Orkestra
BASQUE INSTITUTE
OF COMPETITIVENESS
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2022 BASQUE COUNTRY COMPETITIVENESS REPORT

FOUNDATIONS OF COMPETITIVENESS IN TIMES OF UNCERTAINTY

Deusto

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Orkestra
INSTITUTO VASCO DE COMPETITIVIDAD
FUNDACIÓN DEUSTO

Mundaiz 50, E-20012, Donostia-San Sebastián
Tel.: 943 297 327. Fax: 943 279 323
comunicacion@orkestra.deusto.es
www.orkestra.deusto.es

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Apartado 1 - E48080 Bilbao
Correo electrónico: publicaciones@deusto.es

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2022 Basque Country Competitiveness Report

Foundations of competitiveness in a time of uncertainty

Susana Franco and James Wilson
(Editors)

Mari José Aranguren, Francisco Carrillo, Aitziber Elola, Jorge Fernández, Susana Franco, Juan P. Gamboa, Ibon Gil de San Vicente, Ane Izulain, Bart Kamp, Macarena Larrea, Jaime Menéndez, Asier Murciego, Mercedes Oleaga, Carla Peletier, Eduardo Sisti and James Wilson
(authors)

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2022 Basque Country Competitiveness Report

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Foreword

The past three years have been characterised by turbulence in the global economy, caused by the pandemic, the war in Ukraine and shocks in energy, commodity, and critical component markets. In turn, this has led to levels of inflation not seen in decades and has increased the level of uncertainty in which context governments, households and businesses must make decisions.

This situation has come at a time when society is facing profound transformations (energy-environmental, technological-digital and social-health) that will shape the future in a significant way, with impacts yet to be seen. These transitions challenge our competitiveness and wellbeing, but also create opportunities to create new businesses and jobs.

At Orkestra, we believe that in a context such as that at hand, it is vital to understand the foundations of competitiveness that enable high levels of wellbeing and to explore the structural conditions and levers that will be key to tackling paradigm shifts and ensuring resilience. These structural conditions, which we defined in our new 'territorial competitiveness for wellbeing' framework presented last year, include elements such as: the economic structure, its sophistication, the level of technology, the demographic structure and the culture and values of society.

In the case of the more qualitative characteristics such as culture, attitudes and values, we must understand their evolution in our society, and focus especially on young people, since perceptions around work, family, integration of immigrants, society and life as a whole, are changing. Understanding these characteristics will be critical to developing the skills and training needed to meet the talent challenge and ensure the competitiveness and wellbeing of the future.

In essence, the foundations of competitiveness and wellbeing of a territory refer, on the one hand, to its fabric of economic activities and, on the other hand, to its people and their values. They are pillars that continuously interact with the actions of companies and governments. Accordingly, in this 2022 Basque Country Competitiveness Report, we analyse these two pillars of territorial competitiveness to determine how we can respond to short-term challenges and tackle structural issues.

Lastly, I would like to highlight the excellent work, engagement and commitment of everyone forming part of and working with Orkestra, as well as the sponsor institutions that support us, without which Orkestra would not exist or be an international leader in regional competitiveness.

Iván Martén Uliarte
Chairman, Orkestra-Basque Institute of Competitiveness
Deusto Foundation

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The report has been prepared by a group of people coordinated by Susana Franco and James Wilson. The entire Orkestra team was also involved in a variety of ways, and we thank them for their collaboration throughout the entire process. We are grateful for the contributions of BRTA and Innobasque, who have written boxes for the report, and to the social values research team at Deusto University, who provided data from the European Values Survey for the analysis of Chapter 3. We would also like to extend our thanks for the contributions of the members of the Board of Directors and the Advisory Board, as well as Orkestra's sponsor institutions.

Calculation of the indicators on which this report is based was possible thanks to data provided by Eustat (Basque Statistics Office) by means of purposeful and impartial utilisation of its databases at Orkestra's request. Our sincere thanks to Eustat for all the assistance provided. We also thank Sabi-Informa for its collaboration in providing data for other analyses in the report and the Basque Finance Institute for its support in the use of financial analysis methodologies.

In addition, we would like to extend our thanks for the involvement of all the stakeholders who have participated and contributed to generating knowledge as part of the various projects carried out by Orkestra in recent years.

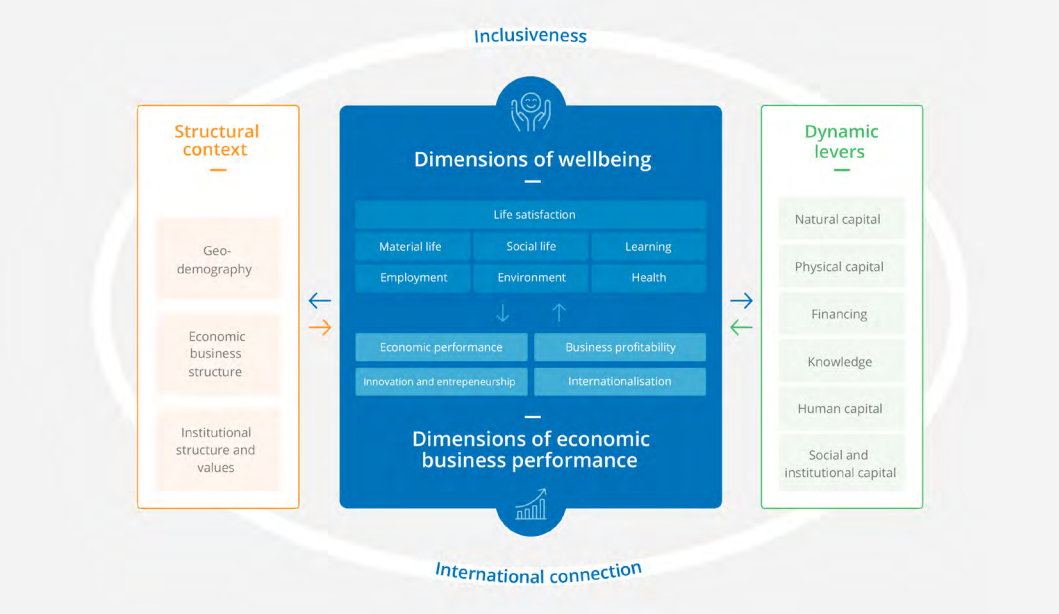
Orkestra assumes full responsibility for any errors or omissions in the content of this report.

Executive Summary

The Basque Country, like all territories, is **navigating a new era of turbulence** in the global economy, associated with the COVID-19 pandemic, the invasion of Ukraine and a series of shocks in energy markets, raw materials, logistics and other critical supply chains. These events, together with the high inflation they have provoked, have created an environment of high uncertainty for businesses, households and governments at a time of profound energy-environmental, digital-technological and demographic-social transitions.

The Basque economy is showing **a robust recovery** after the fall in activity experienced in 2020 as a result of the health crisis. The latest available figures show in the second quarter of 2022 a year-on-year growth of 4.3 % in GDP, 3.7 % in employment, and a record level of exports. However, geopolitical circumstances can change radically from one day to the next, which makes it very difficult to foresee the evolution of the economic climate and requires a high degree of adaptability on the part of companies, governments and other competitiveness actors.

TERRITORIAL COMPETITIVENESS FRAMEWORK FOR WELLBEING



Source: Orkestra (2021).

In these circumstances of high uncertainty, both recent performance and competitiveness fundamentals need to be well understood. In this sense, our **territorial competitiveness for welfare framework** analyses the **economic and welfare results** of a territory in relation to its **structural context** and the **dynamic levers** on which companies, governments and other agents can act. The Basque Country Competitiveness Report 2022 offers an analysis of the situation in the Basque Country structured around this framework, with the aim of identifying actions that will underpin future competitiveness beyond the current economic situation.

Economic performance and wellbeing outcomes

Economic and business performance is consistent with the **turbulent situation in recent years**. Of the 17 indicators analysed, half worsened, but these are mostly indicators for which data are not available in 2021, meaning that performance can be attributed to the direct impact of the first pandemic year. The indicators available in 2021, on the other hand, generally show an improvement from the previous year, in line with the recovery.

Three improvements stand out: the **recovery in GDP per capita, corporate profitability** and **exports**. GDP per capita in 2021 was 9 % above the EU-27 average, without yet recovering the 15 % advantage it had before the pandemic, but with growth in 2021 stronger than the European average. The recovery in corporate profitability is evident in the preliminary ROE and ROA figures for 2021, and both gross operating surplus and exports of goods and services increased in the Basque Country more than the European average in 2021. On the other hand, the deterioration in productivity and unit labour cost indicators in 2020 was a consequence of a sharp fall in output and relatively less job destruction. In the case of apparent labour productivity (€/person), the data show a recovery of 5.1 % in 2021, on track to regain pre-pandemic productivity levels.

The Basque Country is classified as a 'strong innovator' in the European Commission's Regional Innovation Scoreboard, where it is included in the group of 'regional innovation poles'. However, the latest **innovation and entrepreneurship** results from 2020 show a negative evolution in the share of innovative SMEs, in sales of new products and in the share of high-growth firms. Particularly striking is the decrease from 41 % to 39 % in the percentage of innovative SMEs, as the evolution in the other territories analysed has been positive. This is partly explained by an increase in the total number of SMEs in the Basque Country. It may also reflect the greater impact of the pandemic on the sectors in which the Basque Country specialises and, consequently, on its levels of innovation. However, it confirms the need to be persistent in the efforts already underway to foster a culture of innovation among Basque SMEs.

Ultimately, **the competitiveness of a territory is reflected in the wellbeing** it can generate. In the subjective indicator of life satisfaction, which measures perceptions of overall wellbeing among the population, the Basque Country is above the European average and experienced a positive evolution in 2020, reaching a level of 7.6 (on a scale of 1-10). Of the 19 indicators analysed across 7 dimensions of wellbeing, 10 of them show a recent positive evolution, while 2 remain constant and 7 have a negative evolution.

The **learning** and **environment** indicators stand out both due to their positive recent trend and for their improved position compared to the European average. The proportion of the population with some level of post-compulsory education has increased by 2.6 p.p. in 2021, closing the gap with other territories, and the Basque Country has increased its leadership in lifelong learning. These are two particularly important developments in the current context of increasing global competition for talent. On the other hand, trends in environmental indicators reflect the transition towards a green economy and society in all territories. In the case of the Basque Country, the recent evolution of the main indicators has been relatively more positive than the EU-27 average. However, the fall in greenhouse gas emissions in 2020 should be interpreted with caution because it is associated with the large fall in economic activity due to the pandemic.

Not surprisingly in the context of the economic crisis caused by the pandemic, the more economic dimensions of wellbeing exhibit the worst trends in their performance. With regards to **material living**, median equivalised household income fell slightly in 2020, but remains considerably above the EU-27 average (24 % higher). However, in 2021 there was an increase in the percentage of people at risk of poverty or exclusion. In these circumstances, it is positive to note that the level of income inequality has remained low compared to other territories. The **unemployment** rate also worsened in its level and relative position in 2021, although in this case the latest data suggest a positive evolution of this indicator during 2022 which will foreseeably be reflected in future reports.

Evolution of the economic and technological structure

Each territory has a different economic structure, reflecting, among other things, the territory's history, its natural and human resources, its proximity to different markets and its historical investments in capital, infrastructure, science and technology, etc. In times characterised by volatility and profound transitions, where the characteristics of markets, value chains and technologies are changing rapidly, it is particularly important to reflect on how the economic structure of a territory is changing, in order to guide the strategies and actions of governments, companies, technology centres and other actors.

The evolution of the **economic structure of the Basque Country** between the periods 2012-2014 and 2017-2019 is characterised by an increase in employment in local activities such as trade, education, construction, hotels and catering or public administration, which account for most employment in the economy. At the same time, there are several changes in the specialisation (relative to Europe) of manufacturing and industry-related service activities:[1]

[1] The degree of specialisation is calculated as the proportion of total employment in an activity in the Basque Country with respect to the proportion of total employment in the same activity in the EU-27. A value higher than 1 means that the Basque Country is specialised in this activity with respect to the EU-27, and a value lower than 1 means that it is under-specialised.

Increase in specialisation	Decline in specialisation
Sectors related to advanced manufacturing or smart industry, such as Manufacture of metal products, Manufacture of machinery and equipment and Manufacture of computer, electronic and optical products.	**Traditionally important manufacturing sectors**, such as Manufacture of electrical equipment, Metallurgy and manufacture of iron and steel products, Manufacture of other transport equipment, Manufacture of rubber and plastics; and Manufacture of coke and refined petroleum products.
Services important for the knowledge economy, in particular Research and development, Architectural and engineering services, and Other professional activities.	**Services that are important for sales and marketing activities and fostering new management models**, such as Advertising and market research, IT, Legal activities and Financial services.

The Basque Country's **technological specialisations** generally correspond to the industrial activities in which it has strengths. In addition, several of them fall under the S3 priority of advanced manufacturing (PCTI 2020) or smart industry (PCTI 2030). Moreover, the development of BRTA research agendas demonstrate ongoing efforts to ensure alignment between R&D and S3 priorities.

The sophistication of the economy is important for the sustainability of our ability to compete internationally. Our analysis of the **sophistication of the Basque economy** considers both the diversity of activities in which the Basque Country specialises and their uniqueness (if they are activities in which few regions specialise). The Basque Country has maintained its sophistication in terms of manufacturing activities in the European context, but it has lost positions in the sophistication ranking that considers all activities in the economy. In this respect, the high sophistication of manufacturing activity represents a good opportunity to leverage the sophistication of industry-related services.

In general, the evolution of the economic structure in the Basque Country reflects the importance of the **prioritisation process of the S3 strategy**, especially in activities linked to smart industry. The levers of knowledge, human capital and social capital will be critical to promote new opportunity niches based on existing strengths and emerging changes in global value chains.

Evolution of the demographic structure and values

The people of a territory are a cornerstone of its competitiveness, as they are critical to the sustained success of its businesses and the evolution of its economic structure towards activities that bring more economic value and wellbeing. On the one hand, it is important to understand the demographic structure and its evolution, which is affected both by birth and mortality rates and by migratory flows. But on the other hand, there is a growing need to understand the evolution of other more qualitative characteristics of the population, such as their culture, attitudes and values.

With regard to demographic trends, the **ageing** rate (proportion of the population aged 65 and over) in the Basque Country has risen from 18 % in 2001 to 23 % in 2021,

and it is expected to reach 29.3 % in 2036. Ageing has many positive features; for example, it reflects the increasing longevity of the population and generates new business opportunities in both goods and services (the so-called silver economy). However, it has important implications for the labour market of the future and for the social protection system. It implies a reduction in the working-age population (the potentially active population), and a loss of population in the younger age brackets, generally associated with a greater capacity to innovate.

Tackling demographic challenges requires mobilising people in the territory (workforce), increasing their value contribution (innovation and productivity), and having an effective talent attraction policy (immigration, integration, and skills development related to the economic fabric). Immigration will indeed be fundamental in a context in which, according to demographic projections, the population growth forecast for 2035 will come exclusively from the positive migratory balance (contributing 194 700 people). Given the competition between territories, regions and countries for attracting (and retaining) talent, it will be particularly important to ensure the effective integration of immigrants with different profiles and to work on their training and incorporation into the world of work in a way that is aligned with the needs of companies and the territory.

The analysis of the values of the different generations of the population shows traits on which we must build in order to take up these challenges:

- All age groups, and especially the younger generations, have **favourable attitudes towards immigration** and the participation of immigrants in the labour market. In addition, the high valuing among younger generations of values such as 'tolerance and respect for others' is particularly important given the need to ensure the effective and harmonious integration of immigrants.
- **The value of work** is the most important dimension of life after family in the younger generations (< 50 years), and within work, aspects such as salary and working hours are prioritised more than the possibility of taking initiative or responsibility. On the other hand, there are work-related indicators, such as absenteeism, which continue to cause some concern. In this context there are opportunities to innovate in our human resource management strategies —for example, in how the balance between job stability and flexibility is addressed— to optimise both labour market participation, value contribution, and the ability to attract, retain and nurture talent.

In a context where changing demographics and values will have profound effects on our ability to compete, **good coordination and collaboration between policies in different areas** (economic, social, educational, etc.) will be critical.

Levers of competitiveness: Where should we act?

To address the challenges associated with changes in the economic and demographic structure and simultaneously increase the continuous adaptive capacity demanded by the aforementioned environment of uncertainty and transitions, we must act on the six levers of the 'territorial competitiveness for wellbeing' framework. Within these levers, specific actions are identified, many of which are already the target of various public and private plans and initiatives:

Lever	Actions
Natural capital	• Advance decarbonisation through: new renewables and storage projects; strategic initiatives targeting emission-intensive industry; and widespread improvement of energy efficiency in all sectors. • Work on material efficiency and circularity to reduce external dependencies and increase productivity. • Use well-designed incentives to promote progress in the development of cleaner production and consumption alternatives. • Seize new emerging opportunities in areas such as environmental protection, waste management, energy efficiency and circular economy.
Physical capital	• Maintain investment levels, in particular in machinery and equipment, which is especially important for economies with a high proportion of industry. • Foster a stable regulatory environment conducive to investment, especially aligned with the medium-term decarbonisation objectives of the economy (reinforcing actions on the natural capital lever).
Financing	• Diversify sources of financing through the promotion of a local private investment industry. • Explore the potential for diversifying the countries of destination and origin of FDI flows and strengthen inward flows in activities connected to industry and to the challenges of the Basque Country.
Knowledge	• Maintain the recent positive trend in R&D expenditure and efforts to support innovation in SMEs. • Maintain efforts to increase scientific knowledge assets, reinforcing the commitment and alignment of the scientific and university system with the S3 strategy (PCTI 2030). • Reflect on the low propensity to patent in the Basque Country and the potential dangers of this trend at a time when the rules of the game in intellectual property at international level are changing. • Strengthen the weakest dimensions detected in the digital economy and society, such as the number of ICT specialists and training processes in companies, and the use of some emerging technologies.
Human Capital	• Maintain the positive evolution in the employment rate, taking advantage of the potential to intensify participation in the labour market. • Maintain the positive evolution in the percentage of the population with upper secondary and tertiary education, reducing the gap with other territories in intermediate qualifications. • Increase the percentage of tertiary educated people with STEM qualifications. • Facilitate that the educational offer evolves in line with the needs of the economy and society, building on existing strengths, such as the VET system, and enhancing the relationship between university and vocational training.
Social and institutional capital	• Take advantage of the existing high social and institutional capital to reinforce collaborative actions between companies and between companies and other agents.

Five cross-cutting themes for the future

The previous Competitiveness Report, published in 2021, analysed the trajectory of the Basque Country's competitiveness strategy since the 2008 crisis, finding a number of unique features in the current smart specialisation strategy (S3) (PCTI 2030), the Basque Science, Technology and Innovation Network, the education, training and skills system, and the territorial governance and leadership mechanisms. It con-

cluded that the wellbeing and competitiveness performance in the Basque Country was, in general, comparatively high and well consolidated, with some elements to be further improved related to employment, environment, productivity and innovation.

The new diagnosis presented here shows that the bases of competitiveness in the Basque Country continue to be solid, and although the economic situation of recent years has had a negative impact on some dimensions (such as material life, innovation, or productivity), improvements have been observed in others (such as learning, the environment, or internationalisation).

We are now at a time of profound transitions not only in the energy-environmental, digital-technological and demographic-social spheres, but also with respect to geopolitics and its impacts on the rules and relations of the global economy and the value chains in which we are positioned. We will have to face the uncertainties and challenges surrounding these transitions from the foundations of competitiveness built up over the past decades. But we will also have to prioritise cross-cutting actions to strengthen these foundations and prepare for the future. In this regard, the analysis in this Report identifies **five cross-cutting lines of action** that should guide the actions of business, governments and other actors:

1. **Foster the leadership of a new sustainable industrial competitiveness**, responding to the major structural environmental challenge. To this end, it is necessary to complement the short-term strategies of companies, governments and other agents to resist economic pressures with medium-term strategies that accelerate an orderly green transition at the lowest possible social cost, preparing us to compete in a world that requires greater sustainability.
2. **Strengthen people's capacities to contribute to competitiveness and well-being**, in line with the emerging needs of the territory. To achieve this, it is necessary to increase activity and employment rates, to enable the continuous training of people, and to promote the integration of immigrants with different profiles into society, facilitating their training and their incorporation into the world of work. Human resources policies that are more proactive, innovative and sensitive to the needs of the different groups will be necessary for this, as well as for attracting, retaining and developing talent in Basque companies.
3. **Work on the innovation culture, capacity and orientation** of companies, the public administration and the territory as a whole. Innovation culture and skills are critical to strengthen productivity in all areas and to mitigate the negative effects of the shrinking labour force on the competitiveness of the territory. To this end, it is necessary to continue investing in R&D&I and to strengthen the scientific capacities of the territory, as well as to continuously improve the skills of people, adapting them to the new needs of the productive fabric. The orientation of innovation is also key to ensure alignment with the specific opportunities arising from the digitalisation and servitisation of industry, sustainability and energy efficiency, and the ageing of the population. In this sense, it is necessary to work towards a collective vision of the future that we want and to be sensitive to the need for collaboration to innovate in the face of more complex challenges.
4. **Strengthen a sophisticated economic fabric**, capable of evolving towards new specialisation niches based on our industrial strengths. To this end, particular attention needs to be paid to the connections between the different activities of industry and between industry and related services. There is also a need to

strengthen activities whose current development poses barriers to exploiting new opportunities (e.g. digital or financial services that open up new markets or management models related to industrial activity). Multi-level cooperation (e.g. connections between cities and other parts of the territory) and public-private cooperation (e.g. within Cluster Development Organisations) will be critical to identify and seize opportunities to increase the sophistication of the industrial fabric.

5. **Deepen the international connectivity of the economy and society** to open opportunities that allow progress in multiple dimensions, such as the development of new markets and sources of financing, the attraction and retention of talent or the increase in the sophistication of our economic and technological fabric. To this end, it is necessary to integrate an international perspective in the development of actions in all the levers of competitiveness, increasing both the Basque Country's activity abroad and the international connection of the projects and initiatives developed in our territory. In this process, it is important to identify and minimise the potentially negative effects that these actions may have on other territories.

Introduction

The past three years have been characterised by renewed turbulence in the global economy, linked to the COVID-19 pandemic, the invasion of Ukraine and a series of shocks in energy markets, raw materials, logistics and other critical supply chains. This sequence of events has resulted in the current cost of living crisis, which has further increased the uncertainty which firms, households and governments must navigate. 2022 has brought inflation rates not seen for decades. Together with continuing shortages of raw materials, components and workers with certain skills profiles, this is creating challenges for the management and planning of socioeconomic activity.

The roots of these problems —health-related and geopolitical circumstances which may change radically from one day to the next— make it very difficult to predict how the current situation will play out. In fact, while the European Economic Sentiment Indicator is trending downward, so far, the Basque economy has continued to make a robust recovery following the drop in economic activity in 2020. For example, figures for the second quarter of 2022 show 4.3 % year-on-year GDP growth and 3.7 % job growth, together with record exports totalling 9.14 billion euros (42 % more than the same quarter of 2021).[1]

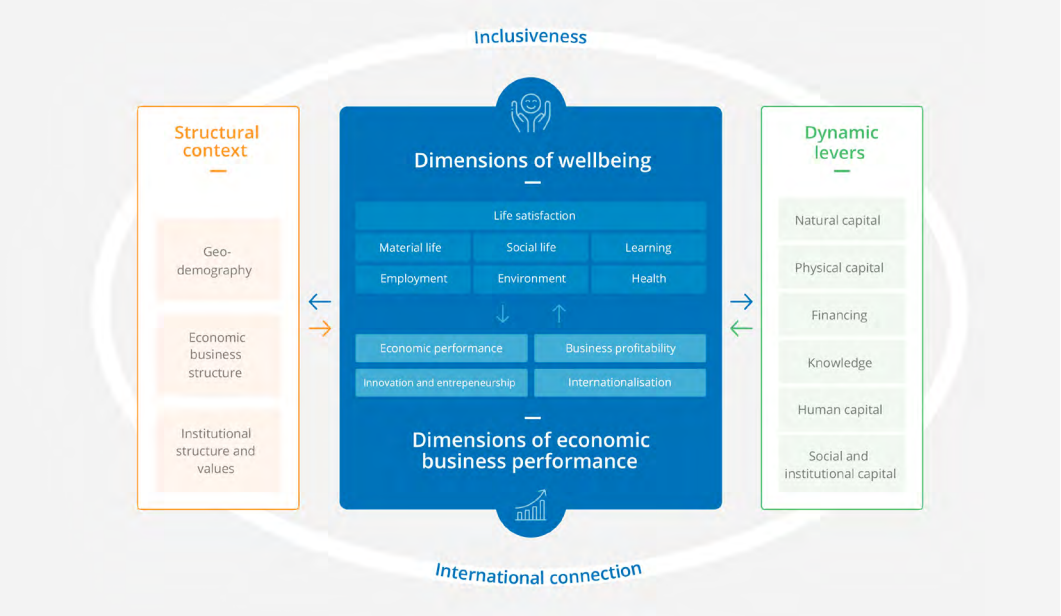
This state of considerable, sustained uncertainty, together with the need to continue tackling the energy/environmental, technological/digital and demographic/social transitions, requires constant and flexible adaptation by firms, governments and other agents of competitiveness. To foster this adaptability, it is necessary to fully understand how the foundations of a territory's competitiveness evolve. According to the 'territorial competitiveness for wellbeing framework' introduced in the *2021 Competitiveness Report* (Orkestra, 2021), these foundations can be found in the territory's **structural context** and in the **dynamic levers of competitiveness** available to it. Together, they determine **economic performance and wellbeing outcomes** (see Graph 0-1).

The focus of this *2022 Competitiveness Report* is an analysis of two critical dimensions of the structural context: **economic structure** and **demography and personal values**. These are pillars of territorial competitiveness, as economic activity and people are in constant interaction with each other and with the dynamic levers of competitiveness (natural, physical, human and social capital; knowledge; financing). Together

[1] See: Basque Government (2022a).

they determine how best to respond to the challenges facing us. Although each territory's economic and demographic structure generally remain relatively stable over time, in a highly volatile environment such as the present their gradual transformation is a determining factor in responses to the shocks which occur, and in ensuring short-, medium- and long-term resilience.

GRAPH 0-1 Territorial competitiveness framework for wellbeing



Source: Orkestra (2021).

The first chapter of this report presents an up-to-date analysis of the **Basque Country's performance** in wellbeing and economic/business dimensions. The next two chapters analyse key dimensions of the **structural context of the Basque Country**: economic structure (Chapter 2) and demographics and personal values (Chapter 3). We reflect on how changes in this structural context interact with the different actions taken by firms and governments to foster robust, sustained competitiveness and wellbeing under current circumstances. Staying with this focus, Chapter 4 analyses recent developments in the main indicators for the six **dynamic levers of competitiveness in the Basque Country**, going into particular detail in the natural capital lever (given the current importance of the green transition and turbulence in energy markets).

1
Wellbeing and competitiveness in the Basque Country

Ultimately, a territory's competitiveness is reflected in the wellbeing outcomes it is able to generate. In this first chapter, we focus on the central section of the 'competitiveness for wellbeing framework' to provide an up-to-date assessment of the Basque Country's recent performance. We begin with the seven dimensions of wellbeing, followed by the four dimensions of economic/business performance.

A territory's competitiveness is reflected in the wellbeing outcomes it is able to generate

The analysis is based on indicators that have been selected bearing in mind their relevance for understanding the dimension in question (the suitability of the indicator) and the availability of recent comparable data (the feasibility of the indicator). As in previous editions of the competitiveness report, we have attempted to select indicators that allow us to make a comparison with other European regions. However, to allow us to incorporate more suitable indicators, there are cases in which the only comparison is with countries, the Spanish average or the other autonomous communities. For ease of analysis, we have selected the following territories: i) two European regions (Baden-Württemberg and Upper Austria) due to their similar characteristics to the Basque Country and positive economic and social performance (Orkestra, 2020); ii) Germany as a benchmark country for Spain; iii) the EU with 27 members (EU-27), to determine the comparison with the average situation in Europe; and iv) Spain, to see how the Basque Country compares with the national average. We present the data for these territories whenever it is available.

Furthermore, the assessment combines the most recent snapshot, based on the latest data available, with a look at trends that make it possible to analyse how the situation has changed in recent years, specifically since 2013, the year the previous economic crisis hit rock bottom and we began to see a recovery.

1.1. Dimensions of wellbeing

1.1.1. Life satisfaction

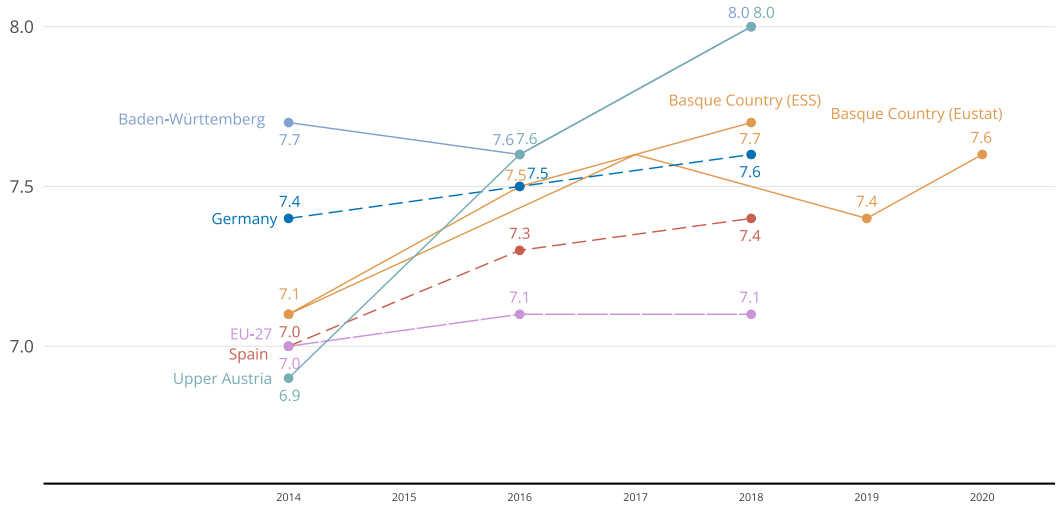
Life satisfaction measures how people evaluate their life as a whole. For a territory's population, the subjective feeling of life satisfaction reflects overall wellbeing, alongside which it is possible to analyse specific dimensions such as material and social life, employment, learning, health and the environment. We analyse the following indicator, which can be broken down by gender:

- **Level of life satisfaction**, determined by asking how people rank their life satisfaction on a scale from 1 to 10.

Basque life satisfaction increased slightly in 2020, with little difference between men and women

As Graph 1-1 shows, according to the European Social Survey (ESS), life satisfaction levels in the Basque Country rose between 2014 and 2018, ranking higher than the average for Germany, Spain and the EU-27 but lower than levels in Baden-Württemberg and Upper Austria. Although the latest ESS data is from 2018, the Eustat (Basque Statistics Office) indicator reveals a similar trend, with a slight drop in 2018 and 2019, followed by a recovery in 2020. Graph 1-2 breaks down these figures by gender, with the Eustat data showing very little difference between men and women in terms of life satisfaction throughout the entire period.

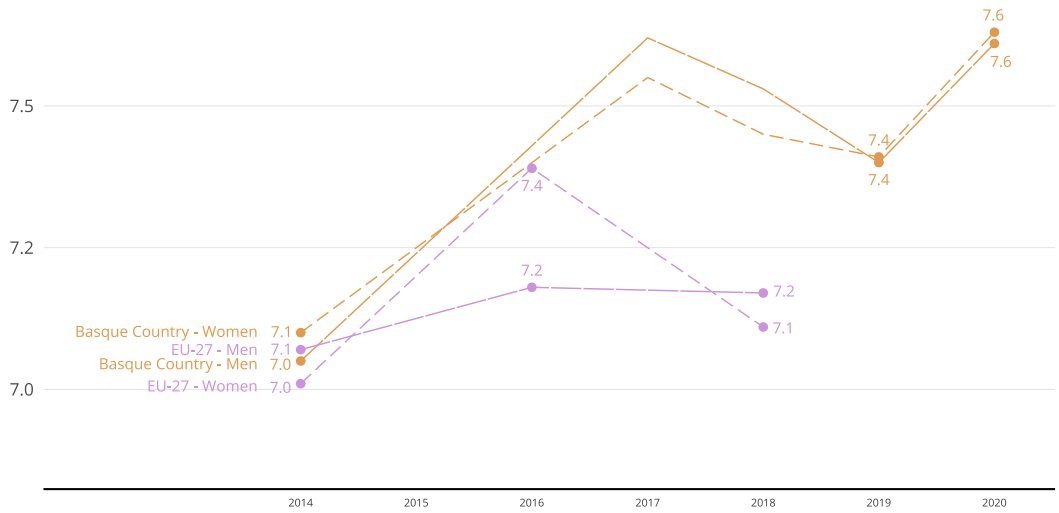
GRAPH 1-1 Life satisfaction



Source: European Social Survey and Eustat. Compiled by authors.

NB: The EU-27 average has been calculated including the number of EU-27 countries surveyed each year.

GRAPH 1-2 Life satisfaction, men and women



Source: European Social Survey and Eustat. Compiled by authors.

NB: The EU-27 average has been calculated including the number of EU-27 countries surveyed each year.

1.1.2. Material life

To understand the most recent results for wellbeing in the area of material life, Graph 1-3 presents three key indicators which describe:

- **Material standard of living**, reflecting in the monetary resources available to households (household equivalent median income);[2]
- **Existing inequality in material life** (S80/S20 ratio, which compares the income of the 20 % of the population with the highest income and the income of the 20 % of the population with the lowest income);
- **Access to decent housing** (% of the population living in homes with certain inadequacies).

The Basque Country is well positioned in the three indicators of material life

The Basque Country ranked well in all three indicators in 2020 (the latest year for which data is available). Firstly, both the Basque Country and Germany have a significantly higher material standard of living than the EU-27 and Spain. Secondly, the indicators reflecting income inequality and unequal access to decent housing position the Basque Country on a par with the EU-27 and significantly better than the data for Spain. However, Upper Austria, a benchmark region for the Basque Country, reports considerably lower inequality, and Germany has performed better in access to decent housing.

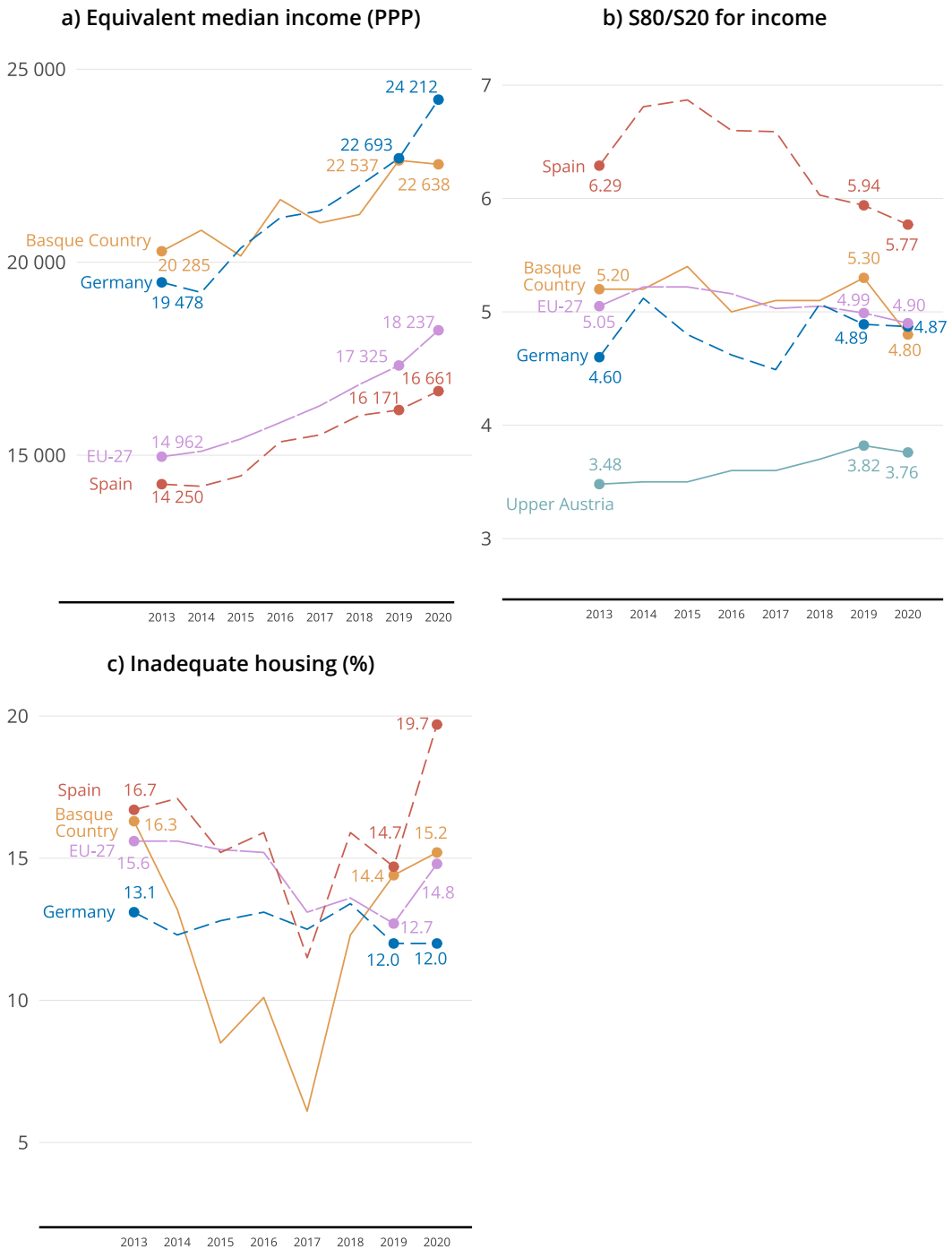
In 2020, equivalent median income declined slightly and inadequate housing increased

If we look at how these indicators have evolved, equivalent median income has been trending positively since 2013, although the growth rate was slightly higher in Germany and the EU-27. There was also a slight decline in 2020 that was not seen in other territories. Inequality levels remained fairly stable between 2013 and 2019, dropping from 5.3 in 2019 to 4.8 in 2020. This is a positive sign amid general concern about growing inequality, as well as the potential impact of the pandemic and the rising cost of living on more vulnerable groups. However, all sources do not point in the same direction during the pandemic.[3] To further explore these issues, in Box 1 we analyse the impact of the pandemic on poverty and social exclusion and how rising prices affect households differently. Lastly, after falling in 2017, the figure for inadequate housing has increased in recent years. In fact, in the context of the pandemic, this figure increased markedly in Spain and the EU-27 and slightly less in the Basque Country in 2020.

[2] Equivalent median income is considered a more suitable indicator than GDP per capita for measuring the welfare of the population because it measures household income rather than the economy as a whole, thus reflecting the monetary resources available to people. Additionally, the indicator shows the level for a typical average household, avoiding the distorted picture which may be given by average income if inequality levels are high, increasing comparability among territories (with different levels of inequality). Equivalent median income also takes into account household makeup, adjusting for differences that could be caused by the different makeup of households in different areas.

[3] Data from the Eustat Survey on Poverty and Social Inequalities indicate that inequality levels are lower than those reported by the INE (Spanish National Statistics Institute), but inequality increased at the onset of the pandemic (from 4.1 to 4.4 between 2018 and 2020).

GRAPH 1-3 Key indicators of material life



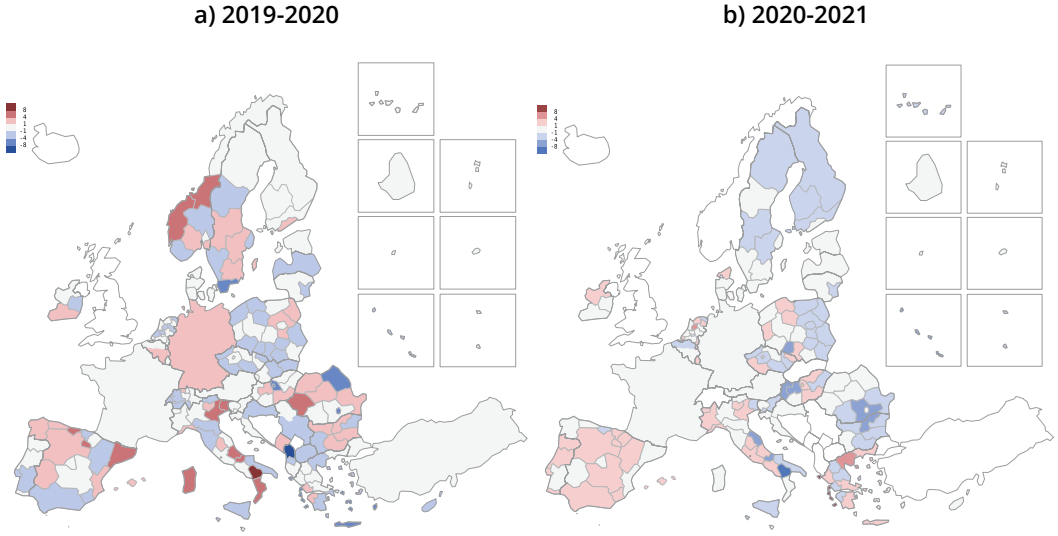
Source: Eurostat and INE. Compiled by authors.

BOX 1 Impact of the pandemic and inflation on material life among the most vulnerable groups

The COVID-19 pandemic, the conflict in Ukraine and the shocks in various markets due to surging inflation have not affected all groups equally. At the European level, an initial understanding of how the beginning of the pandemic affected the most vulnerable groups can be gained by observing how the percentage of people at risk of poverty or exclusion changed (Map 1-1). In the case of the Basque Country, unlike in many European regions, the measures implemented helped lower this number in 2020 (from 15.0 to 13.6). However, in 2021 the percentage increased considerably, rising to 16.0, higher than the 2019 figure.

In 2021, the percentage of people at risk of exclusion in the Basque Country was 16 %, a higher proportion than in 2019

MAP 1-1 Change in the percentage of people at risk of poverty or exclusion in European regions



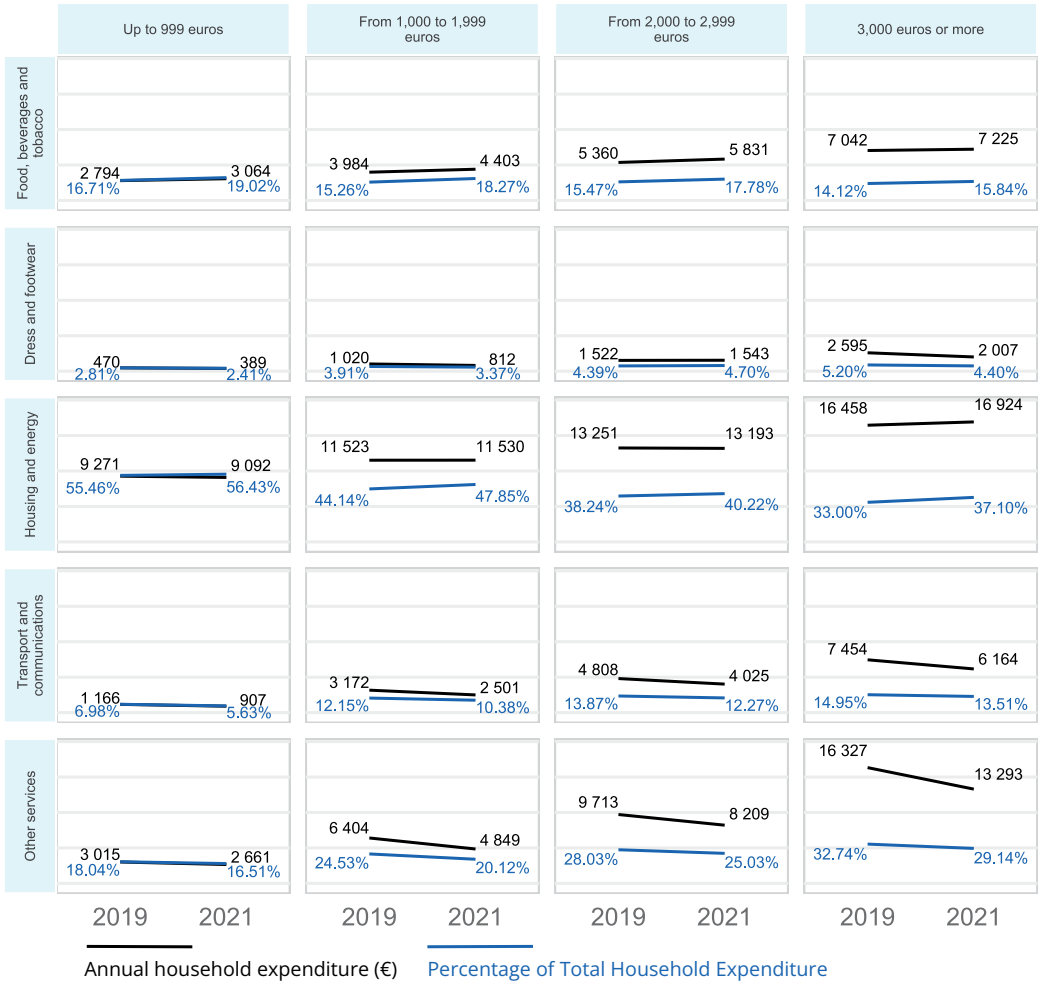
Source: Eurostat.

NB: The data for some countries, including France and Germany, are not available with a regional breakdown. Therefore, the annual growth rate has been applied to all regions.

What is more, inflation has not had the same impact on all households, as the prices of different goods have not increased to the same extent, and the average composition of consumption baskets differ according to income level. Graph 1-4 shows the breakdown of household spending by income level for before the pandemic and in 2021. We can see that lower-income households spend proportionality more on food and on housing and energy, and consequently, less on clothing and shoes, transport and communications. Food and housing and energy are also the items that reported the biggest increase between 2019 and 2021 at all household income levels.

