

# Analysis of Talent Needs in the Basque Country Horizon 2020



**July 2014** 



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# **INTRODUCTION**



### **INTRODUCTION**

At an historic moment, when we are conditioned by the economic situation, it is usually difficult to step away from short-term approaches. However, it is necessary to answer questions that allow building the nation's model with a focus on the mid and long term.

Therefore, with the objective of guaranteeing the sustainability of the social system we have established, a production model that is able to sustain it must be guaranteed.

This report aims to address the concerns laid out by Bizkaia Talent regarding this matter. The goal is not so much to identify the production model that is required, but rather to identify the talent needed to "feed" a production model in transformation.

With a focus set on 2020, it is essential to think about the number of professionals needed in the various knowledge areas so as to support the evolution of the existing system, since it is clear that due to demographic effects, a portion of the current population will have to be replaced or substituted.

In addition, the foreseeable change in trends regarding job creation, combined with the growing weight of the demand for university graduates in job offers today, could lead to the conclusion that between now and 2020, it will be necessary to continue "producing" new university graduates. But how many? And for what knowledge areas? These are the questions that this report aims to answer based on the analysis of historical data from various renowned sources, by consulting social references in the field, and by surveying individuals responsible for hiring at companies (including end users as well as intermediaries).



# **METHODOLOGY**



### **METHODOLOGY**

The study's execution has passed through a number of phases that were carried out in parallel:

- Analysis of document sources.
- Analysis of the microdata file from the Labour Market Census--Censo del Mercado de Trabajo, or CMT in Spanish--(supply) of the Basque Government's Department of Labour and Social Policies.
- In-depth interviews with human resources departments of companies, technology centres, universities and the public administration.
- Surveys carried out with head-hunter firms and human resources departments of companies with more than ten employees in the Basque Country.

### **Analysis of document sources**

Universe:	Basque Country, Spain, Europe					
	Statistics sources:					
	• Eurostat					
	• Eustat					
	• INE					
	• Statistics on the labour situation of graduates Lanbide, Basque Government.					
	<ul> <li>Labour Market CensusCenso del Mercado de Trabajo, or CMT in Spanish(supply) of the Basque Government's Department of Labour and Social Policies.</li> </ul>					
Document	<ul> <li>Statistics of the non-university education system. Department of Education, Linguistic Policy and Culture, Basque Government.</li> </ul>					
sources:	<ul> <li>Student statistics. Ministry of Education, Culture and Sports.</li> </ul>					
	<b>Reports</b> (see bibliography for greater detail):					
	• Eustat					
	Basque Government					
	• CES					
	• Lanbide					
	• Bizkaia Talent					
	• Deusto					
	• Etc.					



### **In-depth interviews**

Universe:	Universities, human resources departments, administration						
Sampling:	Companies:  IDOM: HR Department  HUMANITY AT WORK MONDRAGON: HR Department  SENER: HR Department  Research and technology centres:  CICBIOGUNE: HR Department  TECNALIA: HR Department  IK4: HR Department  University:  DEUSTO: Vice-Rector of Academic Organisation, Teaching Innovation and Quality Vice-Rector of Communication, Multilingualism and Social Innovation  UPV: Vice-Rector of University-Corporate Relations  MONDRAGON UNIVERSITY: General Coordinator of the Faculty of Engineering						
	BASQUE GOVERNMENT, LANBIDE: Technical Cabinet						
	BASQUE GOVERNMENT: University Department						
	BEAZ: Department of Organisation						
Dates:	May and June 2014						
Script:	Prepared by Adimen and reviewed/validated by Bizkaia Talent						



### **Company surveys**

Universe:	- Head-hunter firms						
	- HR departments of companies with more than ten employees						
Sampling error:	$\pm 9.5$ for a 95% confidence level over the total number of companies surveyed. Workforce size and hiring capacity reduce the sampling error in these types of studies that analyse the job market's evolution.						
	- 21 surveys carried out with	n head-hunter	firms				
Sample:	- 103 surveys carried out wi	•					
	which 60 have 50 or more employees and 32 have 100 or more employees.						
	In order to adjust the sample to the reality of the business network, the following weighting has been done using DIRCE (INE) data for the Basque Country:						
		Weighting coefficient					
Weighting:	Industry	36	47	0.7659574			
	Energy supply / waste	2	1	2.0000000			
	Construction	10	2	5.0000000			
	Commerce	11	13	0.8461538			
	Transport	5	7	0.7142857			
	Services	39	33	1.1875000			
Survey dates	Between April and June 2014						
Controls:	100% of the surveys were reviewed						
	Statistical consistency control of the data.						
Questionnaire:	Prepared by Adimen and reviewed/validated by Bizkaia Talent						



Analysis of the microdata file from the Labour Market Census--Censo del Mercado de Trabajo, or CMT in Spanish--(supply) of the Basque Government's Department of Labour and Social Policies.

Universe:	People over the age of 16 who live in family homes that are used as the primary residence during most of the year or the entire year.						
Regional area:	Autonomous Community of the Basque Country						
	The current sample consists of 14,500 homes for the entire region of the Autonomous Community. The sampling design is two-stage and self-weighted within each of CMT employment region and each typology.						
Sample:	Just like the PRA, the CMT operates as a panel in such a way that another basic use of the operation is to provide long-term information about the changes that affect the population over the age of 16.  Total sample of the population surveyed by year:						
	Year	Sample	Year	Sample	Year	Sample	
	2001	40271	2005	31462	2009	26528	
	2002	39356	2006	31210	2010	26629	
	2003	38256	2007	30947	2011	26317	
Survey dates	Annual frequency  Data available for 2001 - 2003, 2005 - 2007, and 2009 - 2011						
Responsible organisation:	File provided by the Basque Government's Department of Labour and Social Policies.						

The Labour Market Census (supply) basis for analysing employed individuals in the various economic sectors according to knowledge area and the year the data was collected (Chapter: "Employment Situation in the Basque Country: Distribution by Sector") is as follows:

	2001	2002	2003	2005	2006	2007	2009	2010	2011
Technical	1057	1062	1056	797	744	763	824	795	723
Social and legal	2250	2279	2370	1919	1845	1894	1662	1633	1530
Humanities	439	421	442	352	382	364	347	326	297
Health	544	601	564	457	426	400	425	430	404
Experimental	222	219	238	195	192	207	168	177	158



# **MAIN RESULTS**

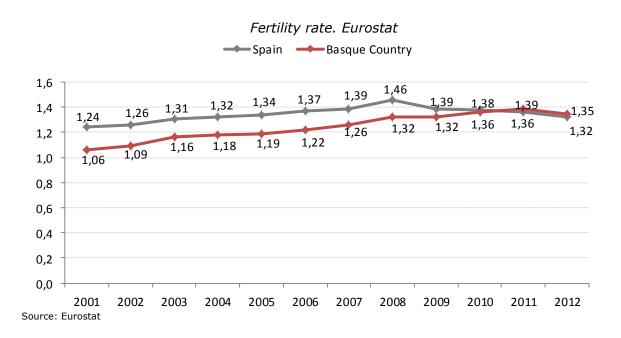


### **DEMOGRAPHIC CHANGES AND THEIR EFFECTS**

European population figures show a clear demographic change in the last decades, making apparent the phenomena of population ageing and the drop in birth rates.

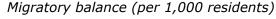
In the Basque Country, this situation is even more noticeable than in the rest of Spain; the region has an average population age of 43.77 years, which is slightly higher than Spain's average of 41.5 years.

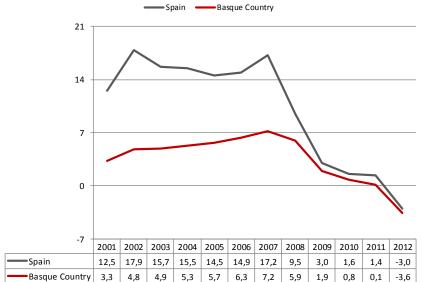
The average number of children experienced a pronounced and constant drop since the last baby boom and then recovered slightly two decades later, in part due to the immigrant population. However, the first drop appeared in 2012, with a fertility rate (average number of children per woman) of 1.35.



The immigration phenomenon has alleviated, to a certain degree, the fall in birth rates, with 63 births for every 1000 immigrant women of fertile age compared to 37.6 births by women in the Basque Country (provisional 2013 INE data). However, these results run the risk of being interrupted, primarily due to immigrants returning to their country of origin or mobility to other job destinations as a result of the crisis.



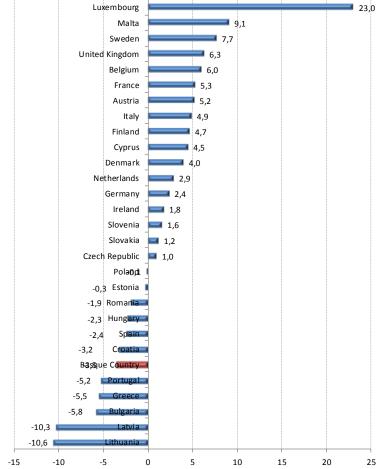




Source: Eurostat

Considering the balance between births and deaths on the one hand, and migratory movements on the other, we find ourselves in a situation in which the actual population balance is negative, below Spain's average. This situation is influenced primarily by the migratory balance since we find ourselves facing a natural growth of zero.

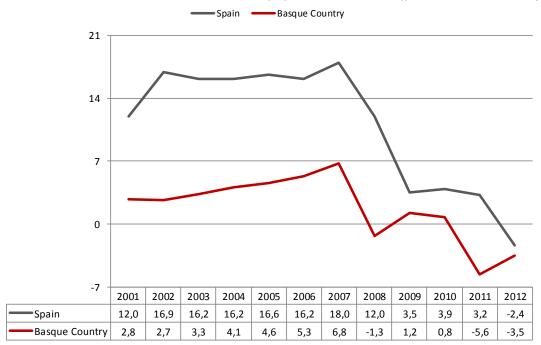




Source: Eurostat (Global data for the entire EU-28 not available)



In the Basque Country, the actual population balance has been lower than the results for Spain in the last decade. There was a turning point in 2007-2008 for both contexts, but the results were more negative for Spain, which was closer to the negative balance attained by the Basque Country in 2012.

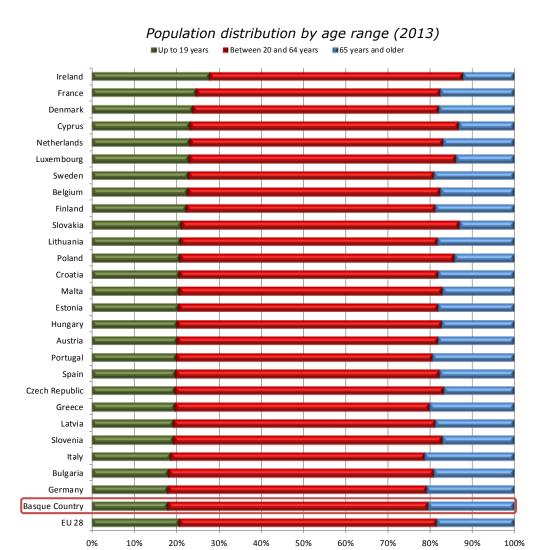


2001-2012 Evolution of the actual population balance (per 1,000 residents)

Source: Eurostat

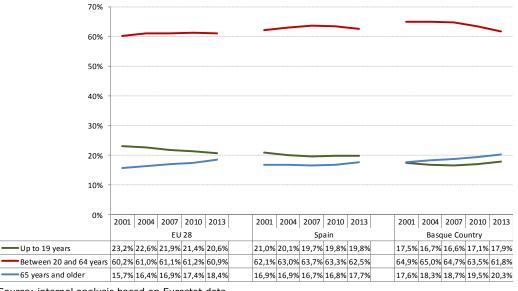
The population data by age compared with EU-28 countries for 2013 confirm the delicate situation of the Basque Country, which is ranked last with the lowest percentage of people under the age of 19 and the highest population percentage over the age of 64, along with countries such as Latvia, Italy and Germany.





Source: Eurostat (data for the United Kingdom and Romania not available for 2013)

The evolution data show how in the Basque Country the proportion of older people surpassed the younger segment as of 2001. This trend could repeat itself in Spain and in half of EU-28 nations, if it has not already occurred.



Source: internal analysis based on Eurostat data



To understand the potential future of population trends, Eustat (Basque statistics service) has designed a series of projections based on the selection of a certain combination of probable evolution hypotheses for each demographic phenomenon involved in population growth (mortality, fertility and migration).

Thus, the data shows a constant drop of the total population and progressive ageing. Between now and 2020, Eustat expects a population drop of 2.4% and then of 2% in the five following years.

Between now and 2020, the population over 65 years will increase by 10%, and this variation will double towards 2025. The younger population will not compensate this growth, and although in 2020 it will be maintained, in 2025 there will be a considerable drop of 4.5% in the population under the age of 19 years.

In terms of the population with ages near the employment life cycle (20-64 years), a considerable drop is also expected in both of the time scenarios considered.

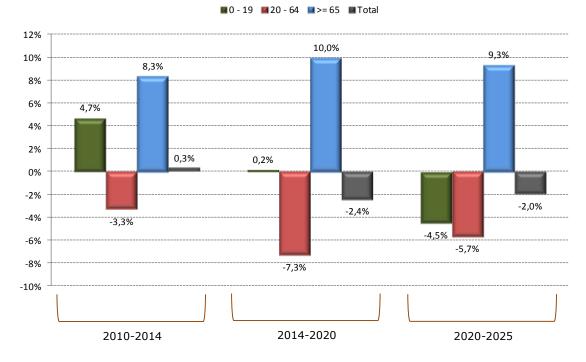
Population projections (Eustat)

# Total — 0 - 19 — 20 - 64 — >= 65 2500 1500 500 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

Source: Internal analysis based on Eurostat data (population projections)



### % population increment or reduction



Source: Internal analysis based on Eurostat data (population projections)

However, Eustat extracts population projections according to seven scenarios, depending on different combinations of variables that affect demographic evolution. Observing these scenarios and considering Eustat's municipal statistics, four of the seven scenarios suggest a drop in population for a closer horizon (2020) as well as one that is more distant (2025).

Thus, the most negative scenario projects a population reduction of -4.1% for 2020 and of -9.2% for 2025, while the most negative scenario projects an increment of 1.1% for 2020 and of 2.1% for 2025.

Even in the scenarios that suggest a more optimistic future, population ageing is clear. In the best scenarios, the population under the age of 19 grows by 4.1% between now and 2020 (6.2% for 2025), but this growth is below the evolution of the population over the age of 65, which increases considerably for 2020 (7.9%) and doubles for 2025 (18.6%).

In the worst scenario, this situation intensifies with an expected drop of 14.6% in the younger population for 2020, which will double for 2025 (31%), while the opposite will occur in the older population, which will increase by 8.2% between now and 2020, and this figure will jump to 19.6% by 2025.

