the modest aspirations and scarce international focus of entrepreneurial activity in the Basque Country (See Graph 4) and the results require deep critical reflection.

In terms of geographical and sectoral distribution in the Basque Country, there is a significant diversification in terms of districts and productive sectors, as well as a significant correlation between the ups and downs of new firms in different sectors and counties. This translates into considerable stability in the relative weight of sectors in which start-ups occur. Despite this apparent lack of dynamism, we find that the less urban areas show a slight increase in entrepreneurship in the most technologically-intensive sectors.

There is still a long way to go in bolstering the risk capital industry, both formally and informally.

The Report also includes a diagnosis of diversity in the business environment of the Basque Country, with regard to financial markets, goods and services markets, public entities, development agents and knowledge-generating entities, in order to assess their capacity for sustaining and promoting diversity and complexity in the entrepreneurial fabric. The diagnosis indicates that the different levels of government have made important efforts to support and stimulate entrepreneurship, as well as to address areas of opportunity, such as the availability of financing — which is necessary given the greater uncertainty and moral hazard involved — for technological entrepreneurship. While government, at all levels, demonstrates its interest by promoting networks of business angels, it is evident that there is still quite a way to go in bolstering the risk capital industry, both formally and informally.

The Basque Country public administrations are making a considerable effort to support entrepreneurship that is not matched by the results obtained

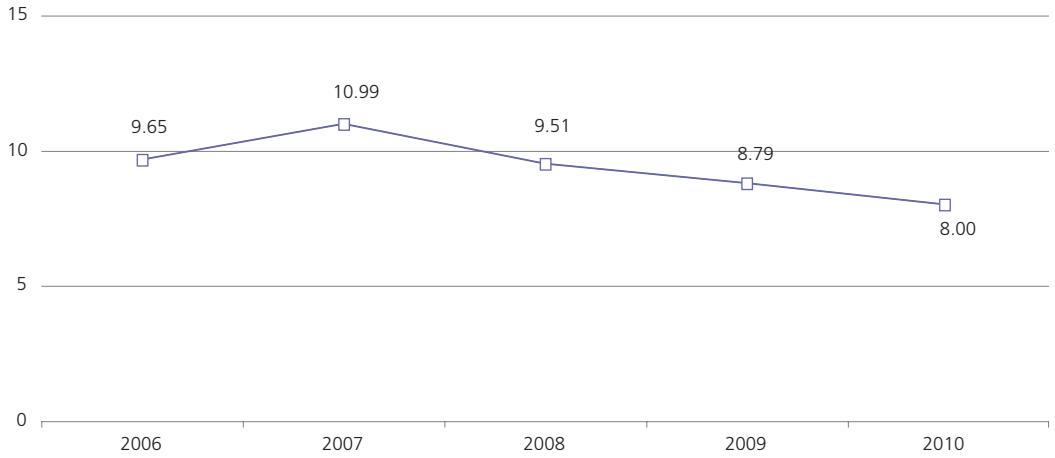
Another area in which progress would be desirable relates to the profusion of programs to promote entrepreneurship. Due to the marked administrative decentralization of the Basque Country, there is a considerable degree of specificity and profusion in the entrepreneurial policies of its different bodies. While it is understandable that in the first instance the different levels of government would design policies to meet the needs of their territory, at a later stage communication between them should be bolstered in order to achieve a more efficient use of resources. Entrepreneurial activity would benefit from greater coordination among the different levels and departments of government responsible for fostering a business-friendly environment.

Policies to promote entrepreneurship follow two main action areas. On the one hand, we find policies to promote entrepreneurial culture by improving the image of the entrepreneur. On the other, there are measures to facilitate and encourage start-ups. Efforts to dignify the figure of the entrepreneur in society must continue. Key to achieving this is to develop awareness programs, especially those aimed at younger people (youths and teens), so as to encourage a sense of initiative and entrepreneurial spirit. These and other, actions would help establish a more entrepreneurial society.

Complexity and bottlenecks in the start-up process are evident

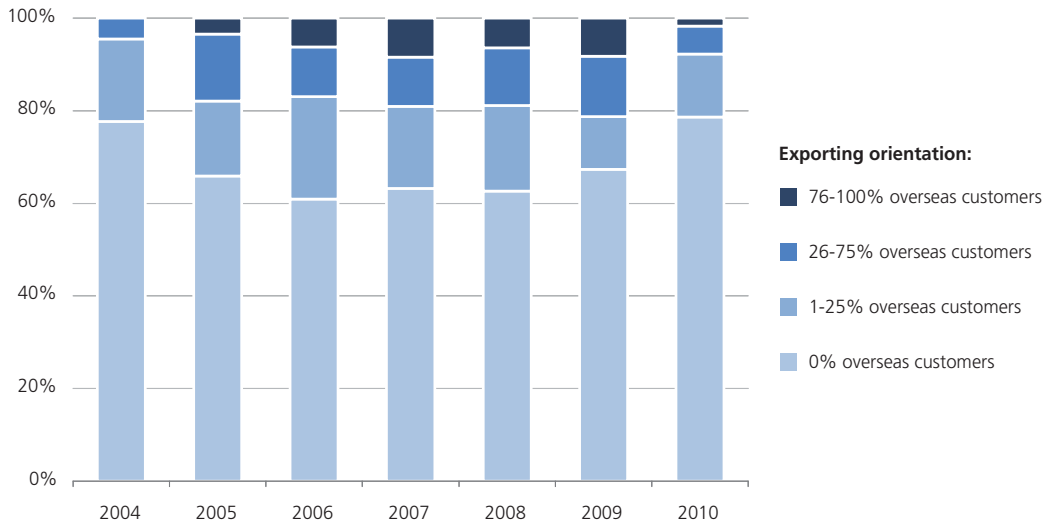
Despite efforts to achieve the latter objective, complexity and bottlenecks in the start-up process are evident, and thus the need to examine ways to introduce changes to simplify and speed up these procedures, and to assess the effectiveness of such

GRAPH 3 Evolution of firm entry per 1000 adults (age 16 or over) in the Basque Country



Source: Data on firm entry on January 1st each year from DIRAE – EUSTAT, and data on yearly population average age 16 or over obtained from Population Survey in relation to EUSTAT Activity. Prepared by the Authors.

GRAPH 4 Share of entrepreneurs by customers located abroad



Source: GEM.

measures. In the context of the present cumbersome system, in order to reduce bureaucratic obstacles, it would be appropriate to examine and develop *one-stop* initiatives that make it easier for entrepreneurs to set up new firms.

From the point of view of demand, there are various government-led programs to promote the consumption of innovative products. In this context, the relative aging of the population of the Basque Country represents a challenge not only for the labor market and the public health and pension system, but also for entrepreneurial activity, since the latter is traditionally concentrated in an age group (35-45 years old) which is shrinking significantly.

On the other hand, this aging trend represents an opportunity for entrepreneurship aimed at creating innovative products and services that meet the needs of sen-

AREA 1: Diversity
Summary of the main conclusions

1. Need to exploit the inter-spaces between the more traditional units of analysis, moving from the firm to business groups; from industry to new industry; and from clusters to inter-cluster collaboration and global value chains.
2. Need to combine different strategies, both corporate — seeking mixed innovation strategies in firms (which combine technological and non-technological innovation, process, product and organizational innovation, DUI and STI innovation) — and territorial, promoting *related variety* and *smart specialization* (as opposed to the alternative strategies of specialization or diversification) and the inclusion of clusters in global value chains.
3. Need to overcome the bottlenecks of all kinds that hinder entrepreneurial activity, primarily technology-based entrepreneurship.

Addressing these challenges will require the involvement of different actors, which vary depending on the challenge: industrial and service firms from different clusters, clusters in different territories, government, academia, basic research centers and technology centers. Likewise, all the actors involved must assume together the need to advance toward the frontiers of knowledge. This will require a process in which the actors work toward defining both the strategy for meeting this challenge and the role of each actor within the process.

ior citizens. The creation of innovative products and services could be facilitated by means of intra-entrepreneuring. Intra-entrepreneurial activity — scarcely studied in the Basque Country — refers to a type of business start-ups (in the form of spin-offs, joint ventures, etc.) which needs to be analyzed and, where appropriate, promoted, given the significant economic impact it has been shown to have in other territories.

These and other innovative ideas could be generated by firms themselves, which would need to familiarize themselves with *intra-entrepreneurial practices*. While some firms have been creating new businesses in this way for some time, we find that the practice is still rare, and given its economic impact, it merits a boost in the Basque Country.

3.2. Area 2: Skills and learning

To meet the challenges derived from all types of diversity, both those that already exist as well as those that may arise, it is important to evaluate and capitalize on the talent available in the Basque Country, in addition to the talent that the region is able to attract and create. It is for this reason that the Report's second Area is focused on an examination of skills and learning, and deals with the challenges that the aging of the population presents for the labor market, the training of people and intra- and inter-firm learning.

3.2.1. Aging and the job market

Demography is a decisive factor in economic activity

To a large extent, the economic activity of a region depends on the characteristics and evolution of its population. Numerous studies have argued that a balanced evolution in demography brings stability to the economic system. Nevertheless, perceptions of how the situation in Europe will develop over the next fifty years include certain worrying aspects, since, if current trends are maintained, experts foresee a decline in the active population of nearly 20 million European workers, while at the same time of life expectancy will constantly increase. Now more than ever, the aging of the population is leading our society toward an unbalanced demographic struc-

ture in which productivity, levels of spending (healthcare and dependence), tax revenue, and the administration of the pension system (to mention only a few considerations) will be seriously affected. It should be emphasized that this new situation will also open up opportunities to develop new economic activities including care, consumer and leisure services targeted at an aging population.

The Basque Country is not immune from this process; rather, it is one of the regions where the population is aging more rapidly; it may be deduced from this that in the near future certain far-reaching socio-economic consequences will result from this process (see Graph 5 for comparative projections of population changes in the Basque Country, Spain and the EU-27).

Drastic drop in active population

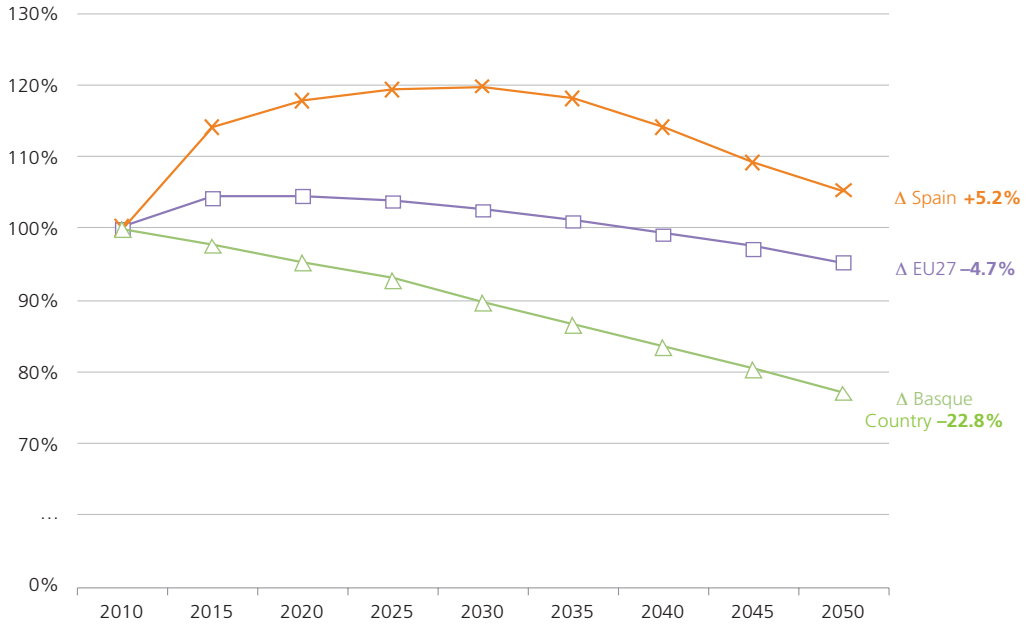
- Reduction in the Basque active population (age 16-64), which it is estimated will fall from 1,047,172 people in 2010 to 918,474 in 2020. For reference purposes, total employment in the Basque Country in 2010 was approximately 948,900 people. Should these demographic forecasts be fulfilled, what can be expected are distortions in supply and demand in the labor market, imbalances in wage costs (upward pressure), the scarcity of certain labor skills, the need for a significant increase in labor productivity, less job mobility, restricted professional diversity, etc.