Households reported an increase in the proportion of their spending allocated to food, housing and energy between 2019 and 2021

GRAPH 1-4 Breakdown of household expenditure by household income level



Source: Eustat, Family Expenditure Survey. Compiled by authors.

NB: Housing and energy includes 'Housing, water, electricity, gas and other fuels' and 'Furniture, household articles and articles for day-to-day household maintenance'. Other services includes 'Health', 'Leisure and culture', 'Education', 'Restaurants and hotels' and 'Other goods and services'.

Changes in the spending breakdown may be due to changes in both prices and quantity. Therefore, to measure the differential impact of inflation on households, Table 1-1 shows changes in both spending and the estimated cost of various consumer baskets. We can see that in the first year of the pandemic, household spending dropped in all income segments. The reason is that there was a decrease in the quantities purchased for all spending items. Moreover, the average price of some items (such as transport and communications and housing and energy) fell. This was a greater benefit to lower-income households, for which housing and energy account for more than half of all spending. If they had purchased the same quantity of goods as the previous year, they would have cost 1.3 % less (compared to a 0.8 % decrease for higher-income households).

In 2021, inflation had already begun to make an appearance and households returned to a consumption pattern in which the quantity of some items increased. Therefore, household spending increased at all consumption levels, with higher-income households reporting a bigger jump. Additionally, the cost of baskets consumed in 2019 —which were less expensive in 2020— increased in 2021. And the lower the household income level, the bigger the increase. Once again, this is due to higher housing and energy prices, which rose 11.3 %, compared to 3.1 % average inflation. With even more pronounced price increases in 2022 (especially for housing and energy and for

food), the cost of both the 2019 and the 2021 baskets was 11 % higher in June 2022 than in June of the previous year. And this increase was more than 13 % for lower-income households. This is confirmation that it is these households which are hit hardest by current inflation, and if spending does not increase in the same proportion, it is because households limit the quantities of the goods they consume.

Households with lower income have been hit the hardest by the inflation that began to make an appearance in the Basque Country in 2021

TABLE 1-1 Changes in expenditure and cost of consumer baskets by household income level

		999 euros or less	1 000-1 999 euros	2 000-2 999 euros	3 000 euros or more
2019-2020	Expenditure	–6.6 %	–10.3 %	–7.4 %	–13.3 %
	2019 basket	–1.3 %	–1.1 %	–0.9 %	–0.8 %
2020-2021	Expenditure	3.2 %	3.0 %	2.2 %	5.5 %
	2019 basket	6.5 %	5.6 %	5.1 %	4.6 %
2021-2022 (June prices)	2019 basket	13.5 %	12.6 %	12.0 %	11.3 %
	2021 basket	13.6 %	12.9 %	12.1 %	11.5 %

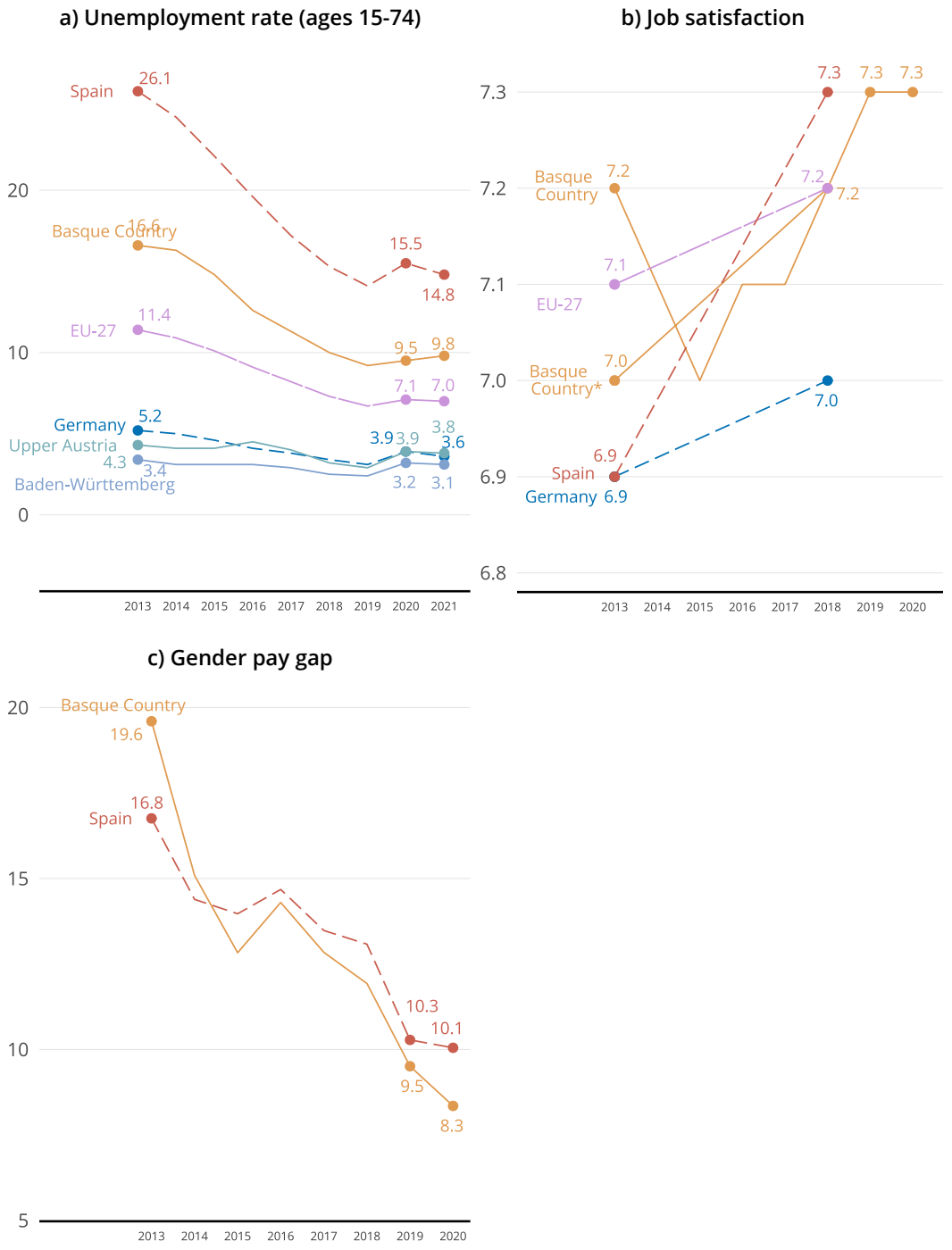
Source: Eustat, Family Expenditure Survey. Compiled by authors.

1.1.3. Employment

Employment is an important dimension for personal wellbeing, as it is the main source of income and because it provides professional and personal development. Given its economic, social and psychological impacts, it is a critical factor for personal inclusion in social dynamics. We analyse the employment outcomes for the Basque Country by means of three key indicators (Graph 1-5):

- **Ease of finding a job** (unemployment rate, ages 15-74, %);
- **Job quality** (average level of job satisfaction, measured on a scale of 1 to 10);
- **Gender inequality in employment** (gender wage gap, %).

GRAPH 1-5 Key employment indicators



Source: Eustat, Eurostat and INE. Compiled by authors.

NB: b) includes both Eustat and (*) Eurostat data for the Basque Country.

The Basque unemployment rate improved in the first half of 2022, after rising during the pandemic

Ease of finding a job has traditionally been recognised as a weak area for the Basque Country, and even more so for Spain, as both economies have a higher degree of structural unemployment than the average for Europe and other benchmark countries and regions. However, between 2013 and 2019, the Basque unemployment rate sunk from 16.6 % to 9.2 %, closing the gap with the EU-27. In recent years, the rate has risen slightly again, to 9.5 % in 2020 and 9.8 % in 2021. Although the effect

of Spain's furlough scheme (ERTE) has helped contain this increase, the upswing reflects the impact of the pandemic on employment. However, the figures for Q1 and Q2 2022 (8.7 % and 8.8 %, respectively) point to a jobs recovery.

The wellbeing deriving from employment is a function not only of having a job but also of its quality. The latter depends on several factors, including whether the job is temporary or permanent, how flexible it is, the learning opportunities it offers, and the ability to balance work with other aspects of life. As a result of the combination of these factors, the job satisfaction indicator captures people's general perceptions. The most recent comparative data are from 2018,[4] when the Basque Country ranked on a par with the EU-27 average, somewhat higher than Germany and lower than Spain. The Eustat data, although not directly comparable with the European figures, show a significant increase in the indicator in the Basque Country in 2019, stabilising in 2020.

The gender pay gap (measured in hourly wage) continues to exist in the Basque Country, with women being paid an average of 8.5 % less than men in 2020. But the trend is downward, the gap having narrowed by almost half from 2013 to 2020 and being smaller than Spain's since 2015. The gap even narrowed during the first year of the pandemic, although the same was not true of Spain, where it remained the same.

The pay gap between men and women in the Basque Country narrowed by more than half between 2013 and 2020

1.1.4. Social life

The social life of the people in a territory —how they spend their free time and how they interact with other people— is another dimension of wellbeing. It is more difficult to analyse variation in the results for this dimension because the indicators are based on a European survey which is updated every two to five years. We consider three key indicators (Graph 1-6):

- **Satisfaction with available free time** (measured on a scale of 1 to 10);
- **Confidence in people** (measured on a scale of 1 to 10);
- **Feeling of insecurity** (measured on a scale of 1, very secure, to 4, very insecure).

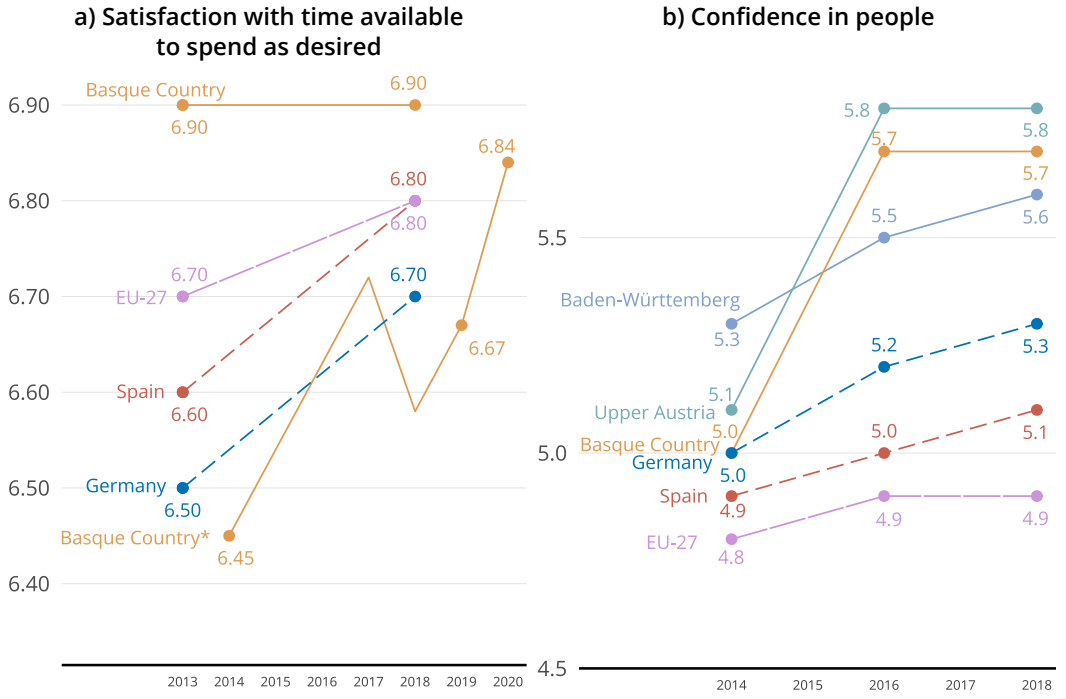
Satisfaction with available free time varies little among the different territories (ranging from 6.5 to 6.9) and is very stable in the two years for which we have European and INE surveys (2013 and 2018). Nonetheless, the Eustat indicator, calculated annually since 2014, is on a positive trend (except in 2018). This is because it started from a lower value than the INE figure for 2013 but reached 6.84 in 2020.

Satisfaction with free time varies little across territories, and the Basque Country ranks higher than the European average

Confidence in people varies more among territories, although the latest data available are for 2018. The Basque Country is at a similar level to Baden-Württemberg and Upper Austria, above the European, Spanish and German average, having improved with regard to the estimate for 2013.[5]

[4] This indicator is calculated by Eurostat every 5 years.
[5] The sources do not provide a unanimous picture for this indicator, as according to alternative data published by the INE, in 2018 the Basque Country was below the Spanish average.

GRAPH 1-6 Key indicators of social life



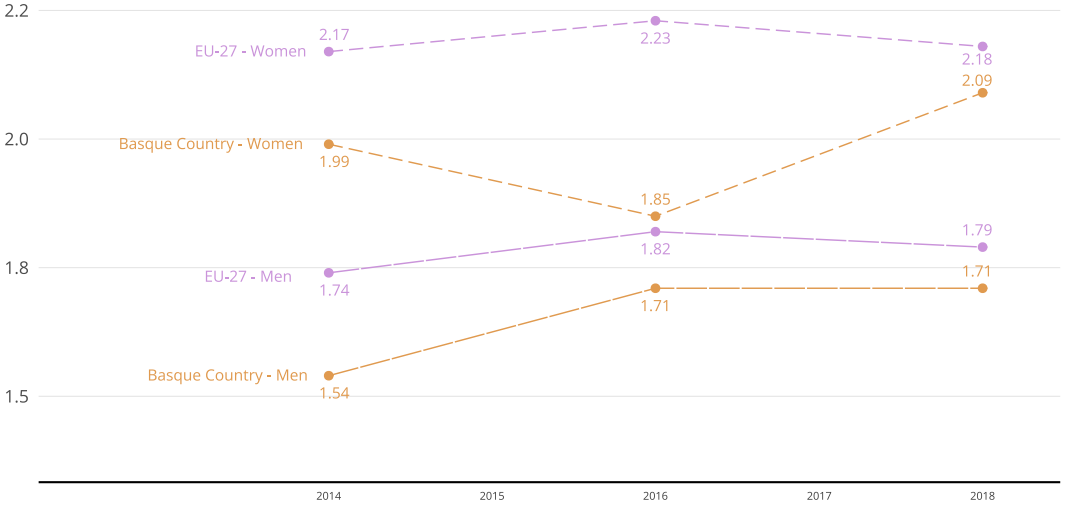
Source: Eustat, Eurostat, INE and European Social Survey. Compiled by authors.

NB: a) includes both INE and (*) Eustat data. In b) and c), the EU-27 average has been calculated including the number of EU-27 countries surveyed each year.

There was an increase in insecurity among women in the Basque Country between 2016 and 2018, approaching the EU-27 average

Feeling of insecurity is measured on a scale of 1 (very secure) to 4 (very insecure). Although there is little variation among territories, the Basque Country has the lowest score (more secure). However, the trend is gradually upward, approaching the other territories. Broken down by gender, in Graph 1-7 we can see that women feel more insecure not only in the Basque Country but also on average in Europe. And the upward trend in the indicator reflects increased insecurity among women in the Basque Country between 2016 and 2018, which is approaching the EU-27 average.

GRAPH 1-7 Feeling of insecurity among men and women



Source: European Social Survey. Compiled by authors.

1.1.5. Learning

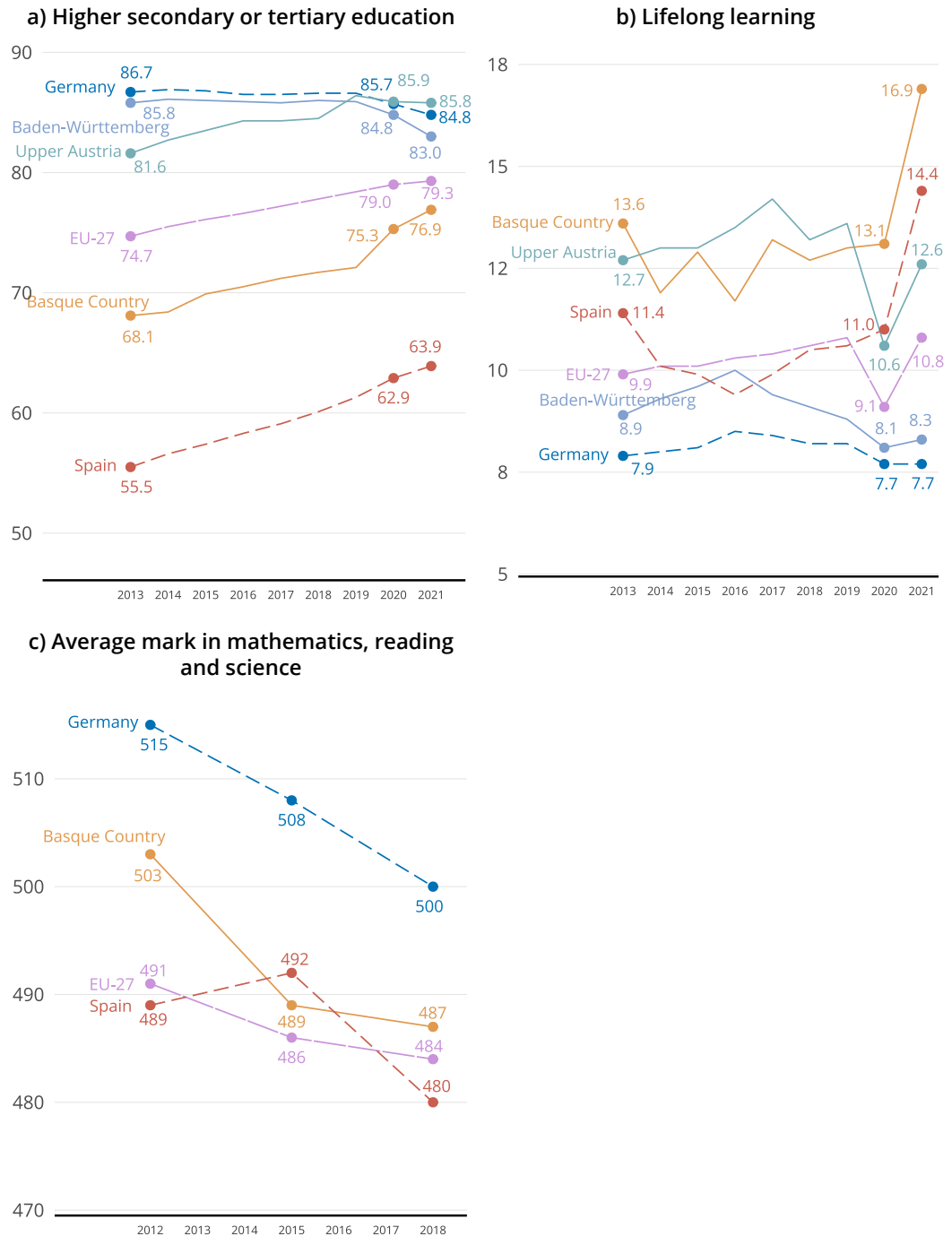
The need to learn is an essential human characteristic and an important dimension of wellbeing. The three key indicators used in Graph 1-8 to measure the territory's outcomes in this area reflect three aspects of this dimension:

- The **proportion of the population with higher education** (% of the population aged 25 to 64 with senior secondary or tertiary education);
- **Participation in lifelong learning activities** (% of the population aged 25 to 64 who have participated in training or learning activities in the four weeks prior to the Labour Force Survey interview);
- **Quality of education received** (combined average marks in mathematics, reading and science).

The Basque Country has closed the gap in terms of higher education and stands out in lifelong learning

Overall, trends in these three indicators paint a positive picture. The proportion of the population with higher education is lower than the EU-27 average and the benchmark regions in Germany and Austria, but it increased significantly in the last two years, narrowing the gap. As regards lifelong learning, all territories saw an improvement in 2021, which may reflect both new perceptions and opportunities related to economic restructuring brought on by the pandemic and the acceleration of the digital and green transitions, which require new skills. In any event, this is an area in which the Basque Country stands out in comparison with these territories, opening up the gap even more in 2021. Lastly, for quality of education received —which is measured by the combined average marks in mathematics, reading and science— there is no new data due to the delay in implementation of the PISA study in 2021 because of the pandemic. The most recent data (for 2018) show that the Basque Country has a slightly higher level than the EU-27 average but significantly lower than Germany. However, the trend between 2015 and 2018 was not as negative as in the other territories.

GRAPH 1-8 Key learning indicators



Source: Eurostat and OECD (PISA Report). Compiled by authors.

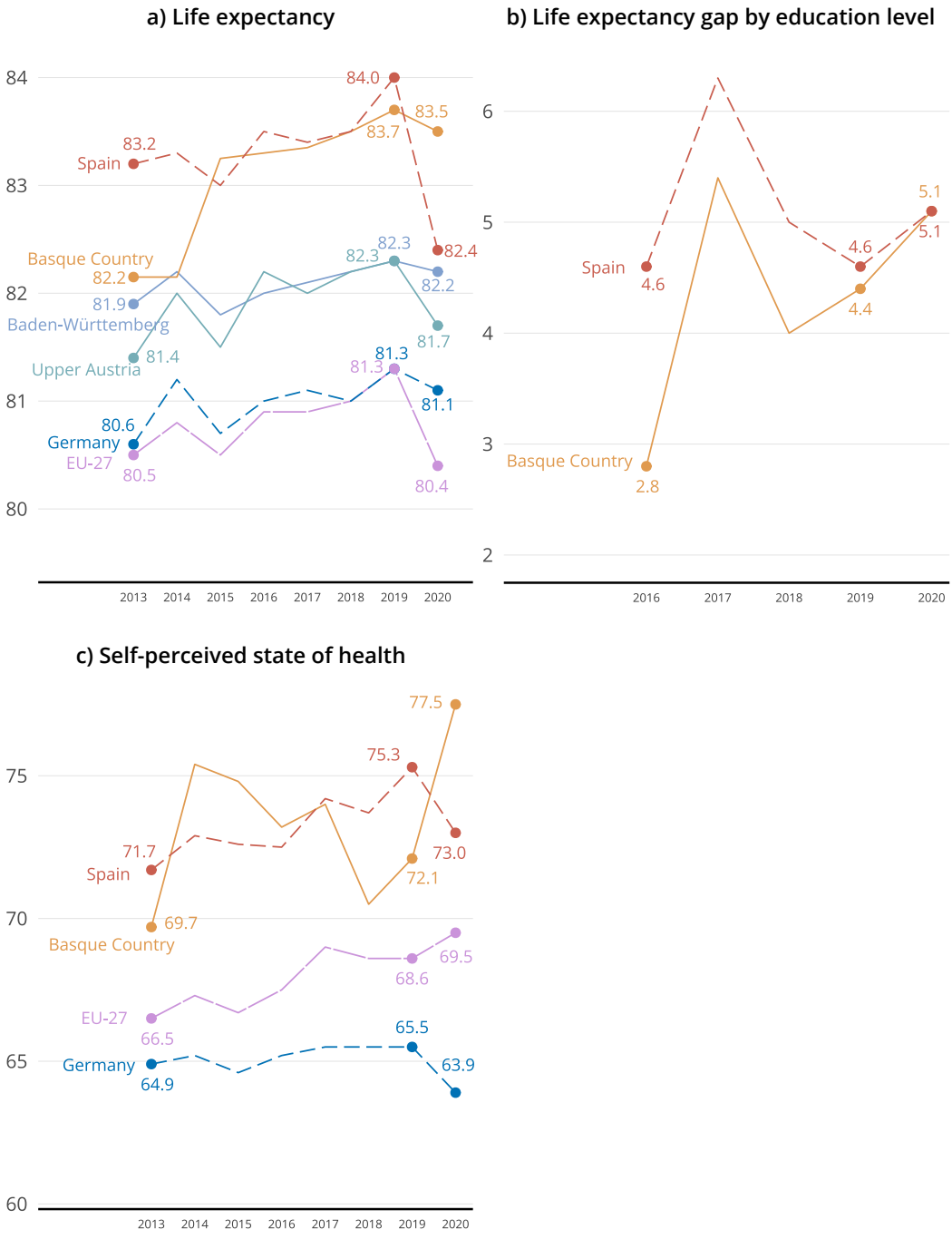
1.1.6. Health

Health directly contributes to personal wellbeing. It also makes an indirect contribution by opening up possibilities for participation in activities such as employment, leisure and learning. To analyse health outcomes in the Basque Country, Graph 1-9 presents the following three key indicators:

- **Life expectancy** in years, as an objective measure of health;

- **Life expectancy gap by education level (%)**, which reflects health inclusivity;
- **Self-perceived state of health** (% of people aged 16 and above that judge their health to be good or very good), as a subjective measure of health.

GRAPH 1-9 Key health indicators



Source: Eustat, Eurostat and INE. Compiled by authors.

The Basque Country ranks very well in the subjective measure of self-perceived state of health and the objective measure of life expectancy

In terms of health outcomes the Basque Country ranked very well in 2020 (latest year for which data is available) compared to the other territories, both in the objective measure of life expectancy and the subjective measure of self-perceived state of health. All territories reported a decline in life expectancy in 2020 in the context of

the pandemic, but this impact was less severe in the Basque Country than in Spain and the EU-27 as a whole. In contrast, the relative drop was somewhat less pronounced in Germany and Baden-Württemberg.

Whereas this negative growth in life expectancy was anticipated, self-perceived state of health showed particularly interesting variation at the start of the pandemic. While in Germany and Spain, perceived state of health got worse in 2020, it improved significantly in the Basque Country, which ranked far above the other territories analysed.

Lastly, both the Basque Country and Spain saw an increase in the life expectancy gap by education level in 2020, coming in at 5.1 %. This means that in 2020, the life expectancy of a person aged 25 with basic education was 3 years shorter than that of a person of the same age with higher education, a considerable difference.

1.1.7. Environment

The environment is the last dimensions of wellbeing analysed. Its inclusion in the wellbeing outcomes reflects the impact of environmental conditions on people's health and quality of life, both in the present and for future generations. In a context of widespread acceptance regarding the radical changes we must undertake to reduce the negative impact of human activity on the environment, this dimension takes on special importance with regard to future wellbeing. It is analysed by means of three key outcome indicators (Graph 1-10):

In 2020, greenhouse gas emissions per capita were slightly higher in the Basque Country than the EU-27 average, and urban recycling rates were slightly lower

- **Greenhouse gas emissions** (tonnes of CO_2 equivalent per capita);
- **Average level of air pollution** (PM2.5 microparticles);
- **Urban waste recycling rate** (%).

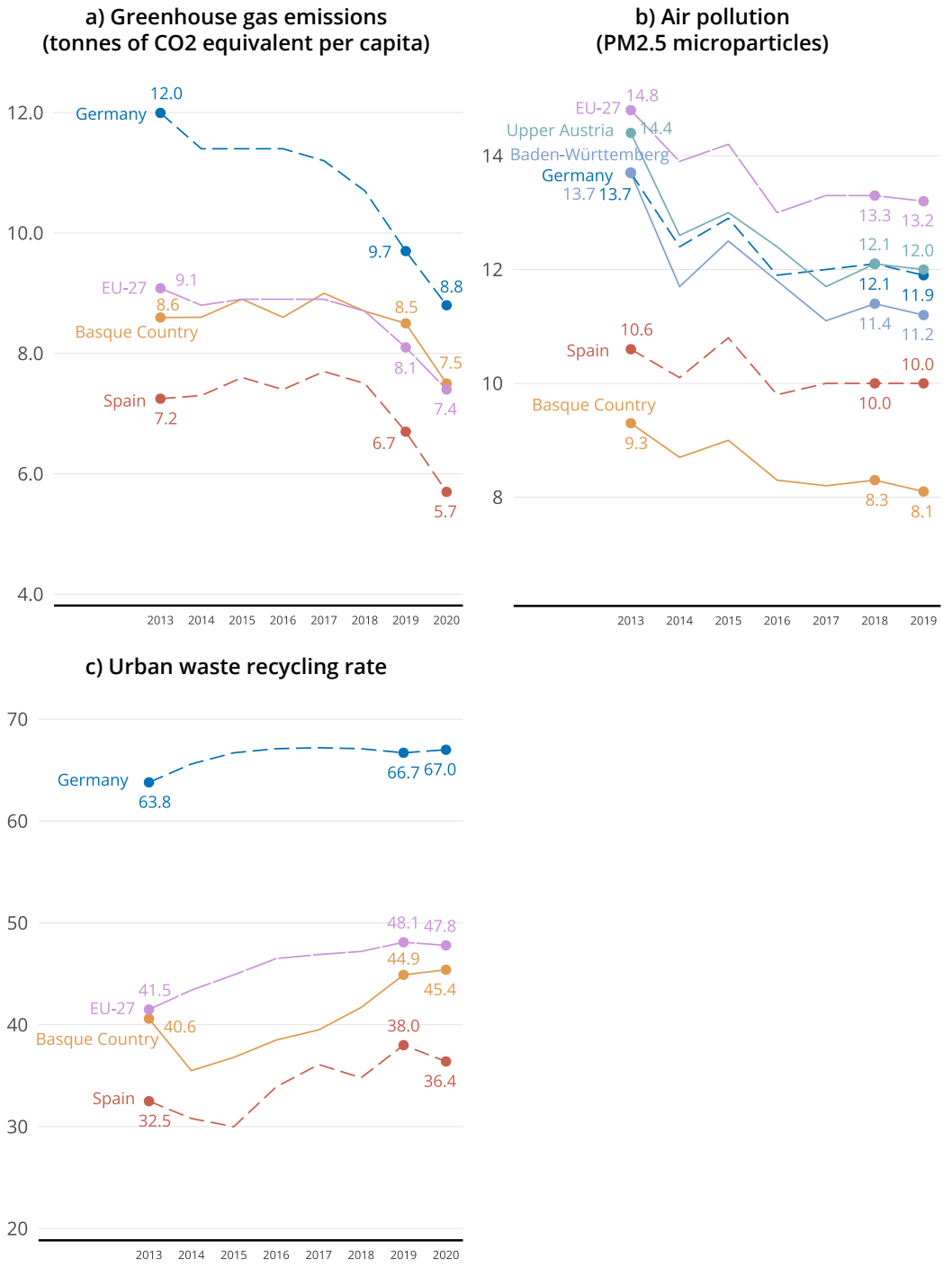
The Basque Country's performance in these indicators presents mixed results compared to other territories. In 2019, the average air pollution level was significantly lower than the EU-27 average, and in fact, than all the territories analysed. However, in 2020 greenhouse gas emissions were slighter higher than the EU-27 average, and the urban recycling rate was slightly lower than the European average.

Trends in environmental indicators for the Basque Country were relatively more positive than the EU-27 average in the last year

As regards the transition to a green economy and society, we can see that all indicators are heading in a positive direction, and in the Basque Country the trend has been relatively more positive than the EU-27 average.[6] Nonetheless, there is still a considerable gap in recycling rates with the top countries. And the drop in greenhouse gas emissions in 2020 in all territories must be interpreted with caution because it is associated with the fall in economic activity brought on by the pandemic. As such, it does not necessarily reflect the increases in energy efficiency and the transition to clean energies which are needed to permanently reduce emissions and speed up the decoupling of emissions and economic growth (see Box 2).

[6] Data from the Basque Department of Economic Development, Sustainability and the Environment indicates that air quality also continued to improve in 2020, as the average concentration of PM2.5 particles fell, going from 8.4 micrograms per cubic metre to 8.1.

GRAPH 1-10 Key environmental indicators

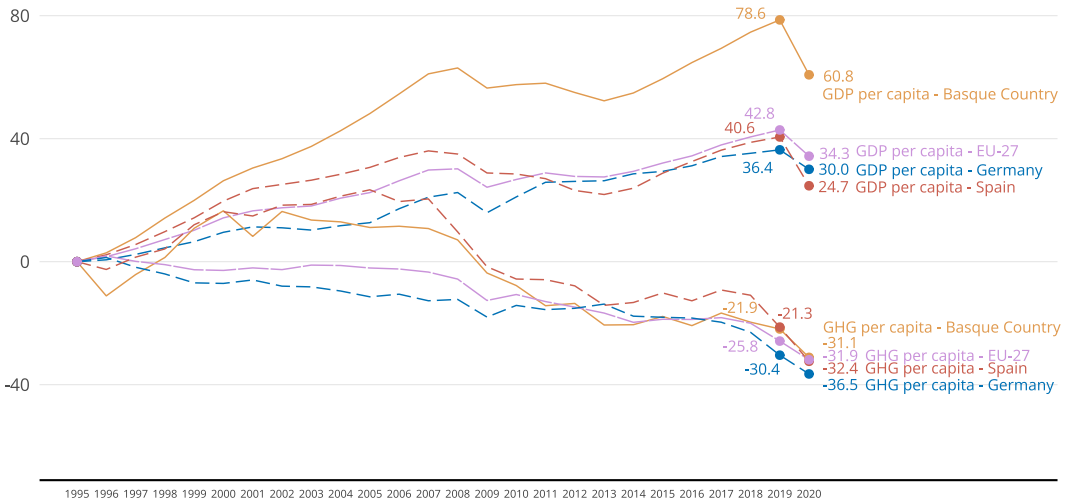


Source: Eustat, Eurostat, OECD and Basque Department of the Environment, Territorial Planning and Housing. Compiled by authors.

BOX 2 Decoupling economic growth and GHG emissions

The decoupling of economic growth —measured in GDP per capita— and greenhouse gas (GHG) emissions has been apparent since the mid-1990s in the EU-27 and Germany, but it began almost a decade later in Spain and the Basque Country (Graph 1-11).

GRAPH 1-11 Growth of GHG and GDP per capita (%)



Source: Eustat and Eurostat. Compiled by authors.

Until 2008, GDP per capita growth in the Basque Country was accompanied by increased emissions. After that year, the financial crisis brought a decline in both. One of the successes of the 2013–2019 recovery from this crisis was the ability to return to economic growth without a renewed increase in emissions. Nonetheless, they also did not decrease significantly during this period. The last year (2020) reflects the impact of the pandemic on GDP and emissions in all territories, and a key challenge is ensuring a green recovery in which a return to economic growth is accompanied by more rapid decoupling of emissions.

1.1.8. Summary

As a summary, Table 1-2 provides the latest data for the 19 key indicators for wellbeing outcomes analysed for the Basque Country, indicating the change with regard to the previous year: 10 of these indicators are on a positive trend, while 2 remain the same and 7 are trending negatively.

The recent trend in wellbeing outcomes is consistent with the turbulent situation in recent years, which has had different impacts on the various dimensions of wellbeing

As the outcomes of other territories are also changing, it is important to understand the Basque Country's relative position with regard to the EU-27 and how it is changing: if the Basque Country is above or below average and if the change over the past year was relatively better or worse than the EU-27 as a whole. Of the 14 indicators for which there are comparable data for Europe, the Basque Country ranks better in 9 and is trending better in 10.

The wellbeing outcomes in which the Basque Country stands out positively are low income inequality, lifelong learning, health (in general) and air pollution. Conversely, the weakest results are those related to the more economic dimensions —median income and unemployment rate— where we see both a negative trend and a drop in ranking compared to the European average. However, it is important to highlight that median income in the Basque Country is comparatively very high, not far behind Germany, and that the unemployment rate has declined again in 2022.

TABLE 1-2 Summary of wellbeing outcome indicators

Indicator	Year	Value	Trend (last year)	Position relative to EU-27	
				Level	Change
Life satisfaction					
Life satisfaction (0–10)	2020	7.6	—	n/d	n/d
Material life					
Household equivalent median income (€ PPP)	2020	22 537	—	+	–
S80/S20 ratio for income	2020	4.80	—	+	+
Population living in inadequate housing (%)	2020	15.20	—	–	+
Employment					
Unemployment rate (ages 15–74) (%)	2021*	9.8	—	–	–
Degree of job satisfaction (0–10)	2020	7.3	=	n/d	n/d
Gender pay gap (%)	2020	8.3	—	n/d	n/d
Social life					
Satisfaction with the time available (0–10)	2020	6.84	—	n/d	n/d
Confidence in people (0–10)	2018	5.70	=	+	–
Sense of insecurity (1–4)	2018	1.91	—	+	–
Learning					
Higher secondary or tertiary education (%)	2021	76.9	—	–	+
Lifelong learning (%)	2021	16.9	—	+	+
Average mark in mathematics, reading and science	2018	487	—	+	+
Health					
Life expectancy (years)	2020	83.5	—	+	+
Gap in life expectancy by education level (%)	2020	5.1	—	n/d	n/d
Self-perceived state of health	2020	77.5	—	+	+
Environment					
Greenhouse gas emissions (tonnes of CO2 equivalent per capita)	2020	7.5	—	–	+
Air pollution (PM2.5 microparticles)	2019**	8.1	—	+	+
Urban waste recycling rate (%)	2020	45.4	—	–	+

* The trend was positive in the first half of 2022: the unemployment rate was 8.7 % in the first quarter and 8.8 % in the second.

** Air pollution continued to decrease in 2020. The Basque Government data, not directly comparable with that of the OECD, indicates that the average concentration of PM2.5 microparticles dropped from 8.4 micrograms per cubic metre to 8.1.

Source: Compiled by authors based on previous analysis.

1.2. Dimensions of economic and business performance

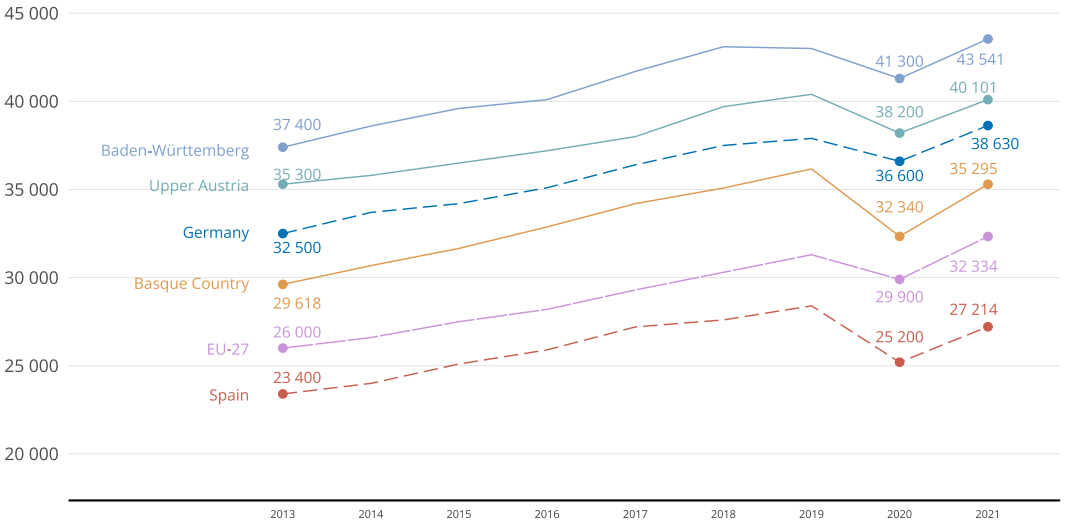
1.2.1. Economic performance

In this section, we discuss the capacity of an economic/business system to generate wealth and added value, in the understanding that this is an intermediate goal in seeking to increase wellbeing. This will in turn create favourable conditions for improving economic results through the various relationships that make up the competitiveness framework.

In 2021, the Basque Country made a stronger recovery in GDP per capita than the EU-27 average, but it has not regained its 2019 position

The simplest and most commonly used indicator for comparing economic performance between territories is **GDP per capita**, measured in purchasing power parity (PPP) terms.[7] As we can see from Graph 1-12, all the economies reported positive growth from 2013 to 2019. The pandemic caused this indicator to drop in all territories in 2020, with the sharpest decline being seen in the Basque Country and Spain (–10.4 % and –11.2 %, respectively, compared to –4.6 % in the EU-27). In 2021, all territories reported a recovery, and in the Basque Country the recovery was slightly stronger than the EU-27 average. Nonetheless, in GDP per capita, the Basque advantage over the European average (109 % of the EU-27 average in 2021) has not reached 2019 levels (when it was 115 % of the EU-27 average). Additionally, we can see that like Spain and Upper Austria, the Basque Country had not reached the GDP per capita levels achieved prior to the pandemic in 2021.

GRAPH 1-12 GDP per capita (PPP, 2013–2021)



Source: Eurostat and Eustat. Compiled by authors.

NB: GDP for Baden-Württemberg and Upper Austria is estimated based on national growth in their respective countries. The PPP adjustment for the Basque Country is obtained by applying the difference between the Basque Country and the Spanish average, calculated by Costa *et al*. (2015).

Both employment rate and productivity have an impact on the level of and variation in per capita income. Whereas there are physical, legal and social limits to employment rate growth, productivity is a constant and sustainable source of progress which relies principally on innovation and scientific/technological advances. There

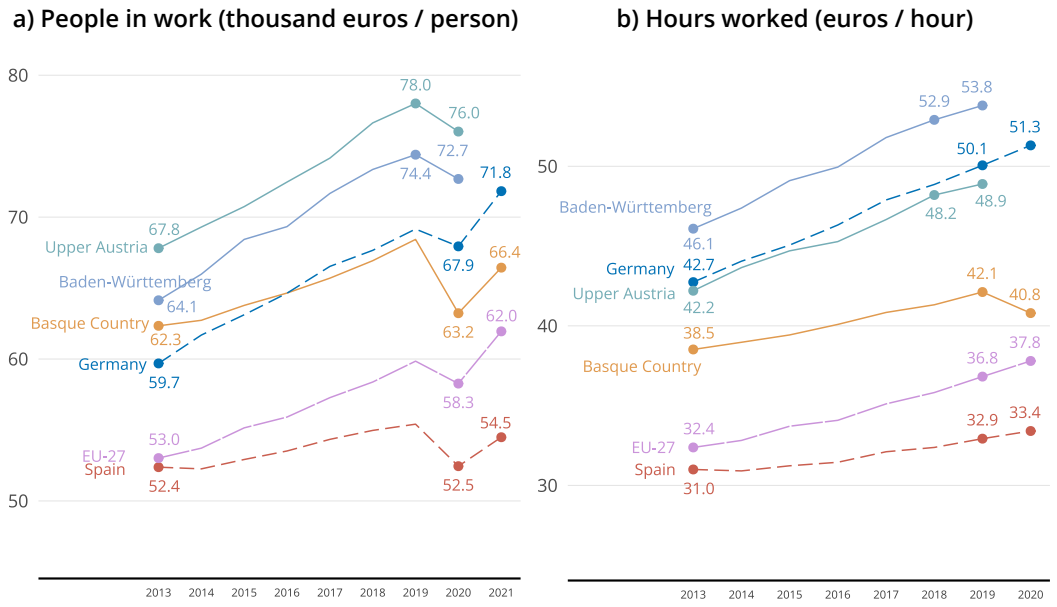
[7] It is important to note that this indicator does not measure performance in real terms. That is to say, inflation is not accounted for, although the inflation differentials with the EU-27 average are reflected.

are various methods of measuring productivity. Here we use **apparent productivity of labour**, which represents the ratio of a measure of output (gross value added in euros) and the resources used (number of people in work and hours worked).

As we can see on the left side of Graph 1-13, for the economy as a whole, the Basque Country ranks below Germany and above the average for the EU-27 and Spain in apparent productivity of labour. In terms of trends, Spain and the Basque Country have seen a larger decline in added value than other territories, which had an impact on the decrease in productivity during the pandemic. Although these two territories returned to a positive trend in 2021, they did not reach the same level of labour productivity as prior to the pandemic (2019). As regards productivity per hour worked, the 2021 data is not yet available. In 2020, this fell in the Basque Country, unlike in other territories, reflecting different short-term responses to the crisis in terms of employment: a greater tendency to maintain workers' hours in the Basque Country despite the decline in activity.

Apparent labour productivity was higher in the Basque Country than the EU-27 average and Spain in 2021, but lower than Germany

GRAPH 1-13 Apparent productivity of labour - Overall economy (2013–2021)

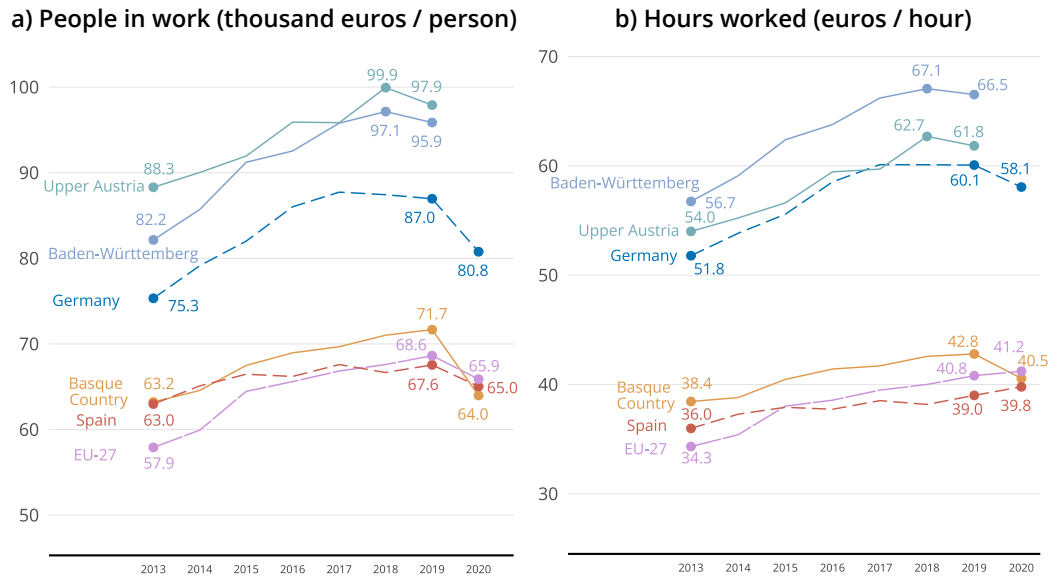


Source: Eurostat and Eustat. Compiled by authors.