Thus, the demographic issue is evident, regardless of how the variables it depends on evolve. However, it is clear that the variation of older people is an inevitable phenomenon,



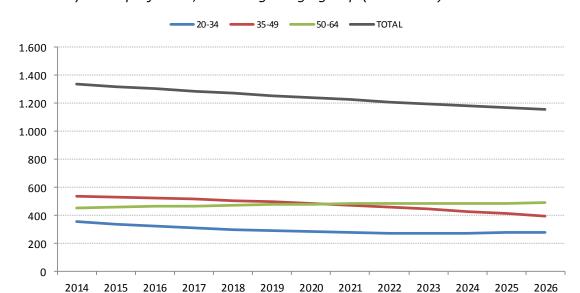
although the younger age group has a greater margin for improvement that could minimise the negative effects of this population ageing.

The reduction of the population between the ages of 20 and 64 means that the active potential available in the Basque Country will also drop, and this could potentially affect the adjustment of job market needs.

Based on INE data and Eustat population projections for the two age groups in question, an analysis of the current situation of the job market notes that there are currently 3.16 people between the ages of 15 and 64 for every person over the age of 64 exiting the job market.

This situation has worsened since 2002, when the rate was 3.9, and according to Eustat projections, this situation will worsen, reducing to 2.5-2.09 the number of employable individuals for each person exiting the job market (depending on a better or worse possible population scenario).

Eustat projections clearly show this drop in the potentially active population.



Population of the A.C. of the Basque Country on 1 January that is potentially active by year of projection, according to age group (thousands). 2014-2026

Source: Internal analysis based on Eurostat data (population projections)

This shows a 7.3% reduction of the active population between now and 2020, plus 6.6% for the next seven years.



This reduction affects the potentially active population between the ages of 20 and 49 years, while the percentage of people aged closer to retirement rises.

■20-34 ■35-49 ■50-64 ■TOTAL 10% 6,1% 5% 2.1% 0% -1,5% -5% -6,6% -7,3% -10% -9,8% -15% 18,2% -20% -20,6% -25% 2014-2020 2020-2026

Variation of the potentially active population in the Basque Country, according to age group (2014-2026)

Source: Internal analysis based on Eurostat data (population projections)

The reversion of the demographic pyramid has been a concern in terms of the deterioration of the system of well-being based on the solidarity between generations, especially when this is combined with an economic crisis that results in lower income for its sustenance. A great deal of literature has pointed out this matter as the main issue to be resolved.

However, discussions with interviewees highlight the fact that the pension system's survival is currently at risk due to a clearly ageing population, and they also point out the issue of a shortage of people to cover the positions that become available and for which a generational changeover will not occur.

This coincides with the acknowledgement that the demographic change is currently inevitable, and that there are more people of retirement age than people about to enter the job market. The shortage in the substitution effect is undeniable, and it is essential to have an adjustment plan to balance this out.



However, there are a number of views on this matter, depending on the more or less imminent view of the issue.

One of the views that foresees a negative effect in the short term bases its estimates on the gross number of people who turn 65 each year, and so they are no longer in the job market, compared with the number of people who turn 24 each year and who are, on average, the individuals who enter the job market.

With this basic analysis (that does not consider the potential variations in the actual population balance), it is clear that since 2009, these two age groups are similar in number, and as of then, the difference grows in such a way that in 2025, there will be approximately 19,000 24-year-olds who will have to replace the people exiting the job market (approximately 34,000). However, the differences between the employment rates of generations and genders are not analysed in this section.

The situation of this social reality will be reflected in companies, which will also have ageing demographics according to one of the experts consulted. "If the age range of baby boomers is taken into consideration, the maximum age of people in the job market in 2020 will be close to 44 years."

This line of thought attributes to the crisis the fact that it is still a hidden issue, but the economic recovery will make it clear to the point that in 20 years, the job market will have 200,000 fewer workers, a number that exceeds current unemployment figures. In fact, this forecast is close to Eurostat's projection of the potentially active population for 2026, which calculates it at 179,000 fewer people.

The expected result of this situation is translated into a shortage of people in all economic areas and all professional levels, and a fight for talent.

This will not be a new situation since the period around 2006 experienced a lack of certain technical degrees. This situation was due to different causes, including economic prosperity, the "technologisation" of the business network, the strength of the construction sector, etc., and at the time, there were more people entering than exiting the job market.



Therefore, the Basque Country is facing a new situation that countries such as Germany and Holland have experienced for years and that they are trying to resolve through talent recruitment.

According to those who defend this position, the Basque Country will come face to face with a fight for talent as well as competing companies, nations and especially regions, since these represent the natural habitat or physical setting where workers carry out their professional and family life.

The other forecast coincides with the recognition of effective demographic change, population ageing and the future issue of replacing pensioners in order to ensure the viable sustainability of the pension system.

However, these positions are not certain that there will be a fight for talent due to a shortage, and this is because of the following reasons:

- The economic recovery will be very gradual, the effects of this recovery will not be to such a degree that a shortage of talent will be evident, and even less if we consider a 2020-2025 horizon, when the debts assumed will still be in the process of repayment. Unemployment and surplus labour force indexes are indications that this is far from becoming a reality.
- The productivity index caused by technological development will make it possible to compensate this potential labour force shortage since industry will continue advancing, despite a lack of new jobs. According to one of the experts consulted, this goes against the key economic principle according to which jobs are created with a GDP over 2% since an attempt is being made below 1%, but the aforementioned technological development makes this unnecessary.

Therefore, along this line, the issue the Basque Country will face is not based on the population but rather the distribution of work and of how things are done, since industry and technological production will diminish the labour force's importance from a quantitative perspective, and this will affect primarily people without training. This will make it necessary to reorganise the market and training in order to address the demand of a specialised sector.

Some of the experts consulted affirm the fact that this is an issue that should have been analysed 15 years ago in order to take action since we have been aware of the situation but the matter has not been addressed as a whole, leading to a lack of social maturation of the issue and of regulations and laws to face it.

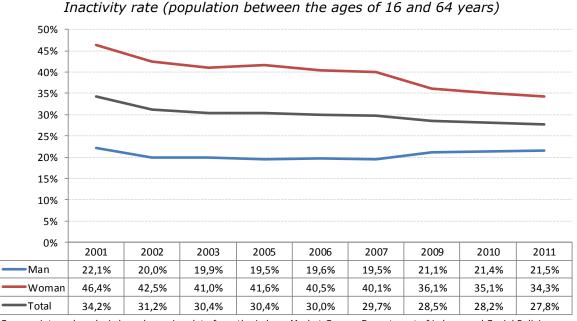


The need arises for an awareness process, knowledge generation, diagnoses, social assessments, regulatory changes and the implementation of all these regulatory changes.

However, despite the different views, all the people interviewed from universities, the public administration and companies agree that there are alternatives for alleviating this potential labour force shortage in general and of university graduates in particular.

The following methods were mentioned to reduce the population pyramid's clash with the job market:

- 1) An attempt would be made to recover a population group that already exists in the Basque Country and does not currently form part of the job market:
  - To recover the inactive population in order to combine it, to the degree possible, with
    the Basque Country's existing labour force.
     According to the Labour Market Census (supply), the inactive population for 2011 with
    individuals between the ages of 16 and 64 years (minimum legal age to work and the
    retirement age) represented 27.8% of the population, with a considerably higher
    percentage in the case of women.



Source: internal analysis based on microdata from the Labour Market Census Department of Labour and Social Policies to Basque Country's situation in 2013 with regard to the inactivity rate (for the population between the ages of 15 and 64 years), with indexes that are lower than the European average and ranked as the country with the 11th lowest inactivity rate.

Inactivity rate (population between the ages of 15 and 64 years), 2013 Italy **36,5%** Croatia **36,3%** Romania 35,4% Malta 35.0% Bizkaia Talent - Bizkaia Technology Pa Hungary 21 de 157 +34 94 479 54 28 34,9% - Build, 804 - Mod, 300 - 48160 Derio Poland 33,0% Relaium

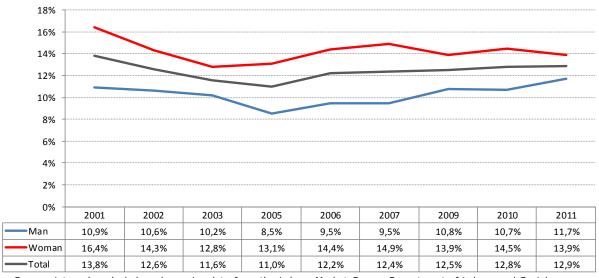


Source: internal analysis based on Eurostat data

In the case of the population with university education, and considering that the job market is accessed later, the rate drops to less than half, with similar percentages for men and women. However, data shows that more than one of every ten university graduates excludes him/herself from the job market and does not search for work. (Since this data is not published for Spain and the EU-28, it is not possible to establish a comparison that would allow us to understand the situation in terms of the inactivity of the population with higher education in the Basque Country).

Aside from unspecified causes (39%), the main reasons cited in the 2011 survey are additional education (33%), followed by caring for people (15.9%) and illness or disability (8.3%). In light of these results, it would be logical to question the feasibility and relevance of considering actions that would attract university graduates who stay away from the job market through their own initiative and for reasons other than education, which in 2011 exceeded 20,000 people.





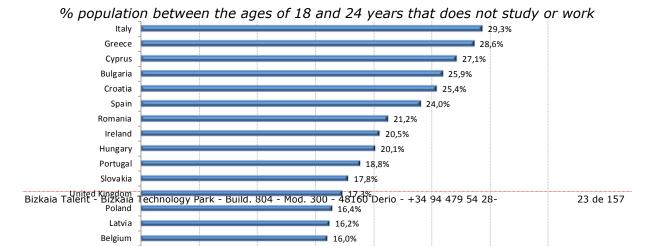
Higher education inactivity rate (ages 25 to 64 years)

Source: internal analysis based on microdata from the Labour Market Census Department of Labour and Social Policies. Basque Government

Population without training and without employment: one of the reflections that were repeated by the people interviewed is the imbalance between the investment made for qualified training at higher levels while ignoring the latent issue of people who do not work but also do not participate in any training activities, known as "NEETs" (which stands for "Not in Education, Employment, or Training"; the Spanish term is "Ninis"). This issue begins with dropping out of school upon completing the mandatory stage, job market exclusion, and then self-exclusion.

There is a high prevalence of NEETs in certain countries where they may represent nearly one fourth of the population, including Spain, which is ranked sixth.

This profile is less common in the Basque Country, which is below the EU average and in line with Finland with 12.6% of young people who are not involved in any type of work or study activity.

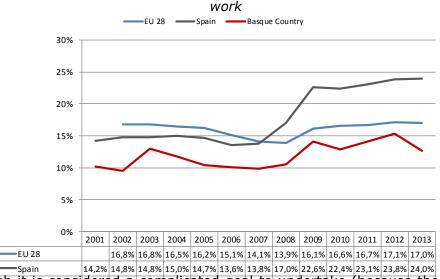




Source: internal analysis based on Eurostat data

The evolution of this population segment has varied throughout the years, increasing considerably in the 2008-2009 and 2010-2012 periods, when the highest percentage was reached before falling to 12.6%.

Evolution of % population between the ages of 18 and 24 years that does not study or



Although its considered a complicated good, to undertake the cause of the source goes beyone the area of training), the need to reduce the number of unqualified individuals is acknowledged, and although the issue is not as serious as in Spain as a whole, it is and it would be an additional component within the recovery of the labour force needed for the future.

Some of the interviewees pointed out that in the current crisis, university graduates are starting to join the NEETs collective. Once they graduate, they come to a halt, they



avoid additional training, they do not undertake entrepreneurship, and they start to become NEETs whose space is occupied by subsequent generations.

In any case, the issue must be approached as an investment lost in training.

- Long-term unemployed individuals between the ages of 40 and 45 years, with professional experience and with two types of situations:
  - Low qualifications and obsolete knowledge; they are expelled from the system and they have few possibilities of being reinserted since the training available to them does not allow them to learn new abilities and valid skills for job placement.
  - Higher education: people excluded from the job market due to age, although with extensive experience and higher education.

According to the interviewees, in both instances, their situation worsens primarily because they are surpassed by the next generations, resulting in self-exclusion and lost confidence in their abilities. Therefore, the need to take action with these groups involves training plans as well as "encouragement" plans. The idea is to find formulas to train them and to give them the option to work at the same time so when they complete the training, they do not find themselves at the starting point once again.

These actions also require making companies aware of the need to integrate these individuals, without focusing on their age or their current situation. The individuals interviewed believe that companies are not focused on working with these groups, especially when they have a pool of young professionals available to fill any open positions.

However, if companies are integrated in a social justice system, they must also change certain criteria, employability parameters, and evolve from a theoretical Corporate Social Responsibility to a real one. In addition, future labour force needs could make them consider this possibility.

 One of the interviewees hinted at the need for a change in awareness regarding retirees. These individuals currently generate social benefits (caring for grandchildren, working with NGDOs, etc.) without any compensation, which leads to the possibility of having them work more years but with certain regulations.



- 2) In terms of recruiting labour for the job market, there are two lines of action:
- Recruiting university talent: a limited number of individuals, from all over the world, who provide knowledge and value to institutional, economic and social systems.
   The previous alternative includes the option of enlisting foreign talent, but in limited numbers since local talent is defended as the main player in the nation's driving force.
- The idea is to include immigrants in the production system, but with the same treatment as the local population. However, the experts interviewed from various fields highlight the difference between two types of people in this labour niche:
  - Technical, highly-qualified individuals who integrate well in the system and are competent.
  - o Immigrants who arrive without any type of training and leave in the same condition because no alternatives have been offered to them. In addition, these people have different values, which makes it difficult to work with them. They are "kicked out" of the system.
    - In this last case, the line of action would be the same as for local groups, but with an additional effort towards integration on behalf of both parts.

Along this line, the study on Ageing and the Job Market in the Basque Country, carried out by the University of Deusto, proposes two major lines of action to reduce the effects of the population ageing process: to intervene in employment opportunities and to carry out a structural transformation in the production model that allows maintaining current economic activity levels but with a smaller working population.



- 1) In terms of intervening in employment opportunities, this study also introduces the need to take action towards migratory flows. It establishes a series of conditions based on the premise that the type of immigrants takes precedence over the number:
  - o Immigration flow comprised by the working-age population
  - Long-term stay of the foreign population (even permanent).
  - o Activity rate similar to the average rate of the native population.
  - Employment rate similar to the rate of the local population, for which it must face discriminatory obstacles as well as cultural and linguistic differences.
  - This study also specifies the condition that they must comprise a human capital that is equal to or greater than that of native workers.

Other measures proposed by the report that are associated with modifying the job market are listed below:

- Increased participation in the job market: through a combination of boosting activity rates, delaying the retirement age, and returning to full employment.
- · Extended work hours.
- Increased human capital through actions aimed at: reducing school drop-out levels
  and increasing the percentage of students who complete non-mandatory education
  levels (university and non-university studies); increasing the time and resources aimed
  at continued education processes at work; developing active job market policies aimed
  at training unemployed individuals.

- 2) In terms of the measures that involve a structural transformation of the production model, the following are proposed:
  - Increased capital stock: this involves transforming the production model to change to a model that is much more focused on use of the capital factor.