The fall in the population in the 25-45 age bracket will have profound implications in terms of competitiveness

- The hypothetically "most active" band of the *active* population, the 25-44 age bracket, will fall by approximately 146,689 people. The decline in this population bracket, estimated at 24.87% for the year 2020, is particularly acute in comparison to that of other brackets of the population. What is more, this is a reduction in a critical band, since it represents both the highest rates of productivity, innovative capacity and positive attitude toward entrepreneurship and creativity. Graph 6 illustrates demographic change by age group in Spain and the Basque Country.

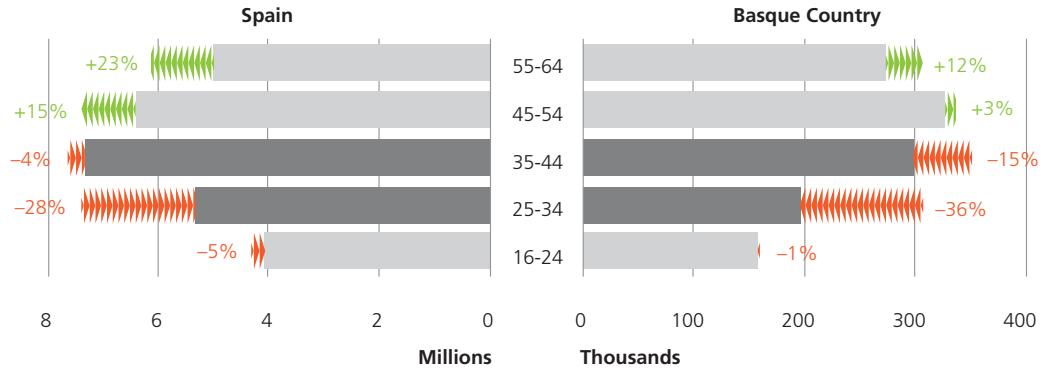
Given this horizon and these structural trends, the question that must be asked is what measures can be adopted to reduce these imbalances, which are already taking

GRAPH 5. Evolution of the potentially active population (base year 2010)



Source: Prepared by the Authors, based on European Commission, EUSTAT.

GRAPH 6 Demographic change by age group from 2010 to 2020



Source: Short-term population projections 2010-2020, INE.

It is necessary to take measures to increase labor supply and influence other determinants in economic activity

place in this decade, and which will probably continue into the next). Steps to mitigate them may be directed both at increasing the supply of work and exercising an influence on other economic activity factors. A few of the measures that might be considered are listed below:

- Increased activity rate. To achieve this, programs must be implemented to create part-time jobs, foster a balance between work and private life, restrict early retirement, reduce long-term unemployment for people over 55 years of age, etc.
- Increased retirement age. In addition to extending this to 67, other measures could also be introduced, such as voluntary extension of working life beyond the legal limit.
- Increased productivity. This increase should go hand in hand with a schedule of salary incentives, which would entail reforms in the labor market and in collective bargaining. Education policies should perform a crucial role in raising the educational levels of the population which would help to increase productivity. In this regard, vocational training programs and university programs should foster the availability of continuing training (*lifelong learning*) to perfect professional skills at any time during people's life with a view to achieving better professional integration.

Competitiveness depends on the productive capacity of a region, and in order to achieve leadership in the new complexity, the involvement of its citizens is of key importance. If the productive capacity of an economy becomes threatened by a decline in the active population, this decline must be halted and reversed, or the individual productivity of its workers increased, so that the region's level of well-being is not impaired. Even if in the present context of high unemployment these messages might seem strange, the Report predicts that even if prudence prompted the implementation of a whole range of measures to combat the impact of demographic change in the Basque economy, they would not be sufficient to mitigate the fall in the active population.

Society must be receptive to immigration both from the rest of Spain as well as from abroad.

It is particularly important to be able to integrate the foreign immigrant population already resident in the Basque Country into higher added value activities. The Report (see Section 3.3.3 of this executive summary) shows that the average educational level of immigrants is almost the same as that of nationals, but despite this they are employed in lower qualified jobs. In addition, if we bear in mind that about 15% of immigrants hold postgraduate qualifications, it might be feasible to introduce proactive policies

aimed at taking advantage of the learning abilities of this group. Nevertheless, steps to boost qualified immigration fall foul of the circumstances derived from general national immigration policies. Along the same lines, attracting qualified workers from the rest of Spain — where many qualified professionals are considering emigration abroad — would not be accomplished without reinforcing the historic perception of the Basque Country as a region offering a haven to immigrants. What is more, it would be necessary to encourage the mobility of highly-qualified employees and foreign investment through projects such as *Ikerbasque* and *Invest in the Basque Country.*

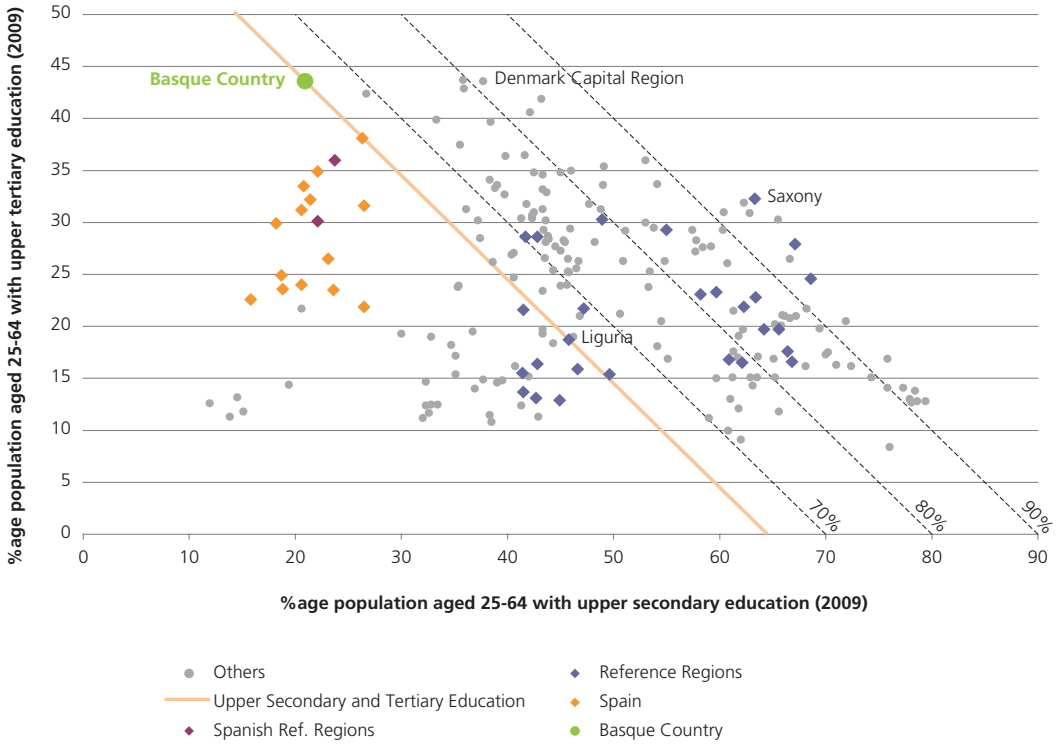
3.2.2. Development of Human Capital

Knowledge and the innovative capacity that this generates are key factors in competitiveness and the ability to react to the changes which in the future will only gather pace. In the end, this knowledge resides in the people living and working in a region; this is why the availability of a qualified workforce has become one of the main assets for leadership in the new complexity. The education system represents one of the cornerstones of this process. Therefore in the Report the training of human capital in the Basque educational system is analyzed, highlighting its main strengths and the principal challenges that it faces in order to achieve leadership in the new complexity, as well as the implications for public policy.

The indicator frequently employed to measure the level of human capital or the skills of the workforce is the level of education among the adult population (25 to 64 years of age). As can be seen from Graph 7, the result presents a dichotomy: even though the Basque Country is one of the regions with the highest levels of tertiary education

Despite high levels of tertiary education, a large share of the population has not reached educational levels above the compulsory ones

GRAPH 7 Highest education level of the population aged 25 to 64. (2009)



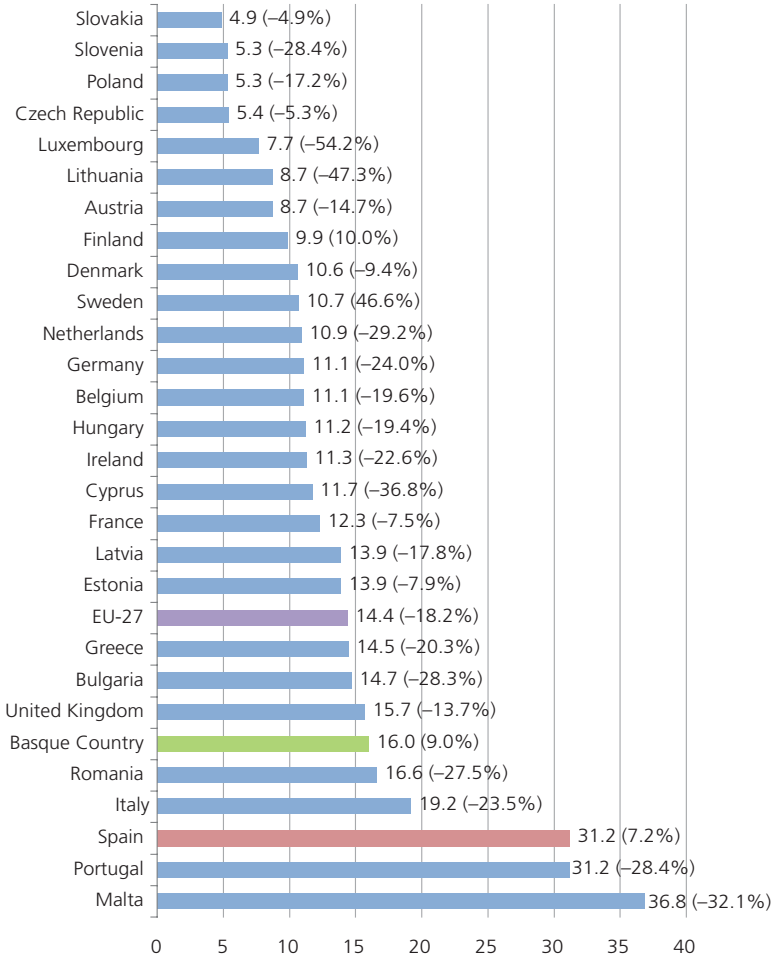
Source: Eurostat.

(43.6%), the high proportion of the population that has not achieved more than obligatory education must also be noted. In times when higher levels of education are increasingly required, the Basque Country faces the challenge of boosting the percentage of its population obtaining more than obligatory high-school qualifications. To achieve this, it is vitally important to reduce the school drop-out rates, that is, the percentage of the 18 to 24 year old population that has not attained a level of education higher than school-leaving. The EU target for this indicator is set at 10% for 2010. However, the data indicate that in the case of the Basque Country the school drop-out rate in 2009 was 16%, above the European average, and that between 2000 and 2009, unlike the rest of Europe, the school drop-out rates for Spain and the Basque Country have increased (See Graph 8).