A major determinant of a territory's productivity is its sectoral makeup. For this reason, in Graph 1-14 we also analyse labour productivity in the manufacturing industry, a sector more open to foreign competition than on average in the economy. Both Germany and the Basque Country saw a sharp decline in productivity per person in work in 2020. This was less marked in Spain and the EU-27 average. In the case of the Basque Country, the drop was due to the fact that the 3.5 % reduction in employment (limited by the furlough scheme – ERTE) was less than that of gross value added (13.8 %). Likewise, productivity per hour worked also fell in 2020 in both Germany and the Basque Country. However, the drop was less pronounced, and this indicator increased slightly in Spain and the EU-27. As a result, in both productivity per person in work and per hour worked, the Basque Country's manufacturing industry maintained the same productivity gap with Germany, with values similar to those for Spain and the EU-27.

The Basque Country has maintained the same productivity gap with Germany in manufacturing activities, and has similar values to Spain and the EU-27

GRAPH 1-14 Apparent productivity of labour – Manufacturing industry (2013–2020)



Source: Eurostat and Eustat. Compiled by authors.

1.2.2. Business profitability

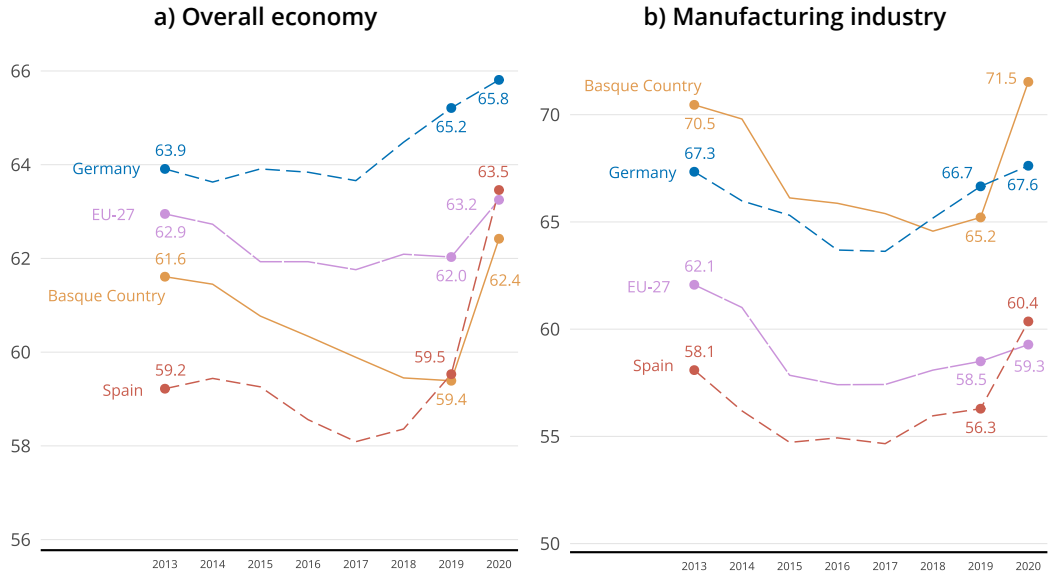
Having analysed what is happening in terms of economic performance in the economy as a whole, this section focuses on studying the capacity of the economic/business system to generate profitability from its activities. We begin by analysing **unit labour costs (ULC)**, an indicator of business competitiveness. Conceptually, this indicator captures the underlying relationship between pay and productivity (in both cases, either per worker or per hour worked). Labour is one component, together with capital, of the function of production and has a direct impact on firms' bottom line. And productivity (which can be considered both an economic and business result) registers the efficiency and innovation of the production process, which is in part linked to the quality of human capital and has a leverage effect on a territory's living standards, economic growth and social development.

In the first year of the pandemic, unit labour costs in the Basque Country approached the European average, and the positive difference with Germany was reduced

In Graph 1-15 we can see that in the Basque economy as a whole, unit labour costs (ULC), calculated per worker, trended downward until 2019. But in 2020, the consequences of the pandemic made themselves felt, and the drop in productivity caused a sharp rise in ULC. This increase was less pronounced in Spain (where they had already begun to rise the previous year) but was quite a bit sharper than the EU-27 average and Germany (where ULC had been growing since 2018). As a result, in the first year of the pandemic, ULC, which had been quite a bit lower than the European average, began to approach this level. The positive difference with Germany was also significantly reduced. Spanish ULC, which were traditionally lower than in the Basque Country, reached the same level in 2019 and even exceeded it in 2020.

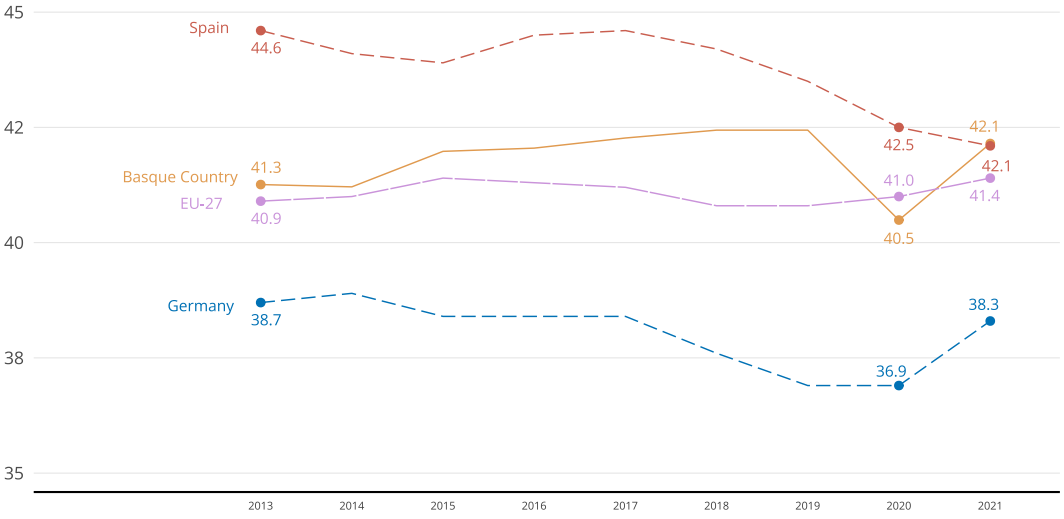
As in the economy as a whole —and starting from higher values above those of the other territories— Basque ULC for the manufacturing industry were trending slightly downward until 2019. That year, this put the Basque Country below Germany, a territory where manufacturing ULC had already begun to increase. However, 2020 brought a sharp increase in Basque manufacturing ULC also linked to falling productivity, and manufacturing ULC once again rose above the level for Germany.

GRAPH 1-15 Unit labour costs (ULC) (%) (2013–2020)



Source: Eurostat and Eustat. Compiled by authors.

GRAPH 1-16 Variation in gross operating surplus



Source: Eurostat and Eustat. Compiled by authors.

In addition to labour costs, we also analyse **gross operating surplus**, defined as the surplus generated by operating activities after deducting the labour factor (specifically, employees). This indicator makes it possible to record what portion of the total income for the economy is earned by capital. However, it should be clarified that this includes income from self-employed workers and consumption of fixed capital (or amortisation). With the data gathered, in the following graph we see a higher share of income which is not represented by the wage-earning population in both Spain (downward trend) and the Basque Country (slight upward trend until 2019, which was cut short last year as a result of the pandemic and recovered in 2021). For its part, Germany ranks quite a bit lower than the other territories under consideration.

The gross operating surplus has returned to growth in the Basque Country in 2021, after falling in 2020

The two indicators representing business profitability are return on assets (ROA) and return on equity (ROE).[8] In both cases, we see a return to business profitability in 2021, in line with other studies published by the Bank of Spain (Escobar *et al*., 2022, p. 5). The data in Table 1-3 show this positive trend in all the territories analysed. This increase is more significant in the Basque Country. However, it is important to note that these calculations were made using preliminary data from a limited number of firms.

TABLE 1-3 Business profitability indicators

	Basque Country (a)			Spain (a)			Europe (b)	
	2013	2020	2021 (p)	2013	2020	2021 (p)	2013	2020
ROA	2.3	2.3	5.8	1.6	3.2	4.5	3.5	2.5
ROE	1.8	3.5	10.0	1.1	5.3	7.5	6.7	5.3

Source: (a) SABI-Informa and (b) BACH. Compiled by authors.

NB: (p) The SABI data for 2021 is provisional, given that it has been calculated using a limited sample.

1.2.3. Innovation and entrepreneurship

The Basque Country is classified as a strong innovator in the latest edition of the Regional Innovation Scoreboard

With regard to the territory's capacity to generate innovation, the Basque Country is among the 67 regions classified as 'strong innovators' in the most recent edition of the *Regional Innovation Scoreboard* (RIS) (European Commission, 2021). It ranks highest among Spanish autonomous communities and was included in the group of 'regional innovation hubs'.[9] The RIS considers more than 20 indicators, combining both innovation outcomes and determinants of innovation. The 2021 edition is based on 2018 data. Here, focussing on the most recent innovation and entrepreneurship outcomes available, we analyse both the proportion of firms that innovate and the proportion of high-growth firms.

[8] The analysis of Basque firms compared to those in Europe used two sources: balance sheet and income statement data at the firm level from the Bureau Van Dijk SABI-Informa Database and data from the BACH Project (Bank for the Accounts of Companies Harmonised). The data from the first source have been filtered for active firms —with assets and operating income greater than 0 —which belong to two-digit sectors of economic activity (CNAE National Economic Activities Classification) from 01 to 82 (excluding financial activities —64 to 66). Next, the two ratios presented were calculated, and cases considered atypical were eliminated, if the firm was below the 5th percentile in at least one of them and above the 95th percentile in the distribution of these ratios. The BACH database contains data for firms in the following European benchmark countries: Germany, Belgium, Spain, France, Italy, Poland, Czech Republic, Austria, Slovakia, Luxembourg, Croatia and Portugal. Despite the fact that accounting systems and practices are not entirely homogeneous among countries, and that there are differences between BACH (EU-12) and SABI (Basque Country and Spain), we feel that the information for the indicators selected is sufficient for comparison.

[9] The Regional Innovation Scoreboard distinguishes between four groups of regions: Innovation leaders (38 regions), strong innovators (67 regions), moderate innovators (68 regions) and emerging Innovators (67 regions).

TABLE 1-4 Percentages of firms with 10 or more employees that innovate

		Basque Country			Spain			Germany		EU-27	
		2018	2019	2020	2018	2019	2020	2018	2020	2018	2020
Innovators (% total firms)	Total	41	42	39	31	31	33	68	69	50	53
	Industry	42	47	43	34	34	36	71	73	53	54
	Services	39	36	36	29	28	31	65	65	48	51
	10-49 emp.	35	36	34	27	27	29	62	64	46	51
	50-249 emp.	65	66	62	47	49	51	81	79	63	
	250 emp.	77	81	77	68	68	68	90	93	77	80
Product innovators (% total firms)	Total	25	30	26	15	16	19	40	36	30	28
	Industry	23	33	27	16	19	21	43	36	31	30
	Services	26	27	24	12	14	17	37	35	27	27
	10-49 emp.	20	25	22	12	13	15	36	31	27	27
	50-249 emp.	43	50	44	25	28	32	47	44	39	
	250 emp.	60	62	57	41	45	48	66	63	56	55
Process innovators (% total firms)	Total	34	36	31	24	25	27	55	56	41	43
	Industry	35	39	34	24	27	29	58	58	42	44
	Services	33	32	27	22	23	25	53	54	39	43
	10-49 emp.	30	31	26	21	21	23	51	51	37	42
	50-249 emp.	52	53	51	34	38	41	66	67	51	
	250 emp.	64	68	63	54	57	57	77	80	66	69
Sales of new products (% total sales)	Total	14.9	18.3	14.9	16.1	14.3	21.7	14.8	14.0	12.9	13.2
	Industry	15.2	19.4	16.2	18.2	16.8	22.6	19.3	17.9	16.6	16.4
	Services	14.2	16.2	12.6	14.0	11.8	20.9	9.5	9.8	9.2	10.2
	10-49 emp.	8.5	10.8	7.7	4.4	4.3	7.3	5.8	6.2	6.6	8.3
	50-249 emp.	17.1	21.9	18.1	9.5	10.5	15.6	7.6		8.8	
	250 emp.	20.3	22.6	19.2	23.4	19.1	29.2	18.6	18.0	16.5	16.6

Source: Eustat, Eurostat, INE and ZEW. Compiled by authors.

NB: The 2020 EU-27 data does not include Luxembourg or in the case of sales of new products, the Netherlands.

To compare with other territories, the innovation analysis follows the Eurostat methodology, focussing on the **percentages of firms with more than 10 employees that innovate in industries which are more prone to innovate** (industry, excluding construction, and commercial services with an innovative profile).[10] The data capture firms that innovate overall, in process and in product, as well as the proportion of sales of new products.[11] Table 1-4 shows the full results, broken down by sector (industry and services) and firm size (10–49, 50-249 and 250 or more employees). For easier reading, Table 1-5 presents a simplified analysis, focussing solely on SMEs (including firms with 10-249 employees).

[10] In the case of the Basque Country, the data refer to enterprises. The CNAE sectors included in the analysis of core sectors are: B: Mining and quarrying, C: Manufacturing, D: Electricity, gas, steam and air conditioning supply, E: Water supply, sewerage, waste management and remediation activities, 46: Wholesale trade and agents; except of motor vehicles and motorcycles, H: Transport and storage, J: Information and communication, K: Financial and insurance activities, 71: Architectural and engineering activities; technical testing and analysis, 72: Research and development, and 73: Advertising and market research.

[11] The data is from Eurostat for 2018, the year in which a new methodology was implemented (OECD/Eurostat, 2019), and following the same methodology, from the national statistics agencies for 2019 and 2020.

TABLE 1-5 Percentage of SMEs (10–249 employees) that innovate

	Basque Country			Spain			Germany		EU-27	
	2018	2019	2020	2018	2019	2020	2018	2020	2018	2020
Innovators (% total SMEs)	40	41	39	30	30	32	67	67	49	51
Product innovators (% total SMEs)	24	30	25	14	15	18	39	34	29	27
Process innovators (% total SMEs)	34	35	30	23	24	26	54	55	40	42
Sales of new products (% total sales)	12.7	16.5	13.2	7.2	7.6	11.7	6.9	6.2	7.8	8.3

Source: Eustat, Eurostat, INE and ZEW. Compiled by authors.

In 2020, the percentage of Basque SMEs engaged in some sort of innovation (39 %) was higher than in Spain (32 %), but clearly lower than in Germany (67 %). Additionally, the Basque Country ranks in the middle by type of innovation: in 2020, 25 % of Basque SMEs engaged in product innovation and 30 % in process innovation, compared to 18 % and 26 % in Spain and 34 % and 55 % in Germany. In all territories, there is a higher percentage of innovative firms in industry (43 % in the Basque Country) than in services (36 %), and among large (77 %) and medium-sized firms (62 %) than small firms (34 %). It is worth mentioning that the percentage of medium-sized firms in the Basque Country that engaged in product innovation is the same as in Germany (44 %). Furthermore, in terms of the proportion of SME sales that are new or improved products, the figure for the Basque Country (13.2 %) is higher than even Germany (which in this case is the lowest of the territories compared). The implication is that although the Basque Country lacks innovative SMEs, compared to Germany, their innovations are more often reflected in the products they make.

The Basque Country's disadvantage in innovation outcomes is particularly noteworthy in process innovation and among small firms

In general, the data confirm two aspects which have already been highlighted in previous reports: (i) that the Basque Country is comparatively weaker in process innovation (which includes, among other things, organisational and commercial innovation) than in innovation as a whole; and (ii) that the Basque Country's disadvantage in innovation is particularly noteworthy in the small firms segment.

Variation over time shows that while in Spain the proportion of innovative SMEs has grown since 2019, it has decreased slightly in the Basque Country. This drop is due to a decrease in the number of SMEs with innovative activities and an increase in the total number of SMEs during this period. In the case of Spain, the opposite is true: the number of innovators has grown, and the total number of SMEs has fallen. Between 2019 and 2020, the proportion of sales of new or improved products out of total sales also decreased in the Basque Country, unlike in Spain, where it increased. In this case, the downturn in total turnover made it impossible to offset the 30 % drop in sales from these types of products, decreasing the share of total sales from product innovation. The proportion of sales of new or improved products fell to a greater extent in services than in industry, and in SMEs with fewer than 50 employees.

The figures analysed point to a comparative worsening of innovation outcomes among Basque firms in 2020 in relation to the trend in other territories. However, in

interpreting this, it is important to bear in mind the possible effect of the unequal impact of the pandemic on the tendency to innovate in different sectors, territories and firm types. As innovative activity entails assuming risks, it becomes a lower priority compared to other activities with more secure and immediate returns in times of crisis (Innobasque, 2020). This effect is particularly strong among the smallest firms. Although the innovation survey data covers three-year periods (meaning that the 2020 survey measures innovation activity between 2018 and 2020) —and therefore, the effects of the crisis, while present, are less starkly reflected in the results— it is possible that a combination of the high percentage of small firms in the Basque Country, the fact that the effects of the pandemic were more severe in the Basque Country and Spain, and differences in sectoral structure (as some sectors were more affected by the pandemic than others) may partially explain the different trends in 2020.

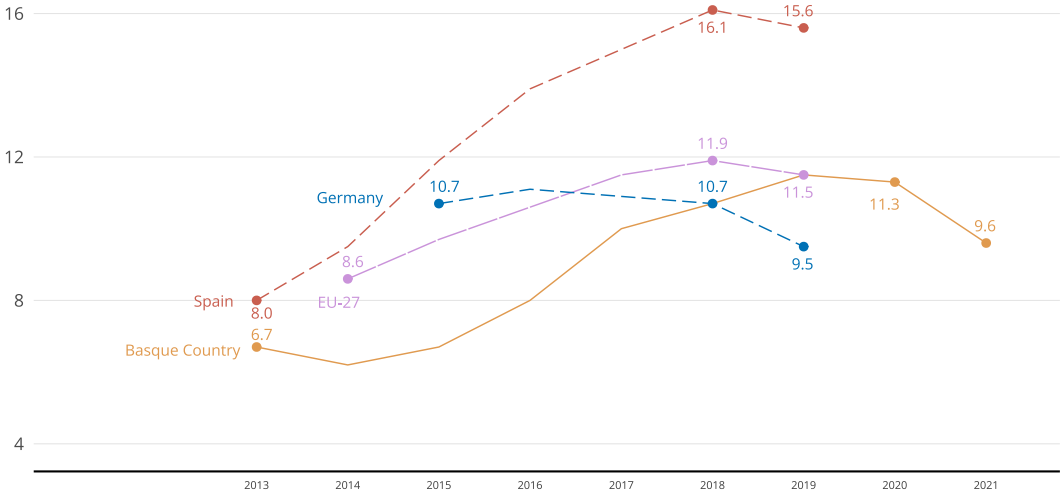
As regards level of entrepreneurship, this is measured based on **high-growth firms**, which are defined according to the following criteria:

- They belong to sectors of the business economy (excluding holding activities).
- Their average annual growth in number of employees is more than 10 % per year for a period of three years, and they had at least ten employees when they began to grow.

As we can see from Graph 1-17, the percentage of high-growth firms in the Basque Country was, along with Germany, the lowest of the four territories in 2018 (10.7 %). However, in 2019 this percentage rose to 11.5 %, passing Germany and reaching EU-27 levels. Spain topped the list throughout the period, with 15.6 % of this type of firm in 2019. We have more recent data for the Basque Country, for 2020 and 2021, which reveal a drop in the percentage of high-growth firms during the pandemic, falling to 9.6 %, close to the figure for 2017. Given that this is a highly cyclical indicator (firms expand more during growth phases), the good values for Spain and the Basque Country can be partially explained because their cycles —characterised by some delay and greater fluctuation than in Europe— are at the end of their growth cycle.

The percentage of high-growth firms in the Basque Country passed Germany and reached EU-27 levels in 2019

GRAPH 1-17 High-growth firms (% of firms with more than 10 employees)



Source: Eustat and Eurostat. Compiled by authors.

1.2.4. Internationalisation

With regard to internationalisation outcomes, we analyse a group of key indicators linked to foreign trade. These are exports —both goods and services and goods

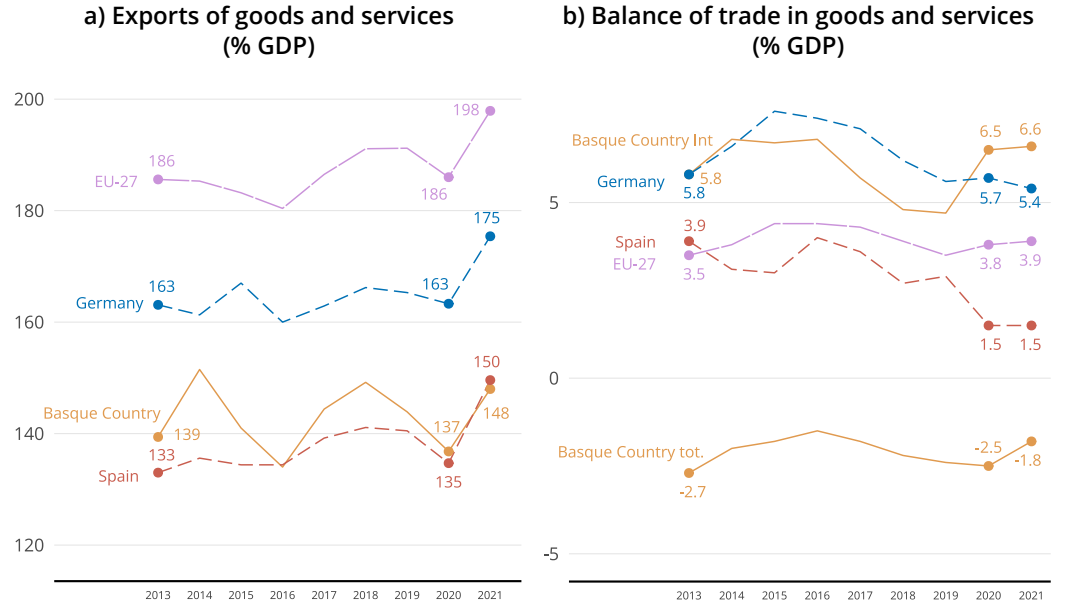
alone— relativised based on gross domestic product (GDP) in the first case and gross value added (GVA) for goods-producing industries (agribusiness) in the second. We also include balance of trade indicators. The challenge in comparing foreign trade of regions and countries is that the figures for regions include not only international trade but also trade with the other regions within that State.

The pandemic shrunk exports for all territories in 2020, and the Basque recovery which began in 2021 continued in 2022

Before the pandemic, Basque **international exports of goods and services** accounted for around 36 % of GDP, on a similar level to Spain, but trailing behind Germany and the EU-27 average. This figure rose to 65 % when sales to the rest of Spain were included. The pandemic shrunk exports for all territories in 2020, but they began to grow again in 2021. In the case of Germany (and somewhat more in the case of the EU-27), 2021 figures were slightly higher than the values for 2019. In the case of the Basque Country, although 2021 exports were still slightly lower than pre-pandemic values, they have grown considerably in 2022, with Q2 results 42 % higher than Q2 2021.[12]

The Basque Country saw considerable improvement in the **international balance of trade** in 2020, indicating that the drop in imports was even higher than the reduction in exports. The trend was similar in the EU-27, although to a lesser extent, but not in Germany, where the balance remained almost unchanged, or Spain, where it worsened considerably. The situation was different with the total balance of trade for the Basque Country, as sales to the rest of Spain were reduced more than products purchased from other parts of the state This resulted in a slight worsening of the Basque total balance of trade. In 2021, the Basque Country's international balance of trade remained at a similar level to the previous year, widening the gap with Germany, which saw a drop that year. The total balance of trade for the Basque Country also improved in 2021, but it remains negative.

GRAPH 1-18 Exports and balance of foreign trade in goods and services



Source: Eustat and Eurostat. Compiled by authors.

NB: In the case of the Basque Country, 'Int' refers to exports and foreign balance of trade, while 'Tot' includes trade with the rest of the state.

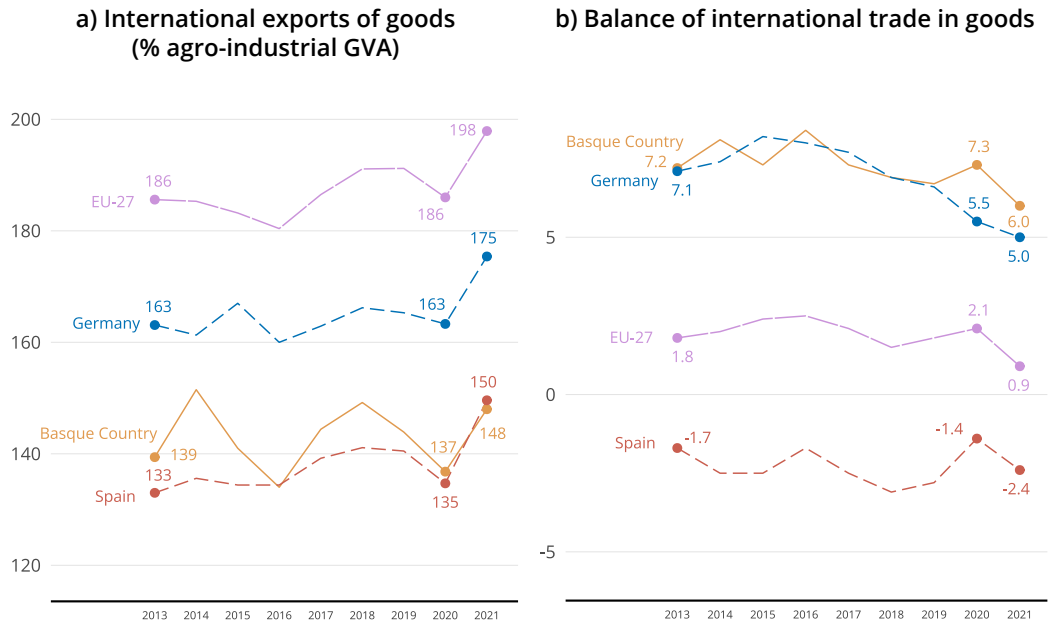
[12] See: Basque Government (2022a).

Regarding **international exports of goods**, the situation in 2020 was flipped last year, and international exports as a proportion of agro-industrial GVA rose 8 % in the Basque Country (compared to a 5 % drop the previous year). The same was true of the other territories. Looking at Basque exports of energy and non-energy products in detail, we find growth in both cases, with energy products —which can vary considerably as these products typically have large price fluctuations— doubling the figure for non-energy products (44 % and 22 %, respectively).

Finally, of the four territories under consideration, **international balance of trade in goods as a proportion of GDP** was highest in the Basque Country (6 %) in 2021. However, unlike when services are included, it dropped compared to the previous year. In all territories, this indicator went down in 2021 as a result of both the drop in the balance of trade and the increase in GDP. With regard to the Basque Country, the balance of trade for non-energy products grew and the balance for energy products dropped. This increased both the surplus for non-energy products and the deficit for energy products.

International balance of trade in goods as a proportion of GDP (6 %) is high compared to other territories

GRAPH 1-19 Exports and balance of trade in goods



Source: Eustat and Eurostat. Compiled by authors.

BOX 3 Exporter trends

This section demonstrates that the Basque economy is relatively open. In this box, we analyse certain details of international exporters. We begin by examining trends in the export base of Basque firms in comparison with the Spanish average and various autonomous communities (Cataluña, Madrid and Navarra), going on to analyse trends in exports according to volume of exports.

Table 1-6 shows the variation in aggregate value of exports between 2013 and 2021, how the number of exporters varied over the same period, and the ratio between the two. Firstly, we can see that in terms of increase in the number of exporters, the Basque Country was the most dynamic territory after Madrid. Secondly, it made the weakest progress in terms of value of exports.

The number of exporters in the Basque Country has increased considerably since 2013

TABLE 1-6 Indexed variation in exports (2013–2021)

	Basque Country	Spain	Cataluña	Madrid	Navarra
Number of exporters	170.9	155.6	128.9	207.3	146.6
Value of exports	124.4	134.3	136.6	129.6	127.5
Ratio	1.4	1.2	0.9	1.6	1.1

Source: ICEX: Profile of Spanish Exporters. Compiled by authors.

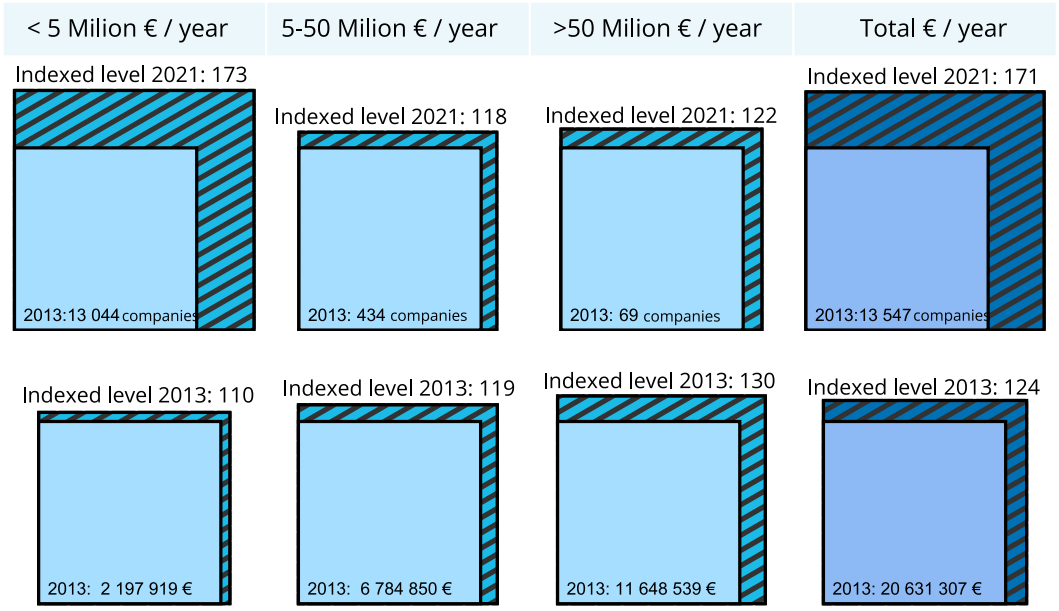
NB: 2013 = 100 for the number of exporters and value of exports.

The ratio in the bottom row is in a certain sense an indicator of whether growth in foreign trade is 'organic' (existing exporters expanding their business) or 'inorganic' (due more to an increase in the number of exporters). Cataluña would be an example of organic growth (although obviously, new players have joined its base of exporters), whereas Madrid would be the best example of inorganic growth. The Basque Country is more similar to the situation in Madrid.

On the one hand, expanding the base of exporters can be considered an investment in the future which will bear fruit in the years to come. However, along with supporting firms that want to begin selling abroad, it is also essential to provide support for regular exporters, helping them diversify their foreign markets, secure a larger market share at the international level, identify new sources of demand and/or expand their market niches around the world.

As regards trends in exports among Basque firms, the 'blocks' in Graph 1-20 show the variation in both number of firms and value of exports between 2013 and 2021 in different ranges of value of exports: firms with annual exports valued at 5 million euros or less, 5–50 million euros, or more than 50 million euros.

GRAPH 1-20 Variation in number of exporters and value of exports (2013–2021)



Source: ICEX: Profile of Spanish Exporters. Compiled by authors.

NB: 2021 indexed level refers to growth in the number of firms and value of exports in each block from the 2013 base value.

Firstly, we can see that in terms of the number of firms per category, the segment of firms with annual exports valued at 5 million euros or less is the most dynamic, growing 73 % since 2013. The other two segments also grew, but considerably less (18 % and 22 %). Secondly, we see that the aggregate value of exports for each of the three categories followed a different pattern. Firms with annual exports of no more than 5 million euros had 10 % growth. Comparing this figure to the growth of new players in this category, we can conclude that new businesses made a limited contribution. If the relationship is expressed as the ratio of 'additional value' to 'new players', the result is less than 1 (110/173 = 0.64).

Exporters topping the 50 million euros/ year threshold increasingly account for the bulk of the value of exports

The category of exporters with annual exports valued at 5–50 million euros has a more proportional relationship. According to the same formula used above, their ratio is 1.01 (119/118). In the case of exporters with annual exports valued at more than 50 million euros, the ratio is 1.07 (130/122).

The implication is that this last category is the most dynamic in terms of growth in the value of exports they are responsible for. It also illustrates that the number of exporters is clustering at the bottom, whereas exporters topping the 50 million euros/year threshold increasingly account for the bulk of the value of exports.

1.2.5. Summary

As a summary, Table 1-7 presents the latest data for the 17 economic/business performance indicators analysed and reflects their variation for the last year. It is possible to see that there are several indicators whose levels worsened in the most recent year available. However, the majority of these are indicators for which there is no 2021 data available. Consequently, the drop may be attributed to the impact of the first year of the pandemic. The indicators available for 2021 do show an improvement over the previous year, with the exception of the balance of trade in goods, which improved in 2020 but dropped back to almost the 2019 level in 2021.

Overall, economic performance indicators worsened in 2020, but recovered in 2021

As regards those indicators for which there is comparable data for the past year, the results show that the Basque Country is in a better position than the EU-27 average for several of these, especially as regards the economy as a whole. Nonetheless, this is not the case for the indicators related to the manufacturing industry, in which a sharp drop in production in 2020, combined with a less severe downturn in employment, translated into a decline in productivity and an increase in unit labour costs. In internationalisation, we also see worse values than the EU-27 average, which are offset if we take into account trade with the rest of Spain.

Shifting to an analysis of relative variation compared to Europe, we find that Basque GDP per capita and gross operating surplus increased in the last year by more than the European average. However, several indicators reflected worse trends than the EU-27 average, narrowing the gap for those in which the Basque Country had a better position (productivity and ULC for the economy as a whole) or contributing to a below-average position. For the majority of the internationalisation indicators, however, the trend was better than the European average.

For most internationalisation indicators, the trend in the Basque Country was better than the European average

TABLE 1-7 Summary of economic/business performance indicators

Indicator	Year	Value	Trend (last year)	Position relative to EU-27	
				Level	Change
Economic performance					
GDP per capita (PPP)	2021	35 295	→	+	+
Apparent productivity of labour (thousand €/person)	2021	66.44	→	+	–
Apparent productivity of labour (€/hour)	2020	40.80	←	+	–
Apparent productivity of labour (manuf.) (thousand €/person)	2020	63.98	←	–	–
Apparent productivity of labour (manuf.) (thousand €/person)	2020	40.55	←	–	–
Business profitability					
Unit labour costs (%)	2020	62.42	←	+	–
Unit labour costs (manuf.) (%)	2020	71.53	←	–	–
Gross operating surplus (% GDP)	2021	42.15	→	+	+
ROA	2021	3.6	→	n/d	n/d
ROE	2021	9.5	→	n/d	n/d
Innovation and entrepreneurship					
SMEs (10-249 employees) that innovate (%)	2020	39	←	n/d	n/d
SME sales of new products (%)	2020	13.2	←	n/d	n/d
High-growth firms (%)	2021	9.6	←	n/d	n/d
Internationalisation					
International exports of goods and services (% GDP)	2021	35.1	→	–	+
Balance of international trade in goods and services (% GDP)	2021	6.6	→	+	–
Exports of goods (% agro-industrial GVA)	2021	148	→	–	+
Balance of trade in goods (% GDP)	2021	6.0	←	–	+

Source: Compiled by authors based on previous analysis.

2
The dynamism of the economic structure

The economic structure of territories condition the combination of levers required to meet competitiveness challenges

Each territory has a different economic structure, reflecting, among other factors, the history of the territory, its natural and human resources, its proximity to different markets, and its historical investments in capital: infrastructure, science and technology, machinery, etc. It is important to have a good understanding of the specifics of the economic structure because in each structural context the combination of levers required to meet the challenges of competitiveness will be different and, therefore, as will their effects. For example, an economy characterized by a high proportion of services will require different investments in knowledge or physical capital than a more industrial economy, and the necessary investments in knowledge or physical capital will also vary according to the type of service or industry in which the territory specialises. In addition, the economic structure of a territory evolves over time according to how it adapts to changes in markets, technologies and the advantages and disadvantages that the territory presents for the location of different activities. At times characterised by volatility and profound transitions, when the characteristics of markets, value chains and technologies are changing, it is important to reflect on how the economic structure is evolving. This will help guide the strategies and actions of governments, companies, technology centres and other actors.

The analysis in this chapter is structured around three questions. Firstly, we analyse the changes over the last decade in employment and the relative specialisation of the sectors that make up the Basque economy to answer the question: how is our economic structure evolving? Secondly, we analyse the structure of patents and the development of technological maps to answer the question: are our economic and technological structures related? Thirdly, we use a novel methodology to answer the question: how sophisticated is our economic fabric as a whole?

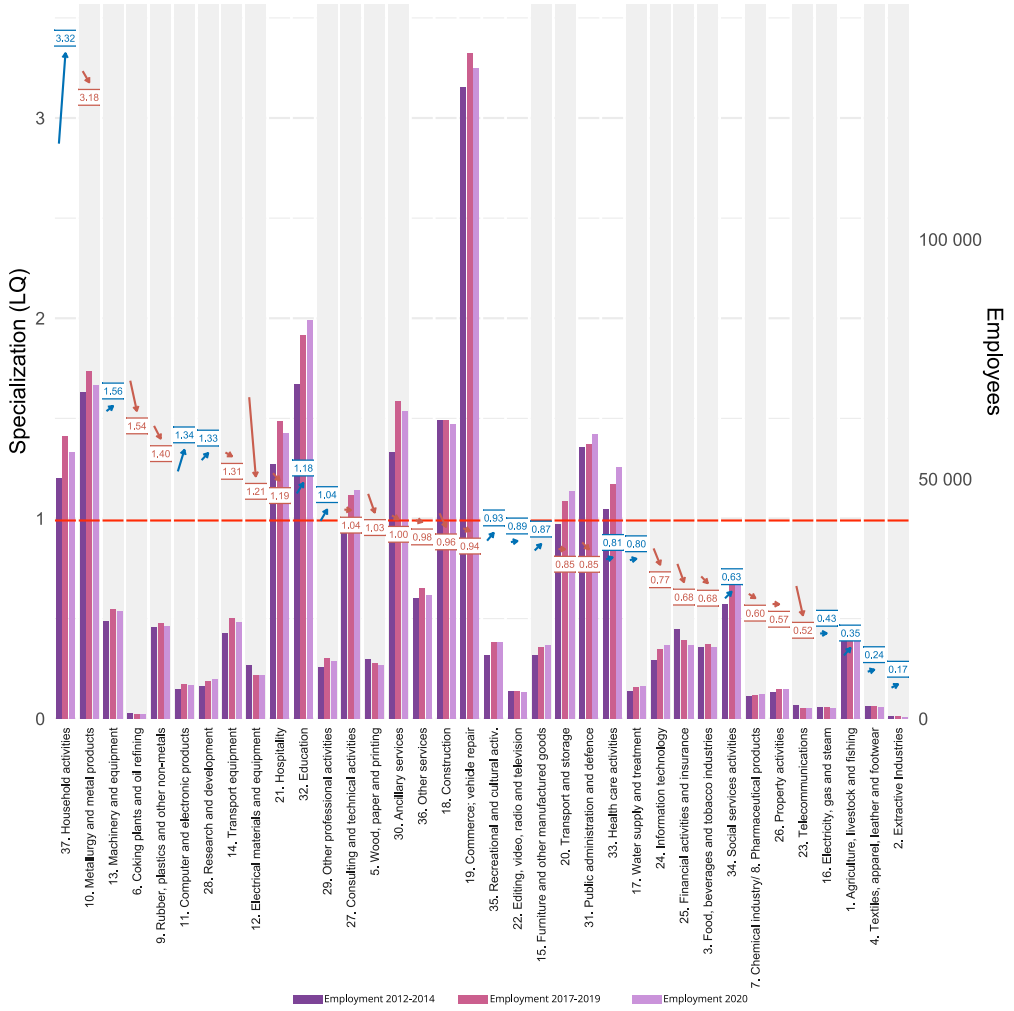
2.1. How is our economic structure evolving?

Graph 2-1 illustrates the average annual employment in the Basque Country and the degree of specialisation[13] (relative to the EU-27) for 36 categories of economic activities covering the whole economy both in the period when the Great Recession hit

[13] The degree of specialisation is represented by the Location Quotient (LQ), calculated as the proportion of total employment in an activity in the Basque Country with respect to the proportion of total employment in the same activity in the EU-27. A value higher than 1 means that the Basque Country is specialised in this activity with respect to the EU-27, and a value lower than 1 means that it is under-specialised.

bottom (average of 2012-2014), and in the period of stable growth immediately preceding the pandemic (average of 2017-2019). It also includes employment data in 2020, the latest data available for the Basque Country with this level of disaggregation, but not the degree of specialisation (due to the unavailability of European data).

GRAPH 2-1 Specialisation and employment of all sectors of the economy (2012-2014, 2017-2019 and 2020)



Source: Eurostat and Eustat. Compiled by authors.

NB: An asterisk (*) identifies the new industry sectors.

The activities with the highest levels of employment are local activities such as commerce, hotels and restaurants, as well as metal-related manufacturing activities

We can see that the activities with the highest employment are local activities such as Commerce (19), Education (32), Auxiliary services (30), Construction (18), Hotels and restaurants (21), Household activities (37) or Public administration (31), and all of them show an increase in employment in the period prior to the pandemic. The only industrial activity with similar employment levels is Metallurgy and metal products (10), which also experienced an increase in employment, reflecting the sustained importance of metal-related activities in the economic structure of the Basque Country.

Graph 2-1 identifies with an asterisk the activities included in the so-called 'new industry', which includes both the industrial sectors in a broad sense and a series of services closely linked to industry, whose growth is usually partly the result of outsourcing processes by industrial companies. This includes both traditional, low value-added service activities (such as transportation) and more knowledge-intensive activ-

ities (e.g. research and development). Auxiliary services (30) activity is the only one of these industrial services that also has high levels of employment.

To understand the structure, we need to analyse not only the volume of employment, but also the degree of specialisation, since many of the local activities generate abundant employment in all territories. Therefore, the activities in Graph 2-1 are ordered by the degree of specialisation of the Basque Country relative to the EU-27 in the period 2017-2019. In first place are the Household activities (37), a fact that may be explained by a habit of contracting care activities directly in the home, rather than, for example, through external residences, which may have more weight in other parts of Europe, and which are accounted for in social services activities (34), in which the Basque Country is under-specialised. Both activities would be included in what we have referred to in previous Competitiveness Reports as the 'foundational economy'.[14]

The Basque Country stands out for its degree of specialisation in manufacturing and energy activities

Apart from this activity, it can be seen that the Basque Country's specialisation is characterised above all by manufacturing and energy activities. Metallurgy and metal products (10) stand out in particular, with a proportion of employment in the Basque Country that is three times that of the EU-27. While the level of employment is not very high, among the services included in the new industry, the specialisation in research and development activities (28) is particularly noteworthy. On the other hand, within this type of sector, the Basque Country is under-specialised in Telecommunications (23), Financial activities and insurance (25) and Information technology (24).[15]

To further examine the evolution of specialisation, Graph 2-2 shows the change in specialisation of sectors in the Basque Country in the period 2017-2019 with respect to 2012-2014 (ordered from greater to lesser change). Since structural change processes take time, in most activities the specialisation coefficient changed only slightly (between –0.1 and +0.1). Although the changes are not very substantial, it is worth noting that, with the exception of Household activities (37), the activities in which specialisation has increased the most are related to the trend towards a knowledge economy, with its features of digitalisation and servitisation, something that is very positive for complementing industrial specialisation in the Basque Country.

In most cases, the changes in the specialisation coefficients had no impact on whether or not the Basque Country can be considered specialised in these activities, the exceptions being two service activities associated with industry —Other professional activities (29), where there was a change from non-specialised to slightly specialised, and Auxiliary services (30), where the opposite occurred— as well as in the Construction sector (18), where there was a change from non-specialised to slightly specialised.[16] In some sectors, such as Electrical material and equip-

[14] The foundational economy refers to the basic goods and services on which we all depend to live on a day-to-day basis: food, health, water, education, care services, etc. For an introduction to the principles of the foundational economy and an analysis of initiatives to strengthen it, see Foundational Economy Collective (2022).