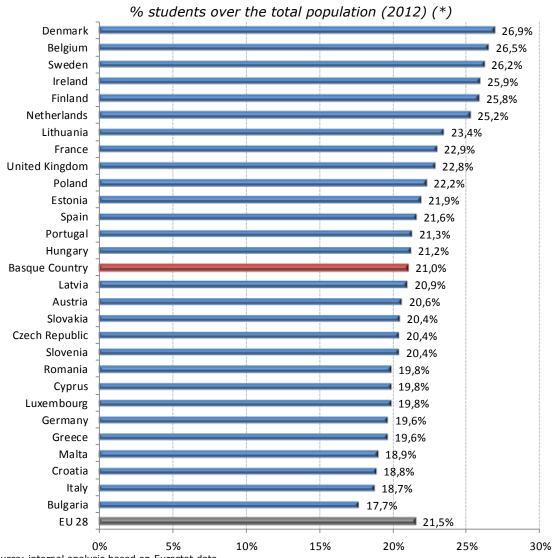
- Increased resources aimed at generating knowledge: increasing the innovative activities carried out by existing sectors and companies, and promoting the activity and development of innovative sectors.
  - Increased productivity of production factors.



### KNOWLEDGE-BASED SOCIETY

### Trends in the population's training activities

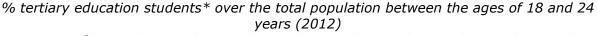
In 2012, the Basque Country had a percentage of students over the total population that was similar to that of the EU and somewhat below that of Spain. This may be in part attributed to population ageing, which is more pronounced in the Basque Country.

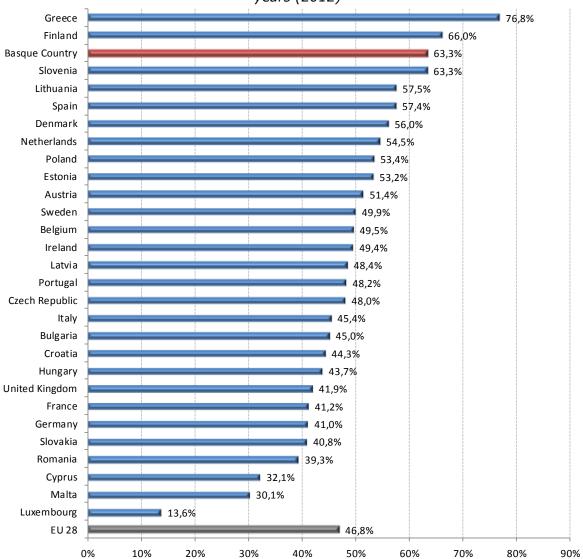


Source: internal analysis based on Eurostat data (\*) 2012 data for the EU-28 total not available. Estimated based on the sum of the 28 member states.



The population data by age group for accessing higher education and duration of higher education, 18-24 years, is used to calculate the percentage of students in tertiary education (\*). The Basque Country holds the third position in the EU-28 ranking for this indicator, compared to Slovenia with 63.3% of the population within this age group that is pursuing higher education.





Source: internal analysis based on Eurostat data.

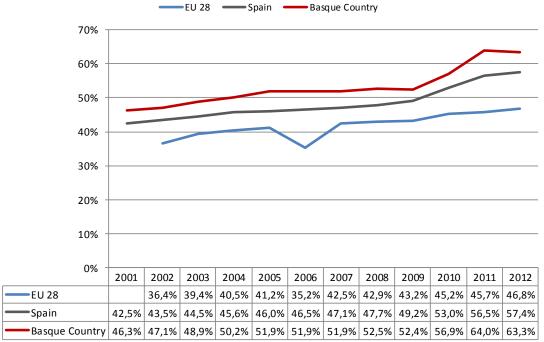
The general trend of this indicator is on the rise, but more so amongst young people in the Basque Country, increasing from 46.3% in 2001 to 63.3% in 2012.

Between 2009 and 2011 marked the strongest increment.

<sup>(\*)</sup> Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education) includes: Training and job placement programmes that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programmes.



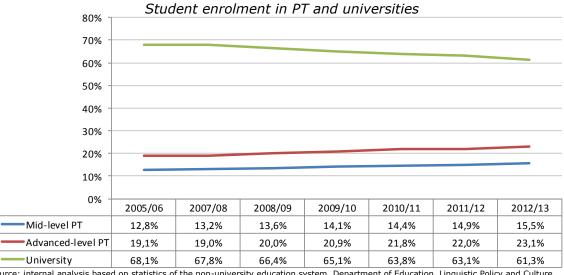
Evolution of the percentage of tertiary education over the population between the ages of 18 and 24 years



<sup>(\*)</sup> Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education) includes: Training and job placement programmes that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programmes.

When discussing the adjustment between supply and demand in the Basque Country's job market, the importance of professional training cannot be omitted. This type of training is highly relevant in a business network like the one of this autonomous community.

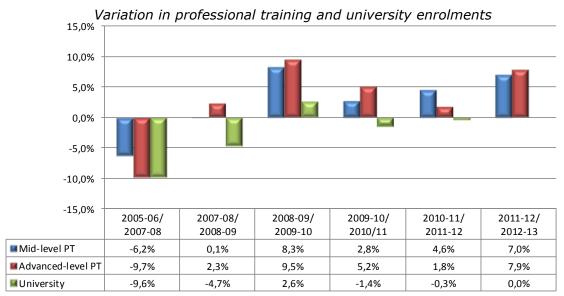
Taking into consideration the population that once mandatory secondary education has been completed decides to continue with additional studies, there is a greater trend towards university education, although the weight of this group has fallen throughout the years in favour of professional training.



Source: internal analysis based on statistics of the non-university education system. Department of Education, Linguistic Policy and Culture

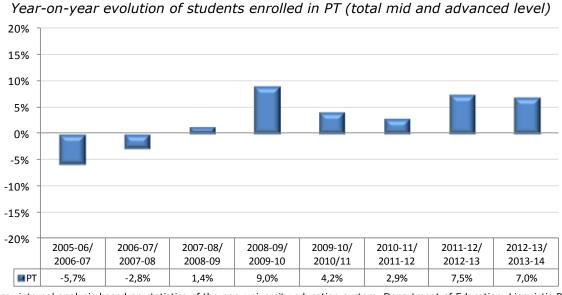


Enrolments for advanced and mid-level professional training increased the most between the 2008 and 2010 school years. The following school years, the number of university enrolments fell slightly, while professional training continued to grow (the most significantly between 2011 and 2013).



Source: internal analysis based on statistics of the non-university education system. Department of Education, Linguistic Policy and Culture

In summary, it is clear that despite being below university enrolment applications, professional training is gaining strength as an option following mandatory education.



Source: internal analysis based on statistics of the non-university education system. Department of Education, Linguistic Policy and Culture



The figures showing the increase in professional training enrolments and the stability of university enrolments, along with the drop in birth rates, supports the hypothesis that the school drop-out rate must also be decreasing as a result.

Therefore, it is first noted that 8.8% of young people between the ages of 18 and 24 years dropped out of school in the Basque Country. This rate is below the EU-28 average and much lower than the Spanish figure, which is at the top of the ranking for European countries.

Spain Malta 20,9% Portugal **19,2%** Romania 17,3% 17,0% Italy Bulgaria 12,5% **United Kingdom** 12,4% Hungary 11,8% Belgium 11,0% Greece 10,1% 9,9% Germany Latvia 9,8% France 9,7% Estonia 9,7% Finland 9,3% Netherlands 9,2% Cyprus 9,1% **Basque Country** 8,8% Ireland 8,4% Denmark 8,0% Austria 7,3% Sweden 7,1% Slovakia 6,4% Lithuania 6,3% Luxembourg 6,1% Poland 5,6% Czech Republic 5,4% Slovenia 3,9% Croatia 3.7% **EU 28** 

10%

15%

20%

School drop-out rate (2013): young people between the ages of 18 and 24 years who dropped out of school upon completing mandatory education or before graduating

0% Source: internal analysis based on Eurostat data

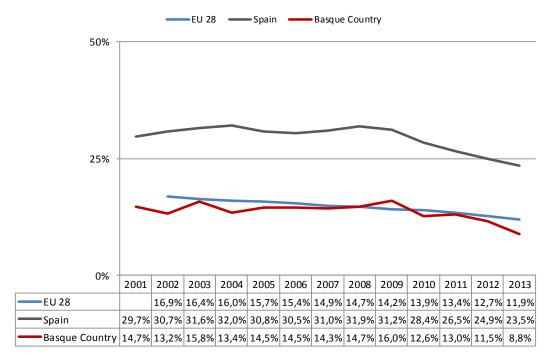
5%

25%



In terms of the school drop-out rate, the Basque Country has shown a slight improvement, especially compared to 2009, when the maximum since 2001 was reached (16%).

Evolution of the school drop-out rate of young people between the ages of 18 and 24 years who dropped out of school upon completing mandatory education or before graduating



Source: internal analysis based on Eurostat data

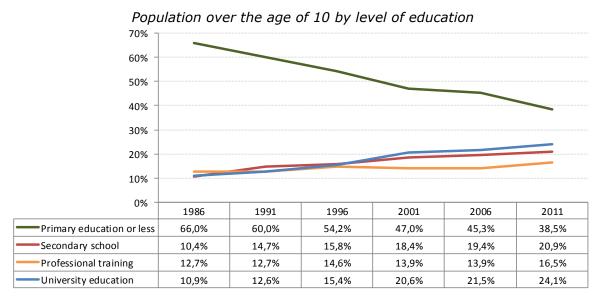


### The population's education level

Considering the population's level of education, Eustat data for the population over the age of 10 shows a significant evolution of the population with primary education or less since 1986, while other education levels have risen, especially university education.

The population with university education increased primarily during the 1991-2001 tenyear period, with a growth of 65.6%. This trend continued during the 2001-2011 ten-year period, although to a lesser degree (20.1%).

On the other hand, the population with professional training increased between 1991 and 2011 by 10.8%, and this growth doubled in the last decade analysed (2001-2011).

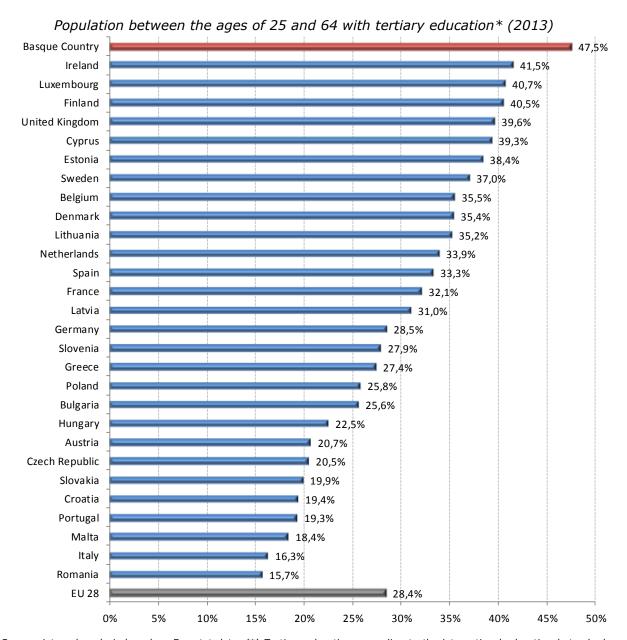


Source: internal analysis based on Eustat data. University education consists of: University schools, Technical schools, University faculties, Advanced technical schools, Other advanced studies, Doctorate and post-graduate programmes

Upon collecting data for the population group between the ages of 25 and 64 (considering 24 years the average age for entering the job market upon completing a university degree), a more extensive weight is noted for university education in the Basque Country than the European average, surpassing all EU-28 nations.

The goal set for 2014 (45%) in the University Plan 2011-2014 of the Basque Government's Department of Education, Universities and Research is also surpassed, coming close to the target goal for 2020 (50%).

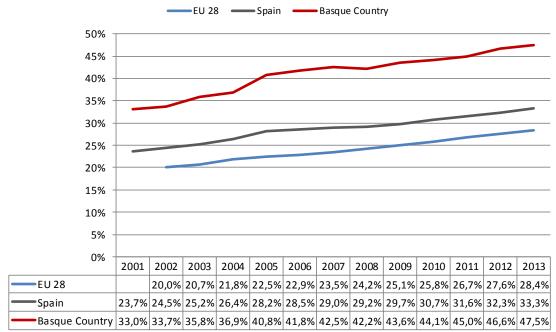




Source: internal analysis based on Eurostat data. (\*) Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education) includes: Training and job placement programmes that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programmes.

The weight of the population group between the ages of 25 and 64 with tertiary education has risen continuously in Spain as well as throughout Europe, but more evidently in the Basque Country, which increased by 14.5% between 2001 and 2013.

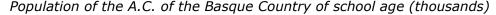


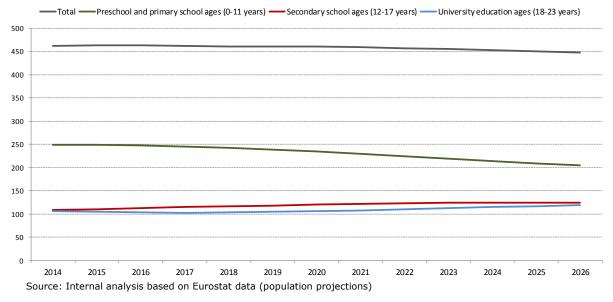


Evolution of the population between the ages of 25 and 64 with tertiary education

Source: internal analysis based on Eurostat data. (\*) Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education) includes: Training and job placement programmes that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programmes.

EUSTAT prepares projections by taking into consideration all the individuals who, because of their age (0-23 years), may be included in any of the levels of the existing education system. This provides an idea of the trends in the evolution of the number of potential pupils in each education level. As is logical, the continued drop in birth rates will result in a smaller pool of pupils, especially in the case of preschool (0-5 years) and primary school (6-11 years) children, while the number of people with ages within the university period and secondary/PT education will increase.



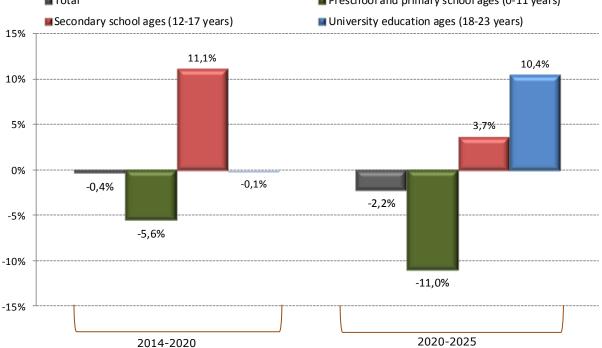




Considering the distribution of the school-age population for the future, it is noted that between now and 2020, the population age group within the university period will drop slightly (in line with the trends observed to date in university enrolments, caused by the population pyramid). During the next period, Eustat expects an increment in this population, which will grow by 10.4%, in lieu of the age groups for the other education levels. This circumstance can be interpreted in two ways. Positive due to the fact that the pool of potential new university students will address the negative trend to date, but on the downside, the image presented indicates a loss in the population base that in the future could become university students, so the issue will intensify further on.