The high levels of education spending do not seem to correspond to the results obtained in the PISA Report

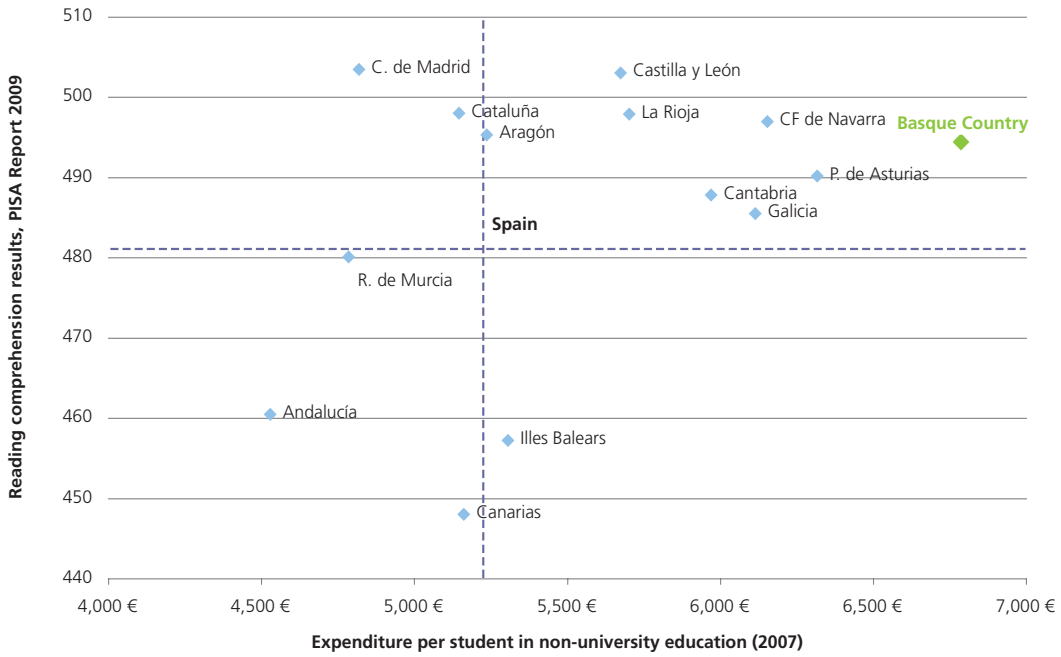
These data raise certain questions regarding the investment in education and the quality of the education system. To analyze this question, education spending and the results of the PISA Report are examined. As can be observed in Graph 9, while the Basque Country is the Spanish autonomous community with the highest cost per pupil in non-university education, these spending levels do not seem to correspond with

GRAPH 8 Percentage of population from 18 to 24 not having completed upper secondary education and not continuing with any type of learning-training in 2009, and variation 2000-2009 (in brackets)



Source: Eurostat and Spanish Ministry of Education.

GRAPH 9 Expenditure per student in non-university education (2007) and PISA Report results 2009



Source: Prepared by the Authors with data from the Spanish Ministry of Education and PISA 2009 (OECD).

the results obtained in the OECD PISA Report 2009, since the region scores seventh in the reading comprehension test, fifth in mathematics and tenth in sciences.

The Basque Vocational Training Centers fulfill an important role in encouraging continuous learning

The diagnosis is more positive if the references are in respect of professional and continuous training. In addition to acquiring certain levels of education through government-regulated training, it is important for the population to follow continuous training, and for this reason the EU established that by 2010 12.5% of the population aged 25 to 64 should take part in programs of continuous training. In the case of the Basque Country, this target had already been reached by 2009. Nevertheless, efforts must be maintained to raise these percentages and to ensure that the training content meets the actual needs of employees and firms; in this respect the Basque Vocational Training Centers play an important role.

The match between training and employment has improved over recent years, although differences do exist depending on areas of knowledge

What is just as important as having highly-qualified workers is that this knowledge should meet the specific needs of the economic activities in a region, and consequently the Report examines the degree to which the education system matches the production system. Firstly, the relationship between the educational level and the activity rate and unemployment rate is studied (See Table 9). It can be observed that the activity rate and the employment level increase with the level of training, and that the differences are greatest in the case of women and among the young adult population (age 25 to 34). Therefore, it can be seen that those with higher levels of education have better employment prospects.

Secondly, in terms of how closely training and employment match, in the case of vocational training it can be seen that a high proportion of graduates work in their specialization and that this percentage has increased in recent years. What is more, in the case of university graduates the match between training and employment has improved considerably over the last few years. However, differences can be observed

TABLE 9 Activity and unemployment rates according to educational level, age and sex. 2008

		Total		Lower primary Ed.		Compulsory Sec. Ed.		Upper Secondary Ed.		Higher Ed.	
		Age 25-64	Age 25-34	Age 25-64	Age 25-34	Age 25-64	Age 25-34	Age 25-64	Age 25-34	Age 25-64	Age 25-34
Activity Rates											
Spain	Male	87.7	92.7	74.8	87.1	90.0	93.8	90.5	92.2	92.4	93.6
	Female	66.9	81.6	39.9	60.3	62.0	74.6	75.1	82.3	85.4	88.5
Basque Country	Male	87.3	93.9	65.2	90.8	87.4	91.4	90.3	94.5	91.2	94.7
	Female	68.2	87.5	34.9	43.4	57.3	85.4	70.3	86.2	85.4	90.5
Unemployment Rates											
Spain	Male	8.6	11.1	14.0	21.9	10.0	13.9	7.7	9.8	4.8	6.9
	Female	11.5	13.0	17.2	25.7	15.7	19.0	11.4	12.9	7.0	9.0
Basque Country	Male	4.7	7.4	6.2	20.2	6.2	9.3	5.6	10.5	3.3	4.6
	Female	6.5	7.1	7.9	34.2	9.3	13.0	8.4	8.0	4.3	5.1

Source: Spanish Ministry of Education.

In the mid-term there may be a shortage of professionals in the scientific-technological disciplines

depending on business sector, with the closest match and an estimated deficit of professionals in the health and scientific and technological sectors, and a wider discrepancy and estimated excess of graduates in groups related to social sciences and business management. This situation poses the challenge to rethink the current system of quotas in the health sector, and the need to stimulate interest among young people in studying scientific and technological degrees.

This thinking is particularly important if we examine the previously mentioned dramatic fall in the active population together with the knock-on effect that in the medium term there might be a serious shortage of professionals in the scientific and technological disciplines.

Graduates lack certain competencies and skills necessary for leadership in the new complexity

In third place, as regards the competencies and skills required by firms, it can be seen that graduates generally demonstrate certain shortcomings. First of all, they are notable for lacking competencies necessary for internationalization, in particular a knowledge of English. In addition, it is stressed that university graduates are falling short in a number of skills that complement their technical knowledge and produce more rounded profiles, such as the ability to manage projects and teams, or to combine knowledge that has traditionally corresponded to two different disciplines.

The development of competencies and skills demands communication between the productive system and the education sector

Thus, the challenge does not lie so much in increasing training in the classic sense of gaining knowledge of specific subjects, but rather in acquiring certain inter-disciplinary knowledge and skill sets that allow them to compete in complex environments, including the capacity for lifelong learning. The recent inauguration of the European Higher Education Area represents an opportunity in this regard, since reforms include a change in the teaching model that encourages the development of the above-mentioned skills in the pupil. Nevertheless, improving the match between the education system and the production system calls for greater communication and collaboration between the two, in order to create the competencies and skills necessary for leadership in the new complexity.

3.2.3. Intra- and inter-firm learning for innovation

In a society as complex and changing as the one in which we live, among the most important abilities for maintaining lasting competitive advantage is the ability to learn, in addition to formal education, throughout one's working life, particularly in the firm and in the firm's relations with other competing firms and suppliers.

Two main methods can be identified in organizational learning: *a) learning through exploration and research*; and b) *learning by doing, using and interacting*. The first is a science-based learning method, while the second is learning based on experience. Both are fundamental and necessary for competitive performance, but the second tends to be ignored in analyses, because of the difficulty in finding indicators to measure it. The Report builds on related studies undertaken by the Institute, in collaboration with Innobasque, and sets out to shed light on the comparative position of the Basque Country in intra-firm and inter-firm learning, particularly in relation to the experience-based learning method.

3.2.3.1. *Intra-firm learning*

The workplace must provide a favorable environment for the exploitation and development of people's capacities for creativity and innovation

Efforts in the education and training of human capital can only flourish and lead to new ideas and innovation if people have the appropriate workplace environments to harness and enhance that talent. The Basque Country is in the lower middle segment in terms of implementation of *high-performance work systems*, i.e., those oriented to individuals to gain a number of capabilities that facilitate innovation. Although it is better positioned than the rest of Spain and Southern Europe, there is still a considerable distance with respect to the Central European and Anglo-Saxon countries, and especially the Nordic countries. This fact is even more serious inasmuch as, far from shortening, the distance between the European countries seems to be increasing. Thus, from Graph 10 it emerges that innovation in types of organization in the workplace in the Basque Country is below the average in the EU-15, and below that in Spain, although somewhat higher than the countries in the enlargement countries (EU-12). Compared to other territories, the percentage of large Basque companies carrying out this type of innovation is particularly low.

Given this situation, the OECD stresses the need to adopt policies that promote innovations in the organizational practices of firms. Along with other characteristics, said policies should: (i) combine the pursuit of improved economic performance with social objectives — such as promoting greater democracy in the workplace, or improving work-private life balance — since there are important synergies between economic and social objectives of organizational change; (ii) back the financing of business network projects, rather than those developed within individual firms; (iii) support efforts to implement innovation more than those that merely dissemination of best practices, etc.

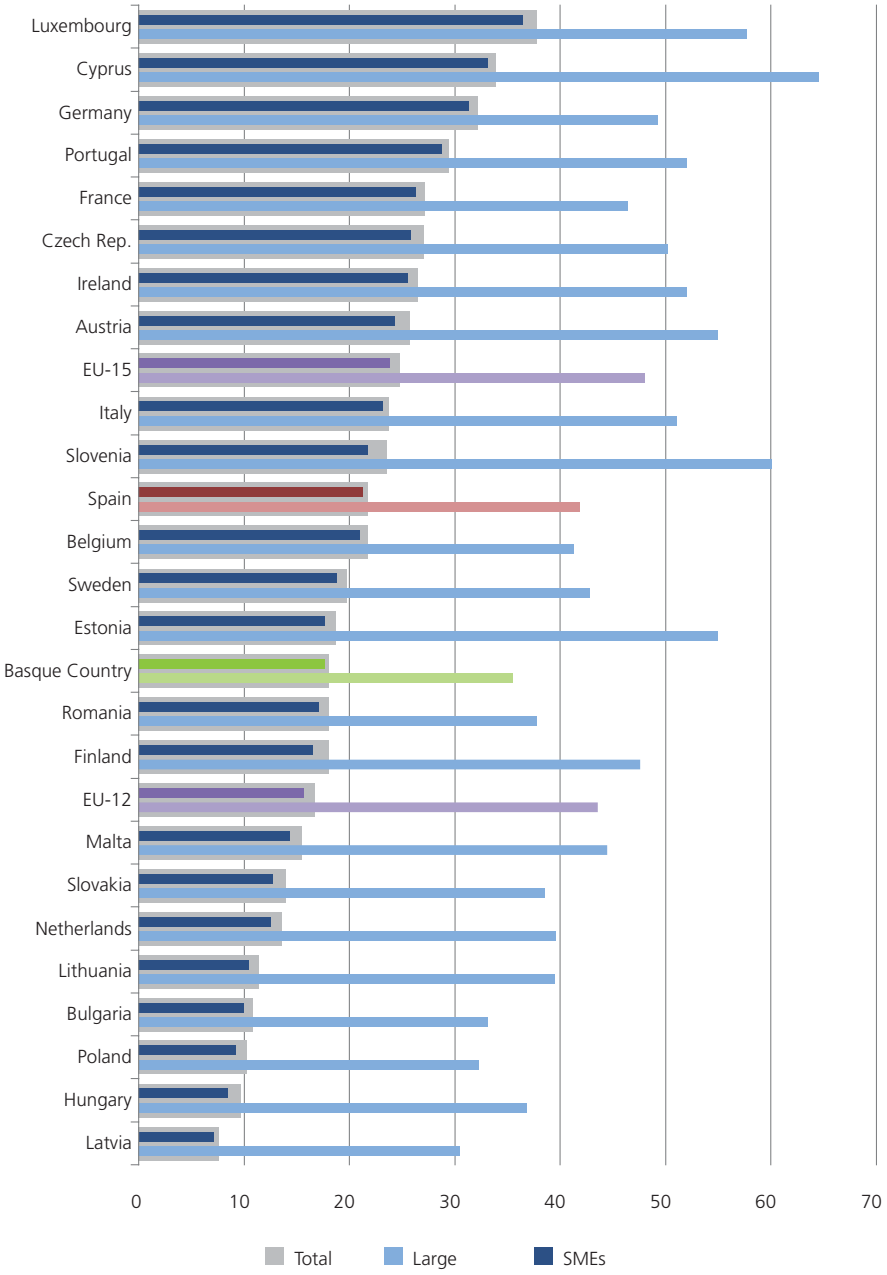
3.2.3.2. *Inter-firm learning*

The report distinguishes between the learning that occurs as a result of sales and purchase transactions, and that which occurs as a result of cooperation in innovation.