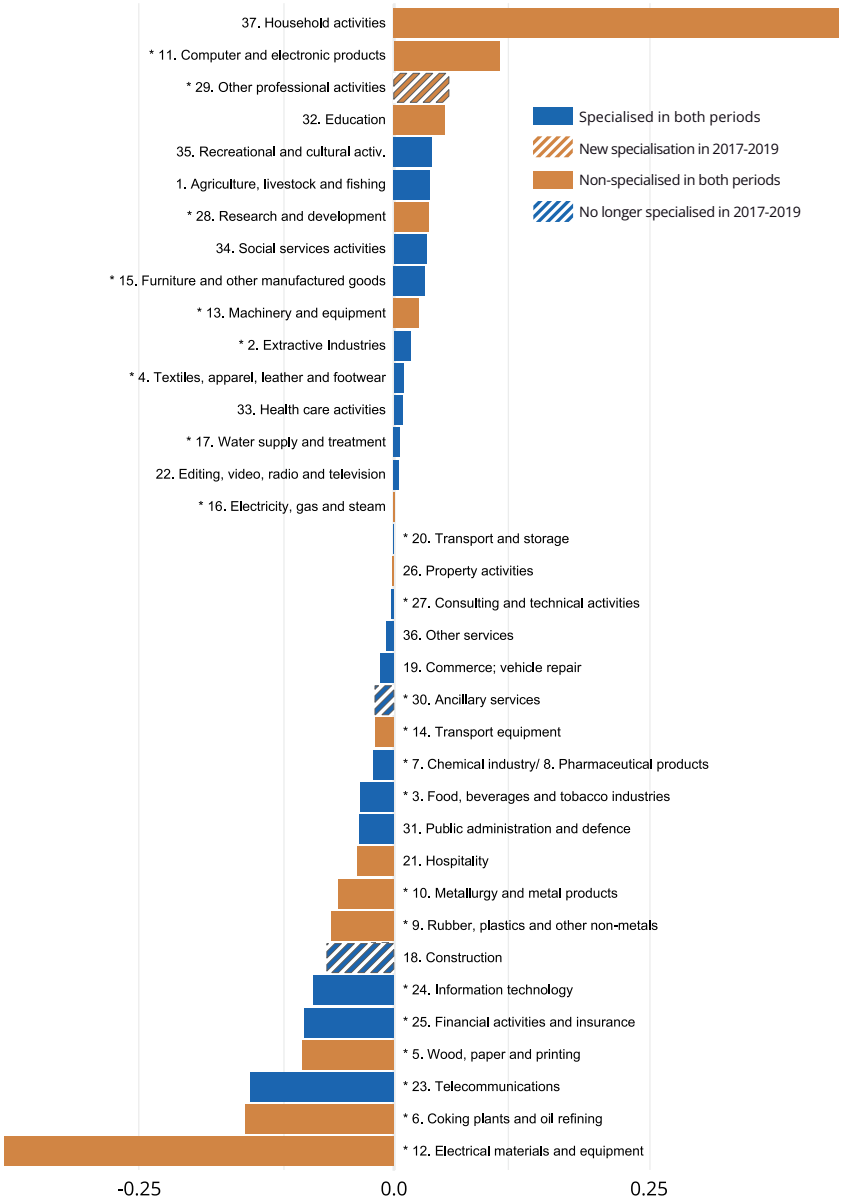
[15] The under-specialisation in information technology is consistent with the analysis of the evolution of the DESI (Digital Economy and Society Index) in Box 5, which highlights certain relative deficiencies with respect to the number of ICT specialists and the integration of some digital services by companies and the public sector.

[16] It is important to take into account, both in the case of Auxiliary Services, which include employment services provided through agencies and temporary employment agencies, and in the case of Construction, the cyclical effect that implies a higher relative growth of employment in the territory in times of expansion, such as the period from 2012-2014 to 2017-2019.

ment (12) and Coking and oil refining (6), although specialisation was reduced more significantly, the Basque Country was still specialised at the beginning of the pandemic.

Specialisation in activities related to the knowledge economy, such as R&D or education, is increasing.

GRAPH 2-2 Change in the specialisation ratio (2017-2019 compared to 2013-2014)



Source: Eurostat and Eustat. Compiled by authors.

NB: An asterisk (*) identifies the new industry sectors.

With regard to the change in the number of people employed, Graph 2-3 shows that almost all sectors in which employment grew in 2020 had already experienced growth in the period immediately prior to the pandemic (with the exception of Electrical Material and Equipment, which recovered slightly after a sharp drop). In addition, there are a number of sectors that had already begun to lose jobs before the pandemic and continued to do so. In between, there are some activities whose previous growth was cut short by the pandemic, in some cases, such as Agriculture, livestock and fishing (1), falling even below the level of employment they had on average in the period 2012-2014.

GRAPH 2-3 Change in the number of people employed (% with respect to employment in the sector)

Nearly all sectors in which employment grew in 2020 had already experienced growth in the period immediately prior to the pandemic

Employment change from 2012-2014 to 2017-2019 (black arrows) and in 2020 (coloured arrows)

Source: Eurostat and Eustat. Compiled by authors.

NB: An asterisk (*) identifies the new industry sectors.

Graphs 2-4, 2-5 and 2-6 show the same analysis with a more disaggregated approach to the activities of the new industry. This allows us to observe that:

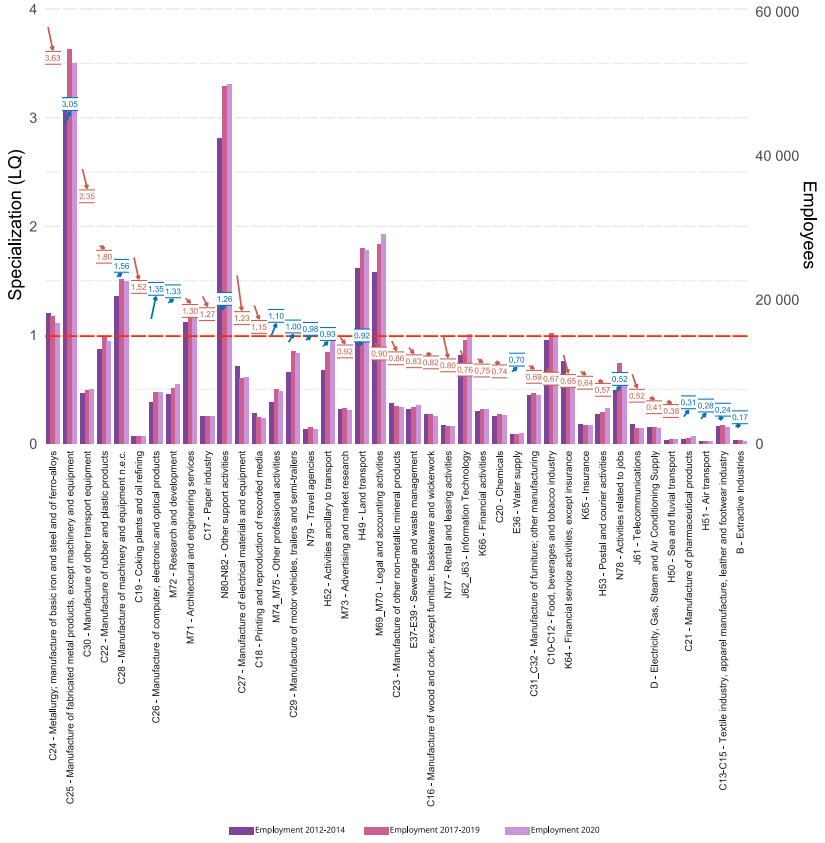
- The industrial activities in which the Basque Country has a high specialisation (LQ>1.5) had not changed radically in the years before the pandemic. However, a decline in specialisation (and employment) is detected in Metallurgy and manufacture of iron and steel products (C24) and Coking and oil refining (C19), and in specialisation (but not employment) in Manufacture of other transport equipment (C30) and Manufacture of rubber and plastic products (C22). In addition, specialisation (and employment) in Manufacture of electrical equipment and apparatus (C27) has fallen substantially.

- On the other hand, among the activities in which the Basque Country is most specialised, Manufacture of fabricated metal products, except machinery and equipment (C25) and Manufacture of machinery and equipment (C28) increased both their specialisation and employment in the years before the pandemic. The first of these has consolidated its position as the new industry activity that generates the greatest number of jobs in the Basque Country. Although less specialised, the Manufacture of computer, electronic and optical products (C26) also stands out due to its increased specialisation and employment.
- Manufacture of motor vehicles, trailers and semi-trailers (C29) is the most highly specialised of the transport equipment manufactures and the only one that became specialised in the years before the pandemic, but specialisation is highest in Manufacture of other transport equipment (C30).
- As regards industry-related services, the Basque Country specialises in Research and Development (M72), with an increasing trend in employment and specialisation, and in Architectural and Engineering Services (M71), with a slight decrease in specialisation despite a growth in employment. Employment has also increased in Other professional activities (M74-M75), an activity that has moved from being slightly specialised, in Legal and accounting activities (M69-M70) and in Other support activities (N80-82). The latter includes administrative support activities which is the service activity that accumulates the most employment.

The Basque Country is under-specialised, and has lost specialisation, in services such as advertising and market research, financial services and insurance

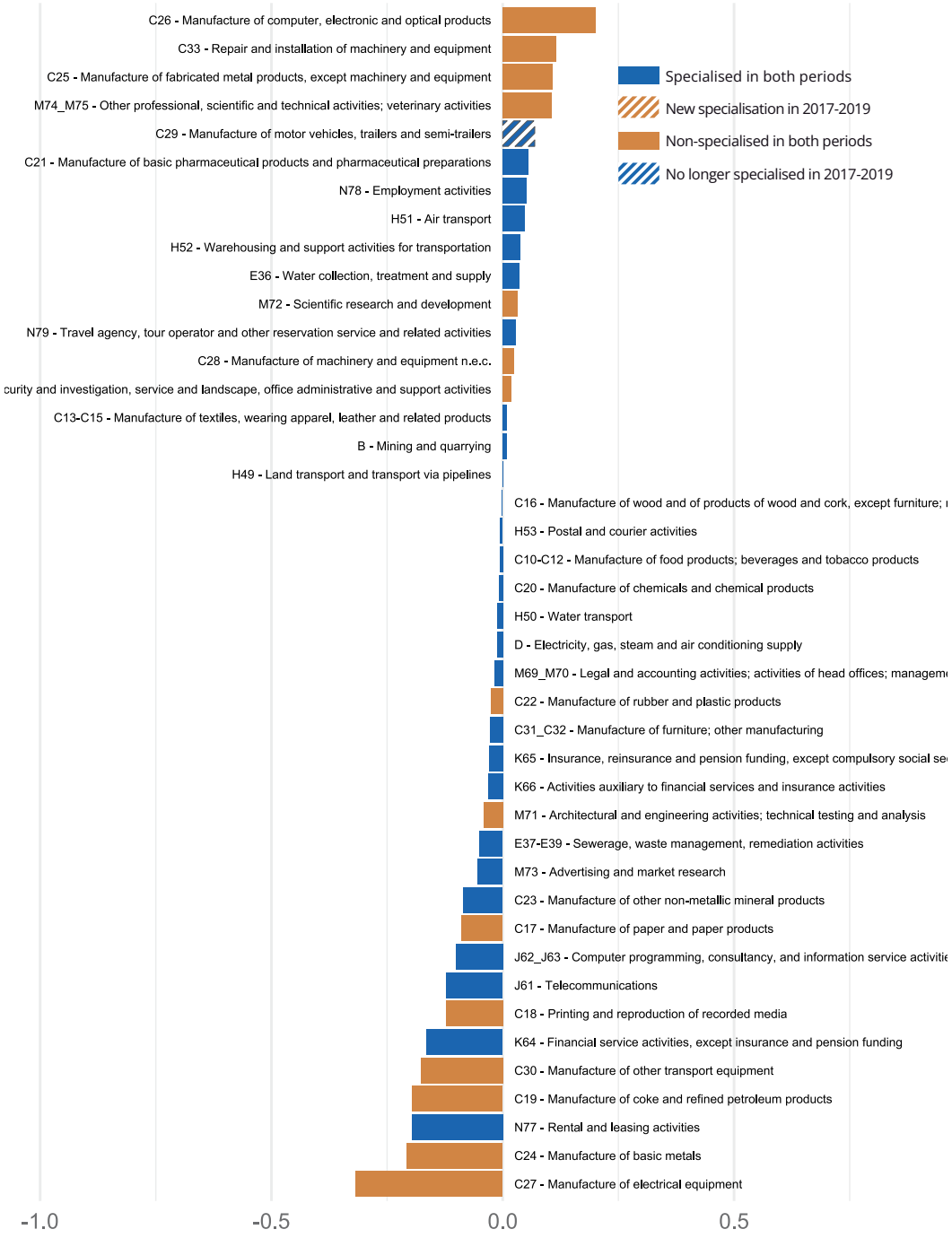
- However, there are other services such as Advertising and market research (M73), Financial services (K64) and Insurance (K65) in which the Basque Country is under-specialised and which have lost both employment and specialisation in the years before the pandemic.

GRAPH 2-4 Specialisation and employment of new industry activities (2012-2014 and 2017-2019)



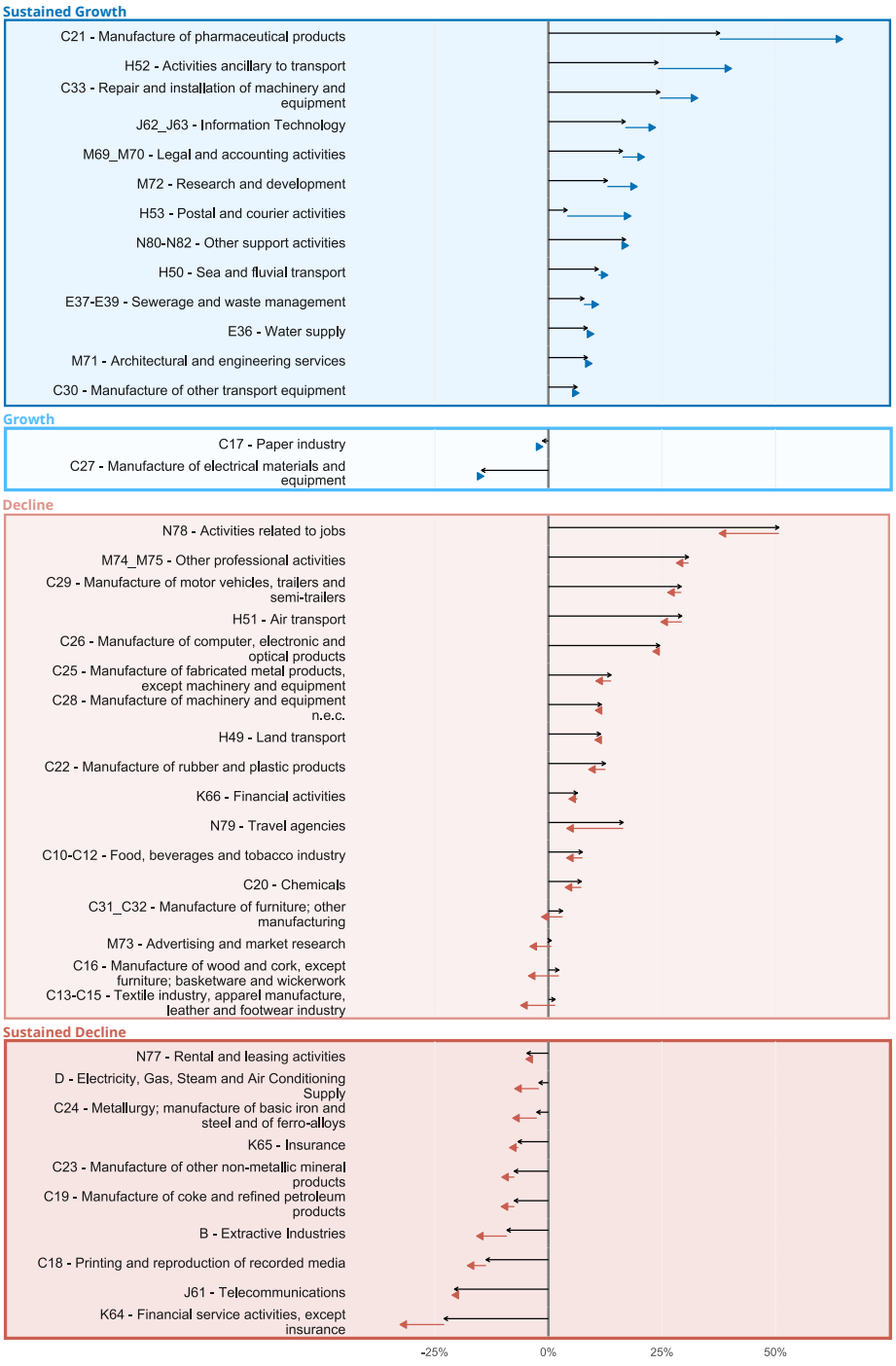
Source: Eurostat and Eustat. Compiled by authors.

GRAPH 2-5 Change in the coefficient of specialisation of new industry activities (2017-2019 with respect to 2013-2014)



Source Eurostat and Eustat. Compiled by authors.

GRAPH 2-6 Change in the number of people employed in new industry sectors (% with respect to employment in the sector)



Employment change from 2012-2014 to 2017-2019 (black arrows) and in 2020 (coloured arrows)

Source: Eurostat and Eustat. Compiled by authors.

Another aspect of the economic structure is the relevance that energy has as an input in the different sectors of the economy, which is analysed in Box 4.

BOX 4 Increase in energy prices and sector structure

The high energy prices of 2022, which have been rising since the summer of 2021 after being at lows in 2020 due to the confinement of the population and the relative stagnation of the econo-

my, have had and continue to have an impact on companies' income statements. The impact that energy price increases have on the costs of each sector depends largely on how energy-intensive that sector is.

In total, energy accounted for 8.8 % of the economy's intermediate demand in 2015 and dropped to 7.4 % in 2019, before the start of the pandemic. That year, 62 % of energy products were consumed by the coking and oil refining, electric power and gas, steam and air conditioning sectors. After them, the main consuming sectors were construction, real estate, hotels and restaurants, wholesale trade and motor vehicle manufacturing.

In total, energy accounted for 8.8 % of the economy's intermediate demand in 2015, a figure which dropped to 7.4 % in 2019, before the start of the pandemic

However, the largest consumers are not necessarily the most energy-intensive, as this will also depend on the total output of the sector. Analysing the data on the ratio of energy inputs to the value of production, Table 2-1 shows that there are four major groups of sectors. First, we have the energy-intensive industrial sectors, of which several are at risk of carbon leakage (paper, rubber, plastics, glass, steel, etc.)[17] and among them, the sector with the highest proportion of energy consumption in relation to the value of production is cement, lime and gypsum (20.8 %), followed by the paper industry (13.8 %) and steel (8.6 %). The second large group is transportation and fishing, which could be grouped together because they require fuels for travel (especially petroleum derivatives), and the third is retail trade and sports and recreational activities, which, having nothing in common a priori, consume electricity and natural gas. Finally, there are activities related to water supply and sanitation and waste management.

TABLE 2-1 Sectors where the proportion of energy in relation to the value of the sector's production is higher

Sector	2019	2015	Sector	2019	2015
Fishing and aquaculture	10.68 %	8.16 %	Iron and steel plants	9.47 %	7.83 %
Extractive Industries	8.65 %	6.96 %	Non-ferrous metal production	7.49 %	6.68 %
Other food industries	4.13 %	3.55 %	Metal smelting	7.87 %	8.39 %
Wood and cork industry	5.13 %	4.89 %	Forging and metal stamping	3.48 %	3.58 %
Paper industry	13.76 %	13.51 %	Water supply	6.16 %	6.05 %
Basic chemical products	7.72 %	8.62 %	Sewerage and waste management	6.72 %	4.70 %
Paints and other final chemistry	6.31 %	6.44 %	Retail trade	4.83 %	4.43 %
Pharmaceutical products	2.29 %	4.73 %	Rail transport	10.51 %	8.78 %
Rubber products	5.21 %	5.31 %	Other land passenger transp.	7.86 %	7.22 %
Plastic products	5.56 %	5.61 %	Other land goods transport	10.17 %	9.84 %
Glass industry	7.03 %	6.53 %	Sea and fluvial transport	10.69 %	10.36 %
Cement, lime and gypsum	20.78 %	19.30 %	Air transport	13.44 %	12.48 %
Other non-metal industry	5.08 %	5.06 %	Sports and entertainment activities	4.85 %	4.34 %

Source: Eustat (Basque Statistics Office). Compiled by authors.

NB: The most intensive sectors have been eliminated for this estimate: coking and oil refining, electric power and gas, and steam and air conditioning, so as not to distort the figures.

[17] According to the European Commission, a sector is at risk of carbon leakage if, for reasons of costs linked to climate policies, companies in that sector or industrial subsector are forced to transfer production to other countries with less severe emission restrictions. View Preliminary Carbon Leakage List (2021-2030).

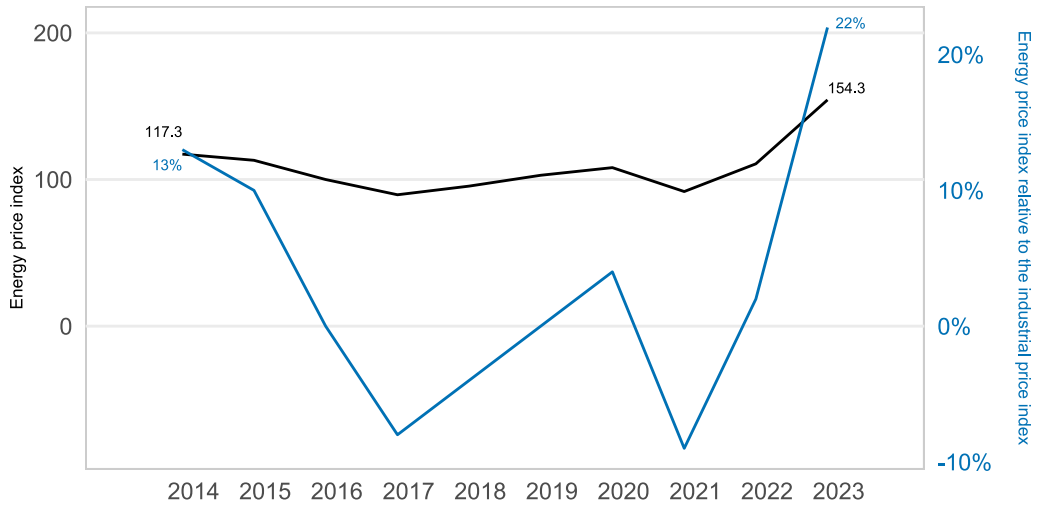
The sectors vary not only in terms of their energy intensity, but also in the type of energy they consume:

- Sectors related to transportation and fishing consume mainly petroleum derivatives, except in the case of railroads.
- Water supply has electricity as its main energy source, while in sanitation and waste management it is gas.
- In the retail trade and sports and recreational activities group, electricity is also the main energy source, although in the latter case gas is also relevant.
- Finally, in the sectors at risk of carbon leakage, in the BC there has been a generalised substitution of coal, even though small quantities are still consumed in sectors such as iron and steel (1.73 %) or cement, lime and gypsum (1.08 %). Petroleum derivatives are consumed in small quantities except in cement, lime and gypsum (6.33 %), in the basic chemical industry (2.91 %) and in paint production (1.09 %). Electricity is widespread throughout industry, with the cement, lime and gypsum sector having the greatest proportion (10.36 %), followed by the paper sector (7.33 %). In the case of production processes where heat is required, a higher level of gas consumption is observed (for example, in the paper industry, 5.40 %; glass industry, 2.64 %; iron and steel and metal production, around 1.80 % in each case).

The proportion of energy consumption relative to production increased over the 2015-2019 period

In most cases, there is an increase in the proportion of energy consumption relative to the value of production in the period 2015-2019 which, in part, is due to a higher energy price index in 2019 compared to 2015 as presented in Graph 2-7.

GRAPH 2-7 Evolution of the energy price index and the ratio of the energy price to the industrial price index in the BC (Base year = 2015)



Source: Eurostat. Compiled by authors.

However, as can be seen from Table 2-2, which shows the evolution of the price of energy with respect to the evolution of the price of products by sector, the impact is not homogeneous in all sectors, ranging from 11 % that the price of energy increased compared to the prices of the Chemical Industry with respect to 2015 to 49 % that it reached in the Textile, clothing, leather and footwear sector. This is because the non-energy costs of each sector may also have varied differently and each sector does not have the same capacity to pass on the increase in costs to the prices of its products.

TABLE 2-2 Evolution of the price of energy with respect to the evolution of the price of products by sector in the BC (with respect to 2015 ratio)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Extractive Industries	14 %	13 %	**0 %**	–9 %	–3 %	1 %	3 %	–15 %	4 %	41 %
Manufacturing industry	12 %	9 %	**0 %**	–8 %	–5 %	–1 %	3 %	–10 %	2 %	26 %
Food, beverages and tobacco ind.	16 %	12 %	**0 %**	–11 %	–5 %	–1 %	5 %	–12 %	3 %	34 %
Textiles, apparel, leather and footwear	18 %	14 %	**0 %**	–11 %	–7 %	–4 %	2 %	–17 %	8 %	49 %
Wood, paper and printing	18 %	13 %	**0 %**	–10 %	–6 %	–3 %	1 %	–12 %	2 %	22 %
Chemicals	15 %	11 %	**0 %**	–10 %	–8 %	–5 %	–1 %	–16 %	–5 %	11 %
Pharmaceutical products	19 %	15 %	**0 %**	–14 %	–11 %	–5 %	–1 %	–16 %	–2 %	30 %
Rubber and plastics	16 %	13 %	**0 %**	–9 %	–2 %	5 %	9 %	–7 %	11 %	45 %
Metalworking and metal products	15 %	12 %	**0 %**	–7 %	–5 %	–1 %	5 %	–10 %	–2 %	18 %
Computer and electronic products	17 %	13 %	**0 %**	–8 %	–4 %	3 %	7 %	–11 %	–2 %	30 %
Electrical materials and equipment	16 %	13 %	**0 %**	–11 %	–5 %	2 %	5 %	–12 %	3 %	38 %
Machinery and equipment	17 %	13 %	**0 %**	–11 %	–8 %	–3 %	1 %	–12 %	6 %	42 %
Transportation equipment	18 %	14 %	**0 %**	–12 %	–7 %	0 %	3 %	–15 %	5 %	45 %
Furniture and other manufactured goods	15 %	12 %	**0 %**	–10 %	–6 %	–1 %	2 %	–14 %	2 %	40 %
Water			**0 %**	–10 %	–7 %	–2 %	2 %	–16 %	0 %	29 %

Source: Eustat (Basque Statistics Office). Compiled by authors.

As has been the case up to now, the future evolution of the prices of the different energy sources will end up having a differentiated impact on each sector.

2.2. Are our economic and technological structures related?

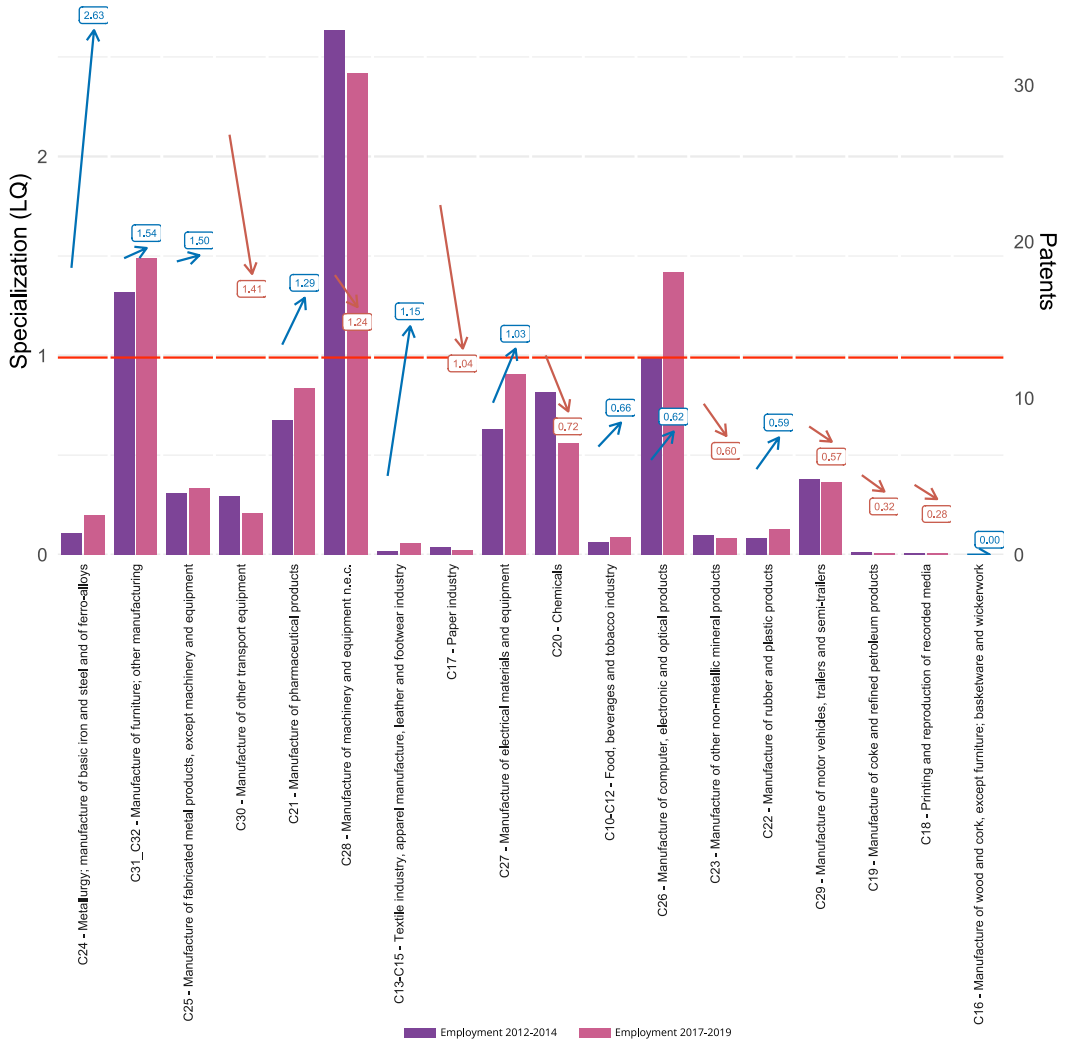
A territory's ability to adapt to new challenges depends on its capacity to develop and adopt new technologies

The development of the territory and its ability to adapt to new challenges depends in part on its capacity to develop and adapt new technologies. The development of these technologies will only bear fruit if it is transmitted to the productive fabric and it is therefore important that there is a certain alignment between the technological structure and the economic structure. To understand whether this alignment is present in the case of the Basque Country, this section begins by analysing the distribution of patents, which have been classified according to the economic activities in which they are considered likely to be used.[18] Most of them correspond to manufacturing activities. Graph 2-8 collects the average annual number of patents and patent specialisation with respect to the EU-27 of manufacturing activities in the periods

[18] The conversion table (Van Looy *et al.*, 2015) gives approximate results that have to be taken with caution, but that provide a direct point of comparison with economic activities beyond conversion to technological fields.

2012-2014 and 2017-2019. The first thing to note is that the variation between the two periods is more pronounced than that observed in the employment data. This is because the number of patents is much smaller and, therefore, small variations can mean a large change in the specialisation index.

GRAPH 2-8 Specialisation and number of patents by manufacturing activity (2012-2014 and 2017-2019)



Source: Eurostat and Eustat. Compiled by authors.

Machinery and equipment manufacturing stands out both in terms of number of patents and relative specialisation in the European context

In terms of specific activities, the Manufacture of machinery and equipment (C28) stands out due to the number of patents in the two periods and for its relative specialisation in the European context. This is consistent with the relatively high level of employment and specialisation in this activity observed in Graph 2-4. It should also be noted that, although the Metallurgy of iron, steel and ferroalloy products (C24) is the most specialised, the number of patents is very low. The same is true for almost all activities, where not even 15 patents a year are computed. Notable exceptions include:

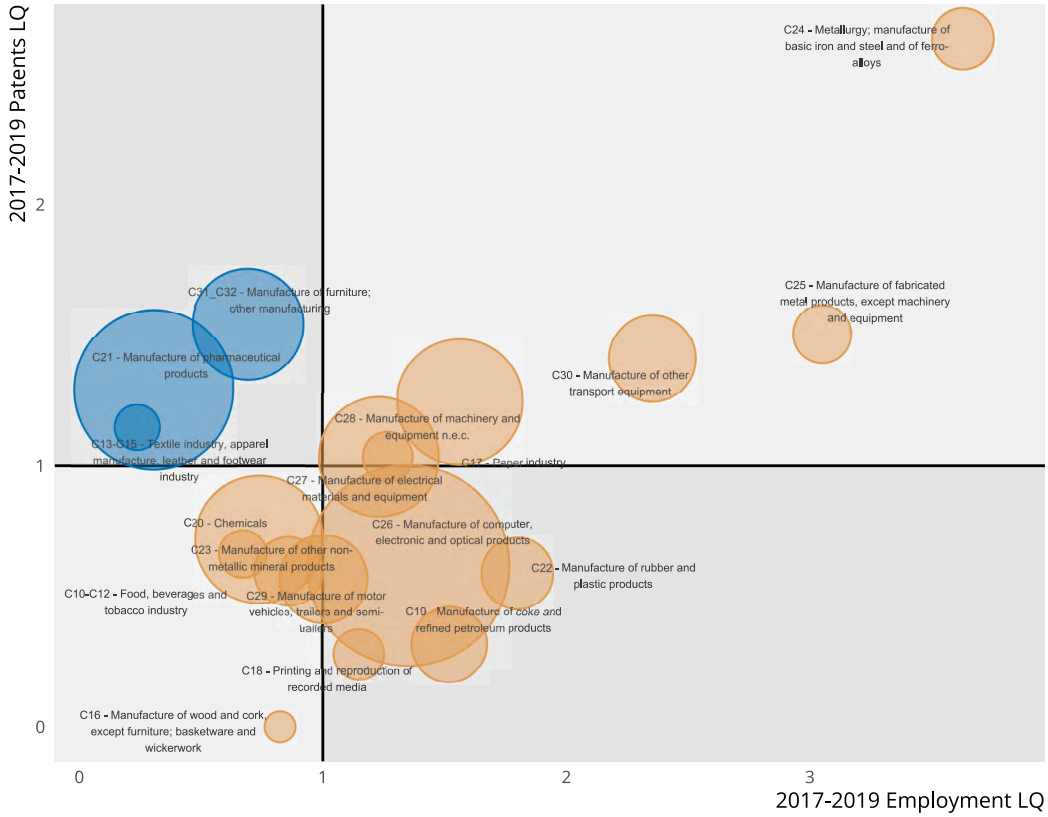
- C31-C32: Manufacture of furniture and other manufacturing industries; an activity in which both the average number of patents and specialisation increased in the 2017-2019 period.

- C26: Manufacture of computer, electronic and optical products; an activity in which the Basque Country continues to be under-specialised. However, an increase in both the number of patents and specialisation is observed, in line with the increase in employment and specialisation in employment of Graph 2-4.

Is the technological specialisation of the Basque Country therefore aligned with its economic specialisation? Graph 2-9 shows the relationship between patent specialisation and employment in manufacturing activities. There are several activities, mainly linked to metallurgy, the manufacture of machinery and equipment and the manufacture of other transport equipment, located in the upper right quadrant, in which economic and technological specialisation coincide. Of these, only the manufacture of machinery and equipment has a somewhat higher number of patents and employment (and, even so, the ratio between the two is lower than the European average). On the other hand, there are three activities (those marked in green in the upper left quadrant), in which, despite not having many patents (except in the case of Manufacture of furniture and other manufacturing industries), technological specialisation is observed, but not in terms of employment. As a result, the ratio of patents per job is higher than the European average. Finally, there are several activities in which job specialisation is not matched by similar technological specialisation. The Manufacture of computer, electronic and optical products (C26) is noteworthy among them, where despite the high number of patents and the high ratio of patents per person employed, this ratio is below the European average.

In several activities linked to metallurgy, the manufacture of machinery and equipment and the manufacture of other transport equipment, economic and technological specialisation coincide

GRAPH 2-9 Economic specialisation vs technological specialisation in the Basque Country (2012-2014 and 2017-2019)



Source: Eurostat and Eustat. Compiled by authors.

NB: The size of the bubble indicates the ratio between patents and employment. Bubbles in green indicate that the ratio in the Basque Country is higher than the EU-27 average and the opposite happens if the bubble is blue.

Technological specialisation can exist in Basque companies and research centres without evidence of patents

In general, therefore, while there is a relationship between economic and technological specialisation in some of the activities (the upper right and lower left quadrants), there are also quite a few activities in the upper left and lower right quadrants where specialisation in one dimension exists despite under-specialisation in the other. However, it is important to recognise the limitations of this analysis, as the patent indicator has several well-recognised shortcomings,[19] and does not capture all the activity that reflects technological specialisation; in other words, there may be technological specialisation in Basque companies and technology or research centres in some areas without patents (and *vice versa*). In this sense, BRTA (Basque Research and Technology Alliance) is in the process of building and socializing technology maps of the Basque Country based on the capabilities integrated in the technology centres and cooperative research centres (see Box 5).

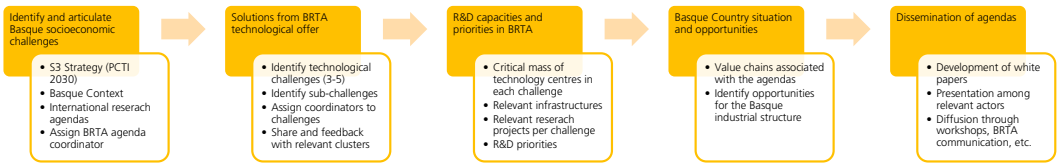
BOX 5: Preparation of BRTA's research agenda

BRTA BASQUE RESEARCH & TECHNOLOGY ALLIANCE

AZTERLAN
AZTI
CIC BIOGUNE
CIC BIOMAGUNE
CEIT
CIDETEC
CIC ENERGIGUNE
GAIKER
IDEKO
IKERLAN
LEARTIKER
LORTEK
CIC NANOGUNE
NEIKER
TECNALIA
TEKNIKER
VICOMTECH

BRTA is a research and technological development consortium, an alliance of 17 technology centres and research centres, created with the support of the Basque Government, SPRI and the Provincial Councils of Araba, Bizkaia and Gipuzkoa. BRTA's mission is to ensure cooperation and the creation of synergies among the consortium's agents in order to meet the technological and industrial challenges of the Basque Country and to strengthen its international positioning.

BRTA's research agenda formulates the most relevant socioeconomic challenges in the areas of smart industry, cleaner energy, personalised health, healthy food, sustainable mobility, eco-innovation and digital technologies. It responds to these challenges from the supply side through research and technology. This work, which began in 2021, has concluded its first phase with the development of the first four agendas, which are summarised below. The remaining three agendas for eco-innovation, sustainable mobility and digital technologies are currently being developed.



Smart industry: Basque industry has to carry out a transformation process that involves major changes in the use and design of materials, the development of intelligent and connected machines and products, and the development of flexible manufacturing processes that allow us to be competitive in the global market and favour new business models based on data and services.

[19] In addition to its limited potential to capture different types of innovations and sectoral differences in terms of patenting tendency, the approximate nature of the conversion between patent codes and economic activities is also important. Also see the analysis of patents in the section on the knowledge lever (Chapter 4).

Cleaner energies: The challenge is to achieve climate neutrality by 2050 and involves the deep decarbonisation of energy with a 100 % renewable electricity system. It is an unprecedented challenge that requires massively incorporating renewables, intensifying the energy efficiency of buildings, cities and industry, electrifying transportation, replacing fossil fuels with green energy carriers, and deploying smart grids to facilitate advanced management of energy generation, storage and distribution.

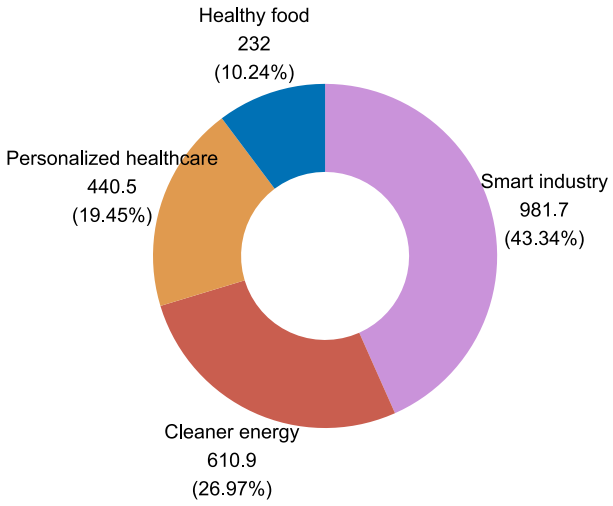
Personalized healthcare: Personalised healthcare seeks to maximize the effectiveness of disease prevention and treatment by considering individual variability in genes, environment and lifestyle. This requires combining scientific and technological advances in different areas of life sciences and data science with a change in the culture of clinical practice and health research.

Healthy food: The great challenge of the food value chain is to produce high quality food that is safe and healthy. Healthy food should make it possible to take care of people's health through a diet that is nutritious and healthy, that is aimed at reducing obesity and other chronic diseases related to food, that is safe and does not produce adverse reactions in the organisms of the chain (both in animals and humans) and that the food supply is guaranteed, reinforcing the weight of the agri-food industry.

An analysis has been made of BRTA's existing capabilities with respect to each agenda. Resources in FES (full-time equivalent staff) have been quantified by the centres in the challenges and sub-challenges of the research agendas. This information, combined with the map of specialisation of the centres, allows us to know the lines of specialisation both individually in each centre and of BRTA as a whole from a bottom-up approach with the agendas and their priorities as a frame of reference.

BRTA's research agendas seek to respond to the most relevant socio-economic challenges for the Basque Country from a technological point of view

GRAPH 2-10 Critical mass of BRTA in FESs in research agendas completed to date



Source: BRTA. Compiled by authors.

2.3. How sophisticated is our economic fabric?

The analysis of the evolution of employment and specialisation by category of activity provides us with an overall view of the evolution of the economic structure. This makes it easier to identify activities in decline (in terms of employment and specialisation), such as financial activities or wood, paper and graphic arts, and others on the rise, such as some of the activities related to the knowledge economy (education

or research and development). But the same data, more disaggregated, can also be used to analyse the sophistication of our economic fabric as a whole, and the evolution of this sophistication relative to other regions.

The sophistication or complexity of the economic fabric of a territory reflects two aspects of its specialisation: diversity and uniqueness

To do so, we can follow a methodology developed for the calculation of what is called economic complexity (Fritz and Manduca, 2021; Hidalgo, C., 2021; Wohl, I., 2020). It is a way of reflecting the sophistication of the economic fabric of a territory based on a combination of the diversity of activities (the number of economic activities in which the territory specialises) and the uniqueness of these activities (the number of regions that specialise in these activities). It highlights the idea that it is good for economic development to be specialised in various activities (not to put all one's eggs in one basket), and that it is even better if these specialisations are in activities in which few territories are specialised (specialising in singular activities). Its economic complexity index combines these two considerations into a single figure that can be compared with other regions.

The Economic Complexity Observatory calculates country complexity indices using export data and takes advantage of the availability of regionalised trade data in Spain to include estimates for the autonomous communities, which are not comparable with those of the countries. In 2021, the Basque Country was in the first position among the 18 autonomous communities.[20] Using 4-digit disaggregated employment data (615 activities),[21] we have replicated this analysis to compare with 195 European regions.

Broadly speaking, this methodology is based on calculating an index for each region (and activity, if desired) by calculating on the one hand the diversity of the regions, i.e. the number of activities in which they are specialised, and on the other hand the ubiquity of the activities, i.e. the number of regions specialised in each activity. By recursively combining both indicators, we obtain an index that captures both the number of activities in which a region specialises and the 'exclusivity' of these activities. This index is used to rank the regions according to their complexity and to analyse their evolution. For this purpose, we have calculated the index for the years 2013 and 2018 for both the whole economy and the subset of manufacturing activities.

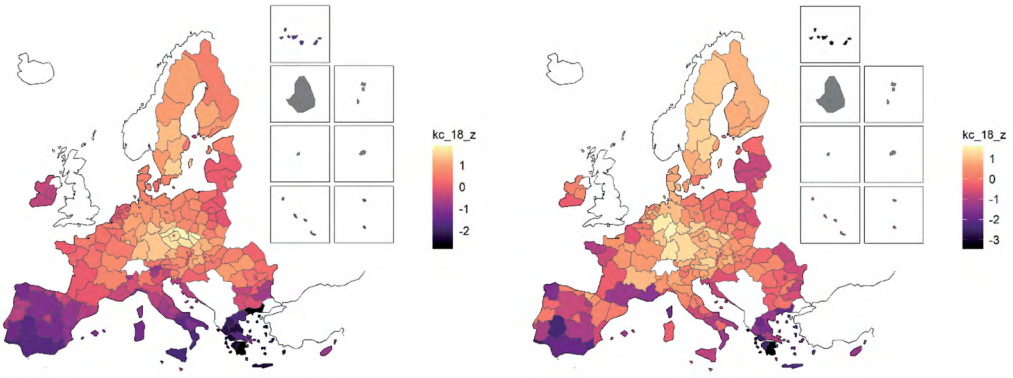
The Basque Country exhibits greater complexity in manufacturing than in the economy as a whole

Map 2-1 shows the results when all activities are included and when only manufacturing activities are selected. In both, the regions with the most complex economies are located in Central Europe. Southern Europe has the lowest complexity values when considering the economy as a whole, but if only the diversity and exclusivity of manufacturing activities are considered, some of these regions, including the Basque Country, exhibit higher complexity.

[20] See: https://oec.world/en/profile/subnational_esp/pais-vasco.
[21] These data were compiled by Orkestra for the cluster mapping of the European Cluster Collaboration Platform: https://reporting.clustercollaboration.eu/.

MAP 2-1 Economic complexity index based on employment data (2018)

a) All activities **b) Manufacturing**



Source: Eurostat and national statistical offices. Compiled by authors.