# ■ Total Preschool and primary school ages (0-11 years)

Variation of the school-age population according to different education levels



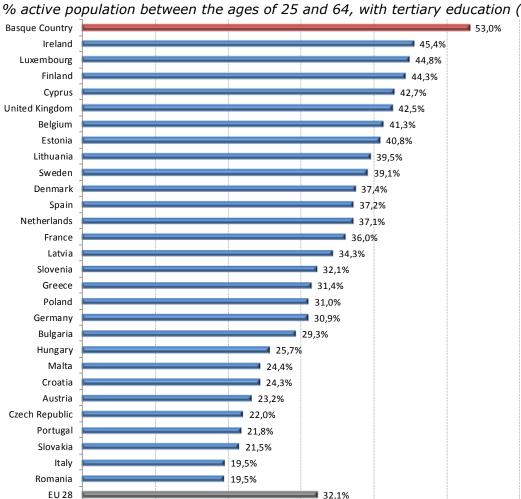
Source: Internal analysis based on Eurostat data (population projections). Source: Internal analysis based on Eurostat data (population projections). This refers to all the individuals who, because of their age, may be included in any of the levels of the existing education system.

In the publication tables, Eustat closes university education at the age of 23, which corresponds to the minimum age for commencing the sixth school year of maximum duration degrees.

In terms of the percentage of the active population with terciary education over the total active population, the Basque Country is once again at the top with 53%, far from the EU-28 average.

Therefore, there is a base of a highly qualified labour force and it has grown by 13% since 2001.





% active population between the ages of 25 and 64, with tertiary education (2013)

Source: internal analysis based on Eurostat data. (\*) Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education) includes: Training and job placement programmes that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programmes.

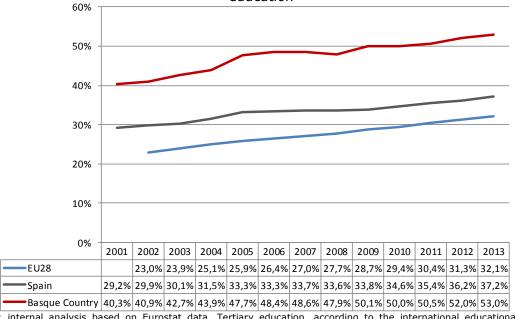
20%

30%

40%

10%

Evolution of the % active population between the ages of 25 and 64, with tertiary education



Source: internal analysis based on Eurostat data. Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education)

60%

50%



In a country with such high tertiary education indicators, one of the unknown aspects considered is whether the production structure will be characterised as being sufficiently knowledge intensive so as to absorb the existing number of university graduates.

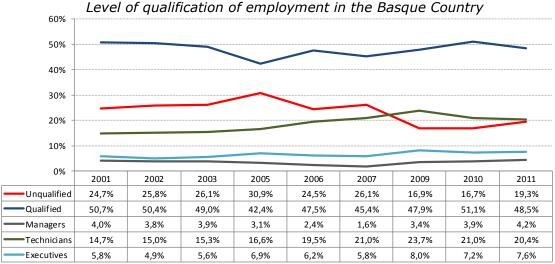
Faced with this unknown, the interviewees believe in focusing on higher education based on the argument that the Basque Country is an advanced economy where low-skilled jobs will disappear due to the continued development of technology that will reduce labour needs for low value-added tasks. In summary, the Basque industry is expected to shift towards producing goods with a higher value-value and where the technological load will be greater.

These opinions are in line with the study carried out by CEDEFOP, Future Skill Needs in Europe - Focus on 2020, in which it is believed that low-skilled jobs in Europe will shift from comprising one third in 1996 to 18.5% in 2020. An average skill level will be required for 50% of positions, and high skill levels (primarily in technical and scientific fields) will be required for 31.5% of positions.

These opinions are also shared by the Economic and Social Council in its study titled *La adecuación del Sistema Educativo a las necesidades de la Actividad Socioeconómica de la CAPV* (The Education System's Adaptation to the Needs of the Basque Country's Socio-Economic Activities).

Labour Market Census (supply) figures confirm these forecasts since nearly half of the jobs in 2011 were qualified positions, and combined with positions that involve some sort of team leadership, this proportion increases to 80% of the working population in the Basque Country.

Unqualified employment has lost positions, from a maximum in 2005 when these three of every ten jobs were of this type, to 19.3% today.

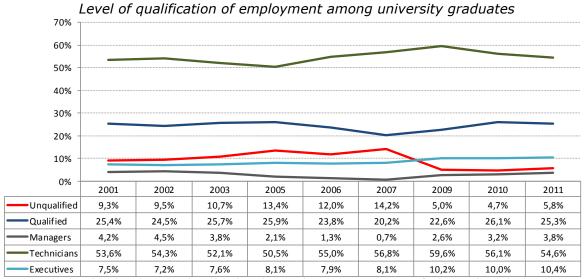


Source: internal analysis based on microdata from the Labour Market Census Department of Labour and Social Policies. Basque Government



The nature of qualified employment as jobs that require high levels of training is more apparent among university graduates, and it becomes highly relevant in technical positions that represent more than half of all jobs.

Unqualified positions among university graduates showed the highest levels between 2005 and 2007, and then dropped to the lowest levels.



Source: internal analysis based on microdata from the Labour Market Census Department of Labour and Social Policies. Basque Government

As a result, the growing trend of university graduates is not a matter that concerned interviewees because they consider it a reflection of a more qualified society with greater potential. In fact, the model of companies that are strongly based on low-skilled labour is highly questioned and difficult to sustain in the long term. According to some of the interviewees, these types of companies must migrate towards a greater concentration of knowledge by hiring new employees and re-qualifying untrained individuals whose work is becoming less relevant in the current production system.

Therefore, according to the experts consulted, technological change will not result in getting by without labour. Instead, it will result in changed roles towards more qualification with regard to the machines that will become increasingly efficient, innovative, adaptable, etc. This means that people will play a role on different levels, and not so much along the lines of production, but rather in terms of design, programming and decision making over the machine.



# The overqualified or underemployed phenomenon

Labour Market Census figures for 2011 show that there is a clear fit between level of education and professional category in technical positions, which are held by university graduates in nine out ten cases.

However, the greatest distortions are noted in two aspects:

Underqualification:

Graduation year

- On the one hand, in executive roles, where two of every ten positions are held by people with secondary education or less.
- On the other hand, one fourth of qualified jobs are held by people with primary education or less.
- Overqualification: about 10% of unqualified jobs are performed by people with higher education.

Fit between level of education and professional category (2011)

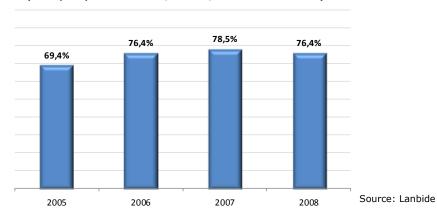
	Unqualified	Qualified	Managers	Technicians	Executives
Primary education or less	42,8%	25,2%	15,3%	0,4%	18,5%
Secondary school	20,2%	15,5%	11,3%	2,0%	12,9%
Professional training	26,9%	41,9%	43,0%	8,1%	22,6%
University education	10,1%	17,5%	30,4%	89,5%	46,1%

Source: internal analysis based on microdata from the Labour Market Census Department of Labour and Social Policies. Basque Government

Data from the Lanbide study on 2005-2008 graduates from the three Basque universities entering the job market shows high indicators of a fit between the duties carried out and the required university degree (the study was performed three years after graduation).

The data for all the graduating classes proves the existence of overqualification in more than two of every ten graduates.

Fit between the duties carried out and the required university degree for the position (sample years: 2008, 2009, 2010 and 2011)



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In fact, when the matter of the balance between supply and demand is addressed for the present and the future, universities and entities consulted note a change in the employability of university graduates and the inevitable overqualification of some if the trend of a growing university population continues.

The change in society's knowledge base means that there are very few people not involved in universities or professional training. This is translated as:

- > Employability and underemployment: fewer possibilities in the job market, tasks for lower profiles, lower salaries, unmet expectations, etc.
- > The birth of another university concept that standardises it and faces it against more competition, creating a situation that is completely different from the one of a few decades ago.

There is even talk of proletarianising university graduates, even in the "privileged castes" of university graduates (doctors, engineers, etc.), who are now merely considered salaried employees. This is even more evident due to the economic crisis and the resulting surplus of university graduates.

The changed role of graduates is also the result of performing the same work as PT degree-holders, with the same working conditions but providing value added. It also mentions the dignification of knowledge and skills in areas aimed at PT students by hiring university graduates in those areas.

In fact, the convergence between professional training (advanced) and universities seems clear to the interviewees, both in terms of holding similar jobs as well as the level of knowledge: advanced technical PT degrees, with little development of speculative thoughts, but with the technical knowledge they have, they will require university training.

Therefore, the need to face the profile of jobs that the Basque Country will have passes through a mix between professional training and university graduates. This translates into a greater weight of Professional Training degree-holders compared to university graduates, which is the opposite of what has occurred to date, in order to be consistent with the path being followed by the economic production system, which is highly focused on the industrial setting. This idea is in line with the imbalances detected by the Basque Economic and Social Council in its study titled "La adecuación del sistema educativo a las necesidades de la actividad socioeconómica de la CAPV (2011)" (The Education System's Adaptation to the Needs of the Basque Country's Socio-Economic Activities).

One of the reasons provided by a business group to justify the promotion of PT is the need to implement innovation in all the phases of the production process, which will no longer



be limited only to technology centres. Specifically, advanced education through PT may also provide a more constant ability to innovate.

According to some of the people interviewed, the weight of university graduates must continue to be sufficient (estimated at 30-35%) in order to maintain both profiles, which will share importance:

- University graduates: a more extensive view and focus, and speculative thoughts; these are the people who will set objectives and establish the path to be followed.
- PT: very prepared in terms of technology and specific projects; they must follow the first group.

Lastly, in addition to the above, there is talk of continued education throughout the professional career of those already in the job market by preparing training plans that adapt to the future evolution in terms of changes in technologies and methodologies, as well as in terms of how things are done and the work is carried out (management plans, flexibility, etc.). All of this focused on contributing to companies in the long term instead of becoming settled and losing value for society.



# ADJUSTMENT BETWEEN THE SUPPLY AND DEMAND OF TALENT

Up until now, companies and technology centres have not considered the issue of the potential shortage of talent. Since these technologically-focused entities, they experienced the shortage of technical profiles that hindered their recruitment due to quantitative reasons as well as due to the salary requirements set by the candidates of various degrees, especially:

- Engineers of a number of specialities.
- Quantity surveyors.
- Business and management graduates.

However, thanks to the prestige and brands of these entities, this matter did not affect them significantly since their extensive relationships with universities provided them with a large pool of recent graduates who fit their demand profile. However, this situation cannot be extrapolated to the business network in the Basque Country.

In fact, only a few of the companies and technology centres interviewed recognised any difficulties in hiring. In any case, there were situations of sporadic needs to cover very specific projects and requiring extremely specialised training, such as nanotechnology, precision engineering, mechatronic engineers, engineers with knowledge of electronics, electronic engineers with mechanical knowledge, etc. Up until now, these needs have been covered by recruiting people from other countries or by hiring individuals with general degrees who are then trained at each centre.

Therefore, of the companies consulted through interviews, all with a technological focus, the challenge in finding the right profiles to hire does not lie in the actual degree itself, but rather in searching for graduates with experience and a series of attitudes and skills that go beyond a CV (these are addressed in another section further on).

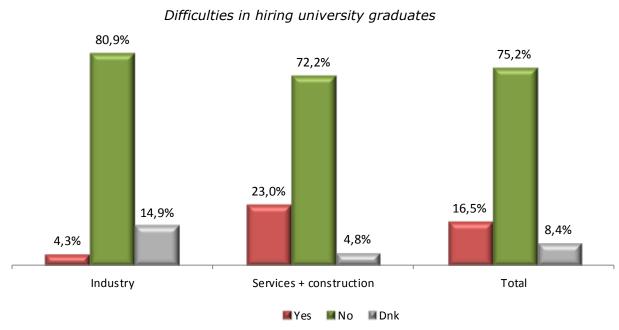
Upon analysing this matter on a global level using quantitative data obtained from surveys, it is concluded that, in general, companies confirm the proper adjustment between the supply and demand of university graduates and/or graduates, especially in terms of the quantitative supply, and they are somewhat more critical regarding their qualifications.



# Adjustment of the supply/demand of university graduates

Base: 103 companies

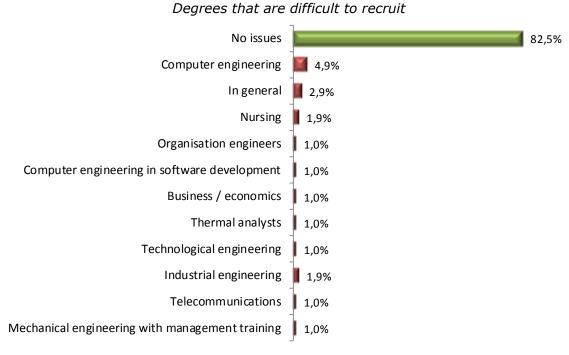
When specific issues related to recruiting candidates are analysed further, 16.5% of the companies consulted state that it was difficult to find university graduates. This was even more common in the case of service companies.



Base: 103 companies

Technical, nursing and business degrees had the most hiring difficulties, primarily due to a shortage of graduates as well as a lack of experience, specialisation and language skills.





Base: 103 companies

On the other hand, more than one third of the head-hunter firms consulted faced issues when trying to hire university graduates, primarily engineers with only a degree or engineers with language skills and/or commercial profiles.

Other profiles mentioned were: purchasing engineers, project with German, general technicians, languages, marketing, social graduates.

In the case of head-hunter firms, the shortage of degree-holders with the required knowledge was the main obstacle in recruitment.

Taking into consideration this major challenge faced by head-hunter firms when searching for certain profiles, it is not surprising that those entities are the most critical with the supply of Basque universities in terms of the number of degree-holders as well as their qualifications (seven and six of the 21 companies consulted, respectively, stated that there was an imbalance between the supply and demand of university graduates).



# FIELDS IN WHICH TALENT IS NEEDED: PRESENT AND FUTURE

#### Distribution of university graduates by knowledge area

Up until now, the job market has not regulated the supply of degree holders because, regardless of the knowledge area, there were many job opportunities. Therefore, according to some of the interviewees, the trend among young people in the last 15 years has been to choose a university education based on their vocation as opposed to employability aspects. This has resulted in an imbalance between the supply and demand of various university degrees, which has become apparent in times of economic prosperity, but the issue is hidden by the current crisis because the market is able to easily access many university graduates in the various fields.

However, this will change in the future:

- Due to economic recovery.
- Due to the small number of university graduates resulting from lower birth rates that, when the weight of the various knowledge areas is distributed in a similar manner as what has been done in the past, which can lead to an imbalance between the actual needs of the social and business network, and the supply of university graduates in certain fields.

The concern in question is how to make this phenomenon have less of an effect on the areas that will be the driving force of the Basque Country and for which the Basque Country will be a driving force. If the fight for talent is a phenomenon that sparks controversy and debate regarding its imminence, there is agreement on the need to establish the direction of the Basque Country and what the desired horizon will be in order to determine the production structure that will be available as well as the knowledge areas and specialities that will be needed to address that structure.