The high percentage of intermediate consumption in Basque firms has potential benefits in terms of cost cutting and innovation

Sales and purchase transactions. With the Basque economy being one that specializes in the production of intermediate goods, the percentage of purchases for intermediate consumption in its firms is comparatively high and rising, which highlights the importance of good management of relationships with suppliers and customers.

GRAPH 10 Share of firms with more than 9 employees that have introduced innovation in types of organization in the workplace in order to improve the distribution of responsibilities and decisión making, according to countries (2008)

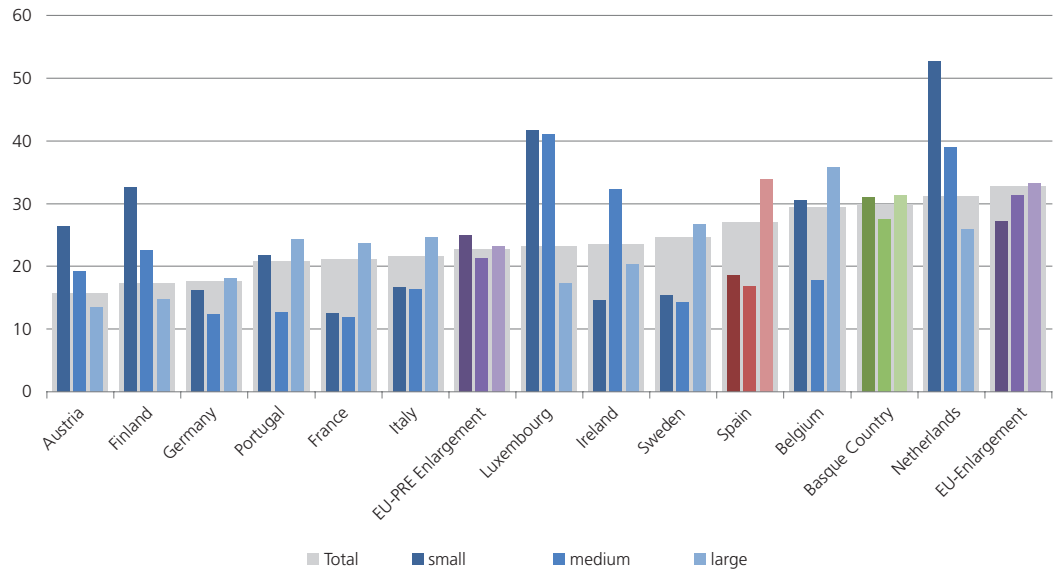


Source: Eustat and Eurostat Innovation Survey.

Effectively managing these relationships is important not only for the impact of intermediate consumption on the total cost of the product (an aspect that can be influenced by a strong supply in global markets), but also for the opportunity it presents for learning (an aspect that, conversely, can be better promoted by the local clusters).

Within the realm of sales and purchase transactions, those involving R&D services are particularly significant in an innovation system. The analysis offers the following conclusions (See Graph 11):

GRAPH 11 Share of external investment on R&D over total costs (internal & external). 2008



Source: Eustat and Eurostat. Survey on innovation. Prepared by the Authors.

- The Basque Country has one of the highest percentages of R&D outsourcing, which is consistent with the primacy of technology centers within its system.
- In the case of firms engaging in R&D activities, the percentage of total spending on external R&D (i.e., outsourcing) versus total corporate R&D spending does not vary substantially by firm size.
- This would signal that the often-stated fact that the SMEs work sparsely with technology centers is due to the lack of capacity to absorb the knowledge generated by such R&D infrastructures: if the firm makes the leap into R&D, it uses R&D infrastructures irrespective of its size.
- Thus, if the goal is for technology centers to work more with SMEs, then the policies should be aimed at encouraging the development of R&D activities within those firms. In other words, it is not so much about creating more supply (or capacity within the centers), as driving their demand, and their absorptive capacity, particularly of the SMEs.

R&D policies should focus on promoting the demand of company R&D and their absorptive capacity

Cooperation in innovation. The Basque Country is in the lower middle segment with respect to the EU-15 countries, although its figures are nearly double the average for Spain as a whole. Since it is the performance of small firms that account for this difference with respect to the EU-15 average, these firms should become the objective of Basque policies designed to boost cooperation.

As can be seen from Table 10, significant conclusions can be drawn by types of agents:

Compared to the more advanced European countries, Basque firms cooperate little on innovation with suppliers, customers and competitors

- Despite the major boost for cluster policies and initiatives in the Basque Country, suppliers and particularly customers and competitors play a lesser role in cooperative projects in the Basque Country compared to European countries. Cluster policy should continue to give priority to the development of the factors (e.g., social capital building) that encourage greater cooperation among members.

TABLE 10 Cooperation in innovation by type of agent (2008)

	% /total companies			% /cooperating companies		
	UE-27	Spain	Basque Country	UE-27	Spain	Basque Country
Total	**12.2**	**6.0**	**11.4**	**100**	**100**	**100**
With companies from the group	4.8	1.4	3.0	39	23	26
With suppliers	7.4	2.8	5.0	61	47	43
With customers	6.9	1.5	2.5	57	26	22
With competitors	3.5	1.1	1.5	29	19	14
With consultants or other private organizations	4.2	1.5	4.8	35	25	42
With technological centres			5.9			52
With universities	4.3	1.9	3.0	35	32	26
With public organisms	2.6	2.1	1.0	21	35	9

Source: Eustat and Eurostat. Survey on innovation. Prepared by the Authors.

- Since the mid-1990s, the process of creating business groups in the Basque Country has been significant. Nevertheless, the percentage of Basque firms cooperating in innovation with their group's firms is lower than in Europe, suggesting that groups have been mainly created in response to objectives (fiscal, labor, etc.) differing from those designed to boost innovation. Policies promoting the creation of groups should strive to improve the limited impact that such groups currently have as drivers of innovation and internationalization.
- Basque firms cooperate proportionately less with universities and public bodies, due to the relatively low importance of the latter in the Basque system, and to the lack of proper guidance from universities as to the needs of the production system.
- In terms of cooperation with technology centers, the level of Basque cooperation in innovation is above the European average.

AREA 2: Skills and Learning
Summary of the main conclusions

1. The economically active Basque population will suffer a significant decline in the coming years. This decline will be seen in the segments most critical to innovation and productivity (i.e., ages 25-34 and 35-44), which means that in order to maintain its competitive position the Basque Country will have to increase its productivity; and that productivity, in turn, will depend on the learning capabilities of people and organizations.
2. People's abilities to learn start with the education system, an area in which the Basque Country is facing challenges to raise the basic educational level of the population, so that formal studies conform to what the markets will demand, to build more of the transferable skills and competencies of human capital and develop high-quality, globally oriented training.
3. For the learning process of individuals, in addition to the education system, the opportunities for learning over the course of a lifetime are invaluable. The analysis of organizational learning shows that the Basque Country faces the challenges of driving organizational innovation to generate learning, both within firms and in collaboration with customers and suppliers, and promoting R&D activities within firms to increase their capacity to absorb the science and technology system.

As with the first Area, addressing some of these challenges will require action by various agents. For example, given the rapid changes taking place, constant adaptation is necessary to strike a better balance between the qualifications and transferable skills required by the labor market and the available training resources. To this end, the educational system (from compulsory education to university studies, including vocational and continuous training) should consolidate forums for dialogue with the production system to start achieving this adjustment.

Finally, with regard to organizational innovation in external relations, the diagnosis is similar to that made for organizational innovation with job positions: although higher than Spain's average, the innovation indicators for the Basque Country fall below those of the EU (even more so than with the organizational innovation of job positions). Again, this type of innovation appears to be correlated with the technological innovation and knowledge intensity of firms.

3.3. Area 3: Openness and Connectivity

To lead in the new complexity, it is more necessary than ever to look *outside* while on the *inside* building a system that is coherent and open, excellent, efficient and competitive. This looking outward is necessary as a frame of reference and resources but also for growth in the present context. What is known as *global globalization* rewards openness and external connectivity to ensure that agents localize and dominate the key relationships with their areas of activity. At the same time, the heightened importance of the systemic relations between different types of agents and between different economic activities requires both internal and external connectivity and openness. The third Area examines three key elements to achieve those conditions: the physical infrastructures, the internationalization of firms and the globalization of people, ideas and technology.

3.3.1. Infrastructures for connectivity: toward an open region

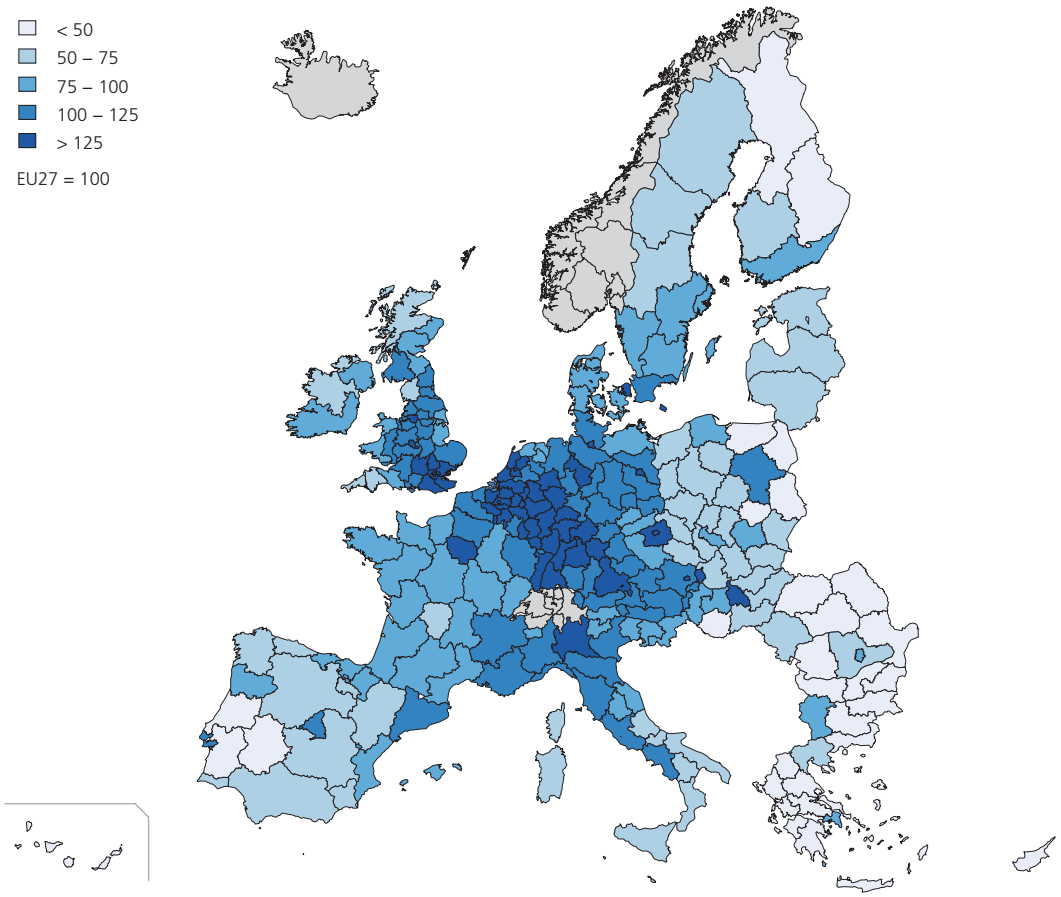
The Report analyzes infrastructures as a generator of connectivity for a territory. First, an analysis of the contribution of infrastructures for competitiveness and regional growth. That is followed by a more detailed analysis of the role of different transport infrastructures (road, rail, airports and seaports) in the regional competitiveness and accessibility of the Basque Country, presenting the main challenges in that area. It should be noted that, due to the availability of data, the analysis of port infrastructures focuses solely on their contribution to growth. It also examines in depth the situation of the Basque ICT infrastructure, both in terms of penetration, and use in business and households. Finally, it is worth noting that this chapter emphasizes the importance of other infrastructures such as gas for the connectivity of a territory. Combining all of these elements gives us a diagnosis of the situation in the Basque Country with regard to its connectivity, as well as the main challenges in this area.