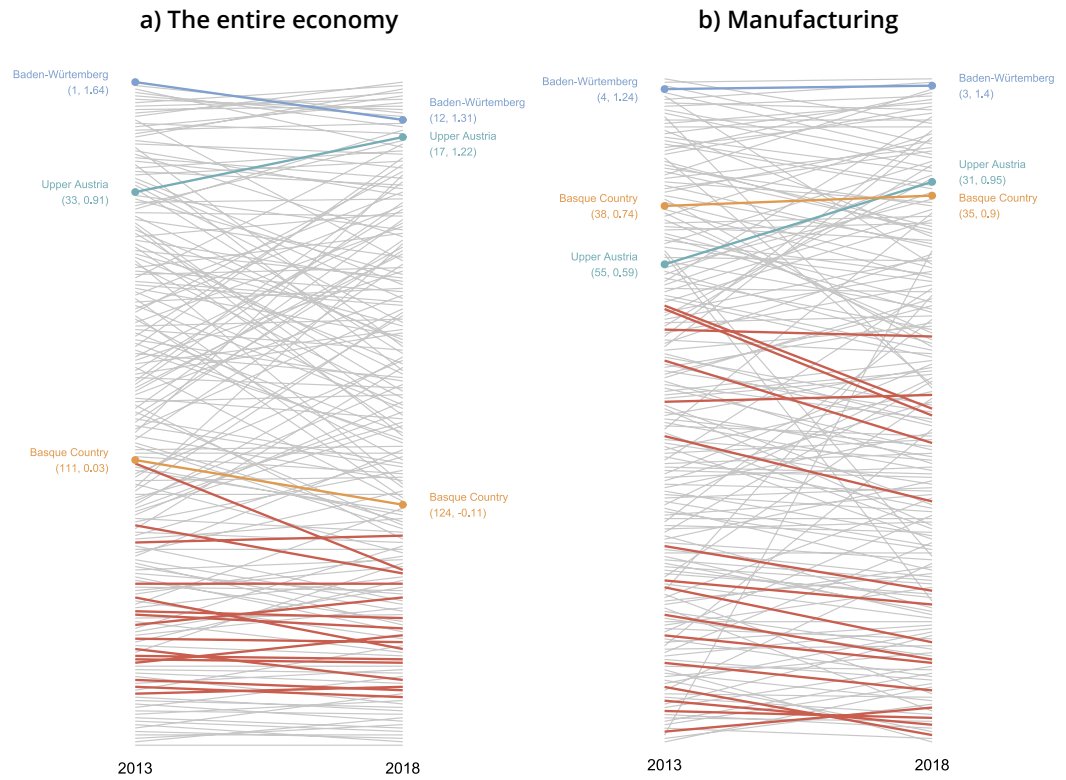
As can be seen in Graph 2-11 the Basque Country is in 124th position among European regions in terms of complexity in the economy as a whole in 2018, and 35th position in terms of manufacturing activities. It should also be noted that, in terms of activities as a whole, although the Basque Country is the best positioned region among the Spanish regions, it is far behind Upper Austria and Baden-Württemberg. However, in manufacturing activities, the Basque Country is closer to Upper Austria and not far behind Baden-Württemberg, being once again the best positioned among the Spanish regions.

Between 2013 and 2018 there was a pronounced drop in the relative position of the Basque Country in total complexity, but not in manufacturing

Although the indices from one year to the next are not directly comparable, it is possible to analyse the evolution in the relative position of the Basque Country between 2013 and 2018. When we look at overall complexity, we see a fairly steep drop (down 13 places) —quite similar to that of Baden-Württemberg—, which contrasts with the 16 places that Upper Austria has climbed. In the case of manufacturing, the positions of the Basque Country and Baden-Württemberg have not changed substantially, but that of Upper Austria has, which also climbs quite a few positions.

The change of relative position in complexity has to do with what is happening in the region itself, but also with what is happening in all the other territories. Thus, for example, a region may continue to specialise in an activity which, if it begins to be present in other regions, gains ubiquity and reduces the complexity of the initial region. In the case of the Basque Country, the loss of relative complexity in the economy as a whole may be due to the fact that, although it specialises in more activities than in the previous period (100 activities compared to 97), it changes some activities that are less ubiquitous, such as Repair of computers and peripheral equipment, in which it is no longer specialised, for activities in which there are more specialised regions, such as Transport of goods by road. In the case of manufacturing, the Basque Country specialises in 39 activities in each period, substituting in the second period 10 of them (mainly in metallurgy and metal products) for 10 others (mainly in rubber, plastic and other non-metallic products and in machinery and equipment manufacturing) without this resulting in a substantial change in its relative complexity with other regions.

GRAPH 2-11 Change in economic complexity ranking between 2013 and 2018



Source: Eurostat and national statistical offices. Compiled by authors.

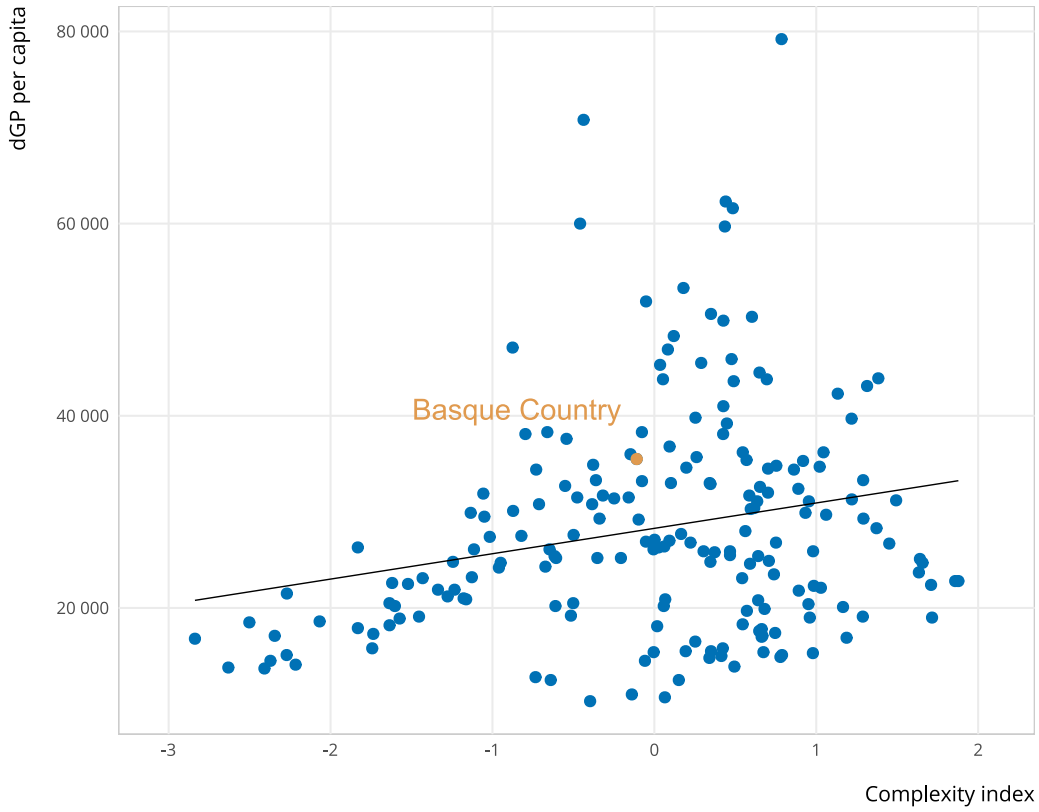
NB: The index values are standardised between –1 and 1 each year. The red lines identify the Spanish Autonomous Communities.

Complexity based on manufacturing activities is associated with higher levels of GDP per capita and it is positive that the Basque Country occupies a good position in the ranking

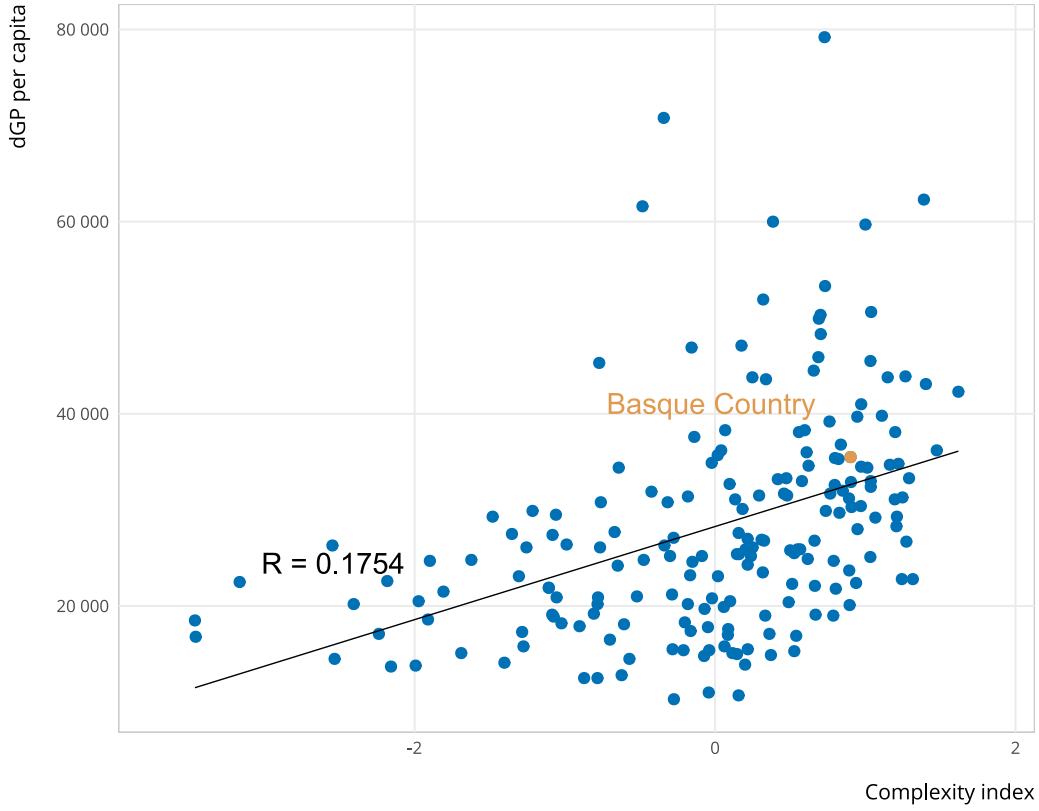
The relationship between the complexity index and regional economic performance is explored in Graph 2-12. There is a positive relationship between GDP per capita and both complexity indices. However, the relationship is stronger in the case of the complexity index of manufacturing activities, which indicates that the diversity and exclusivity of these activities, in which the Basque Country has a higher complexity in the European context, have a stronger relationship with overall economic performance (in terms of GDP per capita). This may be because the complexity of some regions may be based on specialisation in primary sector activities or lower value-added services. However, complexity based on manufacturing activities (specialising in manufacturing activities that are not found in many regions) is associated with higher levels of GDP per capita. In this sense, it is positive that the BC is in a good position in this ranking and points out the importance of continuing to reinforce our specialisation in a diversity of manufacturing activities and related services, above all looking for niches where few territories are active.

GRAPH 2-12 Relationship between GDP per capita and complexity indices (2018)

a) The entire economy



b) Manufacturing



Source: Eurostat and national statistical offices. Compiled by authors.

2.4. Implications and Challenges

It is important to understand the evolution of the economic structure of the Basque Country in a context of industrial transitions and turbulence in some value chains

In this chapter we have analysed the evolution of the economic structure of the Basque Country, its specialisation (relative to Europe) and its complexity between the periods 2012-2014 and 2017-2019. Although the economic structure of a territory does not usually change very quickly, the fact that we are immersed in industrial transitions related to digitalisation and environmental sustainability and living in a time of turbulence in some value chains makes it particularly important to understand its evolution. It can provide clues about emerging trends that represent opportunities or threats and help us reflect on the levers that can be used to guide the evolution of the economic structure in desirable directions in the future.

As in all territories, local activities such as commerce, education, construction, hotels and restaurants or public administration are the ones with most employment, and the trend in the years before the pandemic was an increase in employment in these activities coinciding with the expansionary phase of the economic cycle. With respect to manufacturing activity, employment continues to be concentrated in metallurgy and metal products, a sector with a proportion of employment in the Basque Country that is three times that of the EU-27 as a whole. With respect to services, there was an increase in employment in consulting and ancillary services[22] on the one hand, and a decline in financial activities on the other. The employment data for the Basque Country in 2020 also allow us to see the immediate effect of the pandemic on this structure: while in many cases the changes in employment tend to reinforce trends observed before the pandemic, there are also several sectors that saw their previous growth truncated.

Focusing on **the structure of manufacturing activities and related services (the 'new industry')**, the specialisation profile of the Basque Country has not changed radically in the years leading up to the pandemic, but there are minor changes that reflect gradual trends that are important to keep in mind:

A gradual decline in the specialisation of traditionally important activities such as metallurgy, coking and oil refining is detected

- On the one hand, a gradual decline in specialisation (but not necessarily in employment) of some traditionally important activities for the Basque Country, such as Metallurgy and manufacture of iron and steel products, Manufacture of other transport materials, Manufacture of rubber and plastic products, and Coking and oil refining. In addition, there is a more substantial decline in the Manufacture of electrical material and equipment.
- On the other hand, key sectors such as the Manufacture of metal products and the Manufacture of machinery and equipment have increased both their employment and their specialisation relative to Europe, and there has been a rise, from lower levels, in the employment and specialisation of the Manufacture of computer, electronic and optical products.

The activities of this second group are more related to the so-called advanced manufacturing, manufacturing 4.0 or smart industry from the supply side (companies that provide the goods and services needed for industry 4.0). This growth trend is therefore particularly interesting, as it somehow reflects the emphasis and investments

[22] The sharp increase in auxiliary services employment between 2012-2014 and 2017-2019 (mostly in employment services) and its decline in 2020 may be a sign of cyclical adjustment, as employment through temporary employment agencies is used for these adjustments.

devoted to these activities as one of the three **strategic priorities that were outlined in the PCTI 2020 and worked on since 2014 in the framework of RIS3 Euskadi** (Basque Government, 2014; Aranguren *et al.*, 2016, 2019), and which continued with some adjustments in the current PCTI 2030 (Basque Government, 2020b).

Growth in activities related to advanced manufacturing is a reflection of strategic prioritisation in the smart specialization strategy (PCTI 2020 and 2030)

It is more difficult to assess the effect on employment and specialisation of the attention given to the other two strategic priorities —energy and biosciences-health— because there is not such a clear delineation of their activities in the sectors analysed.[23] However, with respect to the opportunity niches also included in the RIS3, there is a slight increase in employment and specialisation in recreational and cultural activities linked to the creative and cultural industries niche. And with respect to the food niche, there is an increase in employment, but not in specialisation, in the Food, beverages and tobacco industry, and a slight increase in specialisation in Agriculture, livestock and fishing. However, the sectors related to these two niche opportunities remain relatively under-specialised compared to Europe.

There is a positive evolution in employment and specialisation in activities relevant to the knowledge economy and a negative evolution in activities relevant to the commercialisation and promotion of new management models

Another area worth highlighting is the evolution of **industry-related services**, where two opposing trends can be detected. On the one hand, there has been a positive evolution in the employment and specialisation of some important activities for the knowledge economy, particularly Research and development, Architectural and engineering services and Other professional activities. However, there are a number of other activities, particularly important for marketing and the promotion of new management models, such as Advertising and market research, IT, Legal activities and Financial services, which have lost both employment and specialisation in the Basque Country in recent years (from already low levels).

With respect to **technological specialisation**, with the limitations of patent data and starting from a generally low level of patents in the Basque Country (also see the analysis of the knowledge lever in Chapter 4), it is positive to note that the technological specialisations that the Basque Country has generally correspond to the industrial activities in which it has strengths. In addition, several of these activities —the Manufacture of metal products, the Manufacture of transport equipment and the Manufacture of machinery and equipment— are encompassed in the advanced manufacturing (PCTI 2020) or smart industry (PCTI 2030) priority of RIS3. However, it is important to highlight that the ratio between patents and employment in all these activities is lower than the EU-27 average, which reflects the low propensity to patent in the Basque Country in general and points to the need to be attentive to the potential dangers of this trend.

Finally, if we consider the **sophistication of the Basque economy as a whole**, which takes into account both the diversity of economic activities and the uniqueness of these activities, it is clear that the Basque Country has managed to maintain the sophistication of the fabric of manufacturing activities relative to other European regions. However, it has lost positions in the ranking that considers all the activities of the economy, which, together with the previous analysis of trends in services, warns of the need to be especially attentive to the opportunities that may emerge in the connection between the specialisation in manufacturing present in the Basque

[23] With respect to energy, specialisation in Coking and oil refining and Electric power, gas, steam and conditioned air activities has declined during the RIS3 period, but these activities by themselves do not well reflect the energy priority in the Basque context, with its machinery and equipment components and its close relationship with the advanced manufacturing priority.

The connection between specialisation in manufacturing and related services can offer opportunities to increase the sophistication of the Basque economy as a whole

Country and the services related to them. In particular, to maintain or increase the sophistication of the economy going forward, it will be important to look for new niche opportunities in the nexus with existing activities and responding to changes in emerging global value chains in the context of the new geopolitics. Working on the levers of knowledge, human capital and social capital discussed in Chapter 4 will be particularly key to this.

3
People: Demography and personal values

The people of a territory are a cornerstone of its competitiveness, as they are critical to the sustained success of its businesses and the evolution of its economic structure towards activities that bring more economic value and wellbeing. There are two key dimensions to understanding the potential evolution of their contribution.

People are a pillar for the competitiveness of a territory, so understanding demographics is key

On the one hand, it is important to understand demographics, i.e. the structure of the population by age group and place of birth, as well as its variation over time, affected both by birth and death rates and by migratory flows. But there is also a growing need to understand how other more qualitative characteristics of the population, such as culture, attitudes and personal values, are evolving.

In this sense, after the financial crisis, there have been challenges to the traditional concept of competitiveness, acknowledging the need for new research to include the roles that people and society play in the competitiveness of territories. In other words, it is necessary to adopt a perspective beyond GDP that includes economic as well as social and environmental aspects and that considers the relationship between competitiveness, society and wellbeing. Stiglitz *et al*. (2013) have shown that the study of the 'standard economy' does not provide an adequate framework for analysing the problems of today's globalised and rapidly changing economies. The competitiveness framework for wellbeing introduced in the latest Competitiveness Report (Orkestra, 2021), and used in this report, also aims to respond to this shortcoming.

People's culture and values determine to a large extent their relationship with the labour market and the productive fabric

Moreover, in the current context, where we are facing profound demographic-social, energy-environmental and technological-digital transitions, it is more important than ever to understand the roles played by people, both in terms of their contribution to economic competitiveness and their relationship with wellbeing. Economic life is embedded in social structures and relations and economic actors always relate to each other; their economic activities and functions are influenced and shaped by their relations with other actors. Indeed, it is people's culture and values that determine to a large extent their relationship with the labour market and the productive fabric. Moreover, more humane and inclusive competitiveness strategies will make it possible to address the effects of the health crisis, as well as the different impacts that the current global situation is having on our economy and society.

In this chapter, after offering a more traditional analysis of the evolution of the demographic structure, we will provide an exploratory analysis of culture and values in the Basque Country and how they are changing between different generations.

3.1. Population structure

Over the last 20 years, the number of inhabitants of the territory has increased by around 5.5 %

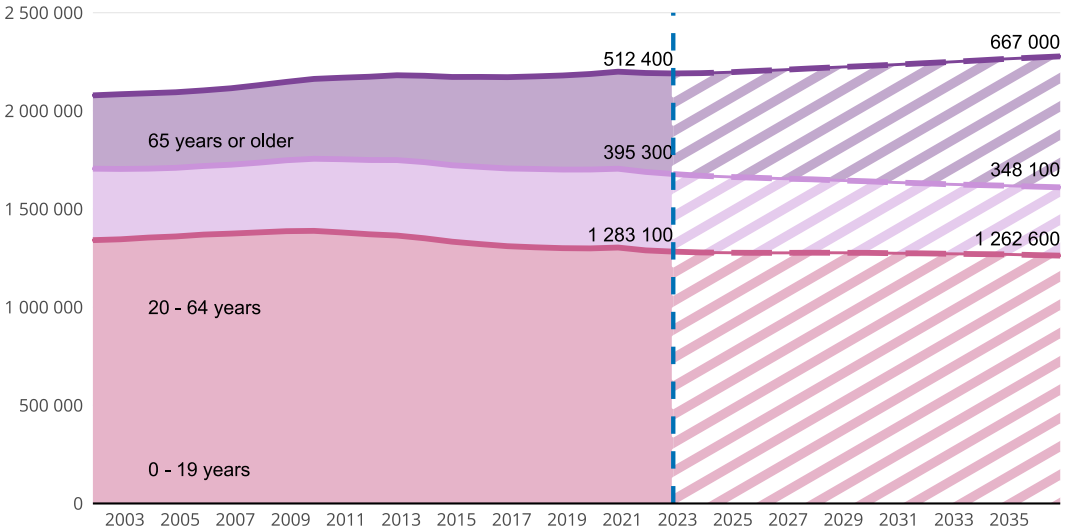
According to Eustat data, on 1 January 2021, the Basque Country had 2,193,199 inhabitants. In general, with the exception of certain ups and downs between 2012 and 2016, there has been an upward trend in the total population figure, meaning that over the last 20 years the number of inhabitants in the territory has increased by around 5.5 %. Between 2020 and 2021, however, the impact of Covid-19 is reflected in a slight drop in the number of inhabitants (–0.3 %).

3.1.1. Age structure

As can be seen in Graph 3-1, in the last 20 years, the evolution of the population has been very uneven across the three major age groups. The population aged 0 to 19 years has increased by around 10 %, but the lower number of births in recent years (see Graph 3-2) is reflected in a reduction in the size of this age group from 2019. The population aged 65 and over, on the other hand, shows a sustained increase over time, so that the population in this age range is 35 % higher in 2021 than 20 years ago. As a result of this evolution, the proportion of the 0-19 age group in the total population has increased from 17.5 % to 18.2 %, the proportion of the 20-64 age group has decreased from 64.5 % to 58.8 %, and the proportion of the 65+ age group, known as the ageing rate, has increased from 18 % in 2001 to 23 % in 2021. The increase in life expectancy, an important wellbeing outcome discussed in Chapter 1 of this report, underlies this trend and is reflected in the evolution of the population pyramids of Graph 3-2, where the increase in the number of older people, those aged 85 and over, is particularly noteworthy.

The increase in life expectancy is a wellbeing outcome and is reflected in the increase in the number of people aged 85 and over

GRAPH 3-1 Evolution of the population by major age groups (2001-2036)



Source: Eustat (Basque Statistics Office). Compiled by authors.

Graph 3-1 And Graph 3-2 also incorporate the population estimates up to 2036 recently published by Eustat. They show that this trend will continue in the coming years, with the population under 20 years of age falling (by 51 000 people) to 15.3 % of the total population in 2036, the population aged 20 to 64 years also falling (26 900 people) to 55.4 %, and the population aged 65 years and over increasing (by 163 200 people) to 29.3 % of the total population.

It is estimated that the population under 20 years of age could represent only 15.3% of the total population in 2036

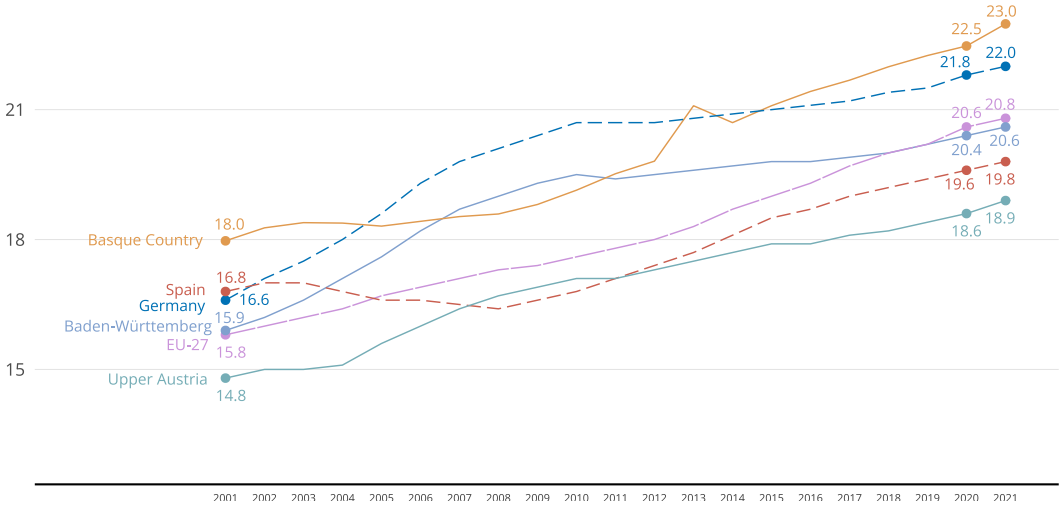
GRAPH 3-2 Population pyramid of the Basque Country (2001, 2021 and 2036)

Source: Eustat (Basque Statistics Office). Compiled by authors.

In comparative terms, Graph 3-3 shows that in 2001 the Basque Country had a higher rate of ageing than Germany, Spain and the EU-27, and the two regions (Upper Austria and Baden-Württemberg) considered as benchmarks for the Basque Country (Orkestra, 2020). In the period prior to the 2007-2008 crisis, the rate increased less in the Basque Country and Spain than in other territories, due, as will be seen later, to differences in the flow of immigrants. However, since the crisis the increase has been greater, especially in comparison with Germany and Baden-Württemberg, placing the Basque Country once again since 2015 as the territory with the highest rate of ageing.

Since 2015, the Basque Country has been the territory with the highest ageing rate among those compared

GRAPH 3-3 Ageing rates (2001-2021)



Source: Eustat and Eurostat. Compiled by authors.

Breaking down this general picture of the population structure by age, certain differences can be observed according to the size of the municipality. Table 2-1 distinguishes between large (more than 50,000 inhabitants), medium (between 10 000 and 50 000 inhabitants) and small (less than 10 000 inhabitants) municipalities, and it is seen that:

The population of small municipalities has remained stable in the Basque Country, in contrast to Spain where it is decreasing

- The proportion of the total population residing in small municipalities has remained more or less stable between 2001 and 2021 (19.8 % and 19.6 %, respectively), while the population residing in medium-sized municipalities has increased from 30.9 % to 34.5 %, and a smaller percentage of the population lives in large municipalities in 2021 (46 %) compared to 2001 (49.4 %). The evolution of the population by size of the municipalities in the Basque Country shows significant differences in this period in comparison with Spain, where the percentage of the population living in small municipalities has decreased (from 23.5 % to 20.2 % of the total population) and the percentage of the population living in both medium-sized and large municipalities has increased (from 25.8 % to 26.9 % and from 50.7 % to 52.9 %, respectively).
- In 2001, small and large municipalities had higher ageing rates than medium-sized municipalities. However, the ageing rate has increased more in medium-sized and large municipalities, meaning that in 2021 the small municipalities have the lowest ageing rate (20.9 %) and the large municipalities have the highest percentage of population over 65 years of age (23.9 %).
- At the same time, the percentage of the population under 20 years of age out of the total population has increased in the small municipalities and to a lesser extent in the medium-sized ones, while in the large municipalities it has hardly changed. As a result, in 2021 the percentage of the population under 20 years of age is highest in small municipalities (19.9 %), followed by medium-sized municipalities (18.5 %) and large municipalities (17.3 %).

TABLE 3-1 Population by major age groups by size of municipality (2001 and 2021)

	2001				2021			
	TOTAL Basque Country	**Municipalities <10 000 inhab.**	**Municipalities from 10 000 to 50 000 inhab.**	**Municipalities > 50 000 inhab.**	**TOTAL Basque Country**	**Municipalities <10 000 inhab.**	**Municipalities from 10 000 to 50 000 inhab.**	**Municipalities > 50 000 inhab.**
Inhabitants	2 079 210	410 954	641 539	1 026 717	2 193 199	428 860	756 186	1 008 153
% of total	100.0 %	19.8 %	30.9 %	49.4 %	100.0 %	19.6 %	34.5 %	46.0 %
0-19 years	17.5 %	17.8 %	17.9 %	17.2 %	18.2 %	19.9 %	18.5 %	17.3 %
20–64 years	64.5 %	63.8 %	65.2 %	64.3 %	58.8 %	59.3 %	58.5 %	58.8 %
65 or older	18.0 %	18.4 %	16.9 %	18.5 %	23.0 %	20.9 %	23.0 %	23.9 %

Source: Eustat (Basque Statistics Office). Compiled by authors.

3.1.2. Structure by place of birth

Along with the birth rate and life expectancy, immigration is an important determinant of population structure and its evolution. As can be seen in Graph 3-4, the percentage of the population of the Basque Country born outside the territory has remained between 27 % and 29 % from 2001 to 2021. However, this period has seen significant variation in the origin of the population born outside the Basque Country. While the percentage of the population born in other provinces of Spain has fallen from 25.3 % to 17.4 %, the percentage of the population born abroad has increased from 2.2 % to 11.2 %.

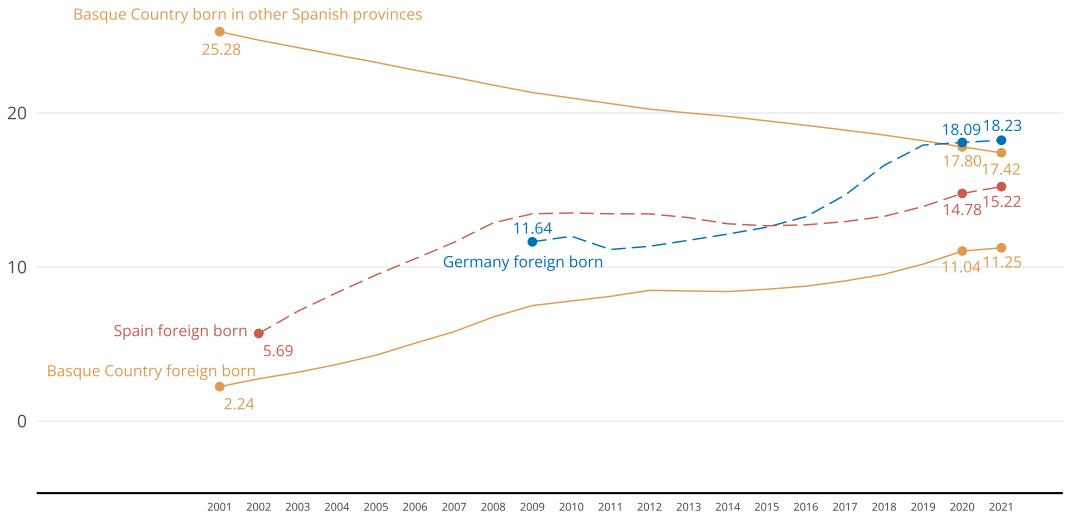
The same graph also analyses the evolution of the foreign-born population in Spain and Germany. In the comparison of the foreign-born population of the Basque Country and these two territories, the following aspects stand out:

- During the entire period analysed, the percentage of the foreign-born population is lower in the Basque Country than in Spain and Germany.
- A comparison with Spain shows a disparate evolution between the two territories. In Spain, where the percentage of the foreign-born population had grown more than in the Basque Country in the years prior to the 2008 crisis, this percentage fell between 2010 and 2015 by 0.8 percentage points, and increased again from 2016 onwards. In the Basque Country, on the other hand, the percentage of the foreign-born population continued to increase until 2012, fell by less than 0.1 percentage points between 2012 and 2014, and increased again from 2015 onwards.
- In Germany, on the other hand, after a fall in the percentage of the foreign-born population between 2010 and 2011, a greater increase is observed than in Spain and the Basque Country, meaning that the percentage of the foreign-born population has been higher than in Spain since 2016. Thus, the percentage of the foreign-born population in Germany in 2021 was 18.2 %, compared to 15.2 % in Spain and 11.2 % in the Basque Country.

The percentage of the population of the Basque Country born outside the territory has remained the same between 2001 and 2021, but its origin has changed

The percentage of the population born abroad in 2021 was 18.2 % in Germany, 15.2 % in Spain and 11.2 % in the Basque Country

GRAPH 3-4 Population by place of birth (%) (2001-2021)

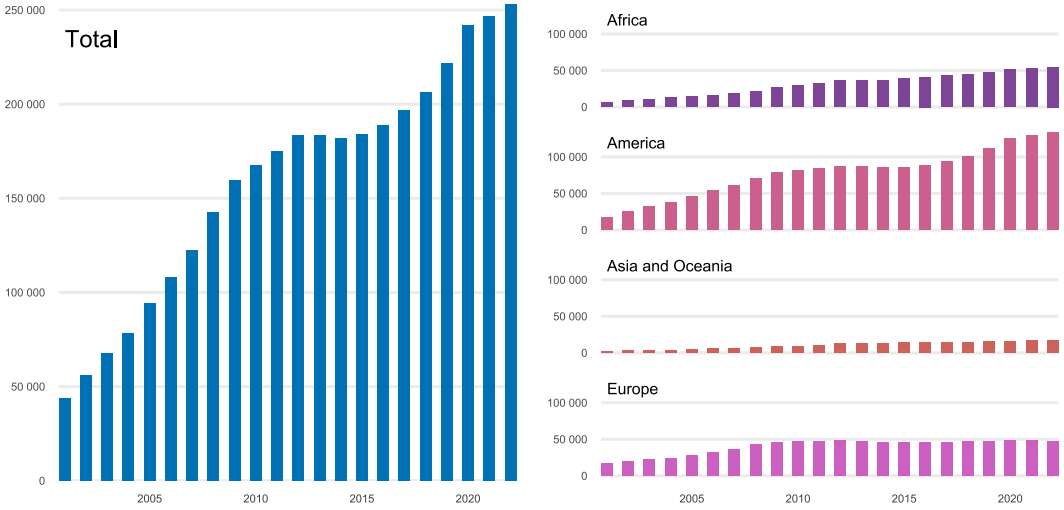


Source: Eustat and Eurostat. Compiled by authors.

Graph 3-5 analyses the population of foreign origin resident in the Basque Country according to geographical area of birth. According to the Spanish National Statistics Institute *[Instituto Nacional de Estatística - INE]* data for the year 2022, 52.9 % of the population of foreign origin resident in the Basque Country comes from America, 21.6 % from Africa, 18.8 % from Europe and 6.7 % from Asia and Oceania. Although the number of residents from all the geographical areas analysed has increased over the period analysed, there has been an increase in the proportion from America (from 39.4 % to 52.9 % of the total) and from Africa (from 14.9 % to 21.6 %) and a fall in the proportion from Europe (from 40.2 % to 18.8 %). This has important implications for the integration of people, as it is generally easier to integrate people who speak the same language and come from similar religious and cultural backgrounds.

More than half of the foreign population in the Basque Country in 2022 has come from the Americas, followed by Africa and Europe

GRAPH 3-5 Population of foreign origin in the Basque Country by geographical area (2001-2022)

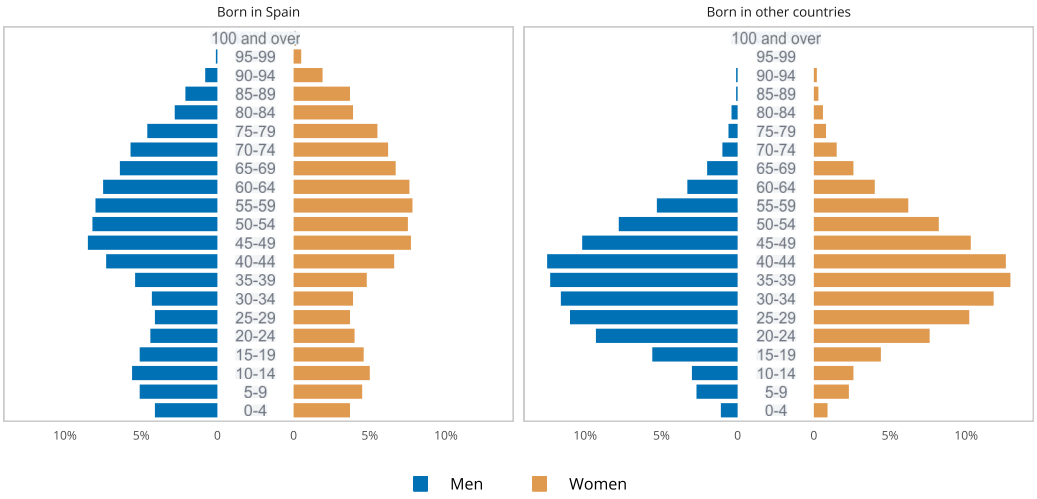


Source: Ikupegi, based on INE data. Compiled by authors.

As for the age structure of the foreign-born population, Graph 3-6 shows its distribution in comparison with the age distribution of the Spanish-born population, highlighting significant differences between the two population pyramids. The concentration of the foreign-born population in the 20-64 age group is particularly noteworthy, as 83.6 % of the population of foreign origin belongs to this group, compared with 55.7 % of the Basque Country population born in Spain. It should also be noted that, within this age group, it is in the younger age ranges, especially between 25 and 44 years of age, where most of the population of foreign origin is concentrated, while among the population born in Spain, the most numerous age groups are those aged 50 and over. On the other hand, among the foreign-born population, people aged 65 and over represent 5.2 % compared to 25.5 % among the Spanish-born population, while the population under 20 years of age represents 11.2 % of the foreign-born population and 18.8 % of the Spanish-born population.

The population of foreign origin in the Basque Country is concentrated in the 25-44 age range

GRAPH 3-6 Population pyramids by place of birth (2022)



Source: INE. Compiled by authors.

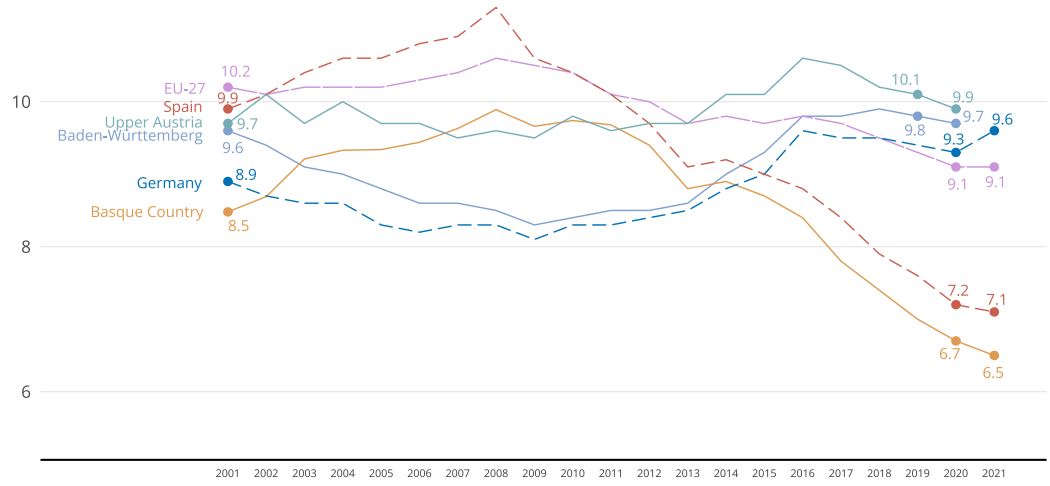
3.1.3. Demographic dynamism

The continued fall in the birth rate in the Basque Country places it below the compared territories in 2021

The evolution of the population and its structure are determined by births, deaths and migratory flows. Considering births first, in Graph 3-7 it can be seen that while in 2001 the Basque Country was below the birth rate of the rest of the territories analysed, the increase between 2001 and 2008 led the territory to reach higher levels than Germany, Upper Austria and Baden-Württemberg in 2008. However, there has been a continuous fall in the birth rate in the Basque Country since 2008 (with the exception of 2014), meaning that in 2021 the Basque Country was the territory with the lowest birth rate (6.5 per thousand), followed by Spain (7.1 per thousand), where a similar evolution to that of the Basque Country can be observed.

The EU-27, Germany, Upper Austria and Baden-Württemberg, for their part, have birth rates above 9 per thousand for the last year for which data is available, although the different territories have followed a disparate evolution. The evolution in the EU-27 is to some extent similar to that in the Basque Country and Spain, although the recent fall in the birth rate has been much smaller. In the case of Upper Austria, a lower variation in its birth rate is observed, while in the case of Germany and Baden-Württemberg, the evolution has been the opposite of that of the Basque Country. The increase in Germany's rate in 2021 also stands out, compared with the fall in the birth rate in the EU-27, the Basque Country and Spain.

GRAPH 3-7 Evolution of the birth rate per thousand inhabitants (2001-2021)

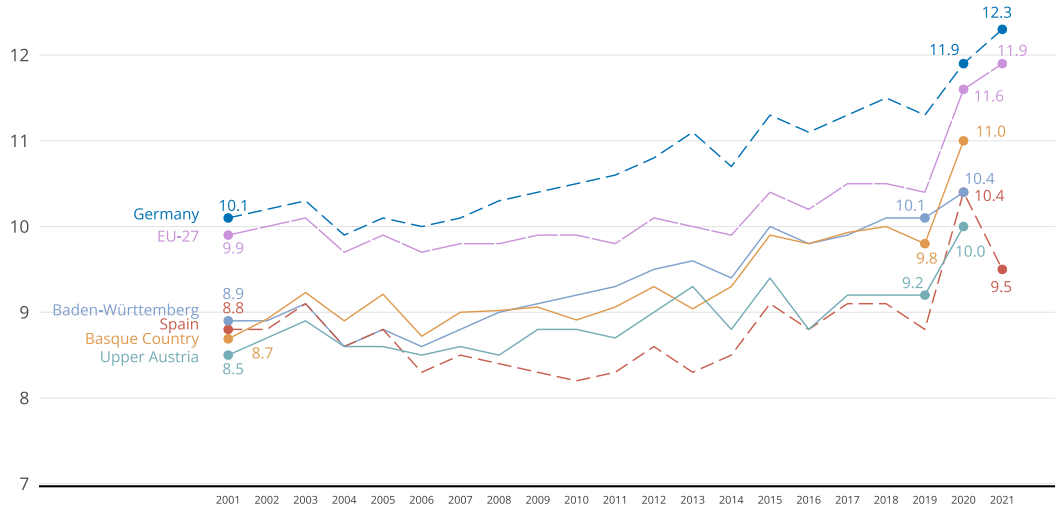


Source: Eustat and Eurostat. Compiled by authors.

The significant increase in mortality rates between 2019 and 2020 due to the pandemic is noteworthy

Graph 3-8 compares the mortality rate of the Basque Country, which is below the mortality rates of Germany and the EU-27 throughout the period analysed, and above the mortality rate of Spain. In general, an increase in mortality rates is observed due to ageing populations. Also noteworthy is the significant increase in mortality rates between 2019 and 2020 due to the Covid-19 pandemic.

GRAPH 3-8 Evolution of the mortality rate per 1,000 inhabitants (2001-2021)



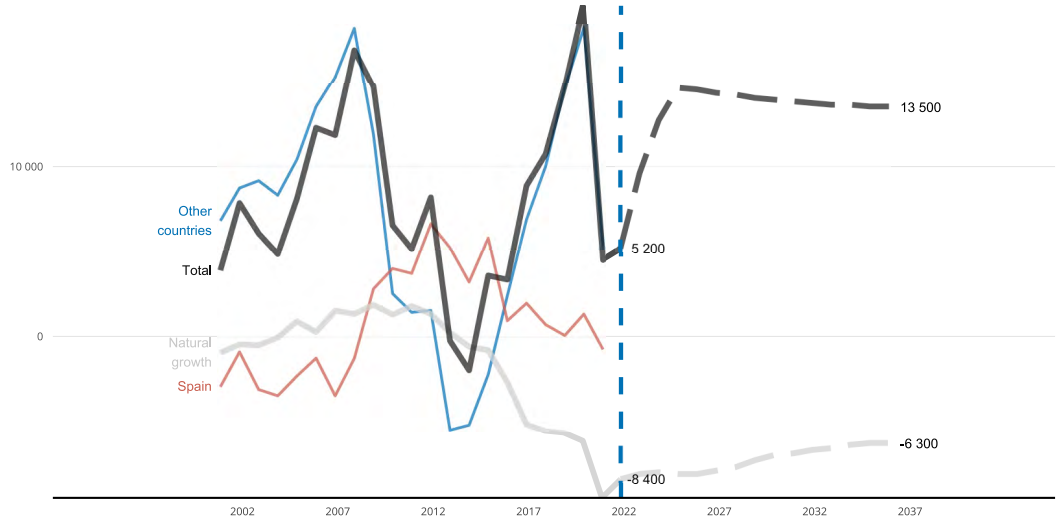
Source: Eustat and Eurostat. Compiled by authors.

Graph 3-9 shows, on the one hand, the natural growth of the population of the Basque Country because of the evolution of these birth and death rates. Since 2014, the natural growth of the Basque Country has been negative, with significant falls in the vegetative balance in 2016 and 2020, in the latter case due to the effect of Covid-19. On the other hand, total migratory flows are mainly marked by the evolution of migratory flows from abroad (outside of Spain). They show a significant growth in the years prior to the 2007-2008 crisis, with a sharp decline since 2008. After a period of recovery, the pandemic triggered another significant decline in 2020.

Projected population growth between 2021 and 2035 will come from a positive migration balance

According to demographic projections carried out by Eustat, the Basque Country's natural population growth will continue to be negative between 2021 and 2035 (by 109,900 residents), due to an increase in deaths and a decrease in births. The expected total population growth will come exclusively from the positive migratory balance (contributing 194 700 persons).

GRAPH 3-9 Migratory flows and natural population growth (2001-2035)



Source: Eustat and Eurostat.

3.2. Culture and values

Contemporary social theory has undergone a 'cultural turn' in which culture has come to occupy a new place in theorising and empirical research (Eyerman, 2004). In parallel, economic development has been the subject of a growing literature investigating possible links between culture and a range of economic outcomes (Beugelsdijk *et al.*, 2019). The economic effects of other aspects of culture such as views on the market economy, gender norms, work attitudes and attitudes towards entrepreneurship and innovativeness have begun to be examined. Authors from the field of competitiveness have also tried to generate explanatory frameworks for cultural dimensions or values that influence the pattern of competitiveness and welfare, including at the regional level (Huggins and Thompson, 2015).

With respect to our framework of competitiveness for wellbeing, we understand culture as part of the structural context of a territory, but also as a dynamic lever of competitiveness in its social capital dimension. Culture is a system of attitudes, values and knowledge that is widely shared in a society and transmitted from generation to generation (Ester *et al.*, 2006; Guiso *et al.*, 2006). While human nature is biologically innate and universal, culture is learned and varies from one society to another (Hofstede, 1980; Schwartz, 2011), and, albeit slowly, over time (Sen, 2004). Values are also grounded in culture through socialisation, but also in individual social experience (Inglehart, 1997), implying that values develop in the socio-economic environment of each generation, fostering possible generational gaps in values.