All the interviewees agreed that this leads to considering the need to guide and prioritise (to a certain degree) the supply of university graduates in accordance with these present and future needs of the social and production network.

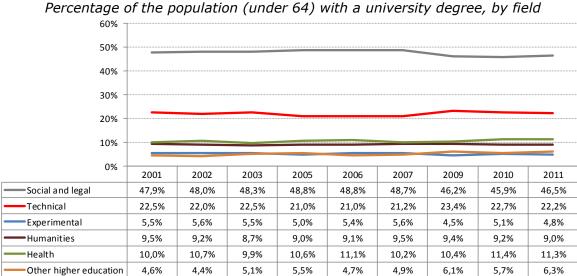
However, this must not override people's freedom to choose their education and the need for there to be a certain degree of competitiveness among the university graduates of each field.

The high number of graduates in the social sciences is unjustified by the needs of the public and, according to those interviewed, more graduates are needed in the science and technology fields, bearing in mind businesses' needs, as well as the fact that the Basque



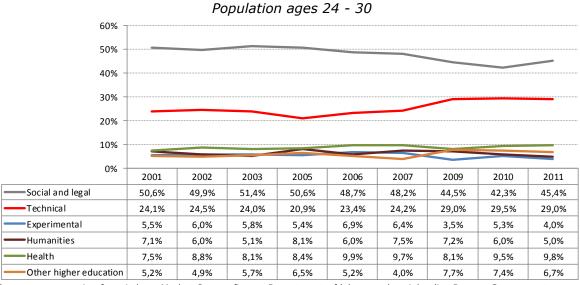
economy is based very firmly in industry that has positioned itself well in international markets.

The population data corroborate this fact: the percentage of university graduates in the social sciences or law is, as with the other disciplines, twice that of graduates with technical degrees, continuing a trend beginning in 2001, if not earlier.



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

Although, a decrease in those choosing the social sciences or law in favour of technical degrees can be observed (keeping those with ages concentrated in a period which could be considered as the conclusion of study and entry into the labour market in mind), especially since 2007, although in subsequent years these tend to plateau, while the legal and social careers begin to rise once again.

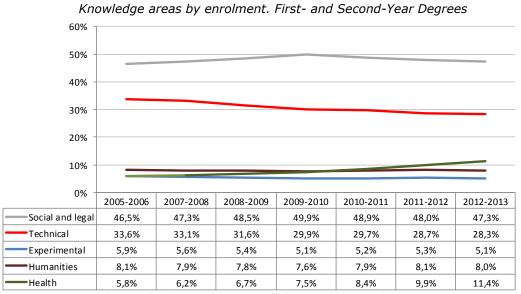


Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government



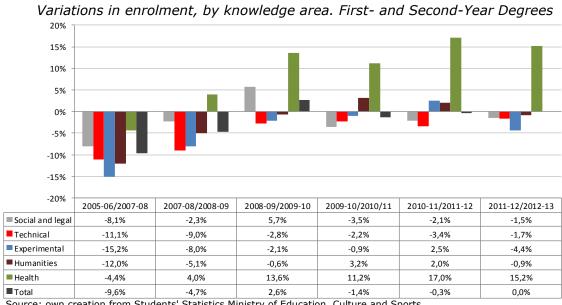
The university enrolment data trend, on the one hand, toward different knowledge areas, with a predominance of graduates in the legal and social fields, followed distantly by graduates with technical degrees.

But, on the other hand, some data suggest less favourable results for those with technical degrees which, like the social sciences and law, lose weight with respect to the total.



Source: own creation from Students' Statistics Ministry of Education, Culture and Sports. Data unavailable for the 2006-2007 academic year

The yearly variations show a very marked loss of students in all knowledge areas between the 2005 and 2009 academic years. Save the 2008-2010 academic year, in which social sciences garner a greater number of students, these and technical degrees continue decreasing in number of enrolments through academic years. The disciplines related to health are the ones that manage to increase in enrolments from year to year.



Source: own creation from Students' Statistics Ministry of Education, Culture and Sports. Data unavailable for the 2006-2007 academic year



In this sense, some of those interviewed choose strategy RIS3 and enrol in the Economic Development Department and Competitiveness as representatives in order to obtain positioning solutions and bet on strategic sectors. The need to create vocations oriented towards defined priorities by this strategy is planted, establishing said priorities through a methodology that keeps in mind:

- 1 Recognizable strong points: a competitive business structure with towing sectors that can make the most of innovations.
- 2 Differential technological scientific capacities.
- 3 The ability to respond to social challenges and the demands of the market.
- 4 Having specific support systems available, in terms of support programs and publicprivate collaboration, in order to develop a defined strategy.

That is to say, specialisation in those capacities that they can be both competitive and differentiated.

The RIS3 strategy departs from what was already defined in the PCTI 2015 and picks up the thread in the document "strategic lines and basic economics of the new PCTI Basque Country 2020" which will replace the PCTI currently in force beginning in 2015. RIS3 defines 3 priorities of intelligent specialisation related to:

Advanced production: picks up the research and development directed toward industrial sectors, fundamentally oriented towards the creation of new products, the incorporation of new materials and the improvement of production processes. Target sectors: Transportation (Automotive, Aeronautic, Rail road, Naval), capital goods (machine tools, equipment, other capital goods), Metal and Multi-sectoral (intelligence, materials and processes, efficiency, services).

**Objective**: to provide answers challenges related to the need to create new and more competitive industrial solutions (in the face of growing international competition), the efficient use of resources and raw materials and sustainable production.

➤ **Energy:** includes all the activities related to the I + D energy sector present in the Basque Country in all of its different environments and every phase of the value chain (generation, transportation, storage, distribution, as well as related auxiliary services).

**Objective:** to confront the challenges and opportunities related to the need to achieve a cheap, clean energy for all, to advance sustainability and to improve alternative energies in urban areas.



➤ **Health & Biosciences** derived from a sustained strategic move that has led to a scientific-technological network with a high capacity for supporting economic diversification. The principle activity centres on the human health segment, which includes ageing from a health (and technologies) viewpoint.

**Objective**: to answer the tremendous future challenges our society faces with respect to health and the ageing population

Furthermore, a series of niches with distinct maturity levels linked with territory, in which abilities and knowledge (both scientific and experiential), with a high degree of orientation toward internal-demand clients (principally public Basque administrations) have been identified. Three main segments, of distinct natures, have been identified:

- > Urban planning and renewal: environmental regeneration, urban planning and solutions, renewal of (historic and industrial) heritage, etc.
- > Ecosystems: Water treatment and decontamination, Soil renewal and recovery, Ecological risk monitoring.
- > Leisure and entertainment: language industries, creative industries (digital leisure, edutainment, multimedia, etc.)

**Objective**: to answer the tremendous future challenges our society faces with respect to urbanization and climate change

Similarly, RIS3 identifies significant technological scientific abilities, placing special emphasis on the so-called 'Key Enabling Technologies' (KET), defined by the EU in its program Horizon 2020: advanced materials, industrial biotechnology, nanotechnology, microelectronics and nanoelectrics, photonics and advanced production technologies.

Good development and orientation of these capacities can contribute advanced solutions and competition in the job-creating, value-added and wealth business sectors identified by this strategy.



On the other hand, the report published by the Basque Strategic Sectors and their Future, carried out in 2010 by the Advisory Board of the Basque leader for Socio-economics analyses which global macro-trends will be particularly relevant for the Basque Country, from the mainstream, technological, economic, socio-demographic point of view. The following have been detected:

- An ageing population
- An increase in connectivity
- A focus on innovation, creativity and productivity
- Globalisation
- Education and talent as competitive advantages
- A Digital world
- Clean Tech
- Sustainability and social awareness
- New forms of governance

Bearing in mind said tendencies to which a series of indicators are added, this report classifies different sectors into prominent sectors and strategic sectors of the Basque Country.

Thus, Health Services, energy, social services and TIC's, as well as electronic and biosciences, are positioned as strategic sectors, with intense growth opportunities associated with detected macrotrends. Its positioning is differentiated, in function of its position in a series of indicators:

- > Influential: sectors with high economic weight, high technological content, sectoral transversality and in line with the principle international macrotrends: Energy, TIC's and electronics.
- > Catalysers: currently represent less economic weight in the Basque economy: Biosciences.
- ➤ Local demand: sectors with highly economic weight that present big opportunities associated with international macrotrends but which chiefly cater to local demand and are less vulnerable to international competition: Health and Social Services.

The remaining sectors are positioned as relevant sectors, although they also have differences in their positioning:

> Growth capacity: sectors with greater potential for growth: Tourism, Transportation and Logistics, Aeronautics.



- Reinvention capacity: sectors with high potential to reorient their activity toward new market opportunities: Transport, Shipbuilding, Pharmaceutics, Machine tools, Railway Construction.
- > The need for reinvention: generic sectors with hefty economic weight, showing fewer opportunities for growth and reinvention with respect to international macrotrends: Metal, Home Appliances, Paper

From businesses to research consultancies, to a certain extent the direction of political strategies is being corroborated, and the movements have their sights set on the following economic areas:

- ✓ Energy: extensive field research into future strengthening of the renewable energies rather than fossil fuels. To which we can add development in the field of energy consumption reduction.
- ✓ Sustainable construction: including everything related to the public project improvements, which represents extensive opportunities in other developing countries and that hopes to play a part in the advancement of cities (the smartisation concept).
- ✓ Industry: the sector with better perspectives, and with heavy stakes set by the continuation of manufacturing in the Basque Country, although with differences according to the subsector. Downwards, the heavy industry and the rise of robotics (robots-human collaboration on the production line).
- ✓ Mobility: along with industry, transportation forms part of the areas where economy and employment can be generated, according to those interviewed.
- ✓ Health: biotechnology-health. One can foresee an increase in the Health field given the ageing population.
- ✓ ICTs: are going to increase due to the role that they occupy in any environment and as a complement to any another industry: service, manufacturing, communication... They are considered a key area for any society in the future and their future will come to pass mostly due to their role as the man-device interface.



Nevertheless, some of those interviewed mentioned the risk of being limited to a discourse centred around a business structure that does not attempt to assess an important part of the economy: social needs. Many of those interviewed emphasized this although they do not form part of the competition strategy.

- ✓ Due to them have a direct incident with the country's wealth.
- ✓ Due, although not directly, to the promotion of socio-cultural cohesion in the country: "A country is more than a production machine, it is something more".

In this sense, the current situation of the ageing public administration staff is brought to light, as well as the needs of education and health overhaul, three of the principle employers of the Basque Country's economic sector, due to the high average age and high proportion of promotions approaching retirement.

Although we find ourselves in a moment of rebalancing where the cuts of the crisis seem to suggest the need to depreciate positions, according to the experts interviewed, depreciation will not be sufficient to contain the substitution effect which must be confronted. More concretely, these problems will intensify in the health sector due to the ageing of the population and in the administration due to the ageing of the staff. Meanwhile, in the case of the education, there ought to be a readjustment of the demand deficit (induced by the decrease in the birthrate).

The Labour Market Census data allow one to familiarise himself with the labour situation in the health, education and public administration sectors according to age. Thus, according to data collected in 2011, from these sectors' current staffs, the figures in 2020 will be the following:

- > Public administration: the average of age in 2020 will be 46.05 and 41.8% of employed people will be between 55 and 64 years old.
- > Education: the average of age in 2020 will be 42.7 and 33.1% of employed people will be between 55 and 64 years old.
- ➤ Health: the average of age in 2020 will be 43.8 and 34.7% of employed people will be between 55 and 64 years old.
- (\*) With the merging of the private and public spheres in the health and education sectors.



# Gross domestic product analysis in the Basque Country (GDP)

In addition to considering which strategies to keep in mind for the future, with a view toward knowing which profile typology will be in demand, it is useful to be familiar with the economic sectors' trends up until now, both at the level of GDP and of employment.

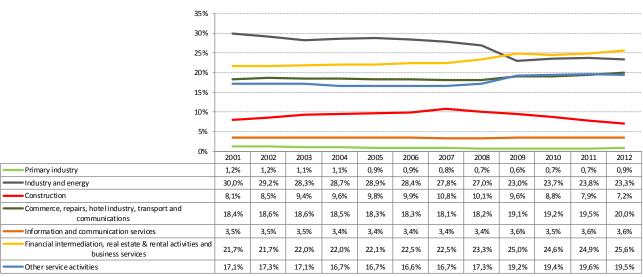
Based on the data on Gross Value Added (GVA), it is possible to analyse the industrial sector's productive structure and its evolution.

Thus, between 2001 and 2011, one can observe that it is the "financial mediation, real estate and rental agencies and activities and business services" section which, since 2008, has contributed most to the global GVA of the Basque Country, in detriment to "industry and energy" whose contribution drops abruptly from 2008 to 2009, after which it levels out. It seems appropriate to qualify that the industry's importance goes beyond its direct contribution to the GDP and employment through its drive for innovation and its role in the rise and development of activities related to industry services and to businesses.

As for construction, the data show a fast ascent until 2007, after which there is a notable, continual, unrelenting backward movement in its contribution to the GVA. On the contrary, "commerce, repair, the hotel business, transportation and communications" increase their relative weight, a trend which repeats itself even more clearly in the "Other activities of services" sector thanks to education, health, and public administration's increasing contributions to the GDP.

The Autonomous Community of the Basque Country (offering) by sector's Gross Value Added (GVA)

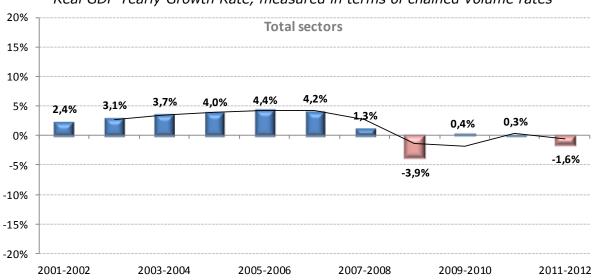
Current prices (in thousands of euro)





Keeping in mind the yearly variation of the real GDP on the global sector variation, an increasing trend beginning in 2002 and continuing through 2006 becomes clear, running out in 2007 with a slight backward movement followed by a reduction in growth in 2008, as a prelude to an abrupt fall of the GDP to 3.9% in 2009. 2010 and 2011 represent a certain recovery that does not consolidate and returns negative values in 2012, with a fall of 1.6%.

Departing from the base setting of the exterior context, the Basque Government's Direction of Economy and Planning foresees a trend towards economic consolidation in the Basque Country for 2014-2015, based mostly in the recovery of internal demand. It is expected that in 2014 the economy will grow 1.0% and 1.7% in 2015, although this is far from the crisis's previous figures.