Regional connectivity can be understood from both internal and external perspectives, given that a region needs to connect to its agents, firms and inhabitants, as well as connecting to other regions and territories in order to facilitate learning and innovation processes.

The greatest contribution of infrastructure to growth occurs upon the initial installation

Infrastructures, in addition to being an element of connectivity, have been a key element of economic growth and competitiveness of regions from a classical standpoint in terms of contribution to GDP. However, according to the data deriving from growth accounting, the contribution of infrastructure to growth diminishes as the territory in question increases its provision of infrastructures. Noteworthy in this regard is the limited contribution to growth made by public infrastructure and transport, only slightly higher than that made by ICT in recent years. It has been well demonstrated in the literature that the major infrastructure contributions to growth

MAP 2 Multimodal accessibility in European regions



Source: Prepared by the Authors, based on ESPON data.

occur upon installation and not in subsequent phases of improvement. This explains the higher contribution of ICT, whose implementation has been more delayed.

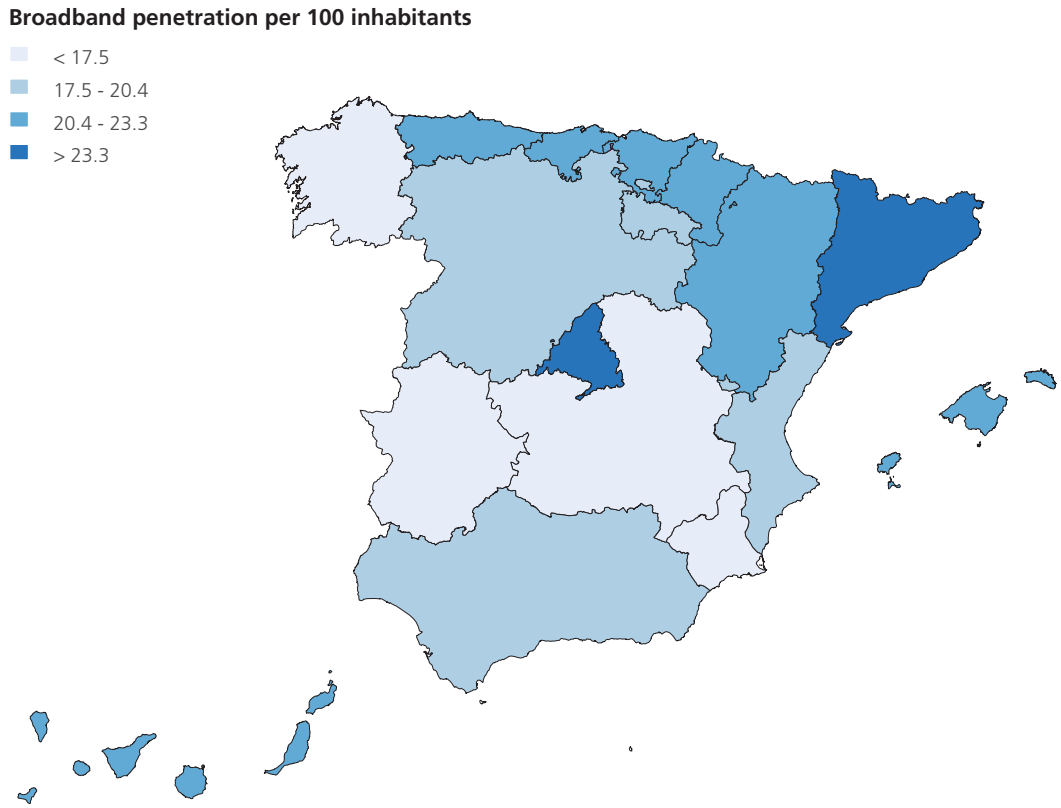
Investment in transport infrastructure, however, determines regions' level of accessibility. In this regard, despite the fact that geographical location determines the starting position for the accessibility of a territory, investments in different transport infrastructures cause this level of accessibility to vary. Therefore, despite the Basque Country being a region located on the periphery of Europe, its level of accessibility is similar to the EU-27 average. Map 2 shows the potential for multimodal accessibility in the various regions of the Union European.

The analysis of different modes of transport infrastructures concluded that rail infrastructures make the most positive contribution to the accessibility and economic growth of a territory.

Governance and management of infrastructure systems constitute a critical element in the new context of complexity

The Basque Country is well positioned with regard to its endowment of transport infrastructures and, like other advanced regions, the greatest competitiveness challenges it faces revolve around not only freeing up bottlenecks and deficiencies, but also implement a plan for efficiently using and managing said infrastructures, including adequate tariff systems. This plan must be in line with an overall strategy for the mobility of people and goods, addressing both the projected supply and demand and associated usage costs. The governance of infrastructure systems thus becomes a

MAP 3 Regional broadband penetration rate in 2009



Source: INE and Eurostat. Prepared by the Authors.

key element in this context complexity; governance, in the case of the Basque Country, requires a high level of inter-institutional coordination in order to gain a comprehensive view of the transportation system.

With respect to ICT, the Basque Country is well positioned in the category of broadband penetration rate, as shown in Map 3. However, usage of those infrastructures, in both the business and consumer sectors, is far below the benchmark countries and regions in this category. One example of this is electronic commerce, an aspect that still presents a challenge for the Basque Country, despite the positive developments in recent years. Various factors emerge from this analysis as causes of this limited use, including the high broadband prices in Spain (among the highest in Europe) and other factors related to education and age.

Broadband prices, along with other factors such as education levels and demographic structure are determinants of ICT penetration rate

Thus, as seen with transport infrastructures, once ICT infrastructures are installed, their use and efficiency, and therefore the connectivity they provide, are conditioned by a number of other factors, such as pricing policies and education or training.

Finally, it is important to note that other infrastructures, such as gas, are also crucial for the connectivity and competitiveness of a region. In this regard, the Basque Country has advanced in recent years toward ensuring provision and accessibility to end consumers, in both the industrial and household sectors. Likewise, support and promotion efforts from various agencies have been undertaken to develop gas infrastructures in the Basque Country (pipelines, regasification plants, underground storage facilities and international connections) will contribute to the security and

continuity of the supply amid a context of rising geopolitical concerns. This will also allow for increased trade through the territory's existing facilities, thereby enabling the development of a gas hub.

In short, it has become necessary to encourage coordinated infrastructure management and optimized usage to generate connectivity in the Basque Country, so that the investments undertaken are selective and necessary from a systematic standpoint.

3.3.2. Internationalization of goods, services and capital

Only foreign markets can offset the current sluggishness — which is expected to persist in the coming years — in Spain's domestic demand

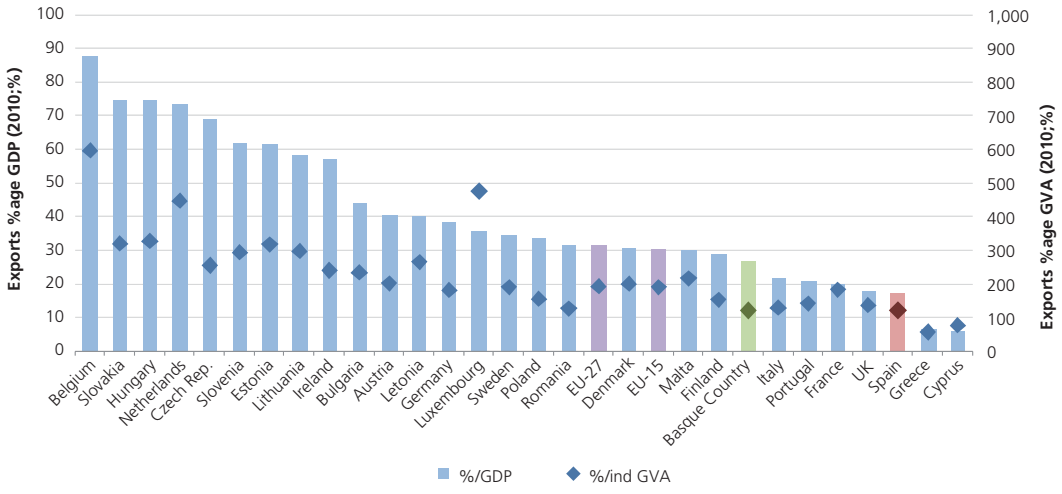
The acceleration of the internationalization process under way in the global economy since the mid-1980s, and the prominence gained in the following decade by the emerging economies, the Asian ones in particular, made it clear that the old playing rules had become obsolete. In this context, making a decisive push for internationalization became an imperative for maintaining and improving the attained level of well-being. Since the crisis that erupted in the second half of 2008 and which has especially wreaked havoc on the Spanish economy, internationalization is now even more of a necessity for Basque and Spanish firms. Only foreign markets can offset the sluggishness that is currently stifling demand — and will likely continue to do so in the coming years — both domestically in Spain and in Europe as a whole, albeit to a lesser extent in the latter case. Foreign markets can act as drivers of overall demand, contribute to further growth and compensate for the high unemployment levels.

3.3.2.1. *Trade in goods*

The relatively high export propension in the Basque Country is due to its manufacturing specialization. However, exports from the industrial sector are not excessively high.

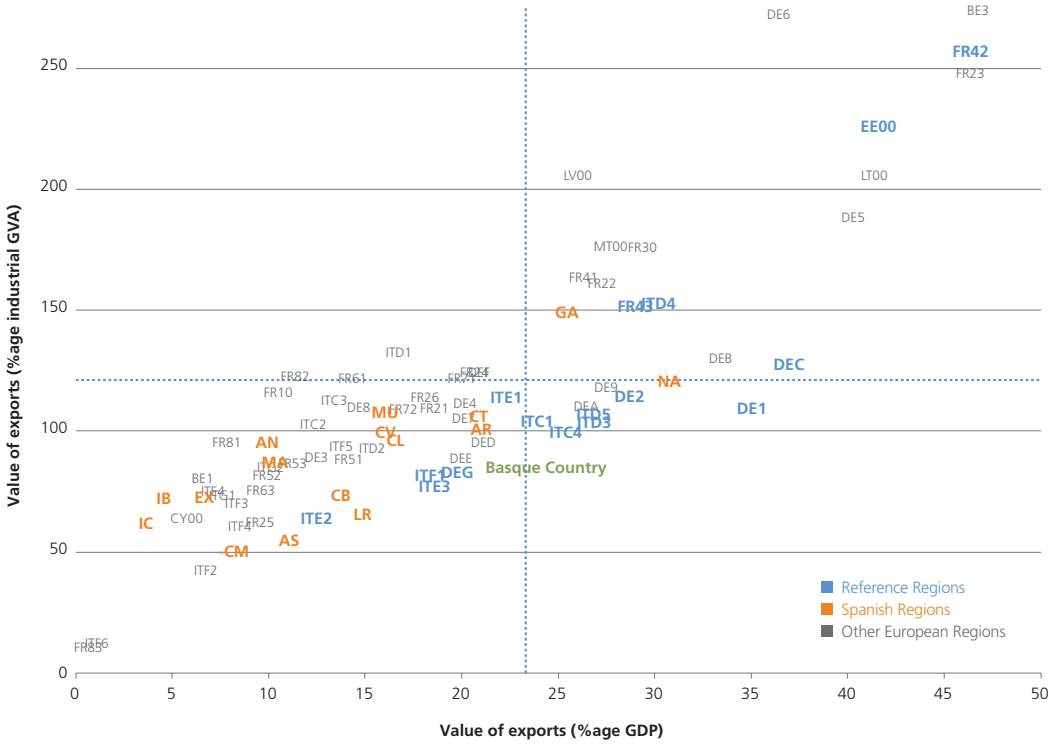
As can be seen from Graph 12 (comparing the Basque Country with countries) and Graph 13 (comparing it with regions), exports from the Basque Country are below the European average and slightly above that of Spain. However, when this is expressed not as a percentage of GDP but instead measured by dividing the total exports by industrial GVA (since the industrial sector is the main generator of exported goods), the ratio for the Basque Country (86%) falls below the average of European

GRAPH 12 Overseas exports over GDP and industrial GVA in EU-27 and Basque Country (%; 2010)



Source: Eurostat and Eustat. Prepared by the Authors.