Culture, as part of the structural context of a territory and as a dynamic lever of competitiveness in its social capital dimension, has an impact on development and wellbeing

Hofstede (1980), Inglehart (1997) and Schwartz (2006) represent three contrasting formulations of the cultural dimensions of values. In this scenario, the most common way to measure them is through surveys (Alessina and Giuliano, 2015), such as the World Values Survey or the European Values Survey. These surveys have made it possible to ascertain the evolution and comparison of values and norms in relation to a wide range of issues since their first longitudinal application in the 1970s.

For an analysis of the values of Basque society as a structural determinant of competitiveness and wellbeing, the data obtained from the European Values Survey (ninth wave) and the Values Survey for the Basque Country (fifth wave) are used.[24] The analysis focuses on values that relate to three elements of Orkestra's competitiveness framework for wellbeing (see Figure 0-1): the wellbeing outcomes of employment and social life and the dynamic leverage of social capital. We compare Spain, Germany and Sweden, as representatives of the three main European welfare state models, and the European average.[25] This differentiation is made because each model is underpinned by different dominant values. Thus, while in liberal models or market economies individual freedom predominates, social democrats prioritise equality, and the more conservative ones stability (Schröder 2013). Sweden is selected as a representative of the universalist, Nordic or social democratic welfare state model; Germany as an icon of the Corporatist; and Spain for the Familialist, Mediterranean or Southern Model (TIPSE, 2014).

Comparative analysis is made with the European average and with Spain, Germany and Sweden, as representatives of three welfare models

[24] Data provided by the Values Team of the University of Deusto.
[25] Excluding Belgium, Cyprus, Ireland, Luxembourg and Malta, EU-27 countries for which there are no data collected.

3.2.1. Perception of the individual over the state

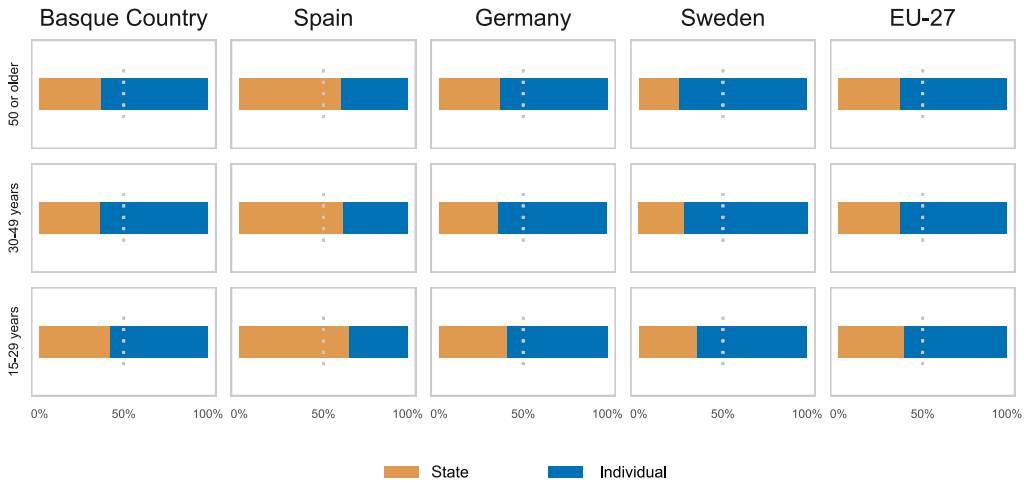
The literature on values contains extensive analyses of individual and collective values and people's trust in institutions (Inglehart *et al.*, 1998, Kaasa, 2019; Ros, 2002). Since World War II there has been a global trend of a shift from the priority of materialistic values (such as 'survival' values, traditional Judeo-Christian norms, economic welfare, military security, internal order, etc.) to post-materialistic values (values of individual self-expression, environment, quality of life, disarmament, etc.) (Inglehart and Welzel, 2005; Inglehart and Welzel, 2005).

In general, highly individualistic cultures praise individual achievement, autonomy orientation, while in collectivist societies, priority is given to group cohesion and collective interests (Baltaci *et al.*, 2022). To this end, two indicators are presented that allow us to present a preliminary analysis in relation to two of the different facets of individual values.

Basque society prioritises individual responsibility over state responsibility

As shown in Graph 3-10, Basque society prioritises individual responsibility over state responsibility more than Spanish society, and more in line with the European average and the cases of Germany and Sweden. In all territories, the tendency towards individualism is slightly more pronounced among the older generations, while there is a slightly greater tendency towards State responsibility among the young.

GRAPH 3-10 Individual responsibility vs State responsibility

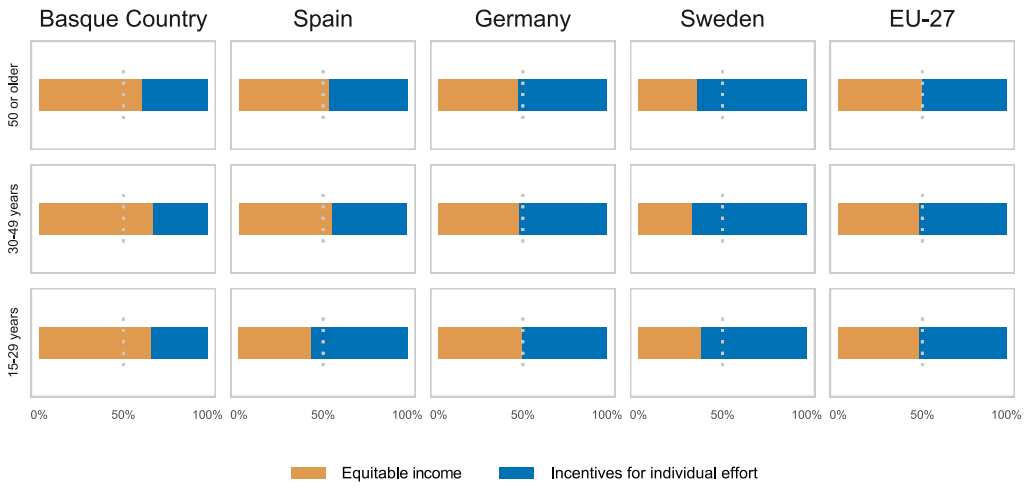


Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

All age ranges in the Basque Country prefer an equitable distribution of income

However, in Graph 3-11, which shows the Basque population's preference for incentives for individual effort as opposed to equitable income in society, the behaviour is the opposite. The Basque Country, for any of the age ranges, advocates greater income equity. On the other hand, in Europe, Germany and Sweden, and the youngest range in the case of Spain, an individualistic pattern is observed, with incentives for individual effort.

GRAPH 3-11 Attitudes towards income



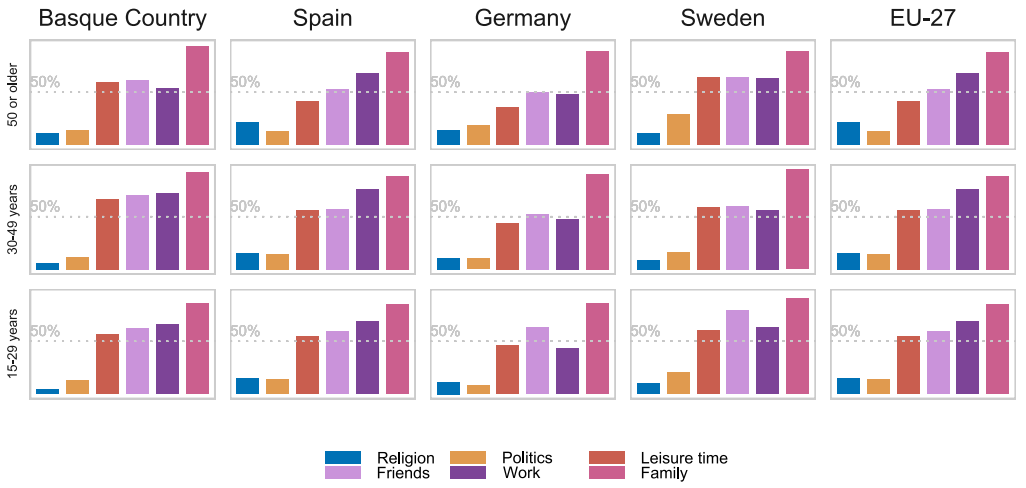
Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

3.2.2. The value of the family

Individuals are members of households and families, and critical decisions at key moments are often made with the involvement of the wider family, influenced by cultural norms that are transformed and passed on from generation to generation (Bunk *et al.* 2010; Shockley *et al.* 2017). According to data from Graph 3-12, family is, in fact, the dimension of life that is given most importance in all the territories analysed, regardless of age range. In the Basque Country, similarly to Spain and the European average, work occupies second place (except for the over-50 age range in the Basque Country). In our territory, moreover, as in Sweden, leisure time is considered particularly important.

Family is the most important dimension of life in all territories, followed by work

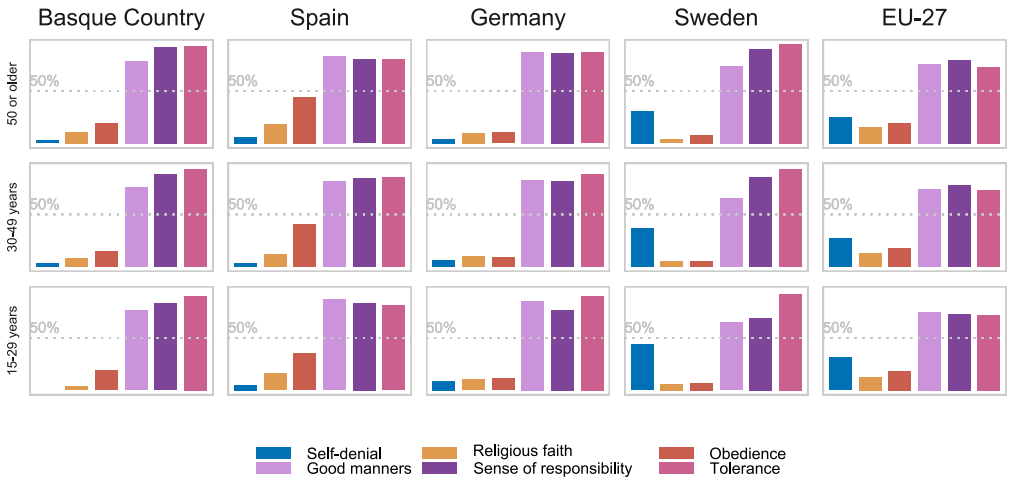
GRAPH 3-12 Degree of importance attached to key life dimensions



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

The first years of a person's life are essential in shaping basic values (Hofstede, 2001); therefore, the actors with the greatest impact in these years, such as the family, are of vital importance in the transmission of values. Graph 3-13 lists some of the qualities of childhood that should be transmitted at home, specifically the three most valued qualities and the three that are of lesser importance. It can be seen that in the younger generation in the Basque Country, and even more so in older generations, values such as 'tolerance and respect for others' or 'sense of responsibility' predominate as values to be transmitted at home. In third place, priority is given to the transmission of 'good manners', an aspect which takes first place in some of the other territories analysed. On the other hand, 'religious faith' and 'self-sacrifice' are the least important values in the Basque Country for the younger population, although the older generations attach greater importance to them.

GRAPH 3-13 Qualities to learn at home in childhood



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

3.2.3. Values with respect to work

After family, work is valued as the second most important aspect of life in Basque, Spanish and European societies (Graph 3-12). Indeed, in our framework of competitiveness for wellbeing, work is central, both due to its relationship with economic-business and wellbeing outcomes (employment dimension), and because of its importance for several of the dynamic levers (human capital, but also social capital and knowledge).

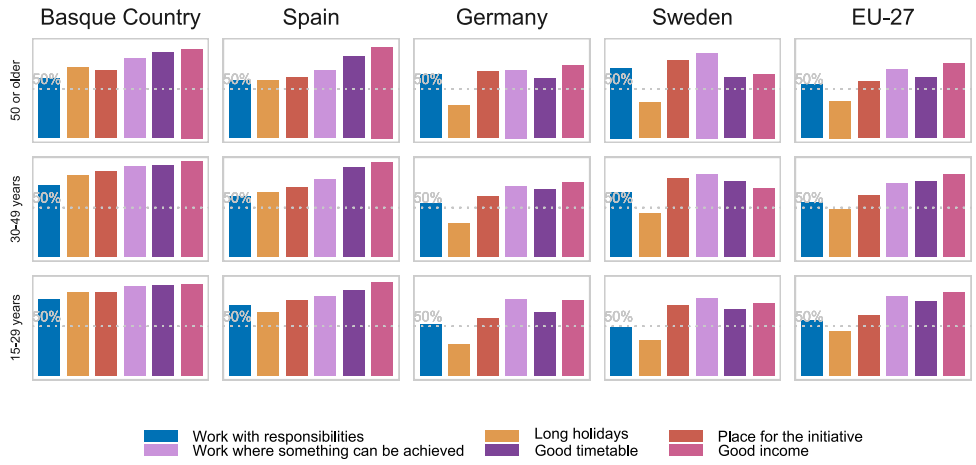
In the Basque Country, great importance is given to income, working hours and annual leave at work

In terms of the main features of work, it can be seen in Graph 3-14 that the Basque population prioritises a good income, regardless of age. Moreover, this job feature scores significantly higher in the Basque Country and Spain than in the other territories. Along with income, all three age ranges in the Basque Country prioritise good working hours and getting something out of their jobs. For the Basque Country, the high importance given to ample holidays stands out in contrast with the rest of the territories, being more relevant than having a job with responsibilities.

In other words, the three age ranges are geared towards valuing aspects such as remuneration, working hours and holidays, rather than elements intrinsic to the

job itself, such as, for example, a place for initiative or having responsibilities at work (Aristegui *et al.*, in Silvestre, 2021). A more exhaustive future analysis would be necessary to understand the connotations that these features of work have for each generation (Baby boomers, Generation X, Millenials, Generation Z), taking into account their different attitudes and needs, as well as the time of life in which they find themselves.

GRAPH 3-14 Work features



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

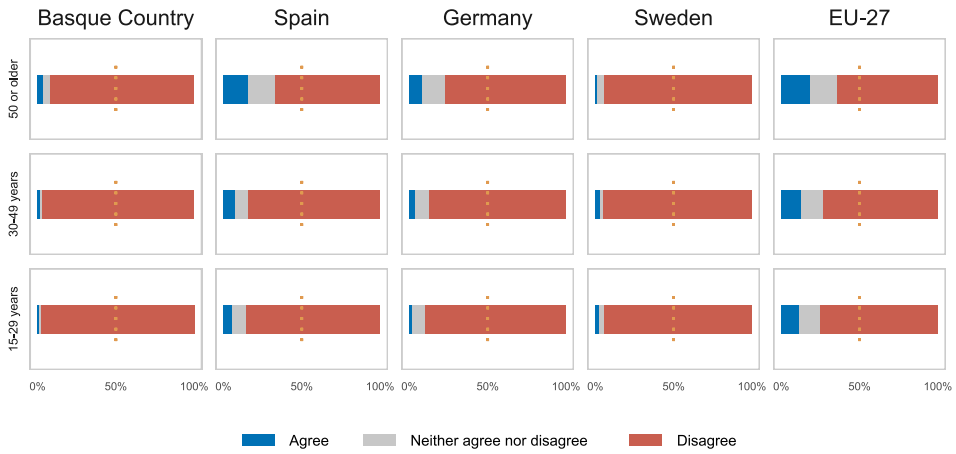
Perceptions regarding gender at work are not always matched by a reality in jobs

The current discourse on access to jobs reflects the need for the full incorporation of women and migrants into the labour force, especially in the current and future demographic scenario discussed earlier in this chapter. With respect to gender, Graph 3-15 and Graph 3-16 show that the Basque Country is a society which perceives itself as egalitarian in terms of access to work. Regardless of age, Basque society considers that men should not have more rights than women when it comes to accessing a job. The Basque population also disagrees with the obsolete pattern of men in the workplace and women carrying out caregiving tasks.[26] This assertion, however, is not matched by the reality of employment by gender and sector, where women continue to opt for jobs in the care and services sector: more precarious and less well paid.

Regarding access to employment for immigrants, Basque society is more inclusive and welcoming than Spain, Germany or Europe in general (Graph 3-17). Again, people over 50 are more reserved in this respect. This pattern can be detected for Spain and Germany as well as for Europe.

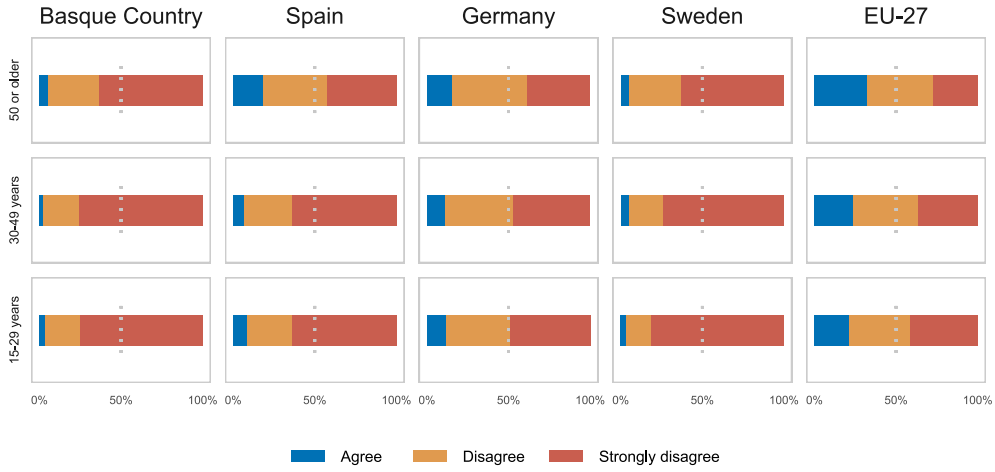
[26] It is also evident that in this case, and for all the territories studied, the group of people over 50 years of age is less supportive of gender equality in caregiving tasks.

GRAPH 3-15 Population who believe that men should have more right to a job than women (%)



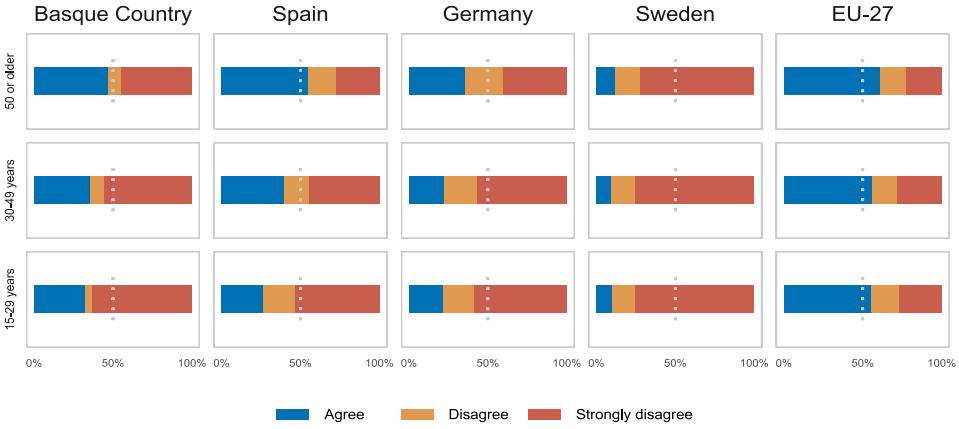
Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

GRAPH 3-16 Population agreeing with the pattern of men working, women caring (%)



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

GRAPH 3-17 Population who believe that employers should admit 'nationals' before foreign immigrants (%)



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

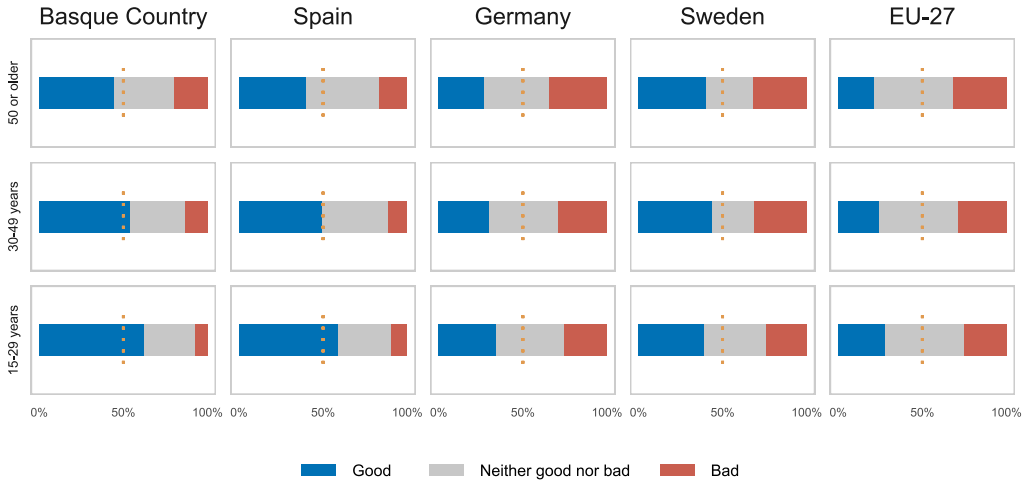
3.2.4. Values with respect to immigration

Migrants are becoming increasingly important in European societies. On the one hand, they can be a decisive element in shaping the population pyramids of the future, as well as an asset for the labour market. But for their development as individuals, as families and as professionals, integration in the host societies is necessary.

Basque society considers that the impact of migrants on the development of the territory is good, mainly among the youngest people, with the percentage of people with this opinion falling as age increases (Graph 3-18). This pattern of different opinions depending on the age of the person is identified for Spain, Germany and Europe, but it is noteworthy that in all age groups, the Basque Country shows better evaluations of immigration than the other territories analysed.

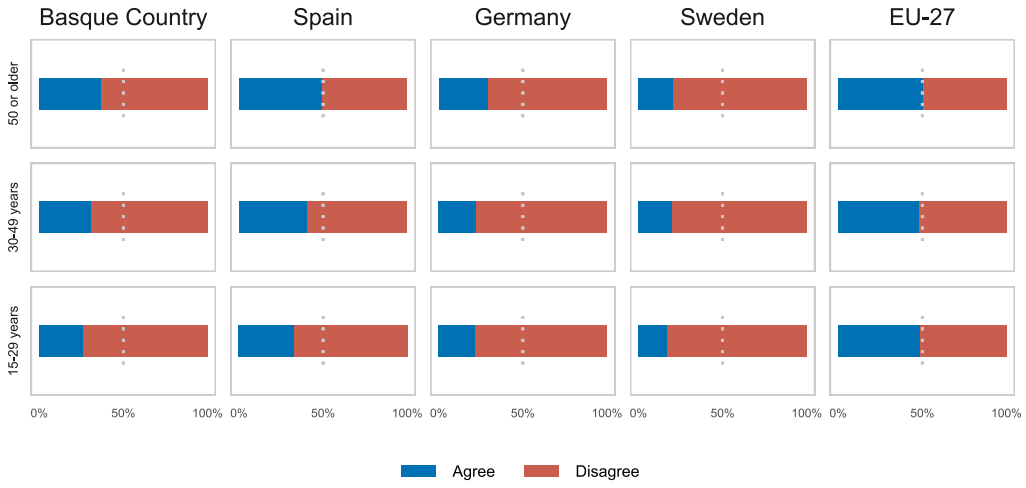
For all age groups, the Basque Country shows more positive attitudes towards immigration than other territories analysed

GRAPH 3-18 Perceptions of the impact of migrants on territorial development



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

GRAPH 3-19 Population who believe that migrants take jobs away from native-born people



Source: European Values Survey and Values Survey for the Basque Country. Compiled by authors.

The same generational pattern is also observed in the indicator related to the statement that migrants take jobs away from people born in the territory (Graph 3-19). The different generations in the Basque Country disagree with this statement. However, the older generations agree most with this statement. This behaviour is observed in Spain, Germany and Sweden, but if we refer to Europe as a whole, we can see that agreement and disagreement with this statement are almost on a par.

3.3. Implications and challenges

In this chapter we have analysed a series of indicators that characterise, on the one hand, the demographic structure and its evolution, and, on the other hand, the values present in different generations of the population. These two structural dimensions change slowly over time, but they have profound implications for the future competitiveness and wellbeing of a territory because they condition the human factor that is at the heart of economic and social success.

The high rates of ageing imply a reduction in the working-age population, which can have a negative effect on productive capacity

With regard to **demographic change**, the high rates of ageing in the Basque Country have important implications for the labour market, as they imply a reduction in the working-age population (the potentially active population), which can have a negative effect on productive capacity. Moreover, the working-age population is increasingly concentrated in the upper age brackets and population is lost in the younger age brackets, generally associated with a greater capacity for innovation. With respect to our competitiveness framework for wellbeing, addressing these structural changes poses relevant challenges for the human capital and knowledge levers in particular:

- The need to increase the activity rate to mobilise the labour force in the territory.
- The possibility of extending the legal and/or effective retirement age and the voluntary extension of working life beyond the legal age, as measures to partially alleviate the reduction of the potentially active population.
- The need to innovate and improve productivity to mitigate the negative effects of the reduction of the active population on the competitiveness of the territory. To this end, it is necessary to continue investing, both in R&D and in continually improving people's skills.
- The need to promote the integration, training and incorporation of immigrants into the world of work, given that immigrants are more concentrated than the general population in working ages.

The analysis of **values** in this chapter shows certain features that should help in meeting these challenges. On the one hand, the Basque collective imagination, and especially the younger generations, considers that women and immigrants have the right to access employment. On the other hand, after family, work is the most important dimension of life for all age groups (with the exception of the 50+ range). Furthermore, values such as 'sense of responsibility' are highly valued as values to be transmitted in the family, in contrast to the low importance given to having responsibility as a desirable feature of work. Indeed, despite the high importance given to work as a value, there are other indicators of reality (e.g. high absenteeism or quality of work) that may not correspond to this statement and need further research to understand their causes. A related area for future work is the adaptation of business

strategies and human resource policies to the values of the different generations and/or life stages in which their workforces find themselves.

As can be seen from developments over the last 20 years and projections for the next 15 years, **immigration** will play a key role in offsetting part of the population decline in the potentially active age group. As this is a widespread problem in different regions and countries, competition between territories, regions and countries for attracting (and retaining) talent and matching it to the demands of the territory is accentuated. In this regard, the Basque Government's Sociological Prospecting Office published a study in 2022 on the perceptions and attitudes of the Basque population to the demographic challenge. The results of this study show a favourable attitude towards immigration, with 65 % of those surveyed 'rather agreeing' that immigration is part of the solution, while 25 % 'rather disagree'. These perceptions are consistent with the attitudes towards immigration analysed in this chapter, and with the prioritisation, among the values to be transmitted at home in childhood, of 'tolerance and respect for others'. This feature is particularly important, given the need to ensure the effective and harmonious integration of immigrants in the context of their importance for the future competitiveness and wellbeing of the Basque Country.

Immigration will play a key role in offsetting part of the population decline in the potentially active age group

The evolution of the population structure shown in this chapter also has important implications for the social protection system and the sustainability of the **welfare system**. On the one hand, we will see a continued increase in pension expenditure and uncertainty about the sustainability of the pension system. On the other hand, we will have new demands and increased spending on health and care services (care of dependent persons, etc.). As shown in Graph 3-2, a characteristic of the ageing process is that the older population is made up of more women than men, due to their longer life expectancy. In this context, the close relationship between women and poverty situations is also an aspect to consider. At the same time, the ageing of the population generates new business opportunities, both for goods and services (e.g. the so-called silver economy).

The evolution of the population structure also has important implications for the social protection system and the sustainability of the welfare system.

In the aforementioned study on the perceptions and attitudes of the Basque population regarding the demographic challenge, the main conclusions include the fact that the first time young people become independent is 5 years later than desirable, that the first maternity and paternity periods take place later than desirable and that, although the reluctant attitude towards parenthood has grown, most people have had fewer children than they would like or would have liked to have had, mainly due to economic, health and work-life balance issues. In this sense, according to the statistics on social protection expenditure published by Eustat and Eurostat, social protection expenditure per inhabitant (in purchasing power parity) amounted to 9 464 euros per inhabitant in the Basque Country in 2019, higher than the 9 066 euros in the EU-27 and the 6 752 euros in Spain, but considerably lower than in countries such as Germany (12 147 euros). The distribution of spending on social benefits, however, presents important differences in the comparison between countries. In the Basque Country, the low percentage of expenditure on social benefits allocated to family and children stands out (3.6 % of the total compared with 8.4 % of the EU-27 average), and there is also a lower percentage of resources devoted to housing (0.8 % compared with 1.3 %). On the other hand, more resources are allocated to the 'old age' heading, which includes spending on pensions, economic benefits related to dependency, and other benefits in kind such as residential services and home care (44.3 % in the Basque Country, compared with 40.2 % in the EU-27).

The initiatives underway in the Basque Country to address the demographic challenge underline the importance of connections between policies in different areas

Against this backdrop, the Basque Strategy 2030 for the Demographic Challenge defines strategic objectives related to **emancipation and the birth rate**. It also prioritises objectives aimed at quantitatively and qualitatively improving the results and impact of public policies in the following priority areas in a systemic approach to the demographic challenge: response to depopulation and ageing in rural areas; attracting and integrating migration; and full and healthy ageing. It includes measures such as the increase in direct aid for dependent children, free 0-2 year childcare through the Haurreskolak Consortium, and a loan programme for entrepreneurship, training or housing projects for young people. This type of initiative underlines the importance of the connections between policies in different areas in a context in which the evolution of demographics and values over time will have profound effects on our capacity to compete in the economic sphere and generate sustained wellbeing.

4
Levers of competitiveness

The structural dimensions analysed in the preceding two chapters are critical for understanding a territory's possibilities in reacting to external changes and demonstrating both economic and social resilience. In our competitiveness framework for well-being (see Introduction), they are placed on the left within the **structural context**, and it is their interaction with the six **levers of competitiveness** on the right which determines the **economic/business performance and wellbeing outcomes** analysed in the first chapter.

The analysis in the previous chapters has revealed some of the interactions between the economic, demographic, cultural and values structure and the different levers of competitiveness. In this chapter, we will review the main indicators for the six levers to understand recent trends in these areas in the Basque Country. Given the current importance of energy markets and the green transition, we will give special attention to the first lever, natural capital.

4.1. Natural capital

Environmental sustainability is a competitiveness factor, like innovation or digitalisation

It is becoming pressingly clear that environmental sustainability is an indisputable factor of competitiveness, like innovation and digitalisation.[27] A territory and its firms can become more competitive through better efficiency and productivity in the use of materials, energy and other resources; a better environmental footprint; and development of innovative 'green' products and services. To give an example, the German federal government's sustainability strategy postulates that 'sustainability represents adaptation to the challenges of our time .... Meanwhile, it is increasingly clearer that, when understood correctly, sustainability is an essential competitive advantage' (Zargartalebi, 2021).

Environmental sustainability is linked to the disposition to increase the efficiency and circularity of economic activities and processes, which makes it possible to reduce the quantity of materials and energy extracted and used, as well as limiting how much waste is sent to landfills. It is also related to highlighting the importance of all the natural resources available to territories (air, soil and coastline, biodiversity, rich

[27] See, for example: Carroll *et al*. (2021), Escaler (2020), Fernández Gómez & Larrea Basterra (2021), Pezzi *et al*. (2021) or Zargartalebi (2021).

Protection of the natural environment is a key factor for the generation of sustainable economic activity in a territory

ness of flora and fauna, for example). Protecting the natural environment thus becomes a key factor in generating sustainable economic activity within a territory. Additionally, it has a positive impact on the health and wellbeing of the people who live there.

The growth of industries linked to the environment in the Basque Country in recent years is a testament to the great opportunity represented by the sustainable transformation of Basque firms, which gives rise to numerous technological, organisational and knowledge needs, as well as control, monitoring, and data capture and analysis tools. Increasing efforts to transform the economy with more sustainable activities can also facilitate access to financing for investment in new technologies, infrastructure and innovative activities, given that more and more funding entities value environmental sustainability in the projects they finance, as well as regulatory trends in the EU. What is more, growing environmental awareness among the population is leading companies that want to attract and retain talent to commit to sustainability as a core element of their strategies (Carroll *et al.*, 2021).

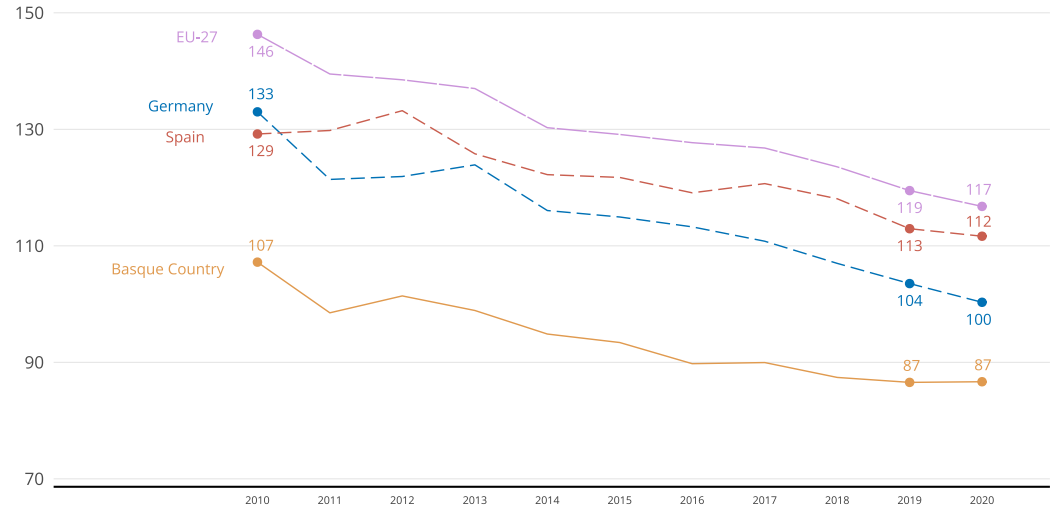
Natural capital refers to the group of nature-related 'assets' that can generate both economic value and wellbeing for people. For the purpose of this report, they have been divided into three components: (i) energy resources; (ii) other natural resources; and (iii) biodiversity and ecosystems.

In terms of energy intensity, the Basque Country shows an advantageous position relative to other territories, although the improvement in Germany is more rapid

4.1.1. Energy resources

Energy consumption increased in the Basque Country over the course of 2021 as a result of the gradual economic recovery, but consumption remained below 2019 levels. In general, in the **energy intensity** parameter (ratio of gross domestic energy consumption to GDP in chain-linked volumes, reference year 2010), the Basque Country is in an advantageous position relative to other territories (Graph 4-1). However, Germany is making faster progress in this indicator, with a 25 % reduction in the past decade, compared to 13 % for Spain, 19.2 % for the Basque Country and 20.2 % for the EU-27.

GRAPH 4-1 Energy intensity index

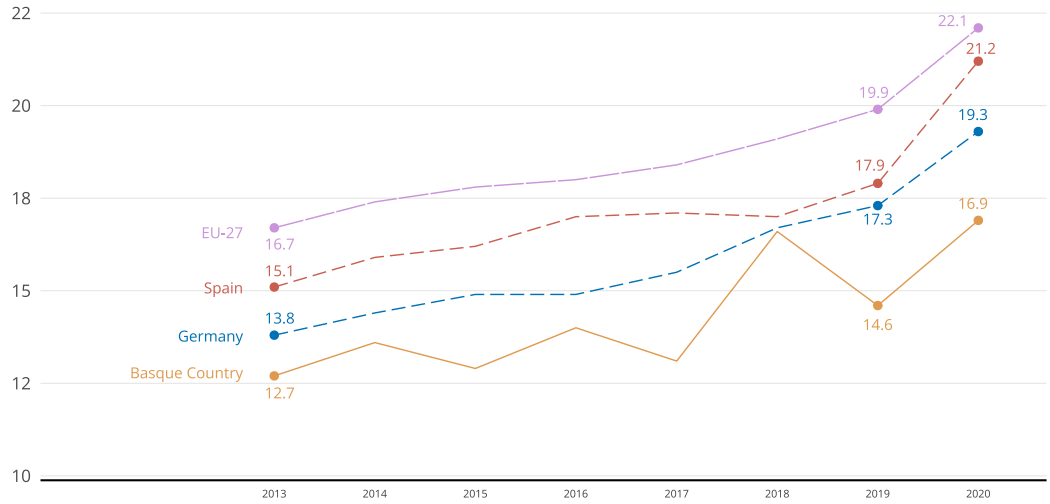


Source: Eustat. Compiled by authors.

Continuous improvement in the energy intensity indicator is a path to decarbonising the economy and reducing greenhouse gas emissions, an indicator previously analysed in the environmental dimension of the wellbeing outcomes. Another critical variable for decoupling economic growth and greenhouse gas emissions is the **share of renewable energy sources in gross final energy consumption**. As we can see from Graph 4-2, this share has increased in all the territories analysed, with the Basque Country reporting 16.9 % in 2020, lower than the levels in the EU-27, Germany and Spain, but 15.8 % higher than 2019.

The share of renewable energies in gross final energy consumption in the Basque Country in 2020 was 16.9 %, below EU-27 levels

GRAPH 4-2 Share of renewable energy sources in gross final energy consumption by country (%)



Source: Eurostat and Eustat. Compiled by authors.

NB: Scale in percentages.

The current share of renewable energy is considerably short of the target set by the EU for 2030 (40 %) and the new 45 % proposal in the REPowerEU Plan to reduce European dependence on Russian fossil fuels (European Commission, 2022). The data for the Basque Country reflect the challenges faced in developing renewable energy sources in the territory, largely linked to topography, less availability of wind and solar resources, and controversies associated with the deployment of large-scale energy infrastructure. Furthermore, high energy prices in Europe have given rise to an interventionist spiral in energy markets (especially in the case of the Spanish electricity market), resulting in considerable lack of legal certainty. This complicates investment decisions in new renewable plants and the development of the power grid, both necessary to reach decarbonisation targets. Generally speaking, a stable regulatory framework —which sends clear signals to investors and respects the operation of energy markets, to the extent possible— will enable the Basque Country to increase the share of renewable energies, reducing its energy dependence and the volatility of energy prices.

The changes in the regulatory framework for energy in the Basque Country establish more ambitious objectives for renewables, although far from those set by the EU

The regulatory framework of the Basque Country regarding energy is currently undergoing changes. Act 4/2019 on Energy Sustainability set the target of 21 % of energy consumption from renewables by 2030. More recently, the 2021–2024 Energy Transition and Climate Change Plan set a more ambitious target of 20 % by 2024, still considerably lower than the levels set by the EU. The Energy Transition and Climate Change Bill, in process throughout this year, will need to take account of the

amendments to EU targets, as well as the Regional Sector Plan (PTS in its Spanish acronym) for Renewable Energy, which was first put forward in March 2021, and which will extend throughout the entire legislative term. The aim of the latter is to provide for the necessary development of renewables, as well as land use (including hilly areas), given the anticipated need to increase the installed capacity of renewable technologies to 2 356 MW by 2030 in order to meet to the targets in the Sustainability Act.[28]

Geothermal, solar thermal, and a green hydrogen value chain would increase the penetration of renewables

In the medium term, the Basque strategy (3E-2030) to increase the penetration of renewable energies entails not only boosting the installed capacity of renewable electricity generation technologies like wind and solar but also a commitment to developing geothermal and solar thermal, as well as a green hydrogen value chain, which has been gaining ground since 2020.

The Basque Government recently published the Basque Hydrogen Strategy (EVH), the aim of which is to facilitate the creation of a Basque business ecosystem focussed on producing renewable hydrogen and developing storage, transport and infrastructure to support the local market (initially driven by industrial consumption) and make it possible to establish a logistics, innovation and techno-industrial centre with a strong position in the international market.

Additionally, there are several business initiatives being developed around hydrogen in the Basque Country. Noteworthy among them are the Basque Hydrogen Corridor (BH2C), led by Repsol and Petronor, which encompasses around 40 projects. It was established with the aim of creating a Basque value chain around hydrogen to make progress on decarbonising the energy, industrial, residential and transport sectors. Tecnalia, Ingeteam, Iberdrola and CIC energiGune are also driving other projects in this area (Larrea Basterra *et al.*, 2022).

Advancing decarbonisation also requires widespread improvements in energy efficiency in all sectors of the economy

Nonetheless, moving forward on decarbonisation will require not only developing new renewables and storage projects (with notable R&D&I initiatives at centres such as CIC energiGune, CIDETEC and Ikerlan; firms like CEGASA; and ambitious projects like BasqueVolt) and strategic initiatives for decarbonising emissions-intensive industry (like the Basque Net Zero Supercluster), but also overall improvement in **energy efficiency** in all sectors of the economy (see Box 6).

BOX 6 Energy efficiency: from 'hidden fuel' to the first fuel

Ambitious targets for reducing greenhouse gas (GHG) emissions have made energy efficiency a key lever for achieving long-term sustainability in our energy system. Energy efficiency can help decarbonise activities for which there are few or complex alternatives (industry and building, for example).

The potential for reducing energy consumption, technological change and altering stakeholder behaviour is high, and this is an affordable way to facilitate the energy transition. Additionally, in the current geopolitical context, energy efficiency is a powerful tool for increasing the security of energy supply, mitigating the risks of high dependence on fossil fuel imports and the impact of the relative scarcity of natural gas in the EU on energy prices.

[28] Wind and solar photovoltaic would grow more (630 MW and 911 MW, respectively) than the other renewables (60 MW ocean, 42 MW biomass, 10 MW hydraulic and 9 MW geothermal).

In the sphere of industry, energy efficiency investments can concentrate on replacing or adapting equipment, developing new operating and production processes, adopting new sources of energy and better use of materials. There are mature technologies and solutions in all these areas, such as comprehensive process control systems and interval meters, which optimise energy use. Furthermore, it is cost-effective to invest in energy management systems and equipment to optimise combustion, heat use and gas recovery processes, as well as advanced control systems with automatic speed adjustment (on pumps, fans, motors, etc.).

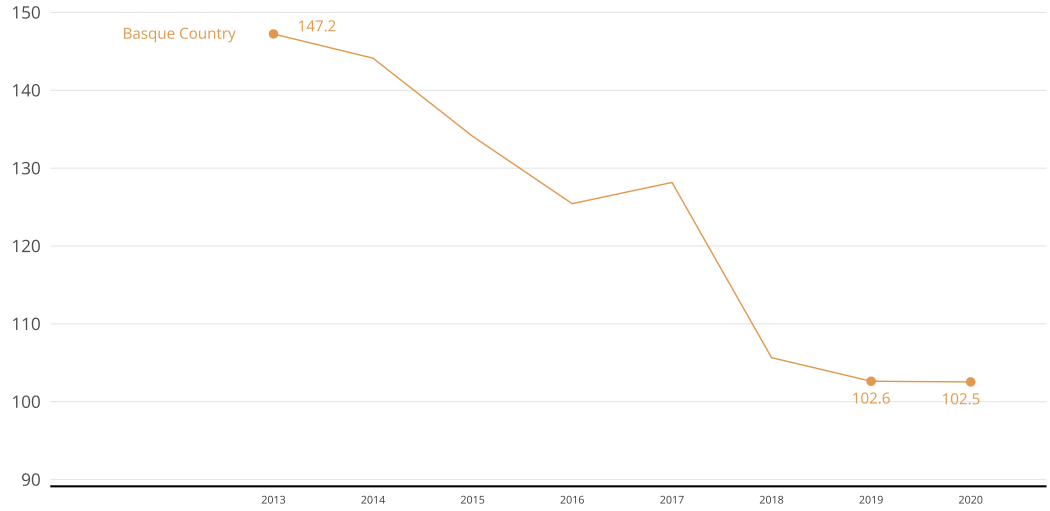
In the residential and commercial spheres, the main tools for energy efficiency are upgrades and changes in the energy vector for heat production (heating and/or domestic hot water for kitchens and bathrooms). In particular, possible projects include lighting, heating and cooling, consumption automation and control, facilities maintenance, building envelope replacement, installing new domestic hot water systems and replacing equipment (e.g., electrical appliances).

Additionally, consumers (and buildings) have considerable potential in terms of increasing the flexibility of the electric power system by actively managing energy demand though flexible and controllable devices, accumulators in their electrical and heating systems or in the batteries of electric vehicles. In this area, the roles of energy aggregators and energy communities take on particular importance. These are legal entities intended to facilitate new ways of organising energy-related activities among citizens, businesses and public bodies, including action around energy efficiency. This emerging ecosystem of stakeholders with the potential to bring flexibility to the electric power system could facilitate mass integration of small-scale renewables and improve security of supply.

There is an emerging ecosystem of actors with the potential to provide flexibility to the electricity system

Energy efficiency improvements will have a positive impact on the environment and the economy. In addition, they will have other benefits linked to reducing energy poverty, improving access to energy, quality of life and the health of the population. Nonetheless, we are not seeing enough investment in energy efficiency in either industry or the residential and commercial sectors, although the energy intensity of industry has been steadily improving over the past two decades (Graph 4-3).

GRAPH 4-3 Energy intensity of the industrial sector



Source: Eustat. Compiled by authors.

The difference between the level of real investment in energy efficiency and the estimated theoretical optimal level is known as the 'energy efficiency gap'. Among the main causes of the energy efficiency gap, we can point to:

- Market failures: asymmetric information, external factors, prices based on average costs, liquidity restrictions, etc.
- Factors related to stakeholder behaviour: lack of interest, bounded rationality, heuristic decision-making methods, systematic bias in views on markets and technology, etc.
- Modelling and measurement errors: incorrect assumptions around costs, usage profiles, product attributes or consumer characteristics, etc.

Incentivising investment and facilitating access to financing would help reduce the energy efficiency gap

Creating efficient frameworks to incentivise investment and facilitate access to financing are therefore the major challenges in making progress on energy efficiency.

What is more, although in the industrial sector, firms have been investing in energy efficiency improvements for many years, progress in the building sector has been slow. Despite the fact that in recent years permit applications for upgrades have increased, between 2002 and 2021 just 1.6 % of homes in the Basque Country were upgraded. This can be attributed to various related causes, including: the length of time it takes to recoup investments (more than 10 years); challenges around reaching agreements and access to financing; the limited maturity and relatively small number of market players in energy efficiency; the technological development of equipment, particularly for heating; regulatory focus; and little interest or lack of knowledge among citizens.