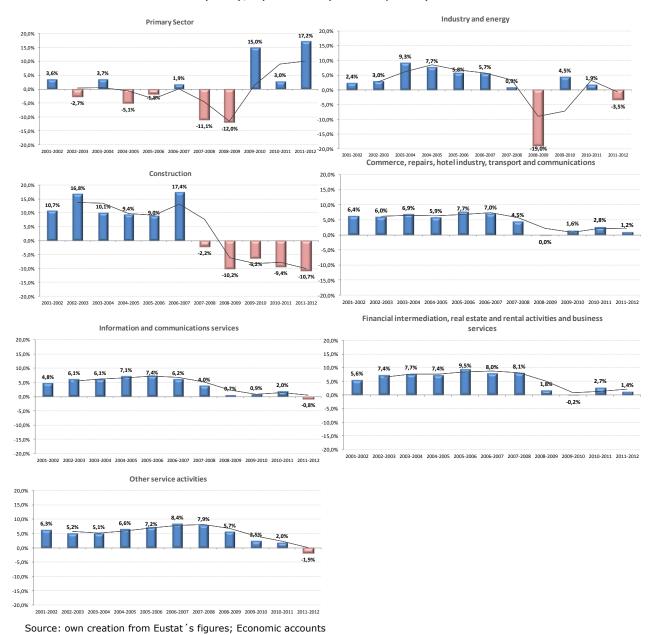


Real GDP Yearly Growth Rate, measured in terms of chained volume rates

Source: own creation from Eustat's figures; Economic accounts  $\label{eq:continuous} % \begin{center} \begin{c$ 



Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)



The evolution of the value added in current terms for the 2001-2012 period in the main points of reference present very different values in their growth rates.

The **primary sector** represents more variable behaviour through the years, with increases and decreases that do not suggest any clear trend, and with notable backwards movement in 2008 and 2009, which are recovered in subsequent years. Though, the Basque Country's economy's reduced contribution the global GDP (0.9% in 2012) leaves these movements scarce prevalence in the economic results of the total sectors. The Basque Government's



Direction of Economy and Planning foresees a growth of 3% in 2014 for the primary sector that, nevertheless, will become negative rates in 2015 (-1.7%).

The "**construction**" sector marks two differentiated periods, 2001-2007, of uninterrupted growth, with variable increasing rates and reaching their maximum point (17.4%) in 2007, leading to a period of backward movement that is maintained to the last year to be analysed, with few indications of recovery. In fact, the Basque Direction of Economy and Planning's forecasts indicate a decrease of -1.5% in the sector in 2014, with some recovery in 2015, although still at a negative rate (-0,2%).

As for the"**industry**", its maximum growth is given in 2004, when it obtains a 9.3% increase, though the backward movement is evident beginning in that year, with much smaller growth data and with 2008 as the last positive year with growth, albeit very reduced, that leads to an abrupt fall of 19% in 2009. Though that circumstance seems temporary, considering that 2010 and 2011 are years that pass for a more than evident recovery, although this does not continue into 2012. The forecasts carried out by the Basque Direction of Economy and Planning suggest that the sector will recovery in 2014, with a GDP growth rate of 1.6%, which improves in 2015 with a variation of 2.8%.

- The subsector with the greatest decreases in Industry is "Coking plants and petroleum refining" which ends the period with -29.8% GVA, preceded by a much greater fall the previous year (-52.7%), owed in part to the strong growth experienced in 2010.
- "Extractive industries," with evident backwards movement since 2009, and "textile, clothing, leather and footwear," are activities with among the worst results in the final analysed year.
- Another of the key activities in the industrial reality of the Basque Country,
   "Metallurgy and metallic products," suffers its most forceful backward movement in
   2008 and 2009 that, despite the positive growth rates in the two subsequent years,
   fails to recover from this drop.
- "Machinery and team" and "Transportation material" are the only activities which, after the drop of 2009, retake the path to recovery, with positive growth rates in the following years. Though the final year's adjusted balance provokes a questioning of its future evolution.



Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)

Industry and energy

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Extraction industries	32,7%	-15,5%	-2,8%	-2,0%	6,1%	9,7%	-0,3%	-7,8%	-19,7%	-29,2%	-27,3%
Food, beverage and tobacco ind.	3,0%	6,9%	20,1%	6,5%	-0,9%	3,3%	-1,5%	-3,8%	8,6%	-4,2%	-2,2%
Textile, clothing industry, leather and footwear	11,5%	-19,1%	3,3%	-4,6%	28,4%	10,0%	2,1%	-21,1%	-5,2%	12,1%	-20,7%
Wood, paper and graphic arts	4,1%	-2,8%	0,2%	5,2%	8,2%	4,1%	-4,4%	-12,2%	-3,2%	7,5%	-3,2%
Syngas and oil refining	-45,9%	40,3%	117,3%	49,5%	-31,9%	-7,8%	-41,3%	-10,7%	55,0%	-52,7%	-29,8%
Chemical industry	10,0%	5,5%	-1,3%	8,1%	5,2%	-13,4%	0,9%	-13,7%	2,4%	3,7%	-3,1%
Pharmaceutical products	11,6%	6,9%	-0,2%	10,3%	3,8%	-19,1%	3,0%	-13,5%	13,4%	28,5%	-5,5%
Rubber, plastics and other non-metals	-1,0%	5,2%	2,5%	11,7%	0,1%	1,2%	-0,2%	-21,6%	8,1%	3,3%	-0,8%
Metallurgy and metal products	3,7%	0,3%	11,7%	5,3%	9,1%	12,8%	-2,5%	-34,1%	5,8%	3,5%	-4,3%
Computer products and electronics	1,5%	1,1%	3,0%	5,7%	10,4%	3,1%	2,8%	-16,0%	13,9%	3,9%	-0,8%
Electrical equipment and materials	-2,7%	3,2%	5,6%	4,0%	5,2%	-0,4%	6,4%	-12,5%	-0,4%	0,5%	-4,4%
Machinery and equipment	1,9%	1,0%	4,3%	5,5%	8,0%	4,3%	1,7%	-6,3%	3,9%	9,4%	0,8%
Transport materials	4,1%	10,9%	4,2%	-3,8%	3,8%	9,0%	2,8%	-17,5%	8,0%	5,1%	0,5%
Furniture and other manufacturers	5,4%	0,9%	0,1%	9,4%	4,7%	0,6%	-3,3%	-9,3%	4,8%	-10,2%	-10,1%
Electrical, gas and steam energy	4,2%	8,2%	22,1%	20,4%	17,0%	3,5%	23,6%	-6,8%	-4,6%	3,4%	-4,4%
Water supply and sanitation	4,7%	4,6%	6,6%	9,9%	10,3%	5,5%	4,1%	-2,4%	12,7%	2,0%	-5,2%
Total	2,4%	3,0%	9,3%	7,7%	5,8%	5,7%	0,9%	-19,0%	4,5%	1,9%	-3,5%

Source: own creation from Eustat's figures; Economic accounts

The "Commerce, repair, hotel business and transportation" sector maintains growth throughout the years, dodging the effects of the crisis, although this growth diminishes in considerably in recent years.

"The Hotel business" shows better behavior in the evolution of GVA generated than the rest of the sector's activities, with considerable growth in time of crisis, while "transportation and storage" has the worst results, with negative variations in 2010 and 2012 and positive rates in 2009 and 2011 that fail to equal those from before 2008.

Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)

Commerce, repairs, the hotel industry and transport

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Commerce, vehicle repairs	7,1%	6,6%	7,9%	5,7%	7,8%	6,2%	4,7%	-1,9%	1,4%	2,1%	1,3%
Transport and storage	5,1%	4,9%	5,9%	5,3%	8,1%	6,8%	4,1%	0,8%	-3,0%	3,5%	-1,6%
Hotel industry	6,3%	6,2%	5,5%	7,1%	6,8%	9,5%	4,5%	3,9%	8,0%	3,7%	4,0%
Total	6,4%	6,0%	6,9%	5,9%	7,7%	7,0%	4,5%	0,0%	1,6%	2,8%	1,2%



The "**information and communications services**" sector maintains the same trend as commerce, with growth that is continued, though very reduced, since 2008, and with a negative balance in the last year.

Telecommunications is the only activity with some positive variations throughout the year every year, although it has been experiencing backward movement since 2007.

The data processing activities, more than the others, indict the effects of the crisis, concluding the dropping analysed period, although these were very light compared with those suffered by "edition, image, radio and television," which shows the sector's worst GVA variation results.

Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)

Information and communication services

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Telecommunications	4,2%	5,9%	6,6%	7,3%	7,8%	4,6%	4,1%	1,6%	0,8%	2,0%	1,3%
Publishing, image, radio and television	3,9%	5,0%	2,7%	7,3%	1,9%	2,9%	-1,8%	-6,8%	1,7%	-0,6%	-7,8%
ІТ	7,2%	7,7%	8,4%	6,7%	11,4%	12,1%	7,9%	3,9%	0,6%	3,6%	-0,4%
Total	4,8%	6,1%	6,1%	7,1%	7,4%	6,2%	4,0%	0,7%	0,9%	2,0%	-0,8%

Source: own creation from Eustat's figures; Economic accounts

"Financial mediation, real estate and rental agency activities and businessservices" is the sector which shows best behavior until 2008, when it begins to experience a sudden drop, with more thoroughly adjusted growth rates and a negative variation in 2010 that tends to be recovered in subsequent years.

As for different activities, until 2008 growth is maintained in greater or smaller measure across the board; it is from here on out where the diverge.

"Real Estate Activities" is the only activity that maintains positive growth every subsequent year, though with ups and downs; "consultancy and technical activities" is the activity that shows greater capacity of reaction after the abrupt fall in 2009 and "safe financial activities" and "other professional activities" are the activities with the worst situation, with some recovery after the point of inflection, which nevertheless does not seem to stabilize.

Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)

Financial intermediation, real estate & rental activities and business services

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Financial activities and insurance	3,4%	5,5%	5,0%	6,7%	11,5%	9,4%	6,1%	-1,5%	-6,1%	-1,5%	2,7%
Real estate activities	6,2%	7,7%	8,8%	7,7%	8,4%	5,4%	8,4%	6,9%	1,2%	3,7%	2,0%
Consulting firms and technical activities	6,7%	8,8%	8,9%	7,8%	8,9%	10,1%	9,8%	-1,1%	3,1%	5,9%	2,5%
Research and development	7,0%	8,1%	7,5%	5,6%	9,0%	10,6%	11,1%	-0,1%	7,2%	5,1%	-1,7%
Other professional activities	7,2%	8,6%	9,3%	6,9%	8,9%	9,9%	9,6%	-1,0%	-4,5%	3,4%	-3,3%
Auxiliary services	7,1%	9,0%	9,2%	7,8%	9,1%	9,7%	9,0%	-1,7%	4,0%	3,5%	-3,6%
Total	5,6%	7,4%	7,7%	7,4%	9,5%	8,0%	8,1%	1,8%	-0,2%	2,7%	1,4%



"Other service activities" is the strongest sector before the crisis, and in it only suffers a negative GVA variation in 2012, although the three preceding years the growth had diminished considerably.

This sector shows very different behaviours by area, without any common trend among these behaviours, and without a clear evolution in any. With everything, although it departs from the worst positions, the "activities of the homes" show greater capacity in time of crisis, just like the "Cultural and recreational activities". "Public administration and defence," "education" and "health activities," in turn, finish 2012 with negative values which, due to their weight in the contribution to the sector, involve a negative variation in the sector total for that year.

Variation of the Autonomous Community of the Basque Country's (offering) value added (GVA), by sectors (current prices)

Other services activities											
	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Public administration and defence	6,1%	4,6%	5,1%	6,0%	6,3%	6,3%	9,0%	0,6%	0,7%	2,7%	-4,7%
Education	5,8%	5,9%	4,7%	6,6%	7,0%	9,4%	6,4%	8,6%	3,8%	-0,4%	-2,5%
Healthcare activities	6,8%	4,5%	5,6%	7,0%	7,8%	11,1%	10,5%	7,0%	2,6%	0,9%	-1,4%
Social services activities	9,2%	7,7%	5,7%	5,7%	8,2%	10,4%	8,8%	7,9%	1,8%	1,7%	0,6%
Recreational and cultural activities	5,8%	5,9%	4,7%	2,1%	9,5%	8,6%	3,3%	8,9%	8,8%	5,4%	2,4%
Other services	6,5%	6,7%	6,7%	7,7%	6,8%	4,5%	3,8%	5,9%	0,9%	3,6%	1,5%
Residential activities	6,2%	3,5%	3,3%	13,0%	7,3%	3,5%	4,5%	6,3%	0,2%	13,1%	0,9%
Total	6,3%	5,2%	5,1%	6,6%	7,2%	8,4%	7,9%	5,7%	2,5%	2,0%	-1,9%



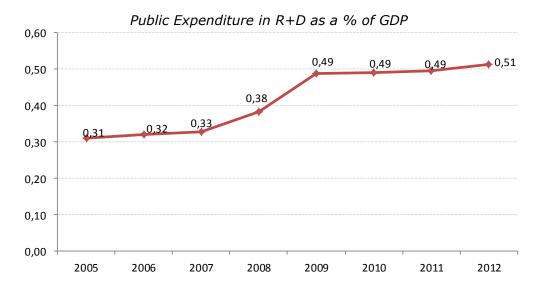
# Trends in R+D in the Basque Country: employment and expenditure

Innovation as a motor to boost an economy leaves little room for argument: "rich countries invest in research because they are rich, when really they are rich because they invest in research"; research involves patents, that lead to the creation of businesses, and thus, wealth.

Entities from the R+D sector state their concern with the current economic situation, but on the other hand they recognize the Basque Country's actions in favour of maintaining this sector despite the financial crisis or other budget cuts. This vision is backed by the comparison with the situation throughout Spain, where the cuts have done away with most of the budgets, while in the Basque Country the investments have been maintained and avoided decapitalization or dismantling of existing knowledge infrastructures.

There is a lot depending on their survival, and the forecasts establish its limits with the duration of each governing term, for which the political figures are asked to maintain their faith in R+D as an investment from the start, and not an expense. Thus the investment must be sustained and increased in time, beyond that of political changes.

In this sense, the Eustat figures show a rising trend in public expenditure for R+D as a percentage of GDP, and is even more evident in the crisis 'initial years, which may also be influenced by an increase in its relative weight due to a real decrease in GDP at this time.



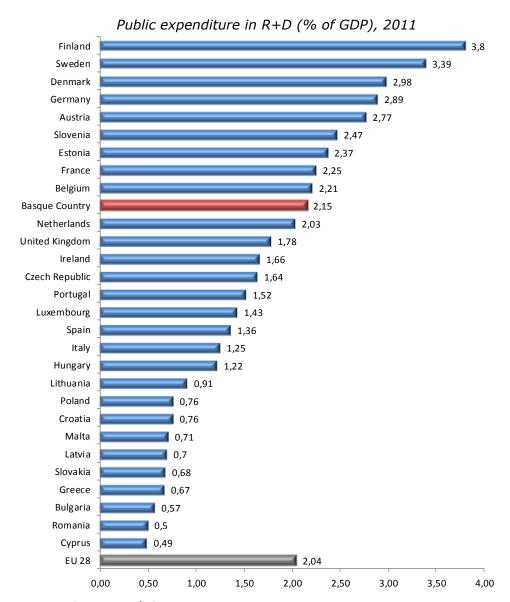
Source: own creation from Eustat's figures



Within the context of the entities asked, R+D expenditure mainly comes from the public sector while the private sectors is more reluctant to investing in mid/long term projects, since they look for immediate results. But, those that have incorporated R+D processes, products and/or services are those in a better position during times of crisis.