GRAPH 13 Export propension and net export balance of European Regions



Source: Prepared by the Authors based on Eurostat and different country sources.

Nomenclature: NUTS codes for non-Spanish EU regions. For Spanish regions: AN Andalucía; AR Aragón; AS Asturias; CB Cantabria; CL Castilla-León; CM Castilla-La-Mancha; CT Cataluña; CV Comunidad Valenciana; EX Extremadura; GA Galicia; IB Islas Baleares; IC Islas Canarias; LR La Rioja; MD Madrid; MU Murcia; NA Navarra.

Exports, 2009. GDP, industrial GVA, 2007.

regions as a whole (121%) and is also surpassed by the average of the other Spanish regions (89%). That is, the general perception of the relatively high export propensity of the Basque economy is due to its specialization in manufacturing production.

Basque exports are concentrated in geographic areas with low growth rates, however this trend is starting to change

In regard to geographic specialization, Basque exports are concentrated in the EU-15, while also being well positioned in Latin America and, during the crisis, have established a greater presence in the latter region as well as in Asia. Considering that these are markets with strong growth prospects, the trend is positive, albeit based on low participation thresholds. This improvement in the composition of target markets, however, has been accompanied by slower overall growth of Basque exports during the period 2008-2010, which probably results from the highly cyclical nature of certain industrial exports.

Also noteworthy is the fact that merchandise exports in the Basque Country are at an intermediate level of intra-industry trade (exchange of varieties of the same product) yet, unlike the case of Spain as a whole, within that intra-industry trade the high-quality segment (i.e., trade in which the price of exports exceeds that of imports) has exceeded the low-quality segment (i.e., trade in which the price of imports exceeds that of exports), and thus more closely resembles the intra-industrial trade seen in advanced countries.

In sum, firms and public policies must make it a priority to increase the export intensity of industrial enterprises and increase the relative importance that markets in more dynamic economies have with respect to those exports. One overall challenge

TABLE 11 Features of exporting manufacturing firms from 7 European countries and the Basque Country. (2009)

		Austria	Germany	Hungary	UK	France	Italy	Spain	Basque Country
Company distribution by number workers	10-49	73.7	73.4	73.6	74.0	77.4	87.0	84.0	80.1
	50-249	20.2	21.3	21.2	21.2	17.8	11.4	13.8	16.8
	> 250	6.1	5.3	5.2	4.8	4.8	1.6	2.2	3.1
	Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Percentage of exporting firms	10-19	70	46	58	55	45	65	51	23
	20-49	64	65	65	63	59	73	64	49
	50-249	89	78	79	77	75	87	76	73
	250 or more	91	84	97	81	88	93	88	77
	Total	**73**	**63**	**67**	**64**	**58**	**72**	**61**	**42**
Percentage of exports over sales	10-19	26	26	30	26	23	30	21	19
	20-49	33	28	44	28	27	34	25	24
	50-249	56	34	53	33	33	42	33	37
	250 or more	65	38	67	34	41	53	41	43
	Total	**40**	**30**	**45**	**29**	**29**	**35**	**26**	**28**
Nº export markets	10-19	5	7	3	9	7	8	5	4
	20-49	8	12	4	12	9	10	8	5
	50-249	18	18	6	18	14	17	12	8
	250 or more	32	28	14	27	24	29	23	11
		12	**14**	**5**	**13**	**11**	**11**	**8**	**6**
%age of exporters that export to:	EU-15	94	93	82	92	92	90	93	93
	Rest of EU	50	48	50	34	37	41	28	18
	Rest of Europe	47	53	24	34	42	50	27	24
	China &India	16	28	2	26	22	18	11	10
	Rest of Asia	18	26	5	32	27	24	14	19
	USA & Canada	22	37	7	44	32	30	18	22
	Central & South America	7	16	1	15	15	19	30	38
	Rest of World	12	17	4	35	31	24	24	24

Source: Navaretti et al. (2010)[5] Dirae and Civex. Prepared by the Authors.

for Basque intra-industry trade is to maintain the current trend of export varieties trading at higher prices than imports.

Since size is a determinant of the rate of export openness, of the capacity to export to distant markets and of the number of target markets, it would be desirable for the number of companies with between 50 and 250 workers to grow.

The analyses of foreign trade based on micro data have shown that some of the areas for improvement noted previously are largely due to the smaller size of Basque firms (only 1.1% of Basque companies have over 50 workers). However, the literature shows that to enter export markets it is not necessary to be a large firm — a condition that, moreover, is beyond the reach of Basque firms, given the region's lack of large corporate groups. The key goal to pursue in this regard is to increase the percentage of firms in the 50-250 employee category. That segment, in nearly all advanced countries, constitutes the backbone of the export sector (See this relationship in the territories presented in Table 11).

[5] Navaretti, G.B., Bugamelli, M., Schivardi, F., Altomonte, C., Horgos, D. and Maggioni, D. (2010): «The Global Operations of European Firms», *The Second Efige Policy Report*. [Véase igualmente un resumen en *Bruegelpolicybrief* nº 2010/05, june 2010]

Therefore, if the goal is an increase in Basque exports — regardless of the direct policies aimed at increasing the percentage of export firms and their export rates — then steps should be taken to reduce barriers or factors that hinder growth for Basque firms. The indicators published in the World Bank's *Doing Business* report show there are many regulations and barriers that stifle the growth of Spanish firms (the same could be said for Basque firms) and prevent them from matching the type of growth seen in the Anglo-Saxon economies, which appear to be more flexible and leaders in those indicators.

3.3.2.2. *Trade in services*

The Basque Country's share of service exports is low, and has in fact receded over the past decade

In recent decades, the growth of trade in services in advanced countries has outpaced that of merchandise trade and has become one of the key growth factors for the more developed economies. The percentage of service exports to foreign markets is lower in the Basque Country compare other places, and in the last decade has seen a slowdown in growth, meaning the gap has increased, rather than decreasing. At the same time, we can see that the Basque Country has a positive trade balance in a significant number of service sectors (e.g., financial and business services, tourism), and therefore the Basque institutions should promote specific internationalization policies for those sectors.

3.3.2.3. *Internationalization of capital*

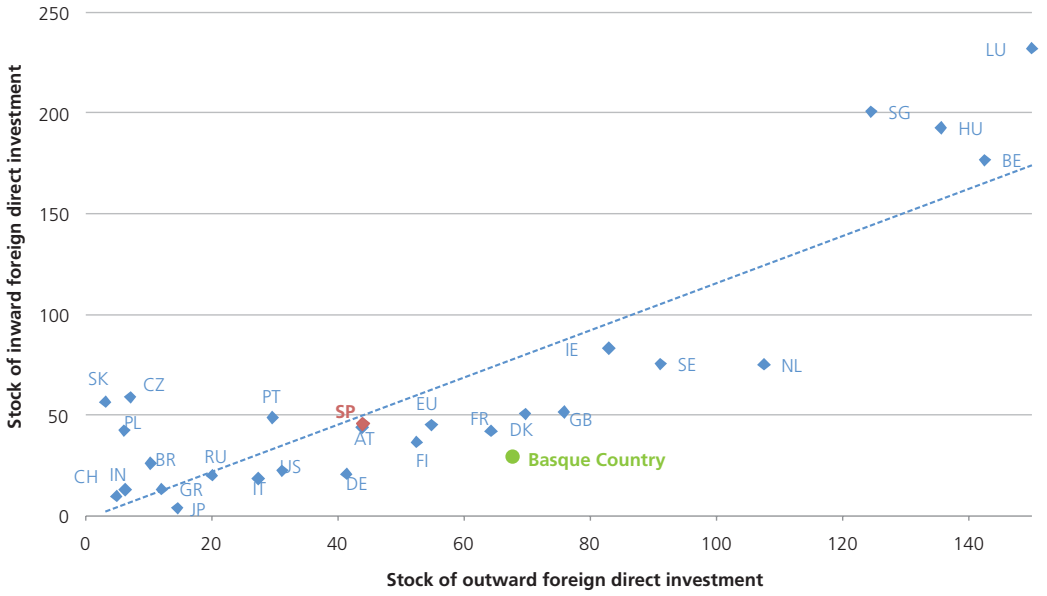
Foreign direct investment. Given the important role of direct investment, both for increasing competitive capabilities and promoting product exports, the Report analyzes the Basque Country's position in this regard (see Graphs 14 and 15). With respect to inward foreign direct investment (FDI), Graph 14 shows that the Basque Country stands below the Spanish and European averages with regards to capturing such funds. In fact, in the period 2005-2007, the number of new foreign firms per million inhabitants attracted by the Basque Country was lower than the EU-27 average (61 versus 177). In contrast, if rather than comparing the Basque Country to European or national averages, it is compared to the 206 European regions, it would rank 89th, placing it in the top third of European regions. Nevertheless, it seems that during the latest crisis the Basque Country has had greater difficulty attracting foreign direct investment than other regions. All the same, the number of Basque firms with foreign shareholders has slowly been increasing and has only stalled in the last year (See Graph 14).

The recent founding of Invest in the Basque Country is an important step in the effort to position the Basque Country as an attractive place for foreign investment, particularly if the institution's policy for attracting investment takes a proactive approach in mobilizing the country's locational assets, such as: the more than 400 foreign firms already established, the high degree of clustering in its economy, its well-skilled workforce, its notable R&D and innovation (RDI) infrastructures and the proximity and accessibility of its administration, which has broad powers of taxation and a wide range of policies to support competitiveness.

The rate of Basque firms operating in foreign countries exceeds that of Spain

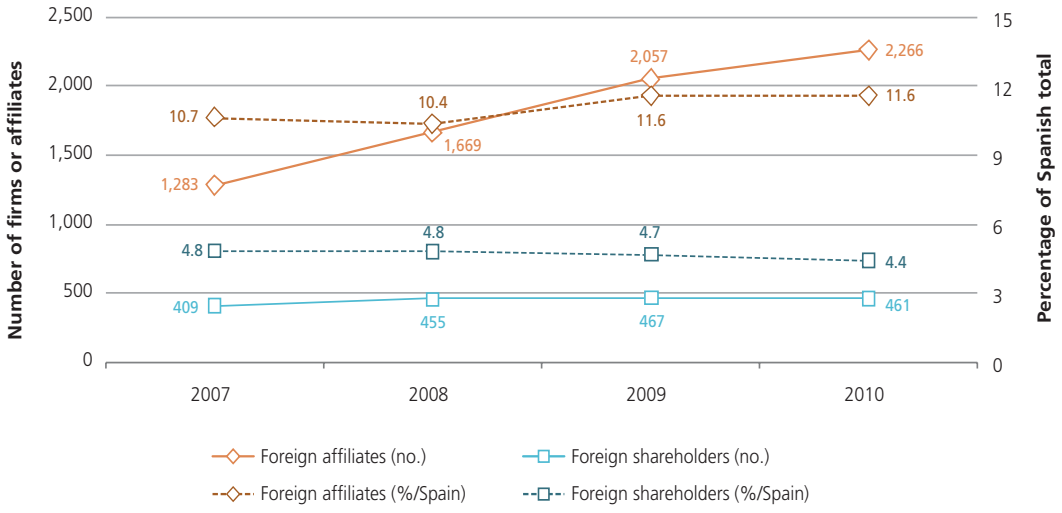
Outward direct investment. In Graph 14 it can be observed that the Basque Country presents quite an acceptable ratio with regards to direct investment abroad for it is above both Spanish and EU averages. The number of subsidiaries has increased considerably in recent years, and constitutes more than 10% of the Spanish total

GRAPH 14 Stock of inward and outward FDI (as % of GDP; 2009)



Source: Ministry of Industry. Position of Foreign Direct Investment in 2008 and estimate for 2009; UNCTAD, World Investment Report 2010.

GRAPH 15 Internationalization of Basque firms



Source: Prepared by the authors, based on SABI data.