Moving forward on energy efficiency will require developing comprehensive strategies that:

- Stimulate R&D&I related to new fuels and new clean, efficient technologies.
- Lead to the development of new financing schemes and products for energy efficiency investments, reducing the energy efficiency gap.
- Update legal and regulatory frameworks (e.g., establishing obligations or sending appropriate regulatory signals)
- Focus on non-technological innovation, new processes and business models.

In the case of the building industry, both social and cultural factors must be taken into account, as well as the existence of economically vulnerable segments of the population.

4.1.2. Other natural resources, biodiversity and ecosystems

The Basque Country has a variety of natural resources and rich biodiversity linked to its terrain, climate and geographical location.

In terms of **land use**, forests cover 490,051 hectares (ha) (68 % of the Basque Country), agricultural land accounts for 180,029 ha, urban or infrastructure areas cover 47,474 ha, and land linked to water occupies 5,341 ha (Hazi, 2020). 23 % of the land is occupied by protected natural areas, which provide services and benefits worth some seven times more than direct expenditure on them (Ihobe, 2020).[29] In addition,

[29] These benefits include supplying products obtain from the forests or sea, carbon capture and storage, potable water purification and supply, controlling soil erosion, mitigating flood damage, improving air quality and facilitating pollination.

the approximately 176 kilometres of coastline provide a range of opportunities related to sea transport, innovative energy developments, activities linked to the bioeconomy or sustainable tourism, and other types of activities related to research and protecting marine spaces.

The Basque **Soil Protection Strategy 2030** has been in place since June 2022. Its strategic aims include: reducing soil consumption, managing soil occupation, protecting soil from harmful impacts, restoring degraded soil, and increasing awareness and knowledge (Basque Government, 2022b). To achieve this, it establishes seven action areas (cross-cutting actions; regional planning; agriculture, livestock and forestry; natural soil; soil contaminated by industry; excavated soil and the circular economy; and mitigation and adaptation to climate change). The strategy includes an initial action plan for implementation, with 69 actions.

The Basque Country has soil protection and biodiversity strategies

The Basque Country also has a **Biodiversity Strategy 2030** (Basque Government, 2016), a tool which establishes priorities and commitments regarding natural heritage, aligned with international guidelines. The strategy prioritises ecosystem restoration and protection, promoting nature awareness and culture, boosting the Natura 2000 Network and more efficient management of natural heritage. Additionally, Act 10/2021 on Environmental Management of the Basque Country was published in 2021. Its aims include protecting citizens against environmental risk; protecting the environment itself; efficient resource management, promoting the circular economy and decarbonisation; fostering public–private collaboration and responsibility in environmental protection; streamlining the operation of environmental management; and fostering knowledge and information around the environment and environmental education.

Nonetheless, in the area of **critical raw materials** for industry and rare earth elements, the Basque Country has very limited natural resources. This has created very high foreign dependence (primarily in raw materials imported from Europe, as well as certain waste) and made the economy increasingly vulnerable to the current situation of geopolitical changes due to the Russian invasion of Ukraine. In the near future, strategies must be established to increase the resilience of solutions for the supply of key materials for Basque industry (supplier diversification, greater flexibility in supply agreements, new cooperation and partnership strategies, etc.) and foster R&D activities around new alternative materials subject to less geopolitical risk, ecodesign for new products, and recycling and re-use operations.

In the field of critical raw materials for industry and rare earths, the Basque Country has a high external dependence

In this context, the circular economy represents an opportunity for the Basque Country, especially as concerns use of critical and non-critical materials (primary and secondary) (Aclima, 2022). Improving the efficiency of materials use can not only reduce the economy's foreign dependence but also result in higher productivity for firms. The **Circular Economy Strategy of the Basque Country 2030** lays the foundations for action plans and tools to make ambitious strides in developing a more circular Basque economy (Basque Government, 2020b). This strategy is structured around nine challenges in four major areas, as shown in Table 4-1, along with the challenges addressed in the **Circular Economy and Bioeconomy Plan** (Basque Government, 2021).

The circular economy is an opportunity to improve efficiency in the use of critical and non-critical materials

TABLE 4-1 Challenges in the Circular Economy Strategy 2030 and Circular Economy and Bioeconomy Plan

	Circular Economy Strategy 2030	Circular Economy and Bioeconomy Plan
Competitiveness and innovation	Challenge 1: Drive the creation of new more circular business models Challenge 2: Innovate in materials (advanced and renewables), processes and products	New circular and high value-added business models Innovation and new technologies in the circular economy and bioeconomy New sustainable materials
Production	Challenge 3: Extend the useful life of products Challenge 4: Reduce consumption of raw materials and waste generation	Product and building ecodesign Efficient manufacturing and sustainable resource use Strengthen circular bioeconomy opportunities
Consumption	Challenge 5: Foster a more circular consumption model Challenge 6: Reduce food waste Challenge 7: Foster the more efficient use of plastics	Circular consumption. Generate demand and market conditions Food waste Plastic consumption
Management of waste and secondary raw materials	Challenge 8: Increase waste reuse, recycling and recovery Challenge 9: Increase the use of secondary raw materials	Sustainable waste management Secondary raw materials

Source: Basque Government (2020b) and Basque Government (2021). Compiled by authors.

Circular economy indicators tend to exceed the equivalents in Spain and are below those in Germany

The **circular economy indicators available** for the Basque Country show an improvement in many major areas between 2015 and 2018 (Table 4-2). Highlights include improvements in waste per unit of GDP, recycling rates (overall and in most subcategories) and waste treatment. There is room for improvement, however, in such areas as total waste generation, materials consumption and material productivity, for which trends reflect the difficulty of decoupling certain indicators from trends in an industrial economy (which in 2018 was better than 2015 in general terms). Comparatively speaking, the indicators tend to exceed their equivalents in Spain, although there is still some way to go before they reach the levels reported by Germany for some indicators.

TABLE 4-2 Circular economy indicators

		Basque Country			Germany	Spain	EU-27
		2018	2015	Variation (%)	2018	2018	2018
Waste/GDP	kg/k€ GDP	59	76	–22.4 %	120	114	176
Waste per capita	t per capita	544	505	7.7 %	632	455	505
Recycling rate (municipal waste)	%	38	33	15.2 %	67	35	47
Recycling rate (all waste*)	%	52	51	2.0 %	36	38	30
Recycling rate, containers overall	%	81	79	2.5 %	68	69	66
Recycling rate, WEEE	%	52	33	57.6 %	37	43	39
Circular material use rate	%	7.9	9.2	–14.1 %	12.4	9.0	11.7
Domestic materials consumption (DMC)	t per capita	13.1	11.0	19.1 %	14.8	9.5	14.2
Material productivity	€ GDP / kg DMC	2.6	2.9	–10.3 %	2.7	2.7	2.1
Total waste treatment per capita (recycling)	t per capita	1.17	1.15	1.7 %	2.00	1.00	1.84

NB: * = excluding the main types of mining waste; WEEE = waste electrical and electronic equipment. Green shading: indicators where there has been improvement.

Source: Ihobe and Basque Government (2021) and Eurostat. Compiled by authors.

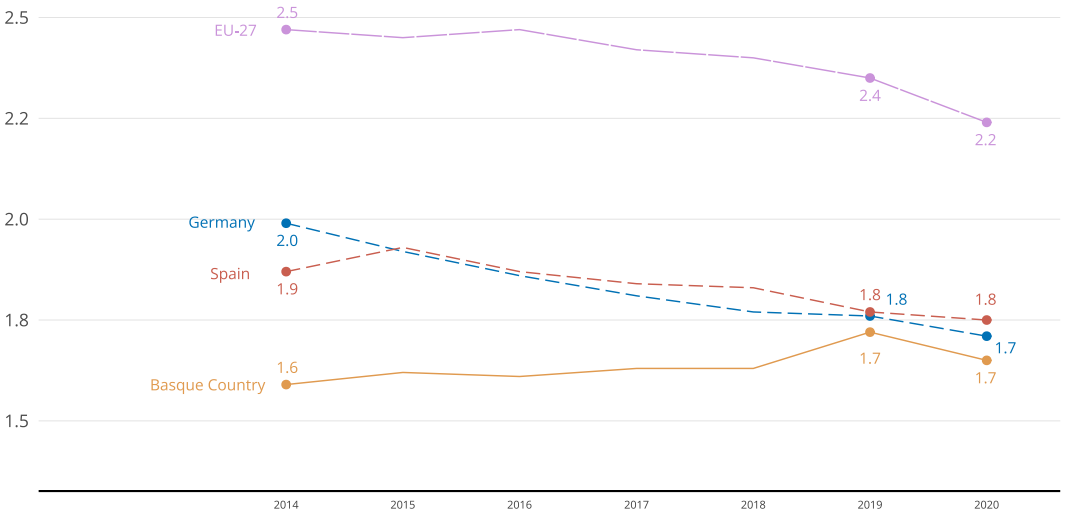
In this context, it is worth mentioning **Act 7/2022 on waste and contaminated land for a circular economy**, the aim of which is to prevent and reduce waste generation and adverse effects in its generation and management, as well as improving efficiency of use to move towards a circular, low-carbon economy. This law covers aspects such as extended producer responsibility, reviewing the scope of application and penalty scheme, boosting the circular economy by revising procedures for by-products and end-of-waste, reinforcing the waste hierarchy and plastics restrictions. Lastly, it is important to note the possibilities presented by the circular economy PERTE (Strategic Project for Economic Recovery and Transformation) announced by the Government of Spain in March 2022, the aims of which are to: reduce waste generation, promote treatment facilities and increase digitalisation (Government of Spain, 2022).

4.1.3. Environmental taxation and the environmental goods and services sector

Environmental tax revenue in all territories fell sharply in 2020 and in the Basque Country exceeded the fall in GDP

In 2020, there was a significant drop in revenue from **environmental taxation** in all the territories included in this analysis (Graph 4-4). This drop could be linked to a reduction in tax revenue from hydrocarbons due to the impact of the spring lockdown and limited mobility which continued throughout that year, as well as a drop in industrial activity and electricity demand. In the case of the Basque Country, revenue from taxes on energy and taxes on transport fell 17 % and 41 %, respectively, much more than the 10 % drop in GDP that same year.

GRAPH 4-4 Revenue from environmental taxes (% GDP)



Source: Eurostat and Eustat. Compiled by authors.

Environmental taxes make it possible to assign a cost to the negative externalities produced by human activity. They are intended to act as an incentive to promote reduction of these undesired impacts and make progress on developing cleaner alternatives for production and consumption, thus redirecting economic activities towards more sustainable activities in environmental terms (Delgado *et al.*, 2022; Larrea Basterra, 2020; Larrea Basterra *et al.*, 2019). Taking into account the aim of environmental taxes, their configuration (types and tax bases) must be well designed to send the appropriate price signals to produce changes in production processes and consumption patterns and support the transition to sustainability (Cubero *et al.*, 2022).

Act 10/2021 on Environmental Management of the Basque Country, mentioned earlier, stipulates that Basque public administrations with this authority must promote the use of environmental taxation, among other tools, to contribute to the aims of this law. Along these lines, it considers the possibility of developing fees for the issuing of permits, licenses and receipt of preliminary notices, and related statements of responsibility. It is also possible to create taxes or other fiscal instruments levied on activities that hinder the environment, and establish reductions, credits or exemptions for actions whose purpose is to meet the aims of the law. Taking these actions could entail changes in environmental tax collection figures compared to current data.

There is an increase in the relative weight of the environmental goods and services sector, especially in the Basque Country

The energy/environmental transition process is also creating opportunities for the economic fabric, as demonstrated, for example, in detailing the anticipated investments in renewable energies. These opportunities will emerge in the area of environmental protection activities and activities such as waste management and those related to energy efficiency, materials use and the circular economy. Table 4-3 shows changes in the gross value added of the **environmental goods and services sector** as a percentage of GDP and employment in these activities in recent years. As we can see, these activities are becoming increasingly important, especially in the Basque Country.[30]

[30] The data for the Basque Country includes some additional elements compared to the data for the EU-27, Germany and Spain, so it is likely that the truly comparable figures are higher for the other territories. In the case of Spain, for which there is disaggregated data for the different elements, if the same elements

TABLE 4-3 GVA (% GDP) and employment in the environmental goods and services sector

	GVA (% GDP)			Employment (% total employment)		
	2018	**2019**	**Variation (%)**	**2018**	**2019**	**Variation (%)**
Basque Country	1.70	1.82	7.06 %	1.85	2.11	14.46 %
EU-27	1.24	1.30	4.84 %	1.16	1.20	3.76 %
Germany	1.95	1.96	0.51 %	1.40	1.45	3.91 %
Spain	2.01	1.99	–0.99 %	1.79	1.77	–1.25 %

Source: Eustat and Eurostat. Compiled by authors.

From a broader perspective, the association Aclima, which acts as a cluster management organisation (CMO) for the environment cluster, estimates that the Basque Country has a framework of firms operating in the environmental sphere which accounted for 5.4 % of GDP in 2020, with total turnover of close to 4 billion euros. The Basque Country's 'environmental cluster' includes six value chains: waste (minimisation, reuse, recycling, management and recovery), contaminated soil (investigation and recovery), water management cycle, air and climate change, ecosystems, and eco-efficient production and ecodesign (Aclima, 2020). Regarding the material and product recycling, repair and reuse subsector, Ihobe estimates it employed almost 17,300 people in the Basque Country in 2019, and it had 831 million euros in gross value added (Ihobe and Basque Government, 2021).

Companies operating in the environmental field in the Basque Country accounted for 5.4 % of GDP in 2020 and had a turnover of almost 4 billion euros

Development and implementation of the full potential of the new activities will require increasing and improving individual skills and the competences of Basque firms in all areas related to environmental sustainability. To this end, it will be important to align the training and education system (regulated and non-regulated) with the skills required for the energy/environmental transition and to promote new programmes linked to the core areas of this transition, with a clear focus on the aims of legislation and of strategies and policies at the EU level (European Green Deal), as well as Spain and the Basque Country. It will be necessary to ensure ongoing adaptation of not only technical programmes (to incorporate new technologies and energy materials, sources and vectors) but also social sciences programmes, and in general, around strengthening cross-cutting skills such as data analysis and management, artificial intelligence, green financing, new business models, forms of collaboration and innovation, and firm and value chain organisational systems (Fernández Gómez and Larrea Basterra, 2022). In addition to a stable and transparent regulatory framework, another method of facilitating the energy/environmental transition is an environmental taxation scheme intended to incentivise technological innovation and emissions and waste reduction, incorporating the 'polluter pays' principle.

The training system must be aligned with the capabilities required for the energy-environment transition

To support this transformation, in April 2022, the Basque Government launched a participatory process to put together its fifth **Environmental Framework Pro-**

as the Basque Country are included, the GVA ratio would be 2.27 and 2.25 for 2018 and 2019, respectively, and the employment data would be 428,788 and 436,661.

gramme (PMA in its Spanish acronym), which will guide its actions on environmental issues and its sustainability policy to 2030 (Department of Economic Development, Sustainability and the Environment, 2022). This programme must align with the 2030 Agenda, European Green Deal and Basque Green Deal. The main aim is to achieve balanced development among the economic, social and environmental dimensions, influencing decarbonisation and digitalisation while boosting the competitiveness of Basque firms and the territory as a whole.

4.2. Physical capital

The physical capital lever refers to tangible assets produced by humans which make it possible to create economic value and wellbeing. In this section, we present various indicators to understand the status of tangible assets. We analyse investment flows and stocks of capital in general, and more specifically, investment in machinery and equipment.

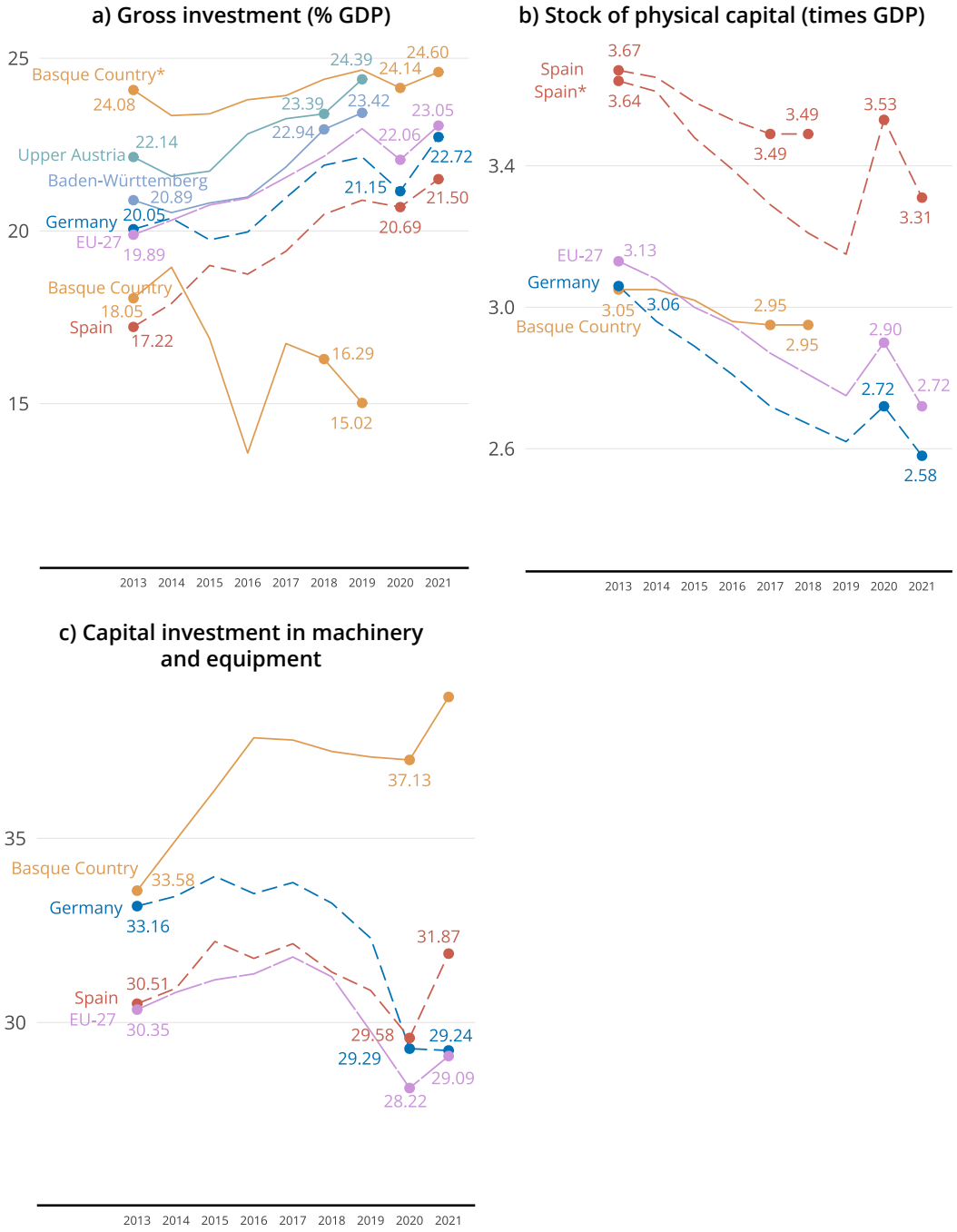
According to Eustat, gross capital formation in the Basque Country in 2021 will be similar to that of 2019, with values of around 24 %

Gross capital formation (or investment) is a flow variable that registers the allocations of all fixed assets[31] (machinery and equipment, construction, inventory changes and other assets) in an economy during a given period. In Graph 4-5, using available Eurostat data to 2019, we can see that the Basque Country ranked significantly lower than the other territories under consideration. However, the Eustat (Basque Statistics Office) data paint a more positive picture, with stable values fluctuating around 24 %.[32] According to this source, in 2021, the Basque Country reported similar figures to 2019, prior to the pandemic. However, according to the Eurostat data, in both Spain and Germany, investment of capital in relation to GDP rose above pre-pandemic levels.

[31] Investments in intangibles (R&D, etc.), which are discussed under the knowledge lever, are also included in gross capital formation (GCF). In 2017, for example, they accounted for 19 % in the Basque Country, and 2020 R&D expenditure accounted for 8.6 % of Basque GCF.

[32] The differences between the two sources are not due to methodological questions, but to how investments are valued by the different stakeholders. Whereas Eurostat takes its data from the INE (Spanish National Statistics Institute), which applies a top-down approach based on breaking down the national gross capital formation entry into the different autonomous communities, Eustat offers a more specific valuation of investment by the territory's firms and government.

GRAPH 4-5 Key indicators of physical capital



Source: a) Eustat and Eurostat. Compiled by authors. b) IVIE, Ameco and Eurostat. Compiled by authors. c) Eustat and Eurostat. Compiled by authors.

NB: Under 'gross investment', both Eurostat and (*) Eustat data are provided for the Basque Country, and the 2021 figure for the Basque Country is early data. Under 'stock of physical capital', both the (*) IVIE-INE and (**) Eurostat data are provided for Spain.

In contrast, **stock of physical capital as a proportion of GDP** is an indicator representing the accumulation of gross capital formation flow (reduced at a relevant depreciation rate).[33] As Graph 4-5 shows, all the territories were on a downward trend

[33] In the case of the EU-27, Germany and Spain, there are data available up to 2020, from the Ameco database. And for the Basque Country (and Spain), the IVIE data (largely based on INE data) go as far as 2018.

in this indicator until 2019, especially Spain, whereas the significant jump in 2020 is due to the drop in GDP as a result of the pandemic. In 2021, the previous trend resumed. Spain maintained a higher level of stock of capital in relation to GDP, which may be influenced by the activation of major gross capital formation flows in construction during the period prior to the financial crisis of 2008–2013. For its part, the Basque Country had higher values than the EU-27 in 2018. However, the difference between the two sources with regard to Spain indicates the need for caution in the comparison with the Basque Country and the EU-27.

Investment in machinery and capital goods in the Basque Country has remained at around 37 % since 2014, above other territories analysed

An important component of gross investment is **investment in machinery and equipment**, which is especially important for economies where industry accounts for a large share. In Graph 4-5, we can see that starting in 2014, the value for the Basque Country began to distance itself from the other territories, holding steady at around 37 %. In 2021, the level increased slightly.

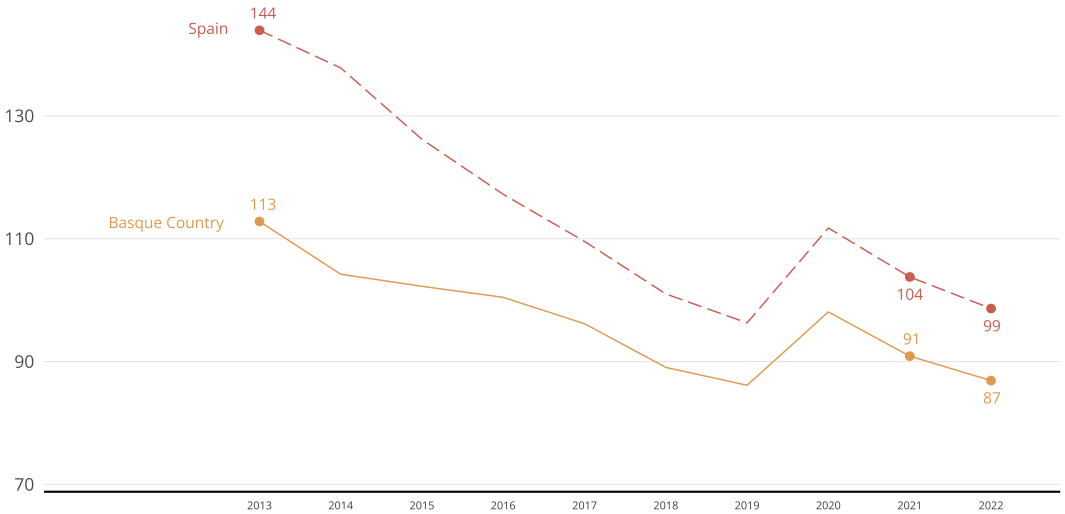
4.3. Financing

The financing lever includes all the factors which make it possible to attract the resources to generate economic value and wellbeing. There are two perspectives from which this financing can be analysed: the private sector and its openness to foreign trade, and the public sector.

The banking system continues to be the main source of financing in the Basque Country

Despite the fact that since the 2008 crisis, financing sources have undergone diversification —including the fledgling emergence of a private local investment industry (see Box 7)— the banking system continues to be the main path to financing in the Basque Country. Therefore, variation in the **banking sector credit** indicator is significant for identifying trends in financing. Graph 4-6 shows a reduction in financing during the recovery from the 2008 crisis, a process which was interrupted by the pandemic. The Basque Country has lower levels of debt, although there is some convergence with Spain, where debt levels have dropped considerably in the past decade, especially in industries like construction.

GRAPH 4-6 Banking sector credit



Source: Bank of Spain, INE and Eustat. Compiled by authors.
NB: 2022 GDP is estimated from first semester data.

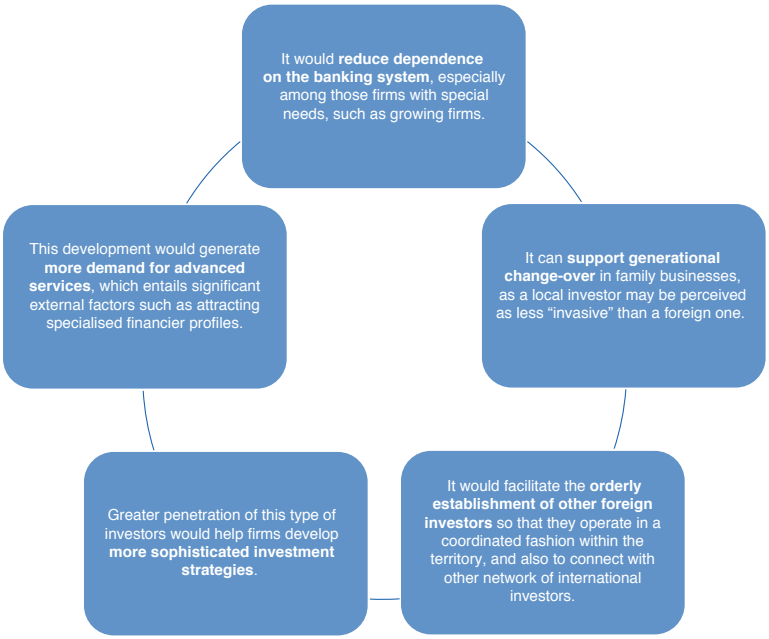
BOX 7 Building a private local investment industry in the Basque Country

The Basque Country fits the profile of a banking-dominated regional financial ecosystem (Zogning, 2017), meaning it has less developed financial agents/markets and significant dependence on the banking sector to facilitate credit. In recent decades, new agents of foreign private investment have become an increasingly larger presence in our financial ecosystem.

Alongside this, a network of professional agents (industry) of local investment is developing with the aim of investing in businesses.[34] This type of investor can be a lever for growth and establishing firms that require capital, which may be targeted for investment of foreign capital.

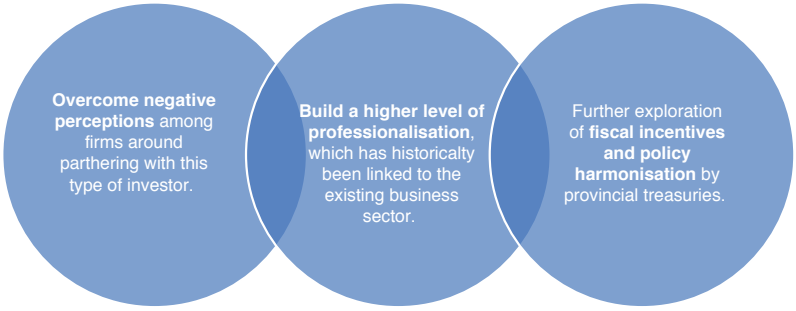
New foreign private investors have been incorporated while developing a network of professionalised local investment agents

A study with the Basque Finance Institute identified five advantages of promoting a more developed local investment industry.



The 17 in-depth interviews conducted as part of the aforementioned study make it possible to identify the three main elements on which work must be done to foster more development of this industry in the Basque Country:

Fostering a more developed local investment industry will require improving tax incentives and aligning policies, among other challenges

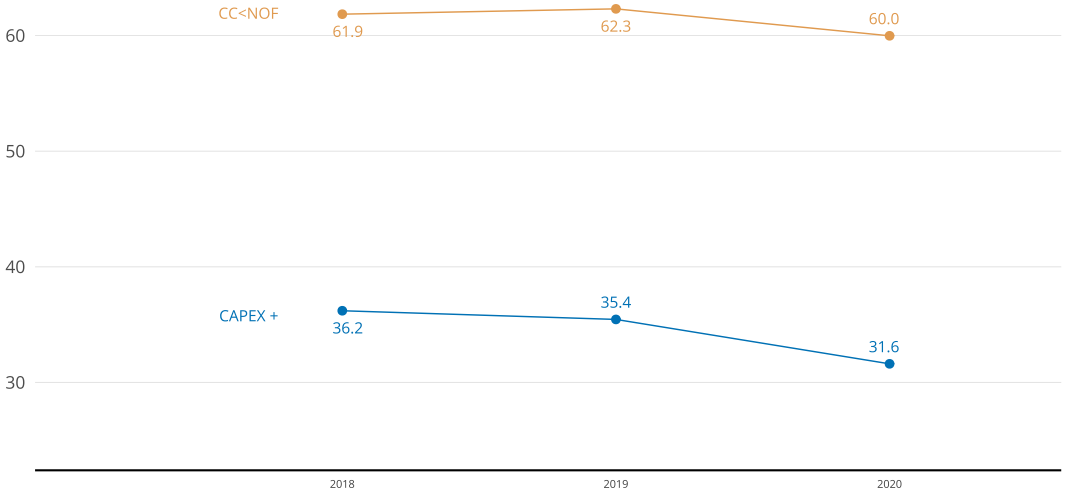


[34] An example of this dynamism is the growing presence of investors that are registered in the Basque Country. There were 12 capital managers in the Basque Country registered with the Spanish Securities Exchange Commission (CNMV in its Spanish acronym) as of 11th October 2022, managing 71 investment instruments. In late 2021, there were 10 managers registered, with 42 instruments.

Between 2018 and 2020, a large proportion of companies had a need for both long-term and short-term financing

Within the private sector, we will focus on the situation of firms. If we analyse the changing **financing needs of firms**, both internal and external, in the 2018–2020 period, we see that the majority needed to finance their activity in both the long and short term (Graph 4-7). Firstly, one third of firms have positive CapEx,[35] meaning they invest in fixed assets, so they need long-term financing. Secondly, 60 % of firms need short-term financing because their need of funds for operations is greater than their working capital (CC < NOF).[36]

GRAPH 4-7 Financing needs of Basque firms



Source: SABI-Informa. Compiled by authors.

The level of net worth to assets is higher in Basque companies than in Spanish companies, but it is converging

Additionally, **equity** is a key structural indicator. It refers to the funds which represent an ownership interest in a company (Table 4-4). Basque firms have more of their net worth in assets than Spanish ones. However, there has been some convergence because Spanish firms have undergone considerable deleveraging. Furthermore, although the data are not directly comparable, they do point to Basque firms having higher capitalisation than those in Europe. This may be the result of greater use of bank finance as the main path to financing.[37]

TABLE 4-4 Net worth and financial assets: 2013, 2020 and 2021

	Basque Country (a)			Spain (a)			Europe (b)	
	2013	2020	2021 (p)	2013	2020	2021 (p)	2013	2020
Net Worth / Assets	45.3	47.2	45.3	37.9	43.0	44.2	35.2	34.8

Source: (a) SABI-Informa and (b) BACH. Compiled by authors.

NB: (p) The SABI data for 2021 is provisional, given that it has been calculated using a limited sample.

[35] Capital expenditure is the investment a company makes in purchasing a fixed asset or to add value to an existing asset with a useful life that extends beyond the financial year.

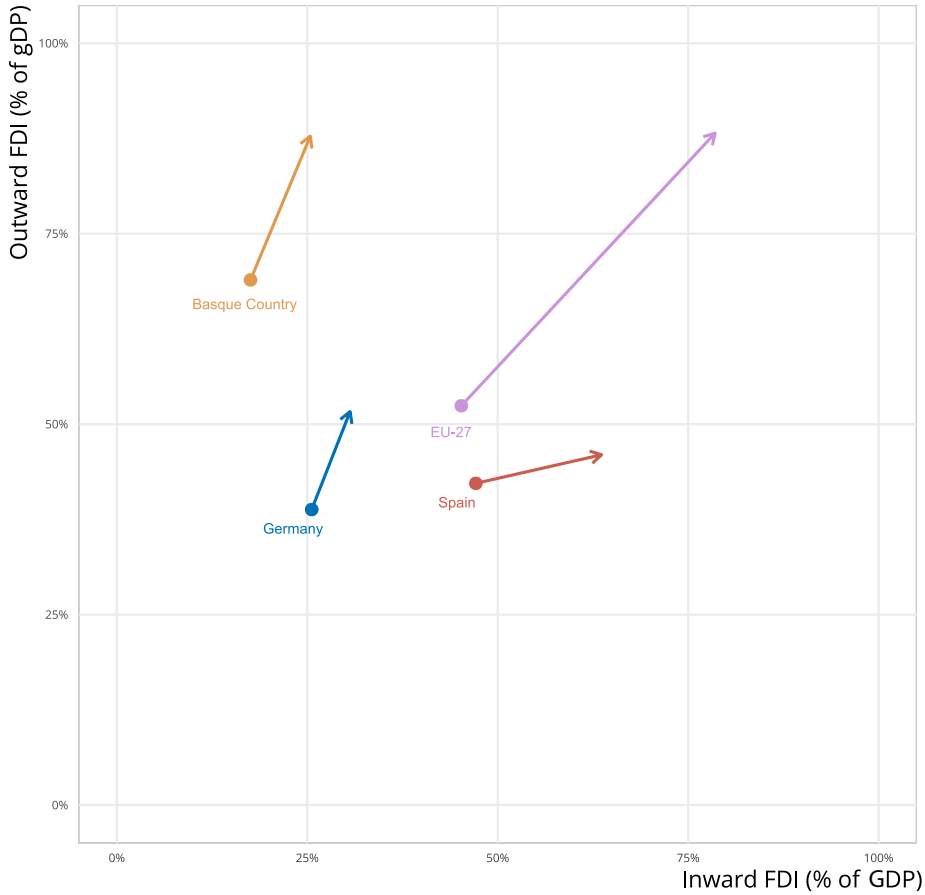
[36] Need of funds for operations (NOF) refers to the funds needed to maintain current assets. When this amount is greater than working capital, it means the firm cannot cover all its financing needs with its available short-term liquidity, and so it requires additional financing.

[37] European Investment Bank data indicate that 76.69 % of external finance for Spanish firms is bank finance, compared to a European average of 66.23 %. Banks use a firm's net worth as one of the main indicators when determining the risk of operations. It is therefore to be expected that firms competing in banking-dominated environments have higher levels of net worth.

The Basque economy is highly internationalised and open, which is reflected in the financing Basque firms receive from abroad (financial assets) and the financing they attract as investment in other territories (equity). We will analyse the importance of both by looking at **foreign direct investment (FDI)**. In Graph 3-8), we can see that the Basque Country is among the territories which, in relative terms, have developed the largest stock of outward FDI (value of investment in foreign companies). This is indicative of the characteristic high degree of internationalisation among its firms. However, it is also clear that on a structural level, the Basque Country has lower flows of inward FDI. This may be indicative of certain limitations in attracting inward FDI (value of the investment of foreign investors in Basque firms). If we compare the trend between 2013 and 2020, despite a significant level of foreign capital —particularly in 2020, when the percentage of FDI jumped 7.9 p.p.— the data indicate that the value of the territory's capital abroad is clearly higher.

The Basque Country shows a higher level of outbound than inbound Foreign Direct Investment

GRAPH 4-8 Stocks of inward and outward FDI (% GDP)



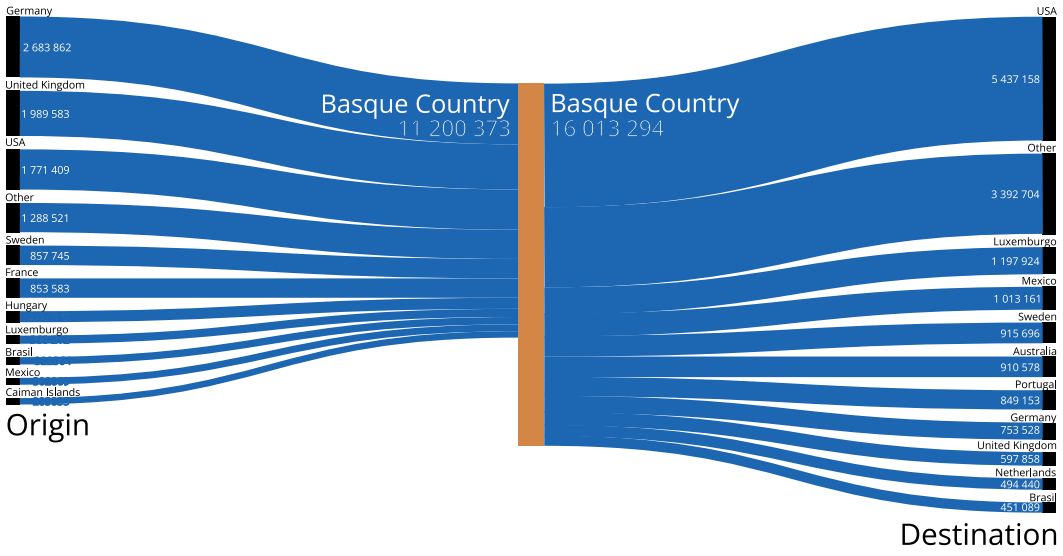
Source: OECD and Ministry of Industry, Trade and Tourism (Government of Spain). Compiled by authors.

If we analyse the **10 main countries of destination and origin for inward and outward FDI flows** during the 2014–2021 period (Graph 3-9), we find a large presence in known markets, both in our surrounding area and in the Americas. Australia is the only exception on this map of destinations for investment. In contrast, the relatively limited presence of major economies such as China and India is noteworthy. In addition to being the world's most populated countries, they account for 19 % and 7 %

The main destination countries for Basque foreign investment do not include major economies such as China or India

of global GDP, respectively, according to the World Bank. It is worth mentioning the presence of some holding countries, like Luxembourg and the Cayman Islands, which are a stepping-stone for investors.

GRAPH 4-9 Main countries for inward and outward FDI, 2014-2021



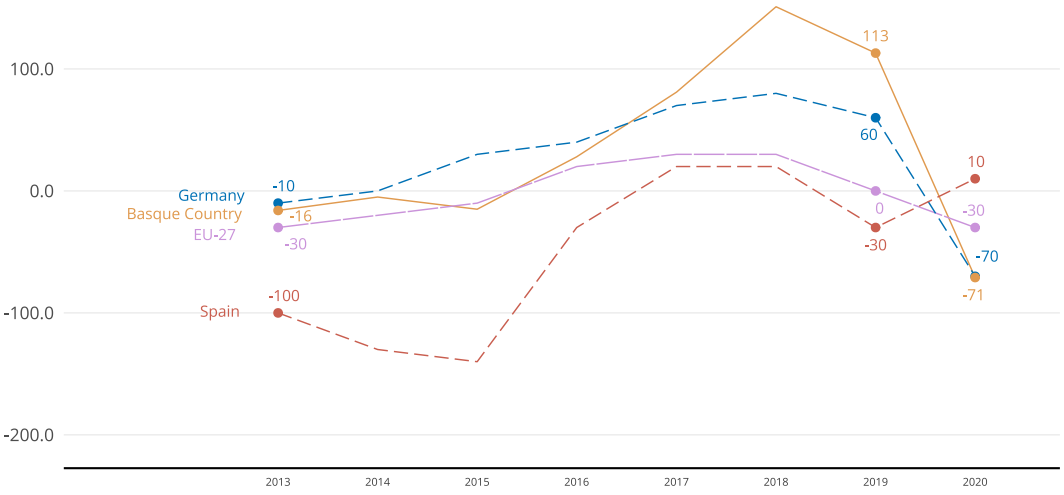
Source: DataInvex, Ministry of Industry, Trade and Tourism (Government of Spain). Compiled by authors.

Turning to the public administration, the **capacity (+) or need (–) for financing** indicator reflects the government's budget implementation, and therefore, it shows the difference between revenue and expenditure. At the subnational level,[38] it is possible to identify differences in government budget stability between countries and regions. As we can see in Graph 4-10, up to 2019, budgets were improving in all the territories under consideration and particularly in the Basque Country, which achieved a budget surplus of over 1 %, even more than that of the German subnational government. In 2020, the Basque Country and Germany saw a sharp drop in the budget balance, while the decrease was smaller in the EU-27, and Spain even increased its balance, moving into the black. This contrast in performance is because during the pandemic the resulting deficit was primarily absorbed by the central government in the latter territories, with this level of government acquiring the biggest deficit. As regards debt, the Basque government also had a lower level than the average for Spanish regional and local government and Germany (18 %, 29 % and 24 %, respectively), which is somewhat higher than the EU-27 average (14 %). In terms of trends, the size of the Basque Country's debt increased in 2020 compared to the previous year (14 %). This was due to the implementation of purposeful, active policies to deal with the crisis, which were possible thanks to lower level of indebtedness in previous years.

The indebtedness of the Basque Country increased in 2020 due to the application of decisive policies to face the health crisis

[38] Public administration encompasses different levels. The ones which are more relevant from the perspective of regional comparative analysis are regional and local governments, what the OECD refers to as subnational governments. At this level, public deficit levels are usually quite a bit lower than those of the national general government. This is because, despite formal statements of local and regional autonomy, the highest levels of government generally have certain power of control over the expenditure and debt levels of lower levels of government.

GRAPH 4-10 Subnational government capacity (+) or need (–) for financing (% GDP, 2013-2020) as a percentage of government GDP



Source: Eustat and Eurostat. Compiled by authors.

4.4. Knowledge

This lever includes intangible assets linked to knowledge and ICT which contribute to the process of creating economic value and wellbeing in a territory. We analyse two main indicators —R&D expenditure as a percentage of GDP and PCT patents per million inhabitants— which reflect efforts and results in generating scientific and technological knowledge. This knowledge is widely recognised as essential for strong competitiveness outcomes, particularly with regard to innovation and entrepreneurship outcomes. Additionally, Box 8 summarises the Basque Country's participation in the H2020 EU Research Framework Programme, and Box 9 delves into digitalisation and ICT, analysing recent trends in certain dimensions of the Digital Economy and Society Index (DESI) in the Basque Country.

Intangible assets based on knowledge and ICTs contribute to the process of generating economic value and well-being of a territory

As we can see from Graph 4-11, in 2020 the Basque Country achieved its highest value in the past eight years for **R&D expenditure as a percentage of GDP** (2.08 %).[39] Furthermore, 2021 numbers recently published show another slight rise (2.13 %) at a time when the EU-27 average has held steady. Although still at a lower level than the EU-27 average, this gap shrunk in 2020 and 2021, and the Basque Country clearly ranks above the median for EU regions.

In 2020, the Basque Country reached 2.1 % of GDP in R&D expenditure, reducing the gap with the EU-27 and surpassing the median of European regions

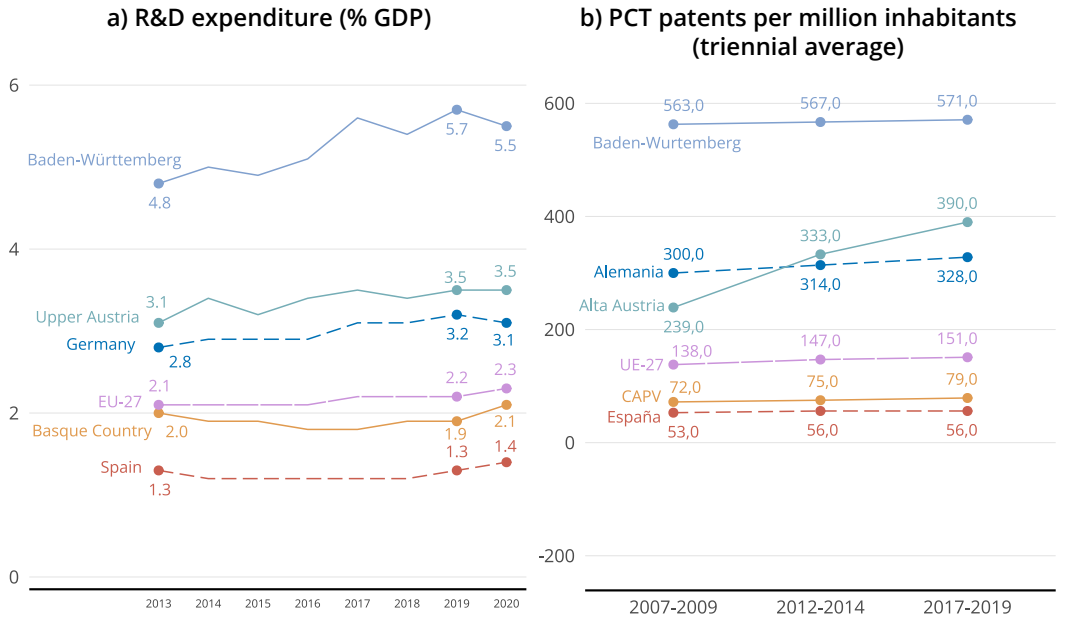
Graph 4-11 shows that in 2020, the Basque Country reported the highest growth in R&D expenditure as a percentage of GDP (11 %) of the territories analysed, the result of a slight increase in spending in a year when GDP plummeted. In fact, the slight rise in spending in 2020 conceals sector-specific effects which reflect the unequal impact of the crisis caused by the pandemic (Grassano *et al.*, 2021; Orkestra, 2020). Thus, while R&D expenditure remained relatively stable in most activities, there were significant increases in activities like chemicals and petroleum refining and IT activities, and significant drops

[39] According to the INE (Spanish National Statistics Institute), the 2020 figure is even higher, 2.20 %.