That is why the efforts on behalf of the R+D entities and the public administration are efforts to increase the presence of research in businesses, highlighting small and medium businesses as the leaders of our productive network.

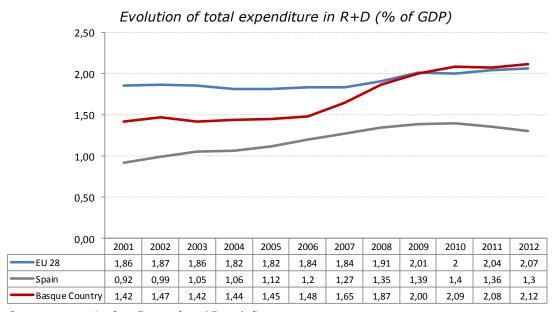
Relative to Europe, the total R+D expenditure as a % of GDP in the Basque Country is between that of Belgium and Netherlands and above the European average and Spain.



Source: own creation from Eurostat's figures

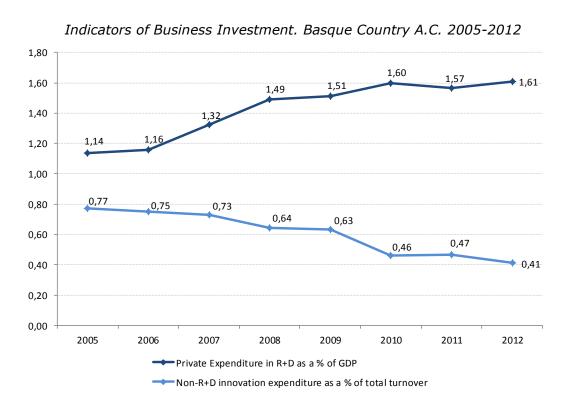


The R+D expenditure as a percentage of GDP has increased continuously from 2004 to 2011, when a slight decrease occurs, until it is recuperated to its highest levels in 2012. Since 2010 this indicator is even higher than the European average.



Source: own creation from Eurostat's and Eustat's figures 1997-2004 figures are calculated with the 2005 GDP as base; 2005-2012 figures are calculated with the 2010 GDP as base. 2012 Basque Country figures are calculated with a preview of the GDP.

Research and development is established as the motor for innovation, relative to innovative activities that lack this element. So the trend of innovation in R+D is secured, despite other innovations losing importance.



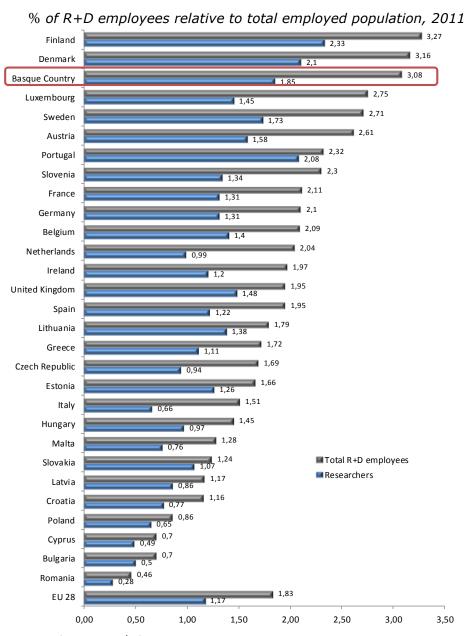
Source: own creation from Eustat's figures



The public sector's emphasis on research and development in the Basque Country, besides the maintenance and development of the infrastructures and innovation networks has allowed most technological centres surveyed to maintain their staff in recent years, maintaining or slightly growing, which also forms part of their business strategy.

Relative to Europe, and keeping in mind the people involved in R+D as a percentage of the employed population, the Basque Country is in third place, below countries like Finland and Denmark, far above the European average and Spain.

Relative to researchers, the Basque Country ranks fourth, after Portugal in third place, also placing above the European and Spanish average.



Source: own creation from Eurostat's figures



The evolution of the researcher as a percentage of the total employed population, even in times of crisis, with a drop in 2010, was recuperated the following year.

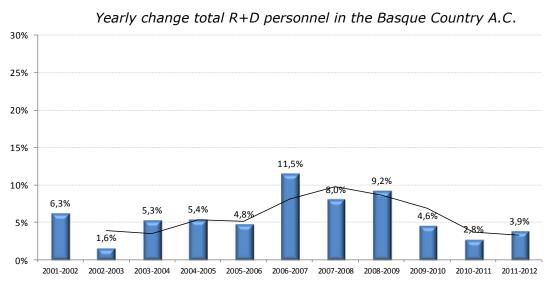
Total employed Researcher 3.50 2.00 1,80 3,00 1,60 2,50 1,40 2.08 1,20 2,00 1,00 1.07 1,01 1,50 0,98 0,95 0,80 1.00 0,60 0,40 0,50 0,20 0,00 0.00 2003 2004 2005 2006 2007 2008 2009 2010 2011

Evolution of % of R+D employees relative to total employed population

Source: own creation from Eustat's figures

→ Spain → Basque Country

According to Eustat's data on R+D personnel, the increase has continued yearly, while the growth rate has varied, without presenting a defined trend. At the start of the crisis, 2007 to 2009, growth is greater, slowing considerably from then on.

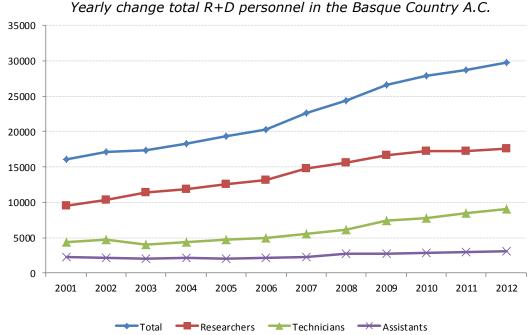


Source: own creation from Eustat's figures



The researcher is the main human resource with which the Basque Country's R+D relies on, making up 59.2% over the total, while technicians make up 30.4% and assistants 10.3%. Therefore, 9 out of 10 R+D personnel are required a university degree for their jobs as researcher or technician.

However, amongst the most highly qualified jobs, the researcher has lost rank to the technician since 2008 (in 2008, the researcher made up 63.7% and the technician 25.2%), while assistants remain more stable throughout time.



Source: own creation from Eustat's figures

With regards to the scientific disciplines, the research in "engineering and technology" is what employs the most personnel, supposing 63.6%. Then followed at a distance by health sciences with 14.1%. This is followed by natural and exact sciences (10.5%) and social sciences and humanities (9.5%). Lastly we find agricultural sciences, which employs the least number of personnel.



30000 25000 20000 15000 10000 5000 n 2002 2003 2005 2006 2011 2012 2001 Engineering and technology Health sciences (including pharmacy) Agricultural sciences (including livestock, silviculture and fishing) Social sciences and humanities

Total R+D personnel in the Basque Country A.C. by scientific discipline

Source: own creation from Eustat's figures

In terms of yearly variations in personnel, there is no specific trend by scientific discipline, except possibly engineering and technology, which was consolidated in 2007 with an increase of 13% in 2007, and starts to drop its rate of increase in the preceding years until reaching 2% in 2012.

On the other hand, the remaining disciplines show a more varied behaviour, with ups and downs in the number of implicated personnel, an effect of the variability in the type of projects developed each year.

Just like with the number of employed personnel, the R+D expense also shows a high concentration of R+D activities in the field of Engineering and Technology, supposing 71.5% of the total expenditure in 2012, even though its weight has decreased with regards to the first year studied, mainly in favour of exact sciences and health sciences.

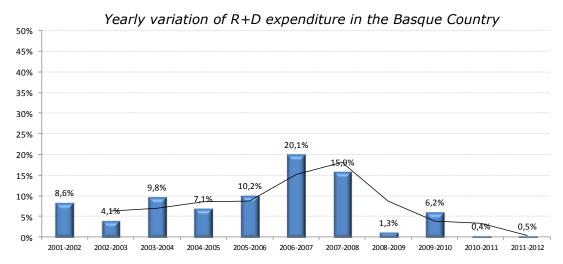
Distribution of percentage of expenses in R+D in the Basque Country by scientific discipline

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Engineering and technology	79,3%	77,2%	77,2%	76,9%	75,4%	73,6%	72,2%	71,7%	69,7%	69,3%	71,7%	71,5%
Exact and natural sciences	6,2%	9,7%	8,1%	9,6%	8,9%	12,0%	9,4%	11,9%	10,7%	11,9%	10,4%	10,0%
Health sciences (including pharmacy)	5,5%	5,5%	5,5%	6,7%	8,0%	7,7%	10,5%	8,1%	10,0%	10,1%	9,3%	9,9%
Social sciences and humanities	5,9%	4,4%	5,0%	4,4%	4,1%	5,1%	4,2%	5,0%	6,2%	6,3%	6,1%	6,1%
Agricultural sciences (including livestock, silviculture and fishing)	3,0%	3,1%	4,2%	2,4%	3,6%	1,6%	3,7%	3,4%	3,4%	2,3%	2,6%	2,5%

Source: own creation from Eustat's figures



The investment efforts in R+D both in the public and private sphere are evident, keeping in mind the yearly positive change in expenditure, even though the crisis has limited these growths. So just like what happened in the number of personnel, 2007 and 2008 are years of positive growth in expenditure, which falls drastically in 2009. In 2010 there is again an increase in expenditure of up to 6.2%, while this is only a one-time improvement since the low rate of growth, near zero, from the previous years are reflections of the sector's delicate situation.

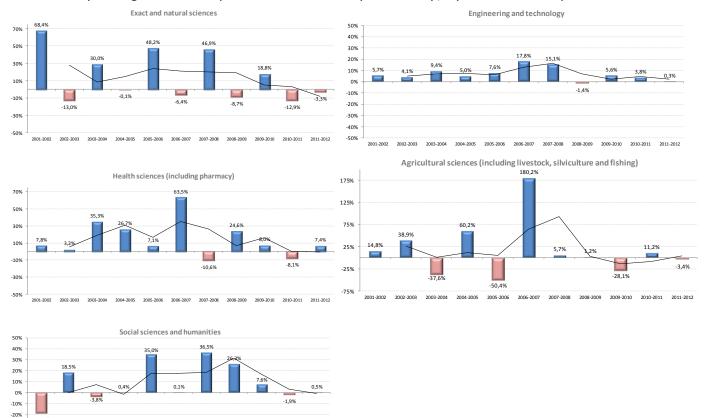


Source: own creation from Eustat's figures

The variation in expenditure per scientific discipline shows unequal behaviours, with abrupt ups and downs, except like with the personnel, in "engineering and technology." This discipline, with greater continuity in R+D has shown varied growth until 2008, this year and the prior are the two years when the largest growth spurts are produced. However, from here on the crisis shows its effects with a decrease in 2009 and a recuperation of expenditure in 2010, which again decreases in later years.



# Yearly change in R+D expenditure in the Basque Country, by scientific discipline



Source: own creation from Eustat's figures

-20% -30% -40%

Considering the change as a whole experienced in the last decade of the Basque Country's R+D investment, we see a more than evident growth in R+D expenditure in all scientific areas (except in agriculture that increase 14.7%), the most obvious is in health sciences (256.9%), and exact and natural sciences (141.9%), which reflects the boost in bio and nanotechnologies (two of the KETs defined in the RIS3 strategy). The researcher's activity in social sciences also increases its expenditures (138.8%), just like engineering and technology, a discipline that has a much higher expenditure base, but still increases 81.6%.

Up to 2008, the increase in R+D expenditure has been greater than personnel, giving way to a parallel trend amongst indicators (except in 2005).



While this trend is inverted in 2008, increasing the number of R+D employees over expenditure, it may be due to, amongst other causes, an upturn in the contracting of technical personnel in 2009 over researchers with a greater salary range.

In the last two years of analysis, the increase in personnel is above the expenditure that tends towards zero growth. Before this situation, the Industry, Commerce and Tourism Department in the Basque Government, in its report "Business Competitiveness and Social Innovation. Strategy and Lines of Action," they maintain that improvements in research productivity are necessary. For this, it proposes in "besides other matters, improve the qualification of the people, increase the number of doctors and establish a more solid collaboration between the University and the European Research Area."

Relationship between the change in R+D personnel and R+D expenditure 25% 20,1% 20% 15,9% 15% 11,5% 10,2% 9,8% 10% 9,2% 8,6% 8,0% 6,2% 5% 4,8% 5,4% 5,3% 2.8% 1,3% 1,6% 0% 2006-2007 2007-2008 2008-2009 2009-2010 2010-2011 2011-2012 2003-2004 2005-2006 R+D personnel R+D expenditure

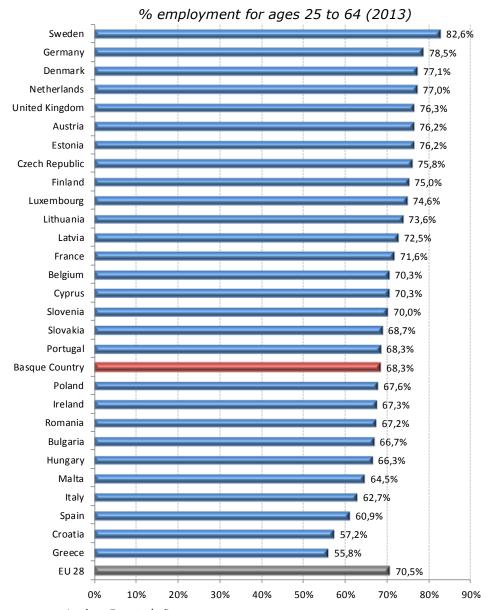
Source: own creation from Eustat's figures



# EMPLOYMENT IN THE BASQUE COUNTRY: DISTRIBUTION BY SECTOR

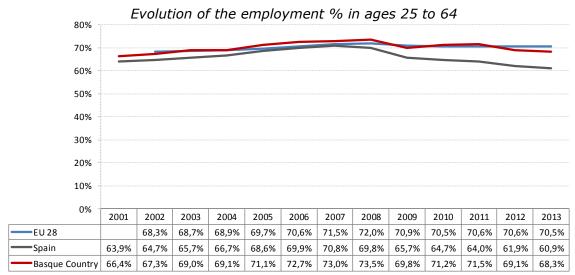
## Evolution of employment: total population and population with university education

The Basque Country is far from reaching top rankings in employment indicators for ages 25 to 64, with Sweden, Germany, Denmark and Netherlands leading the ranking. However, with 68.3% of this population employed in 2013, it is closer to the European average and surpasses that of Spain.



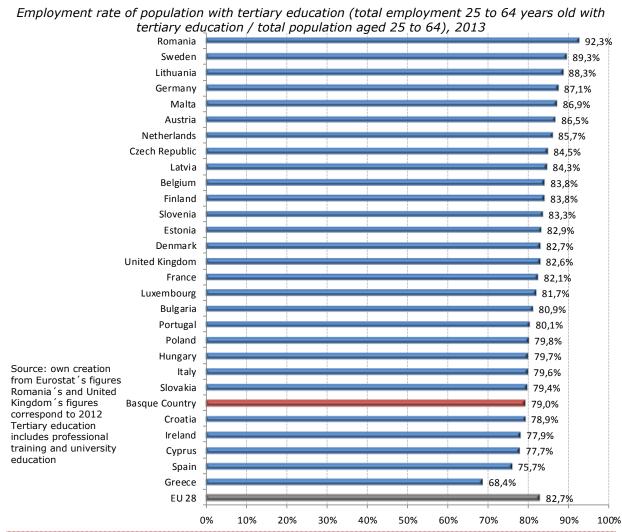


Despite the Basque Country showing signs of retrogressing in employment, its trend is more stable than Spain's, and is closer to the European evolution.