(See Graph 15). Compared to Spanish firms as a whole, the only segments in which the percentage of firms with foreign operations is higher in Spain as a whole versus the Basque Country are holding firms and large corporations. This increased foreign presence of Basque firms is notable in the manufacturing industry and knowledge-intensive services. In terms of geographic areas, the Basque Country holds a relatively strong position in Latin America, though is less relevant in Asia. Its direct investment in emerging markets could open the door to achieving three types of objectives:

- Relocate to emerging countries any parts of the value chain that demand highly standardized activities that are cost-intensive in terms of cheap labor, in order to

lower the costs of these components or processes, which would then be imported by Basque plants, which would continue to carry out the final stages of production and product distribution, generally with a much higher level of sophistication (i.e., design, engineering, R&D, marketing, customer training and after-sales service, etc.).

- Surmount the obstacles (i.e., transport costs, tariff or non-tariff trade barriers, the need for ongoing customer service, etc.) currently impeding export, through implementation strategies, moving production to third countries for products to be sold primarily in those countries and nearby markets.
- Establishing operations in emerging countries can also be geared toward production in third countries to manufacture products that meet the variety of needs and demands existing there. This strategy is linked to approaches such as those proposed by Prahalad (to serve the *base of the pyramid*) or *frugal innovation*, which is necessary for working under the right conditions to meet the needs of the new segments of low-income consumers in emerging countries.

3.3.3. Internationalization of people and knowledge

3.3.3.1. *Internationalization of people*

Although studies on internationalization have traditionally focused more on trade and investment flows, while largely ignoring flows of people and knowledge, recent studies have highlighted the fact that the prosperity of a country depends to a large extent on its capacity to attract talent and absorb knowledge from abroad, with some authors, such as Richard Florida, even maintaining that talent attracts capital, not the other way around.

Taking all of this into account, the Report presents an assessment of the attributes of foreign immigrants in the Basque Country, including the following conclusions: (See Table 12)

- With regard to the whole of Spain, there are relatively few, mostly of working age, and smaller concentration in terms of their background.
- A relatively high educational level, higher than that of the Spanish immigrant population as a whole, though still slightly below the educational level of the Basque population.
- Entering the workforce in low-skilled occupations involving manual labor, partly by the perception that the educational levels reached in their countries of origin might not ensure the supply of real competencies required by jobs in the Basque Country, and the underutilization of the knowledge and skills provided by the immigrant population, for which it is not uncommon to see existing regulatory restrictions to that end. In any case, the learning capacity of the immigrant population appears to be ignored, though it should be targeted by policies to support competitiveness.
- A significant number of students in doctoral programs at Basque universities, apparently due more to linguistic and cultural factors than to the excellence of Basque universities and who, unlike other environments with student immigra-

The Basque Country is underutilizing the knowledge and skills of the immigrant population and not exploiting their learning capabilities

TABLE 12 Foreign Population in Spain and the Basque Country: Main characteristics (2009)

		Total	Basque Country
General Characteristics	Total population	46,951,532	2,178,061
	Foreign population	5,708,940	139,229
	% foreigners/population	12.2	6.4
	% foreigners/female	47.5	48.3
	% foreigners aged 0-15	15.4	15.0
	% foreigners aged 16-44	62.0	69.3
	% foreigners aged 45-64	17.2	13.9
	% foreigners aged 65 or over	5.4	1.8
Labor Market	Rate Spanish nationals in employment	48.2	50.6
	Rate foreigners in employment	55.4	57.7
	Rate Spanish nationals unemployed	15.9	9.9
	Rate foreigners unemployed	28.2	23.8
Country of Origin	**Total foreigners**	**100.0**	**100.0**
	Total advanced	**22.4**	**14.0**
	EU-15	21.1	13.1
	EFTA countries not belonging to EU-27	0.7	0.1
	USA, Canada, Australia, New Zealand & Japan	0.6	0.8
	Total not-advanced	77.6	86.0
	—EU-12	20.0	12.7
	—Rest of Europe	3.3	2.8
	—Latin America	30.5	44.0
	—Africa	18.4	21.0
	—Asia	5.4	5.5
	—Rest not advanced	0.0	0.0
	Concentracion 5 Index	46.4	45.9
	Hernfindahl Concentration Index	601.0	549.0

Source: INE, Register and EPA.

Nationals: Spanish nationality only. Foreigners: foreign nationality and double nationality.

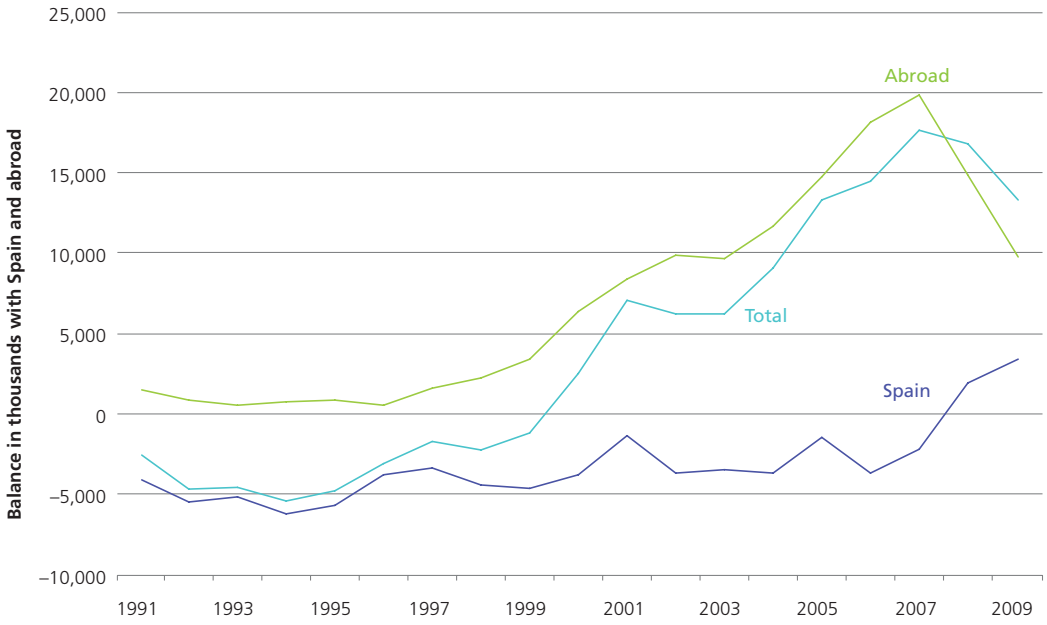
tion, after earning their Ph.D., do not stay and establish their careers in the Basque Country. Policies for attracting and retaining talent should target this group and encourage their social and occupational integration in the host country.

A negative migratory balance had been present from the mid-seventies until the first ten years of the new millenium (See Graph 16), when due to the strong increase in foreign immigration, the growing positive balance with abroad has more than compensated for the negative migratory balances that still exist with the rest of Spain.

The data do not confirm the alleged brain drain from the Basque Country

With respect to the departure of individuals and talent from the Basque Country, the analysis confirms the idea of a *brain drain*, at least in the new millennium, since in absolute or relative terms, the education levels of the Basque Country's emigrant population are not higher than the immigrant population. Meanwhile, there is an underexploitation of the potential offered by the existing network of Basque centers abroad, and of the presence of individuals of Basque origin in both diplomatic and

GRAPH 16 Basque Country migration flows, totals with the rest of Spain and abroad (in thousands)



Source: Eustat.

In accordance with the usual way in which demographic studies are designed and which Eustat uses in its statistics, the term "immigrant" comprises those coming both from the rest of Spain and from abroad, and "emigrants" are considered to be those who leave the Basque Country either to go to the rest of Spain or abroad.

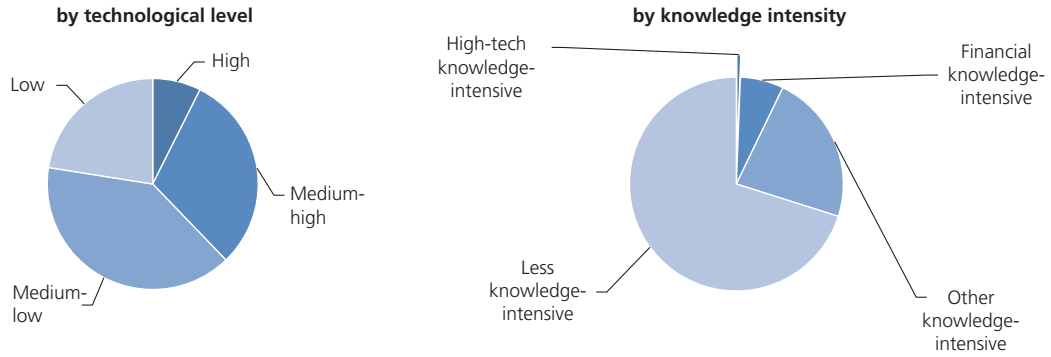
consular corps and multilateral institutions (i.e., Inter-American Development Bank, World Bank, OECD, etc.), with support programs such as secondments and the Basque Chair of Competitiveness.

3.3.3.2. *Internationalization of Knowledge*

With regard to the internationalization of knowledge, contrary to the line of thinking that considered any importation of foreign technology and knowledge to be a sign of dependency and subordination, the belief now is that the most successful territories and organizations are those that know how to attract and absorb external knowledge, with which they complement and enhance their own.

In that sense, the analysis presented in the Report indicates a marked inclination toward insularism in the Basque Country in the exchange of knowledge and technology abroad: very little outside knowledge is absorbed, as is the knowledge generated through external cooperation. The percentage of high- and medium-high technology manufacturing imports, for example, is lower in the Basque Country than in the rest of Spain, the EU-15, some of the EU enlargement countries, and the US. The same applies to imports of knowledge-intensive market services, where the percentage in relation to total imports of market services is much lower than in countries like Sweden, Finland and Germany, which are leaders in high-tech infrastructures (see Graph 17).

GRAPH 17 Technological level and knowledge intensity in Basque Country imports



Source: Eustat and Eurostat. Input-Output Tables. Prepared by the authors.

The Report presents multiple indicators — what is relevant for the purpose of diagnosis is not the accuracy of either indicator, but rather the resulting composite image — related to insularism in the exchange of knowledge and technology, among which can be found:

- The low relative importance of high- and medium-high technology versus total imports.
- The low percentage of knowledge-intensive market services.
- The minimum values in payments for the acquisition of disembodied technology (i.e., license fees, technology services, etc.) of the technology balance.
- The minuscule percentage of patents registered with the European Patent Office (EPO) by Basque Country residents developed with the participation of foreign inventors.
- The small percentage of R&D conducted by foreign affiliates versus total corporate R&D spending in the Basque Country.
- The reduced percentage of patents deriving from co-invention involving inventors from the Basque Country with foreign inventors.
- The low percentage of firms that have cooperated internationally in innovation projects.
- The small ratio of foreign export of knowledge-intensive services.
- The limited revenue from the disembodied technology exports, ranking among the lowest among the OECD and even behind that of Spain.

The Basque innovation system is highly insular and absorbs little external knowledge and technology

These results highlight the priority that should be attributed, in Basque competition policy, to the correction of such insularism and the connectivity to international networks and knowledge sources of excellence. While it is important to develop internal relations and capabilities, both at the firm and territory levels, competitive success requires complementing these internal capabilities with the maximum possible absorption of external knowledge, made possible precisely by the internal capacity. Such knowledge absorption does not weaken the firm, nor is it a sign that the innovation system is weak. The Report notes that it is precisely the Basque innovative firms that pay the most for technology imports, and that the most advanced European regions have the highest ratios of international cooperation and patent co-invention.

TABLE 13 Indicators of foreign knowledge connectivity

	Basque Country	Spain	EU-15	USA
Imports of high-tech goods (% of total)	6	19	21	25
Imports of medium-high technology goods (% of total)	29	39	37	34
Knowledge-intensive services (% of total)	58	79	73	72
Technological payments (% of GDP)	0.1	0.6	2.2	0.4
Technological receipts (% of GDP)	0.1	0.6	2.4	0.6
Joint invention of EPO patents with foreigners	2.1	4.4	5.8	n.d.
Joint proprietorship of EPO patents with foreigners	0.5	4.4	7.5	n.d.
Revenues from multinational affiliates (% of total firms)	22	26	36	11
R&D spending of multinational affiliates (% of total firms)	9	38	39	14

Source: Eurostat, Eustat and OECD. Prepared by the Authors.