The number of researchers per million inhabitants in the Basque Country grew in 2020 from 6 163 to 6 194

in activities like transport equipment, metallurgy and machinery.[40] As regards innovation inputs, there are other aspects which indicate that in 2020, innovation efforts continued to increase in the Basque Country. For example, the number of research staff (full-time equivalent) per million inhabitants increased that year, going from 6 163 to 6 194.

GRAPH 4-11 Key knowledge indicators



Source: Eustat and Eurostat. Compiled by authors.

The average value of the number of PCT patents per million inhabitants of the Basque Country is well below the other territories and only above Spain

The Basque Country ranks lower than most of the other territories under consideration in **PCT patents per million inhabitants** (Graph 4-11). Calculating by triennia to avoid large annual fluctuations, the average number of PCT patents per million inhabitants in the Basque Country between 2017 and 2019 was 79, higher only than Spain. The gap with Germany —and especially with the two comparable European regions— is very significant throughout the entire period (up to seven times higher in the case of Baden-Württemberg in the last triennium). The territory with the biggest growth in the three triennia is Upper Austria. In the last triennia (2017-2019), the Basque Country had 6 % growth, the second highest of all the territories.

Understanding the reasons for the patent gap is important for an economy such as the Basque Country, which seeks to position itself among the most advanced in innovation

Patents have widely accepted drawbacks as an indicator of innovation output, particularly reflecting the fact that many innovations are not patented, and many patents cover innovations with little impact on productivity. Additionally, comparisons between territories are especially difficult because there are different cultures regarding patents in different places and in different industries. Thus, to some extent, the numbers may reflect the type of economic activities in which the Basque Country specialises and the innovation system or model itself (which does not require patents to protect knowledge in the same way as other territories). Nonetheless, they may also reflect the limited knowledge of, or importance given to, issues of intellectual property rights by Basque firms. In any event, the size of the gap indicates the importance of better understanding this situation in the context of an economy seeking

[40] See Eustat: Internal R&D expenditure of the business sector and private non-profit institutions in the Basque Country (thousand euros) by industry, type and period.

to position itself at the forefront of innovation at a time when the rules of the game at the international level are changing. On this topic, in his book *Innovation in Real Places*, Dan Bresnitz (2021) identifies intellectual property as one of the three dysfunctions of the global economy and warns that territories must truly understand the game and develop smart strategies around them to prevent restrictions on their future growth and innovation opportunities.

The number and quality of academic publications has been growing in the last decade

Academic publications are another indicator of innovation output. As noted in the recent *Informe sobre la ciencia en Euskadi 2022* (Ikerbasque, 2022), the number of publications per capita has risen over the last decade, and in 2021, Basque scientific production accounted for 6.4 % of national production and 0.21 % worldwide. The quality of these publications is also increasing, with the percentage of publications in first-quartile journals (the top ranked) rising from 50 % in 2011 to 63 % in 2021. It is important to continue strengthening scientific knowledge assets given that, as Aranguren *et al.* (2019) note, an important advance under the 2020 PCTI (Science, Technology and Innovation Plan) was greater commitment and alignment of the science and university system. In line with the analysis in Chapter 2, where we examined the alignment between economic structure and technology, it is worth mentioning that science must also contribute to this alignment to achieve the goals and aims put forward.

BOX 8 Basque participation in Horizon 2020

innobasque
Berrikuntzaren Euskal Agentzia
Agencia Vasca de la Innovación

The results of the Horizon 2020 framework programme have favoured the development of research that has strengthened the Smart Specialisation Strategy (S3)

Since the European Commission launched the first European framework programme to support R&D, the Basque Country has gained experience and maturity in internal collaboration on research and innovation projects. The results of the Horizon 2020 (H2020) framework programme reveal a significant forward leap in this area. Not only were the ambitious goals established at the outset achieved, but they also fostered the development of research that made it possible to strengthen the Smart Specialisation Strategy (S3). In 2021, the Basque Innovation Agency (Innobasque) published a report on Basque participation in H2020 (2014-2020), highlighting the following overall results of participation:

EU Contribution: **869.3 M€** vs. Objective 805.5 M€ ↑84 % from FP7 1.3 % total H2020 budget	Participating actors: **2 212** (↑62 % from FP7)	Projects: **1 492** (↑51 % from FP7)
*Project leadership: **23 %** (vs 21% in FP7)	*Collaborative projects with multiple Basque partners: **31 %**	Basque partners: **409** (↑34 % from FP7)
SMEs: **56 %** (vs. 49 % in FP7, ↑54 %)	Newcomers: **69 %**	Success rate: **19 %** vs. 12 % European average

* **% of collaboration and leadership** and the number of projects led (LID), were calculated based on 1,253 projects (total number of projects in internal collaboration). The SME instrument calls for application, European Research Council (ERC) projects and Marie Curie Skłodowska (IF) actions were not included because they are individual projects.

Specifically, the 869 million euros contributed by the Commission exceeded the results of the previous period by 84 %. These successful funding outcomes are down to a quantitative and qualitative jump in:

- The number and quality of the projects: participation was up 33 % compared to the previous programme. As regards the success rate (proposals approved vs. the number submitted), the gap with the European average (EU-28) increased by 4 points, despite increased competition, which caused the average success rate for H2020 to fall.

- The number of new Basque entities taking part in this programme – and especially, the number of SMEs: this was 54 % higher compared to the previous programme.

- Collaboration with leading international stakeholders and among Basque stakeholders: 31 % of all the projects submitted to H2020 are international collaborations among Basque entities, compared to 26 % in the previous framework programme.

All of this helped put the Basque Country in ninth position (of the 240 regions) in the European Union in securing H2020 funds per capita for the 2014–2019 period, having received 1.3 % of the total budget for H2020. Additionally, the share of international financing in Basque internal R&D expenditure was up from 6 % in 2013 (the year before the start of H2020) to 8.5 % in 2020.

BOX 9 DESI 2021 in the Basque Country

The structure and indicators of the European Digital Economy and Society Index (DESI) changed in 2021 to reflect the major political initiatives that will have an impact on digital transformation in the EU in upcoming years: the Recovery and Resilience Facility[41] and the Digital Decade Compass. The new structure has four dimensions, in which there are seven new indicators (and eight with methodological changes):

1. Human capital

2. Connectivity

3. Integration of digital technology

4. Digital public services

The changes entail a methodological improvement to obtain comparable indicators for the Basque Country. Consequently, it is not feasible to calculate the complete DESI 2021 for the Basque Country. However, the main methodological barriers are found in the fourth dimension. Thus, we are able to compare the performance of the Basque Country in the first three dimensions of DESI 2021 (Table 3-4).[42]

41 https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en.

42 Given the changes in structure and indicators, the scores and rankings in the new index are not directly comparable to the results of DESI reports from previous years.

TABLE 4-5 Performance of the Basque Country in three dimensions of the DESI 2021

	Basque Country		Spain	EU-27
	Position*	Score	Score	Score
Human Capital	11	49.3 %	48.3 %	47.1 %
Connectivity	3	62.6 %	62 %	50.2 %
Integration of Digital Technology	8	43.5 %	38.8 %	37.6 %

NB: The DESI 2021 reports are based on 2020 data. (*) Position in relation to 28 territories: EU-27 countries plus the Basque Country.

Source: Eustat, Eurostat, INE, SETSI and EJIE. Compiled by authors.

The Basque Country has its worst ranking in the **human capital** dimension, 11th out of the 28 territories compared. However, its 49.3 % score is one point higher than Spain and almost two more than the EU-27. This dimension covers various digital skills indicators, including:

- 59 % of the population has at least basic digital skills, above the European average but trailing behind the 80 % target set in the European Pillar of Social Rights Action Plan for 2030.
- ICT specialists have grown 4 %, but this is still lower than the EU-27 average (4.3 %). Moreover, just 20.5 % of ICT specialists are women (a slightly higher percentage than Spain and the EU-27).
- 19.7 % of firms with ten or more employees provide ICT training to their employees, equal to the European average.

The Basque Country is behind the European average of 4.3 % in ICT specialists, and only 20.5 % are women

The Basque Country holds a strong position in the **connectivity** dimension, ranking third with a score of 62.6 %. Performance is especially strong in 4G, NGA and very-high-capacity network coverage, with scores close to the 100 % maximum. Broadband and mobile take-up also report strong results and are higher than the European average.

The Basque Country is very well positioned in connectivity and above the European average in digital technology integration and e-government users

In the **integration of digital technology** in companies dimension, the Basque Country ranks eighth with a score of 43.5 % (compared to 38.8 % for Spain and 37.6 % in the EU-27). Of the indicators that make up this dimension, the following results are noteworthy:

- 79 % of Basque SMEs have at least a basic level of digital intensity, higher than Spain and the European average (62 % and 60 %, respectively).
- 13 % of Basque SMEs sell online, five percentage points below the European average. This value is reduced by half in the case of SMEs selling online cross-border to other countries within the EU, and online sales of Basque SMEs as a percentage of total turnover is 6 %.
- As regards digital technology employed by Basque firms with ten or more employees, the values are much higher than the European average in electronic information sharing (52 %), social media (44 %), ICT for environmental sustainability (76 %) and, to a lesser extent, e-Invoices (35 %). In contrast, the Basque Country trails EU levels in big data analysis (8 %), artificial intelligence (22 %) and the use of cloud services (24 %).

As regards the fourth dimension, **digital public services**, various indicators are missing that would make it possible to calculate the comparable score for the DESI 2021 with the new methodology. However, in terms of the e-Government users indicator, for which the data are available, the most recent figure for 2021 shows a significant increase since 2020 (up from 61 % to 71 %), putting the Basque Country above the European average (65 %).

In conclusion, our analysis has shown that the different dimensions of the new DESI indicate significant strengths in connectivity and many aspects of integration of digital technology. In contrast, the analysis points to the need to work on the human capital dimension to continue growing the percentage of ICT specialists among the population and increase opportunities for ICT training in companies. For firms, there is also room to take advantage of the benefits of digitalisation and new and emerging technologies in areas such as big data, artificial intelligence and the use of cloud services.

4.5. Human capital

The human capital lever is closely linked to the analysis of demography and values in Chapter 3. It includes a set of indicators for different dimensions related to individuals which determine how they contribute to the labour market and thus have an impact on creating economic value and wellbeing.

In number of medical personnel per 100 000 inhabitants, the Basque Country is the best positioned territory in 2020, although the only in which the figure decrease from 2019

The first dimension reflects the importance of people's health. In addition to being crucial for wellbeing itself, it is critical if our human capital is to participate effectively and productively in the labour market. The **number of medical personnel per 100 000 inhabitants** (Graph 4-12a) is a general reflection of a territory's ability to maintain a healthy population. In 2020, the Basque Country continued to hold the top position in this indicator among the territories with available data. However, it is the only territory where this number dropped compared to 2019. In other territories with lower levels of medical personnel it was necessary to strengthen the the number to cope with the pandemic.[43]

In population with tertiary education, the Basque Country is positioned well above other territories, although if upper secondary education is also considered it is below all but Spain

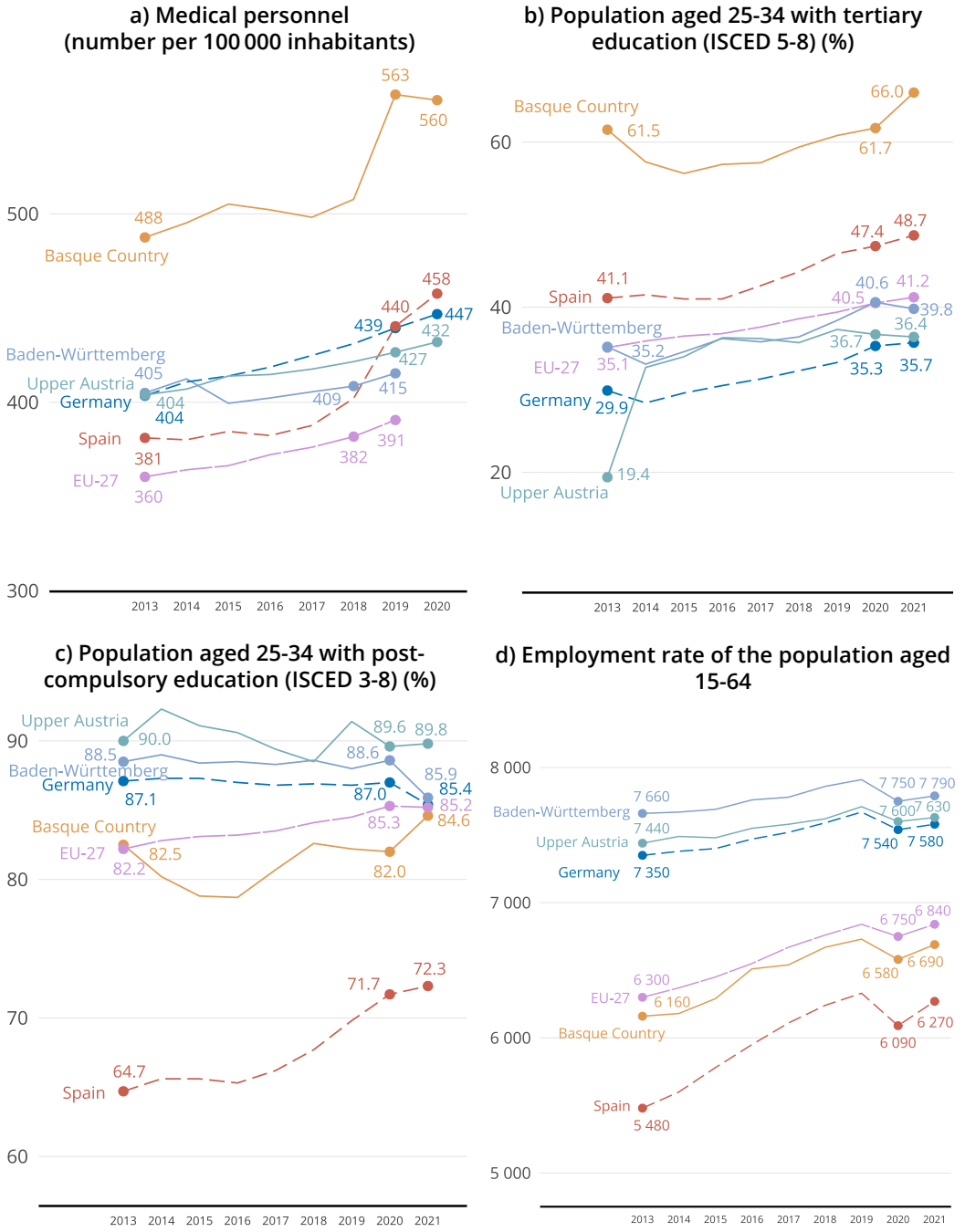
The second group of indicators we analyse reflects people's general skills, which largely determine their potential contribution to the labour market. Graph 4-12 shows the **population ages 25–34 by education level**. In the Basque Country, the population with tertiary education (ISCED 5–8) was 66 % in 2021, a favourable change compared to 2020, building further on the positive trend in recent years (Graph 4-12b).[44] We can also see that the Basque Country ranks far above the other territories in this indicator, reflecting the high percentage of people with higher vocational education and university education. However, when we analyse the percentage of the population with senior secondary and tertiary education (ISCED 3–8) in the same age range, while we see that the Basque Country has grown to 84.6 % in the last year, it ranks below all the benchmark territories except for Spain (Graph 4-12c).

These differences may be due to larger percentages of people with intermediate qualifications (like *Bachillerato* or intermediate VET) in the other territories. In fact, the 2021 Eurostat data indicate that the Basque Country is the territory with the smallest percentage of population aged 25-34 years with **intermediate qualifications (ISCED 3-4)** among the benchmark territories, with 18.6 %, followed by Spain as a whole (23.6 %), the EU-27 (44 %), Baden-Württemberg (46.1 %), Germany (49.7 %) and Upper Austria (53.4 %).

[43] Breaking the data down further, Ministry of Health figures indicate that in 2020, the Basque Country had 0.81 primary care physicians per 1,000 people. This is more than the Spanish average (0.78). The number of doctors also increased by 0.01 compared to 2019, while remaining the same in Spain as a whole. In the case of specialised care, the Basque Country had 2.31 doctors per 1,000 inhabitants in 2020, also higher than the Spanish figure (2.02), although growth was slower in the Basque Country (0.02) than in Spain as a whole (0.05).

[44] This indicator is part of the 'human resources' dimension within the framework conditions driving innovation, according to the European Innovation Scoreboard 2021. Furthermore, the Regional Competitiveness Index considers higher education (higher VET and university) to be a key indicator of a workforce with stronger skills and an 'efficiency' factor as a regional economy develops.

GRAPH 4-12 Key indicators of human capital



Source: Eurostat. Compiled by authors.

NB: For the 2021 value for 'population aged 25-34 with post-compulsory education' and 'employment rate of the population aged 15-64', there is a break in the time series compared to the previous year in all the territories analysed. Additionally, in Spain and the Basque Country, there was also a change in definition for the 'employment rate' indicator in 2021 compared to the previous year.

In 2021, people with STEM qualifications accounted for 9.7 % of the working population in the Basque Country, higher than in all comparison territories

Moreover, despite the Basque Country's strong position with regard to the population aged 25-34 with tertiary education (ISCED 5-8), there are two elements of analysis to consider. The first is the **percentage of people with tertiary education whose qualifications fall under STEM**, which are key for the digital and green transitions. In this regard, a territory's STEM qualifications must be reflected in the number of science and engineering professionals as a percentage of the working population. These professionals are considered active drivers of innovation in technological

development.[45] In 2021, they represented 9.7 % of the working population, topping all the benchmark territories, which ranged from 6.9 % in Spain to 9.6 % in Baden-Württemberg. However, maintaining and improving this indicator in the Basque Country relies on promoting STEM qualifications among young people, as well as attracting and retaining talent to deal with population replacement in these occupations and the rapid pace of scientific and technological advances. In recent academic years, we have seen stable performance in the enrolment rate for undergraduate degree programmes that fall under STEM and a slight upturn in enrolment in master's and higher vocational education programmes, although this performance should be trending positively in all cases.

The high percentage of young people with tertiary education must be accompanied by a high capacity of the territory to take advantage of them in jobs in line with their qualifications

The second element to be considered is the **percentage of people with tertiary education who are overqualified with respect to their job position.** According to the survey conducted in 2019 by the INE (Spanish National Statistics Institute) of graduates from undergraduate degree programmes who completed their studies in the 2013-2014 academic year, 21.7 % of those surveyed in the Basque Country believed the most appropriate level of education needed to perform their job was less than university, whereas this percentage was 20.2 % in Spain as a whole. A survey of people with higher VET qualifications indicates that of those who trained in the Basque Country, 28.5 % believed the most suitable level of training needed to perform their job was lower than theirs, compared to 27.1 % in Spain as a whole, 25.4 % in the Community of Madrid and 23.9 % in Cataluña.[46] Therefore, it is crucial for the high percentage of young people with tertiary education to be accompanied by high capacity within the territory to take advantage of these skills in jobs which are appropriate for their qualifications and drive attracting and retaining talent.

The Basque Country employment rate grew in 2021 and is approaching 2019 levels, but remains comparatively low

The last dimension of human capital we consider is the intensity with which a territory takes advantage of the available human capital, measured by means of the **employment rate of the population aged 15-64** (Graph 4-12d). In 2021, the employment rate in the Basque Country rose to 66.9 %. This increase was smaller only than the rise in Spain as a whole. The other benchmark territories reported a smaller increase in employment rate, which is due to the smaller loss in 2020 compared to 2019, due to the pandemic. In this area, it is worth mentioning that the Basque Country is the territory whose employment rate is closest to the 2019 figure, after the EU-27 as a whole, which has already returned to the pre-pandemic rate. The other benchmark territories still have further to go to reach the 2019 value. However, as regards the 2021 values, it should be noted that the employment rate in the Basque Country is lower than all the benchmark territories, except Spain. This indicates great potential for intensifying labour market participation in general. This is particularly important taking into account the demographic situation analysed in Chapter 3, which points to a decline in the working-age population.

4.6. Social and institutional capital

The social and institutional capital lever relates to the system of rules and organisation which structure socioeconomic interactions, affecting the creation of economic value and wellbeing. Some of the institutions —both formal (system of government, administration, etc.) and informal (values, creativity, trust, etc.)— are part of the

[45] Identified as a component of human resources in science and technology (HRST) by Eurostat. See: https://ec.europa.eu/eurostat/cache/metadata/Annexes/hrst_esms_an1.pdf.
[46] See: https://www.ine.es/jaxi/Tabla.htm?tpx=44996&L=0

structure of our framework (see Chapter 3). That part changes only slowly over time, but it determines the possibilities for action and the effects of several of the levers of competitiveness. However, it is possible to have an impact on another part of our social and institutional capital in the short and medium term, improving aspects such as the quality of government or the environment of trust among firms as a direct lever to drive better competitiveness and wellbeing outcomes.

In fact, the role of formal and informal institutions as a lever of regional development is widely recognised. According to Rodríguez Pose (2020):

> 'The consensus is that institutional quality matters, and that it matters a lot … as an explanation of the divergent economic paths of subnational territories in virtually all economic realms …. Overall, differences in institutional quality across territories can be considered today as important as —if not more important than— variations in physical and human capital ….'

In times of uncertainty and volatility, the value of social and institutional capital increases because interactions between agents become more important in the search for solutions

Furthermore, in times of uncertainty and volatility, such as the present, the value of social and institutional capital increases because interactions among stakeholders take on more importance in seeking solutions and adapting to new situations. In this regard, social and institutional capital is essential for resilience (Orkestra, 2020). One illustrative example is the role intermediaries such as cluster management organisations have played during the pandemic. In the Basque Country, as well as other places in Europe,[47] they have helped structure interactions among firms, governments, research centres and other stakeholders in seeking solutions to disruptions in value chains or the supply of healthcare equipment, for example.

However, social and institutional capital is a difficult lever to measure, and there is a lack of suitable and comparable indicators at the regional level. To gain insight into the situation regarding this lever in the Basque Country, we analyse three dimensions:

- The **quality of government**, reflected in the European Quality of Government Index, which measures perceptions and experiences with corruption in the public sector, as well as citizens' perceptions of quality and impartiality of public services (Charron *et al.*, 2021).
- **Business social capital**, reflected in the level of cooperation among firms for innovation (% of SMEs that cooperate in innovation).
- **Public–private collaboration**, reflected in the level of public–private co-publications (per million inhabitants).

Since 2013, the quality of government in the Basque Country has been rising relative to the European average

The European Quality of Government Index is an indicator calculated every four years whose results are not directly comparable from one year to another.[48] In other words, it is not possible to assume that a higher value indicates an improvement in the quality of government. What can be compared is whether a territory is above or below the European average (which is set at zero each year) and the gap between regions in terms of quality of government. The data since 2013 therefore indicate that the quality of government (different government bodies) in the Basque Country has been increasing since 2013 in comparison with the European average, slightly exceeding Baden-Württemberg and Upper Austria in 2021 and also ranking the best among Spanish regions.

[47] See, for example, the 2021 *European Cluster Panorama* (Franco *et al.*,2021).

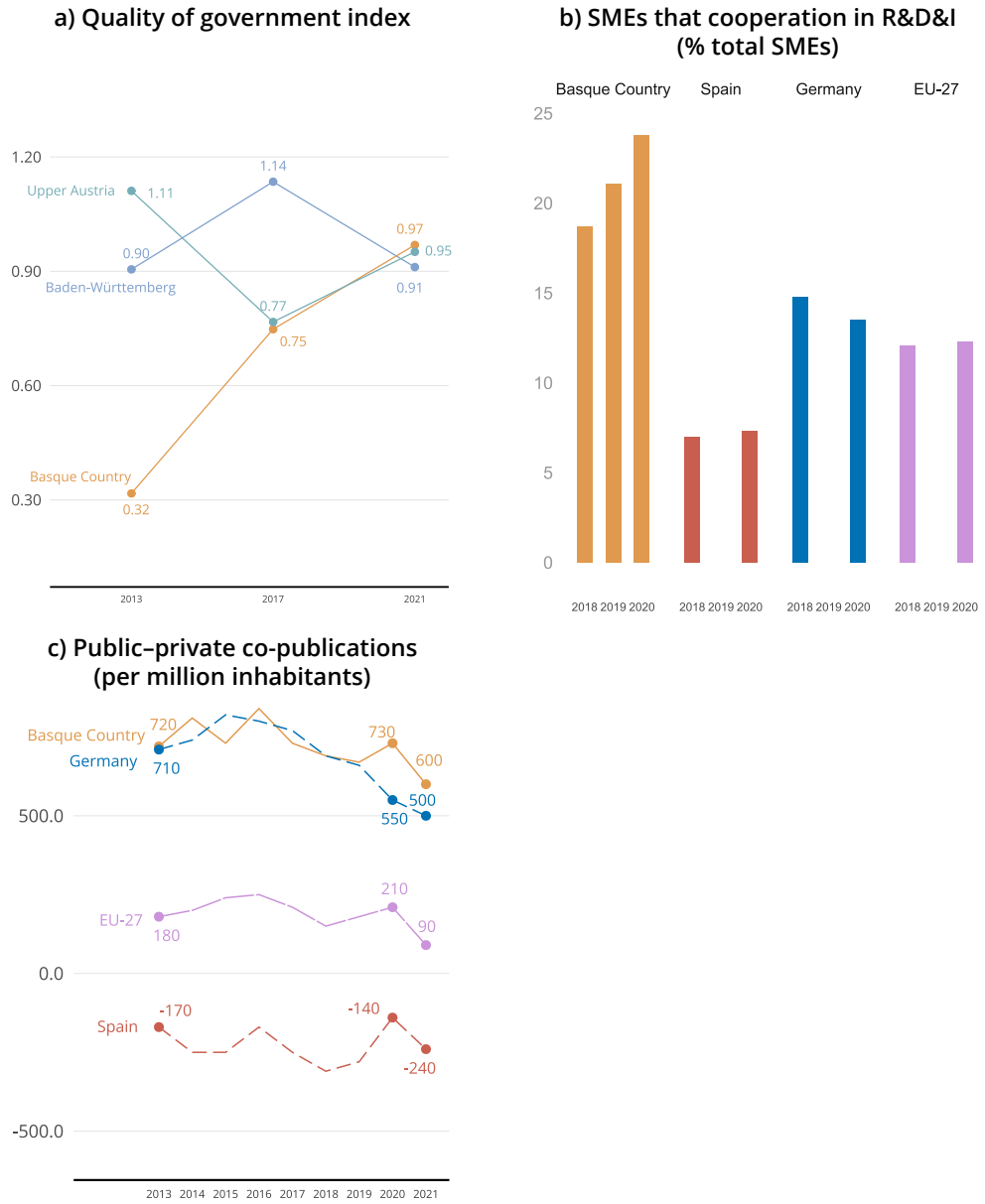
[48] The index is standardised in such a way that each year the European Union average is assigned a value of 0. Therefore, positive values indicate that the quality of government is above the average for the European regions, and a negative value indicates the opposite.

As regards cooperation among SMEs to carry out R&D&I, due to the methodological changes in the innovation survey, there are only comparable data since 2018. The data indicate that the Basque Country began with higher levels of cooperation than in Germany and the EU-27, and much higher than in Spain, and that this cooperation has increased. This contrasts with the other territories under consideration, where 2020 levels remained similar to those from 2018 or even dropped (as in the case of Germany).

Levels of SME cooperation are higher than in other territories

Lastly, for the public–private co-publications indicator, we can see that the Basque Country also ranks far higher than the other territories and that the trend continues to be positive, with a particularly large increase in 2020.The Basque Country therefore has good levels of institutional and social capital among firms and in public–private collaboration. This has improved in recent years and constitutes a strength for cooperative actions that reinforce competitiveness.

GRAPH 4-13 Key indicators of social and institutional capital



Source: a) European Quality of Government Index, University of Gothenburg. Compiled by authors; b) Eustat and Eurostat. Compiled by authors; c) Scopus and Eurostat. Compiled by authors.

Conclusions

The analysis in this report is structured around the new 'territorial competitiveness for wellbeing' framework presented in the *2021 Basque Country Competitiveness Report*. That report analysed how the Basque competitiveness strategy has developed since the previous crisis in 2008, identifying a series of unique characteristics in the current smart specialisation strategy (S3) (PCTI 2030), the Basque Science, Technology and Innovation Network, the education, training and skills system, and mechanisms of governance and territorial leadership. It concluded that the Basque Country's outcomes in terms of wellbeing and competitiveness were, in general, comparatively positive and well consolidated, with some weaker points in the areas of employment, environment, productivity and innovation.

Since then, the uncertainty that has enveloped us during the pandemic has been amplified by the invasion of Ukraine and the impact of the geopolitical situation on various important markets, such as energy. In the current context of deep energy/environmental, technological/digital and demographic/social transition, we are also adapting to high inflation, sustained vulnerabilities in critical supply chains, and greater intervention in various areas of the economy. Against this backdrop, the framework helps us to understand not only the impacts on competitiveness and wellbeing outcomes, but also the changing foundations of competitiveness that are found in the structural context of each territory and the dynamic levers that can be used to influence future competitiveness and wellbeing.

The framework helps us to understand not only competitiveness and wellbeing results, but also the evolution of the competitiveness foundations of the territory

Wellbeing and competitiveness outcomes in the Basque Country

The assessment of wellbeing and competitiveness outcomes does not reveal major changes from the assessment in 2021, although it does reflect the turbulence of recent years. Indeed, the weakest recent performance has been in those wellbeing indicators with a more economic dimension. This is not surprising in the context of the economic crisis brought on by the pandemic, which is also reflected in economic/business performance indicators.

Wellbeing indicators with a more economic dimension have shown the worst performance in recent years

In the seven dimensions of wellbeing, the following outcomes are noteworthy:

- **Life satisfaction:** Life satisfaction is comparatively high in the Basque Country, and it bounced back after a slight drop in 2018 and 2019. We do not see major differences in life satisfaction between men and women.
- **Material life:** Household equivalent median income remains considerably higher than the EU-27 average, although it dipped slightly in 2020. Additionally, there was an increase in the percentage of people at risk of poverty or exclusion in 2021, at a time when inflation began to have a greater impact on material life among the most vulnerable groups. In these circumstances, one positive is that income inequality levels have remained low in comparison with the other territories.
- **Employment:** Unemployment continues to be high compared to other territories, but after worse results in 2021, the 2022 figures point to recovery. In addition, job satisfaction held steady in 2020, consolidating the 2019 increase, and the gender pay gap continued its downward trend.
- **Social life:** The Basque Country has better levels of satisfaction with free time, confidence in people and sense of insecurity than the EU-27 average and almost all the other benchmark territories.
- **Learning:** The 2021 data show that the Basque Country's position has improved, both in the proportion of the population with some post-compulsory education (in which the gap with other territories has narrowed) and in opportunities to engage in lifelong learning activities (in which its lead on other territories has increased). These are important factors in the current context of growing global competition for talent.
- **Health:** Life expectancy and self-perceived state of health are significantly higher in the Basque Country than the EU-27 average and higher than in all the benchmark territories.
- **Environment:** In 2020, greenhouse gas emissions per capita fell in all territories as a product of the pandemic, and the Basque Country ranks practically the same as the European average. In addition, the Basque waste recycling rate improved in comparison with the European average, and in air pollution, the Basque Country continued to be the top ranked territory among those analysed.

In the four dimensions of economic/business results, the following outcomes stand out:

In 2021, the scenario is one of recovery in economic performance and business profitability

- **Economic performance:** We are seeing a recovery following sharp declines in 2020 in GDP per capita and productivity because of the pandemic. Basque GDP per capita recovered in 2021, but it has not yet reached pre-pandemic levels or recovered its lead in comparison with the European average. Apparent productivity of labour also recovered in 2021, ranking above the EU-27 average but below Germany and the benchmark regions of Baden-Württemberg and Upper Austria.
- **Business profitability:** The different indicators of business profitability also reflect this recovery. Firstly, both ROA and ROE bounced back in 2021, and gross operating surplus has returned to pre-pandemic levels. On the other hand, unit labour costs reported a sharp rise in 2020 (the latest year for which data is available) due to the decline in productivity, both in the economy as a whole and in manufacturing industries.

- **Innovation and entrepreneurship:** The Basque Country is among the 67 regions classified as 'strong innovators' in the latest edition of the *Regional Innovation Scoreboard*, and it is included in the group of 'regional innovation hubs'. However, the latest innovation and entrepreneurship results, from 2020, reveal a negative trend compared to the previous year. This includes the proportion of innovative SMEs, sales of new products and the percentage of high-growth firms. Of particular note is the decline in the percentage of innovative firms, given that the trend is positive in the other territories analysed (Spain and Germany). This can be explained in part by an increase in the total number of SMEs in the Basque Country in 2020. It may also reflect the greater impact of the pandemic on the sectors in which the Basque Country specialises and consequently, on its levels of innovation. However, it does confirm the need to persist in efforts already underway to foster a stronger culture of innovation among Basque SMEs.

SME innovation performance shows a negative evolution in 2020

- **Internationalisation:** Exports of goods and of goods and services recovered in 2021 following a sharp drop in 2020. The international balance of trade in goods and services remains positive, yet while the balance when trade with the rest of Spain is included has improved, it remains in the red. The international balance of trade in goods declined in the last year —indicating that growth in goods imports was higher than in exports— but it remains positive.

Exports of goods and services rebounded in 2021 after a sharp drop in 2020

Economic and technological structure

The economic structure of a territory does not usually change very quickly, but the fact that we are currently engaged in industrial transitions linked to digitalisation and environmental sustainability at a time of turbulence in some key value chains make it especially important to understand how things are developing, however slowly. Based on analysis of trends in the employment structure of the Basque Country between 2012–2014 and 2017–2019, we have detected various **changes in the specialisation (relative to Europe) of manufacturing activities and services linked to industry**:

In a context of high uncertainty and major transitions, it is necessary to understand the evolution of the economic structure

Increase in specialisation	Decrease in specialisation
Sectors related to advanced manufacturing and smart industry, such as Manufacture of metal products, Manufacture of machinery and equipment, and Manufacture of computer, electronic and optical products.	**Traditionally important manufacturing sectors**, such as Manufacture of electrical equipment, Metallurgy and manufacture of iron and steel products, Manufacture of other transport equipment, Manufacture of rubber and plastics, and Manufacture of coke and refined petroleum products.
Services important for the knowledge economy, in particular Research and development, Architectural and engineering services, and Other professional activities.	**Services that are important for sales and marketing activities and fostering new management models**, such as Advertising and market research, IT, Legal activities, and Financial services.

We also see that the Basque Country's **technological specialisations** broadly coincide with the industrial activities in which it is strong. Moreover, several of them are included in Science, Technology and Innovation Plan (PCTI) priorities of advanced

manufacturing (PCTI 2020) or smart industry (PCTI 2030). What is more, the Basque Research and Technology Alliance (BRTA) research agendas reflect ongoing efforts to ensure alignment between R&D and S3 priorities. However, the ratio between patents and jobs is generally lower than the EU-27 average, with the Basque Country having fewer patents in various sectors than employment levels would lead us to expect.

Lastly, analysis of the **sophistication of the productive fabric** —based on the diversification and uniqueness of the activities in which it specialises— reveals that the Basque Country has maintained its sophistication in manufacturing activities in the European context, but that it has lost ground in the ranking of sophistication encompassing all activities in the economy.

The evolution of the Basque economic structure reflects the importance of prioritization within the S3

Overall these observations concerning the evolution of the Basque economic structure reflect the importance of the **S3 strategy prioritisation process**, especially in activities linked to smart industry. Moreover, the analysis of the sophistication of the economy and trends in services urges us to be especially attentive to opportunities which may emerge at the intersection of current manufacturing specialisation and related services.

Demography and values

Demographic structure and personal values also do not usually change very quickly. However, they have a profound impact on the future competitiveness and wellbeing of a territory.

High ageing rates have important implications for the labour market and the social protection system, and successful integration of immigrants will be key

Firstly, **high ageing rates in the Basque Country have significant implications for the labour market and social protection system**. This ageing has many positive features: for example, it reflects the increasing longevity of the population and generates new business opportunities for both goods and services (referred to as the silver economy). However, it also means a reduction in the working-age population (potentially active population), which represents a critical challenge for maintaining competitiveness and wellbeing in the long term.

Tackling demographic challenges requires mobilising the territory's people (workforce), increasing their added value (innovation and productivity), and retaining, attracting and cultivating talent (immigration, integration and skills linked to the economic fabric). Concerning the last item on this list, with a lack of certain talent profiles being a widespread problem in different regions and countries, competition among territories to attract (and retain) certain types of talent is becoming more pronounced. In a context in which demographic projections indicate that population growth will come exclusively from a positive migration balance by 2035, it will be particularly important to ensure the **effective integration of immigrants in all areas** and to work on their training and incorporation into the job market in line with business and territorial needs.

Secondly, analysis of the **values of different generations of the population** reveals certain features regarding attitudes towards immigration and work which are important to consider when designing actions to tackle the demographic challenge:

- **Attitudes towards immigration:** All age groups, particularly the youngest generations, have positive attitudes towards immigration and the participation of immigrants in the job market. Moreover, the high score among young generations in values such as 'tolerance and respect for others' is particularly important given the need to ensure the effective and harmonious integration of immigrants.
- **Attitudes regarding work:** Among the youngest generations (< 50 years of age), work is valued as the most important dimension of life after family, and within work, greater priority is given to aspects like pay and hours than to the possibility of taking initiative or assuming responsibilities. On the other hand, there are work-related indicators, such as absenteeism, which continue to cause some concern. In this context, it will be important for firms to incorporate both a generational and a life stage analysis of their labour force into their human resources policies so that they may better respond to needs and concerns. In this area, there are opportunities for innovation in our human resources management strategies —for example, in how we handle the balance between labour stability and flexibility— to optimise labour market participation and added value, as well as the ability to attract, retain and nurture talent.

Attitudes towards immigration and work are important for identifying actions to face the demographic challenge

In response to this situation, the Basque Strategy 2030 for the Demographic Challenge defines strategic goals related to emancipation and birth rate and prioritises improving results and impacting on public policy in areas such as attracting and integrating immigrants, as well as full and healthy ageing. Additionally, it is advisable to analyse the expectations of young people about work, education and training, to better enable Basque firms to attract them and to generate key education and training options for the transitions. Demographic decline tests the capacity of firms and the territory as a whole to produce effective strategies to attract both students and people with education from abroad, as well as to innovate in how we boost and adapt the skills of people from the territory in line with changing needs. This underlines the importance of connections between policies in different spheres in a context in which changing demographics and values will have a profound impact on our capacity to compete in the economic sphere and generate sustained wellbeing.

Where should we take action?

To tackle the challenges associated with changes in the economic and demographic structure and to increase our ability to continuously adapt to the new challenges associated with the environment of uncertainty and the energy/environmental, technological/digital and demographic/social transitions, we must work on the six levers of competitiveness. The analysis of a set of headline indicators which denote the state of the six levers has pinpointed several specific points of action, many of which are already the target of different public and private plans and initiatives:

The analysis of the six competitiveness levers has identified several specific points for action

Lever	Actions
Natural capital	• Advance decarbonisation through: new renewables and storage projects; strategic initiatives targeting emission-intensive industry; and widespread improvement of energy efficiency in all sectors. • Work on material efficiency and circularity to reduce external dependencies and increase productivity. • Use well-designed incentives to promote progress in the development of cleaner production and consumption alternatives. • Seize new emerging opportunities in areas such as environmental protection, waste management, energy efficiency and circular economy.
Physical capital	• Maintain investment levels, in particular in machinery and equipment, which is especially important for economies with a high proportion of industry. • Foster a stable regulatory environment conducive to investment, especially aligned with the medium-term decarbonisation objectives of the economy (reinforcing actions on the natural capital lever).
Financing	• Diversify sources of financing through the promotion of a local private investment industry. • Explore the potential for diversifying the countries of destination and origin of FDI flows and strengthen inward flows in activities connected to industry and to the challenges of the Basque Country.
Knowledge	• Maintain the recent positive trend in R&D expenditure and efforts to support innovation in SMEs. • Maintain efforts to increase scientific knowledge assets, reinforcing the commitment and alignment of the scientific and university system with the S3 strategy (PCTI 2030). • Reflect on the low propensity to patent in the Basque Country and the potential dangers of this trend at a time when the rules of the game in intellectual property at international level are changing. • Strengthen the weakest dimensions detected in the digital economy and society, such as the number of ICT specialists and training processes in companies, and the use of some emerging technologies.
Human Capital	• Maintain the positive evolution in the employment rate, taking advantage of the potential to intensify participation in the labour market. • Maintain the positive evolution in the percentage of the population with upper secondary and tertiary education, reducing the gap with other territories in intermediate qualifications. • Increase the percentage of tertiary educated people with STEM qualifications. • Facilitate that the educational offer evolves in line with the needs of the economy and society, building on existing strengths, such as the VET system, and enhancing the relationship between university and vocational training.
Social and institutional capital	• Take advantage of the existing high social and institutional capital to reinforce collaborative actions between companies and between companies and other agents.

Five priority cross-cutting actions are identified that should guide the actions of companies, governments and other stakeholders

Beyond the specific actions associated with each of the levers, if we combine analysis of the current competitiveness and wellbeing outcomes, the competitiveness levers and the structural context included in this report, we arrive at a group of cross-cutting actions. Building on the solid foundations of Basque competitiveness from which to tackle upcoming challenges in future months and years, we identify **five priority cross-cutting actions** to guide the activities of firms, governments and other stakeholders with regard to each of the levers of competitiveness:

1. **Foster the leadership of a new sustainable industrial competitiveness**, responding to the major structural environmental challenge. To this end, it is necessary to complement the short-term strategies of companies, governments and

other agents to resist economic pressures with medium-term strategies that accelerate an orderly green transition at the lowest possible social cost, preparing us to compete in a world that requires greater sustainability.

2. **Strengthen people's capacities to contribute to competitiveness and well-being**, in line with the emerging needs of the territory. To achieve this, it is necessary to increase activity and employment rates, to enable the continuous training of people, and to promote the integration of immigrants with different profiles into society, facilitating their training and their incorporation into the world of work. Human resources policies that are more proactive, innovative and sensitive to the needs of the different groups will be necessary for this, as well as for attracting, retaining and developing talent in Basque companies.

3. **Work on the innovation culture, capacity and orientation** of companies, the public administration and the territory as a whole. Innovation culture and skills are critical to strengthen productivity in all areas and to mitigate the negative effects of the shrinking labour force on the competitiveness of the territory. To this end, it is necessary to continue investing in R&D&I and to strengthen the scientific capacities of the territory, as well as to continuously improve the skills of people, adapting them to the new needs of the productive fabric. The orientation of innovation is also key to ensure alignment with the specific opportunities arising from the digitalisation and servitisation of industry, sustainability and energy efficiency, and the ageing of the population. In this sense, it is necessary to work towards a collective vision of the future that we want and to be sensitive to the need for collaboration to innovate in the face of more complex challenges.

4. **Strengthen a sophisticated economic fabric**, capable of evolving towards new specialisation niches based on our industrial strengths. To this end, particular attention needs to be paid to the connections between the different activities of industry and between industry and related services. There is also a need to strengthen activities whose current development poses barriers to exploiting new opportunities (e.g. digital or financial services that open up new markets or management models related to industrial activity). Multi-level cooperation (e.g. connections between cities and other parts of the territory) and public-private cooperation (e.g. within Cluster Development Organisations) will be critical to identify and seize opportunities to increase the sophistication of the industrial fabric.

5. **Deepen the international connectivity of the economy and society** to open opportunities that allow progress in multiple dimensions, such as the development of new markets and sources of financing, the attraction and retention of talent or the increase in the sophistication of our economic and technological fabric. To this end, it is necessary to integrate an international perspective in the development of actions in all the levers of competitiveness, increasing both the Basque Country's activity abroad and the international connection of the projects and initiatives developed in our territory. In this process, it is important to identify and minimise the potentially negative effects that these actions may have on other territories.

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Glossary

BACH	Bank for the Accounts of Companies Harmonised
BRTA	Basque Research and Technology Alliance
CMO	Cluster Management Organisation
CNAE	National Economic Activities Classification
CNMV	Spanish Securities Exchange Commission
DESI	Digital Economy and Society Index
DMC	Domestic materials consumption
EJIE	Technological management body of the Basque Government
ERC	European Research Council
ERTE	Temporary Employment Regulation Proceedings
ESS	European Social Survey
EU	European Union
EVH	Basque Hydrogen Strategy
FDI	Foreign direct investment
FES	Full-time equivalent staff
GDP	Gross domestic product
GHG	Greenhouse gases
GVA	Gross value added
HRST	Human resources in science and technology
ICT	Information and communications technology
INE	National Statistics Institute
ISCED	International Standard Classification of Education
IVIE	Valencian Institute of Economic Research
LQ	Location quotient
OECD	Organisation for Economic Co-operation and Development
PCT	Patent Cooperation Treaty
PCTI	Science, Technology and Innovation Plan
PERTE	Strategic Projects for Economic Recovery and Transformation

PISA	Programme for International Student Assessment
PMA	Environmental Framework Programme
p.p.	Percentage points
PPP	Purchasing power parity
PTS	Regional Sector Plan
R&D	Research and development
R&D&I	Research, development and innovation
RIS	Regional Innovation Scoreboard
RIS3	Research and Innovation Smart Specialisation Strategy
ROA	Return on assets
ROE	Return on equity
S3	Smart Specialisation Strategy
SETSI	Secretary of State for Telecommunications and Information Society
SME	Small and medium-sized enterprises
STEM	Science, technology, engineering y mathematics
ULC	Unit labour cost

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