Note: The years of reference vary for the different indicators. These can be consulted in the different tables and graphs in Chapter 12 of the Informe de Competitividad del País Vasco 2011. (Report on Competitiveness in the Basque Country 2011). In some cases, data for Spain and the EU-15 were obtained as the averages for their regions and constituent countries.

The success of any regional innovation system depends on its foreign connections

It is necessary to remove barriers that limit outsourcing by Basque firms to meet their technology and knowledge requirements. An example of this is when access to the benefits of R&D policy requires firms to award their R&D service contracts to agents of the Basque network, and not the agent that can provide them with best services. At the same time, proactive policies must be promoted in order to attract R&D centers and knowledge-intensive activities to the Basque Country. Such policies can be reinforced by the training and availability of researchers, RDI infrastructure, public support for R&D and a favorable overall environment. Table 13 presents indicators on foreign knowledge connectivity for the Basque Country, Spain, EU-15 and US.

AREA 3: Openness and Connectivity
Summary of the main conclusions

1. In regard to transport infrastructure, the challenge entails optimizing management and usage to enhance internal and external territorial connectivity, and gaining a better understanding and integration of the transport system as a whole.
2. For ICT, the challenge is to increase usage, by both the business community and society in general.
3. With respect to internationalization, the challenge is twofold: first, to boost merchandise exports, in terms of both quantity and geographical destination, for which it is vital to reach a certain business size. And, secondly, to capitalize on the opportunities to internationalize services.
4. As far as investment is concerned, it is necessary to promote policies aimed at attracting foreign investment, especially those that contribute to innovation and harness technology and talent.
5. With regard to the internationalization of people, the region must exploit the potential of the immigrant population, and encourage people to go learn abroad and then return at the ideal point in their careers.
6. In order to promote the internationalization of technology, it is crucial to endow people with the necessary skills to identify, assimilate and exploit technological opportunities at the international level, to capitalize on external opportunities to optimally exploit existing technological capacities, and acquire new capacities.

BOX 2 Factors favoring the location of R&D units in the Basque Country

Training and availability of research personnel

1. The high educational level of its population: According to Eurostat, in 2009, 43.6% of the population aged between 25 and 64 had achieved tertiary education. The Basque Country would stand in fourth place among the 272 regions (NUTS2) of the EU-27 on this indicator. The Basque Country also stands out for its high number of engineers and scientists: it would also be fourth on this indicator among all the regions of the EU-27.
2. Labor costs of R&D personnel is one third less in the Basque Country than the European average (See Navarro, 2009).[6]

Public aid for research activity

3. According to the OECD report (2011)[7] on the Basque innovation system, subsidies represent between 22 and 25 per cent of total business R&D expenditure in the Basque Country, while the averages in the OECD and EU stand between 6 and 7 per cent. Subsidies for R&D are between three and four times greater than the average in advanced countries: no country surpasses the Basque Country in this respect.
4. The Basque Country has its own tax system, different from the Spanish one, which it uses to support innovation. According to the previously-quoted OECD report, tax deductions for R&D in the Basque Country (indirect financing) are equivalent to those granted in subsidies (direct financing), and as they work out at a further quarter of business R&D expenditure, they are among the highest in the world.
5. The way the peculiar Basque Country tax system deals with patents is also, according to the OECD report, one of the most generous in the world, both with regards to the intellectual property which is applied to it, as to the degree of exemption it is granted.

R&D&i infrastructures

6. The Basque Country concentrates the most important technological centers network in Spain (over 40% of its invoicing and personnel, and the weight is even greater if we focus on strict R&D services). The Cooperative Research Centres and the Basic Excellence Research Centers, promoted in the Basque Country especially in the nano- and bio-technology fields have been added to this network.
7. The four Basque Technological Parks (Bizkaia, Miramón, Miñano and Garaia) make up the most powerful network of technological parks in Spain. They concentrated 27% of R&D expenditure in the Basque Country, and 34% of business expenditure on R&D
8. The deployment of fiber optics is in a very advanced state in most of the territory, due to the policy followed by the Basque Country in this respect – a pioneer in Spain.

General environment in the Basque Country

9. The Basque Country has a good quality of life - beautiful landscapes, mild climate, art, gastronomy, very low crime rates, high life expectancy rate –all of which are very highly valued by the research community for its localization.

Box 2 brings together a key number of unique singularities or assets that communicated in the right way, should help to make the Basque Country an attractive place for company R&D units.

As an overall conclusion, the Report highlights the considerable efforts made thus far to move toward the innovation stage, despite the results still being unclear.

[6] Navarro, M. (2009). *Sistema de innovación de la CAPV a partir de la estadísticas de I+D.* Bilbao: Publicaciones de la UNiversidad de Deusto.

[7] OECD (2011). *OECD Reviews of Regional Innovation: Basque Country, Spain*. Paris: OECD publishing.

Taking into account the complexity of the process, we can see that such progress does not happen overnight, since it entails halting inertia in multiple areas. In this regard, it also underlines the willingness and history of cooperation among businesses, governments and other actors in the Basque Country which, despite always having room for improvement, is an asset that is generally accepted and which largely determines the capacity of Basque actors to define and implement policies.

As such, the challenge identified in the Report is not to inject more resources, but rather to develop a regional strategy that must be inherently selective and disregard certain objectives and activities and even more so in an austere fiscal context.

4

Towards a strategy for leading in the *new complexity*

The analysis set out in the Report concludes that in the current environment of complexity, the Basque Country is in a state of transition toward a new competitive scenario, dependent on key factors that differ from the previous situation. In an austerity context, the challenge lies in achieving leadership in the phase of innovation to come, which calls for complex changes that break the patterns of inertia and functioning of the previous phase.

But we must give up on the attempt. As with the Red Queen in the Lewis Carroll story, when confronting the new complexity we have to run, and run as fast as possible, often just to keep in the same place (Breznitz and Murphree, 2011)[8]. In the case of the Basque Country, that same place might be the maintenance and improvement of the living standards of its inhabitants.

A unique strategy

The construction of a regional strategy for the new phase is a permanent, ongoing process, which needs qualified people to lead it

One of the central messages of the Report is that leadership in the new complexity which characterizes this new phase requires the Basque Country to build a unique strategy that will generate sustainable benefits and lead to the progress and well-being of society. The construction strategy must be a process and not a product thought up at one particular moment and embodied in a document. Development is increasingly a deliberative process that incorporates strong elements of experimentation and collective construction of the context in which the agents of competitiveness interact. It is not an easy process, and in addition, it calls for the gradual creation of the necessary competencies so that there will be *qualified people* available to develop it. Although there are no ready-made formulas for this type of process, they must respond to at least three questions: *how* this process is created, *who* must lead it and *what* result must be achieved through it.

Collaboration and analysis are the keystones for focusing strategy on the most promising opportunities, given the competitive advantages and disadvantages of the Basque Country

How. Collaboration and analysis are key factors. In any region each agent has his or her own aims which must gradually converge to build the regional strategy, and which will only be sustainable if it is a strategy of mutual benefit. In order for the regional strategy to emerge, it is necessary to have collaboration or to set up spaces where information and experience can be shared and where any existing consensus

[8] Breznitz, D. and Murphre, (2011): *Run of the Red Queen*, New Haven: Yale University Press.

and dissent can be expressed. It is also necessary for the actors to know the contextual frameworks – fiscal, political, etc. – that limit freedom of action. These spaces for dialogue must have a certain degree of continuity so that the opportunity is given to explore the diversity of points of view, experiences, projects and proposals that can be found in the region. These dialogues are the ones that make the actors happen to have their own mission and goals that they converge on a mission and regional objectives (system) shared. Nevertheless, collaboration alone is not sufficient, but at the same time there must be *analysis* which will help to focus strategy on the most promising opportunities, taking into account the competitive advantages and disadvantages of the region. The Report aims to make its contribution to just this phase of the analysis.

The regional strategy must be led by a variety of public and private partnerships

Who. In a complex environment, where the knowledge necessary to respond to the challenges identified is spread among various protagonists both local and worldwide, leadership of the regional strategy cannot be undertaken by a single agent. A variety of public and private partnerships is needed, which meet the different strategic challenges arising in the region. To achieve this, the various actors must develop the ability to think and act on a regional level and transcend personal interests as far as it is possible.

What. The process of collaboration must achieve an open and resilient regional partnership capable of keeping alive the ongoing process of regional development (regional leadership itself) and a strategic, flexible plan of action, which serves as a roadmap for regional development.

New policies

The second important message is that the transition to a new competitive phase and the advisability of confronting that transition through a regional strategy process denote a challenge to start developing new policies. These policies must, first and foremost, be *contextual*: that is, they must respond to the specific problems of each region. Secondly, they must be policies that take account of *how they interact* with other policies and that are not laid down and enforced in isolation. In third place, they must be more *systemic*, influencing not only the behavior of the various agents of the system of innovation, but also the way they interact. In fourth place, because of the need to have contextual policies, the very process to determine policies must in itself be an *innovative process*. And lastly, they must take into account multi-level governance, given that there are always different administrative levels that rightfully meet together in the same region.

Learning and innovating in a complex environment: People, organizations and public authorities

The third central message is that the new environment, distinguished by its increased complexity, needs to be analyzed using new ways of thinking in order to be interpreted. It will not be possible to face up to the challenges discussed in the Report, on the basis of thinking that served to meet earlier challenges. In this respect the Report makes a number of recommendations on the way in which people, organizations and organizational or system networks should confront the new complexity, interpret it and respond to the challenges that will ensue.

The new complexity calls for people with the ability and drive to continue learning throughout their lives. Learning firstly requires humility, empathy and a systemic view. Learning also calls for proficiencies and abilities to work as part of a team, interpersonal skills and competencies for developing in international and diverse environments. Likewise, in the new complexity it is essential to have people endowed with a degree of generosity to commit themselves to group projects.

People are needed who have the ability to learn, to work as part of a team and to develop in a multicultural environment

In the new complexity organizations are needed in which organizational innovation emerges forcefully as one factor that helps in the creation of environments where people are able to give the best of themselves, contributing their knowledge and generating the capacity of innovation needed by the region. This enables skills to be developed that will give rise to mixed innovation strategies and paves the way for the transition toward higher added value activities (for example, through related variety), thus leading to better results. In order to achieve this, the perspective must be created to look beyond what has always been done: for this, organizations must become more open and improve their international profile.

Organizations (firms, administrations, civil society, etc.) must offer environments that favor the development of creativity and innovation

Lastly, the main message for the public authorities is that they must innovate constantly, and must also call into question the *business as usual* attitude, ensuring that programs do not become cast in stone and setting up spaces for experimentation. If the ability to meet the challenges of individuals and organizations to a large extent depends on their learning capacity, one of the major challenges of public authorities is to generate a collective learning capacity in the region. Such learning processes must support the various policies implemented. Both evaluation and governance have a direct bearing on the collective learning capacity in order to improve. Evaluation in order to improve the effectiveness and efficiency of policies. And governance to give expression to participation, which must be result-driven and use a critical approach to assess which are the processes in which participation is capable of creating higher value.

Evaluation and governance are essential in enabling the public authorities to set up collective learning processes in the region

The way in which change is aligned in this multiplicity of levels will be decisive for the development of a regional strategy that leads to the improved well-being of society.

Orkestra
BASQUE INSTITUTE
OF COMPETITIVENESS
DEUSTO FOUNDATION

The Basque Country Competitiveness Report 2011, the third prepared by Orkestra-Basque Institute of Competitiveness, has been published at a moment when several structural tendencies are giving way to what the Report calls the «new complexity» characterized by profound changes in global economic parameters and relations that affect the competitive environment in which firms and regions will bid for leadership and the well-being of their citizens over the coming years. The Report analyzes the state of competitiveness of the Basque Country in an environment characterized by the «new complexity»; it analyzes critical factors that pose challenges to the competitiveness achieved so far; and finally, reflects on the design and implementation of competitiveness policies conducive to leadership.

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