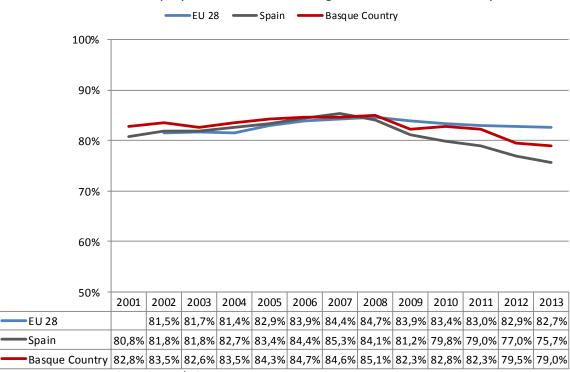
Source: own creation from Eurostat's figures

With greater training, employment status improves, with the population with tertiary education aged 25 to 64 reaching 77.1% employment. However, this indicator remains very below the top ranking European countries and far from the average.





The crisis also affects employment of people with tertiary education, while later than in Spain, with 2011-2012 being the years in which the decrease is most evident in comparison to the stability in EU-28.



Evolution of the employment coefficient in ages 25 to 64 with tertiary education

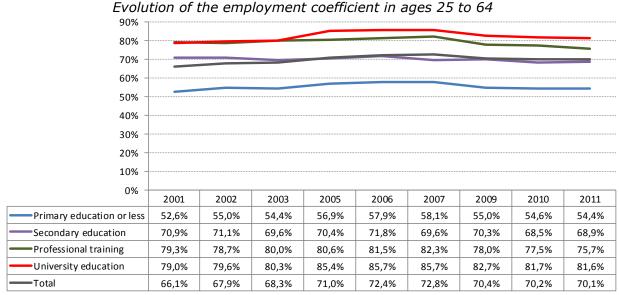
Source: own creation from Eurostat's figures

Tertiary education, according to the international educational standard classification (ISCED) 2007 (ISCED 5 and 6 for tertiary education include: Programs for the training and labour market entry that require an advanced level professional degree, university degree, masters, post-graduation and advanced arts, vocational, dance and music studies, graduate university education and doctoral programs.

The Labour Market Census data shows employment results of the population with university degrees slightly different than those presented by Eurostat (due to different methodologies), but they allow for a comparison between other educational levels so as to understand the similarity or disparity in the data's evolution.

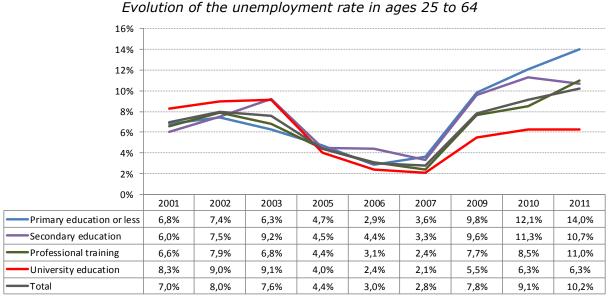
From this information it is clear that people with university education, together with people with professional degrees, have higher rates of employment then the rest.





Source: own creation from Labour Market Census figures Employment department and social policy Basque Government

But, despite the crisis affecting employability less in those with university degrees, this group increases its unemployment rate by 4.2 percentage points from 2007 to 2011, even though it is a smaller increase than populations in other educational levels.



Source: own creation from Labour Market Census figures Employment department and social policy Basque Government



In order to understand the employment population distribution by economic sector, Eurostat's figures allow us to compare the Basque Country with EU with regards to the sectors that sustain employment, between 2008 and 2013, from which we see similarities with EU28's averages and clear difference from Spain.

So, the main similarities with respect to the EU and differences with Spain are seen more so in the "Other service activities" sector, while commerce, transport and hotel industry sectors make up a greater percentage of employment in Spain.

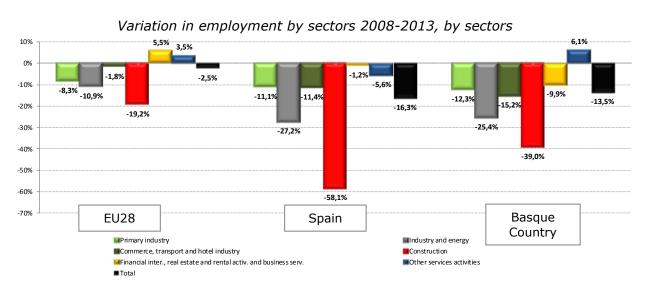
The Basque Country distinguishes itself from Spain and the EU in the weight of industry as employer.

Employment distribution by sector, Eustat (total employed population)(\*)

	/	2008		2013			
	EU-28	Spain	Basque Country	EE-30	Spain	Basque Country	
Other services activities	28,6%	7,3%	25,3%	30,4%	8,2%	31,1%	
Commerce, transport and hotel industry	23,6%	33,5%	24,1%	23,7%	35,5%	23,6%	
Industry and energy	18,9%	15,8%	23,8%	17,3%	13,7%	20,5%	
Financial inter., real estate and rental activ. and business serv.	14,8%	27,3%	16,0%	16,0%	32,2%	16,6%	
Construction	8,3%	12,0%	9,2%	6,9%	6,0%	6,5%	
Primary industry	5,2%	4,0%	1,6%	4,9%	4,3%	1,6%	

Source: own creation from Eustat's figures

However, the variation of employment in the crisis years 2008-2013 show a worse situation in the Basque Country versus the EU28 in all sectors.



<sup>(\*)</sup> This data is not completely comparable to that presented by the CMT, since Eurostat includes both IT, publishgin and telecommunications in business services, while in CMT telecommunications is associated to "commerce, transportation, hotel and restaurants and communications" in CNAES prior to 2009.

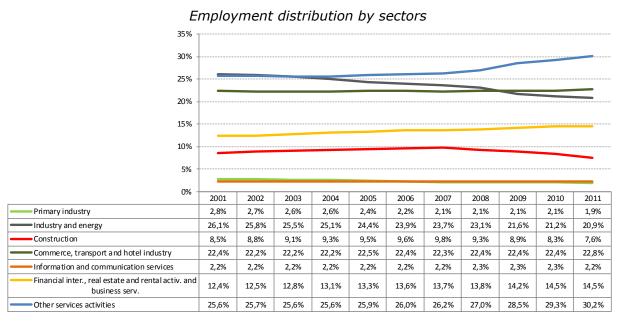


According to Eustat, until 2011 the service sub-sector "Other service activities" is what encompasses the majority of employed individuals, followed by "Commerce, repairs, hotel industry, transport and communications" and "industry and energy."

There are clear movements with regards to the capacity of each of the sectors to employ the majority of the employed population, with "industry and energy" losing the capacity to employ since 2001, which leads us to think that it is a less intensive sector in the labour force due to effects that go beyond the current economic crisis (technological development, off-shoring and other factors).

"Other services activities" maintain its increasing weight as employers beyond the crisis just like "Financial intermediation, real estate and rental activities and business services," while less so. On the other hand, "construction" loses weight continuously from the start of the recession.

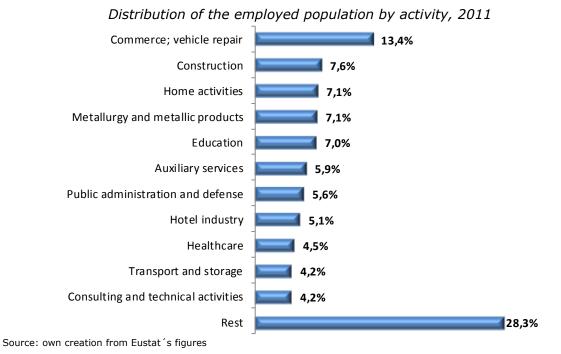
"Information and communication services" maintains its contribution to employment stable.



Source: own creation from Eustat's figures

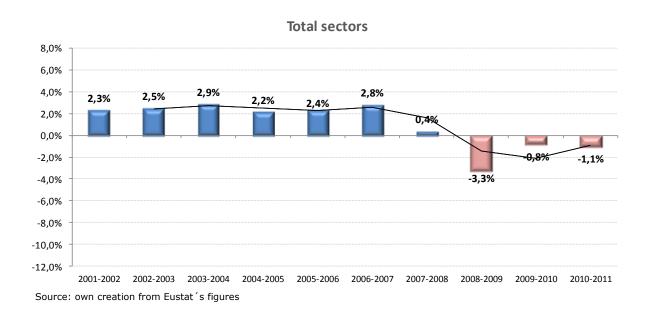
With the areas of activities in mind, we see that retail, healthcare, education and other business activities have a greater weight in the labour force, making up more than one third the total.





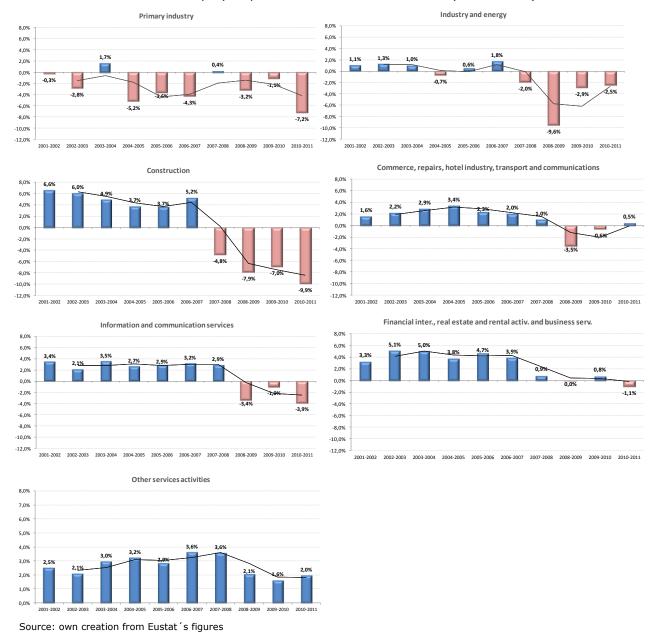
Relative to all sectors, the yearly variation showed an increase in staff year-by-year until 2008, when a period of decreasing begins, most obviously seen in 2009. Until 2011 the fall

continues, while less so.





#### Variation of employed personnel in different sectors (2001-2011)



Keeping in mind the different sectors, the differences in employment trajectory is evident. The **primary industry** does not show a clear trend, while during the years employees decrease there is a greater change in comparison to the two only years where employment increases (2004 and 2008)

"Industry and energy" tend to slightly increase employment (except in 2005) up to 2008, with 2009 the year with the greatest negative change reaching 9.6%.



In terms of movements in the labour force by each of the industrial activities, since 2008 there is a decrease in the number of employees in general, most evident in "extractive industries," "rubber, plastics and other non-metals" "metallurgy and metallic products," "wood, paper and graphic arts" and "furniture and other manufacturing industries."

"Water supply and sanitation" is the activity that presents the best behaviour in terms of employment, together with "Coking and oil refining."

Variations of employed individuals in different activities Industry and energy

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Extractive industries	-0,7%	2,7%	3,9%	-13,5%	-0,1%	0,9%	1,3%	-7,1%	-9,7%	-17,3%
Food and drug industry	0,5%	1,5%	1,0%	3,1%	-1,6%	-0,7%	-2,8%	-0,8%	2,5%	-2,2%
Textile, tailoring, leather and footwear	-1,6%	-3,4%	-2,4%	-3,9%	1,1%	-2,3%	-13,4%	-6,6%	-5,0%	-6,2%
Wood, paper and graphic arts	0,9%	2,3%	-1,0%	-0,2%	1,9%	-0,7%	-3,3%	-10,5%	-6,1%	-4,6%
Coking and oil refining	0,7%	0,7%	9,8%	9,3%	5,3%	5,3%	3,1%	4,1%	0,8%	-0,2%
Chemical industry Pharmaceutical products	0,0%	-2,8%	-0,9%	2,3%	1,5%	-1,1%	-2,6%	-8,2%	-3,0%	-5,6%
Rubber, plastics and other non-metals	0,8%	0,6%	1,5%	1,7%	-0,8%	-2,2%	-0,3%	-13,4%	-2,8%	-0,1%
Metallurgy and metallic	2,6%	1,7%	1,8%	-1,0%	1,3%	5,2%	-2,9%	-12,2%	-4,9%	-3,2%
Prod. IT and electronics	-2,0%	-1,2%	0,6%	2,1%	-0,1%	3,0%	-4,1%	-5,1%	-0,9%	0,9%
Electric material and equipment	-1,7%	-1,4%	0,5%	0,0%	2,4%	-2,7%	0,1%	-9,0%	-3,1%	-1,5%
Machinery and equipment	1,8%	0,4%	0,4%	-0,6%	1,3%	2,7%	0,0%	-7,9%	-1,9%	-1,9%
Material transport	-0,4%	4,7%	0,6%	-3,8%	-2,5%	-0,1%	1,6%	-5,9%	-1,2%	-3,0%
Furniture and other manufacturing	0,2%	3,0%	0,9%	-6,4%	0,1%	1,7%	-4,7%	-11,2%	-0,9%	-5,9%
Electric, gas and vapour energy	1,5%	-5,8%	6,1%	6,2%	-2,8%	-1,4%	5,5%	-3,0%	-4,0%	0,2%
Water and sanitation	2,4%	1,9%	2,4%	1,1%	5,2%	1,8%	2,4%	-1,7%	4,5%	10,2%
Total Company of the	1,1%	1,3%	1,0%	-0,7%	0,6%	1,8%	-2,0%	-9,6%	-2,9%	-2,5%

Source: own creation from Eustat's figures

This point of inflection, 2007-2008, is repeated in the **construction** sector, but with much more evident changes. The sector, growing from an employment perspective, obtains worse results from 2001 to 2006, even though in 2007 it makes a comeback with 5.2% more employees, then dropping again by almost 5% the following year. The negative situation is maintained, increasing the negative change percentages up to 2011.

Unlike construction, the "Commerce, repairs, hotel industry, transport and communications" sector gradually increases its staff from 2001 to 2006, the year in which despite continuing positively, the growth slows and it is in 2009 when retrogressing becomes evident, even though the situation seems to improve in the later years.

This trend is repeated in all sector activities, with the hotel industry having the best performance in employment during the years of the crisis.



#### Variations of employed individuals in different activities Commerce, repairs, hotel industry, transport and communications

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Commerce; vehicle repair	2,0%	2,5%	4,2%	5,1%	1,5%	0,9%	0,2%	-4,0%	-0,3%	0,2%
Transport and storage	0,4%	1,6%	2,4%	-1,5%	2,4%	5,0%	2,3%	-5,6%	-2,5%	-0,5%
Hotel industry	1,6%	2,1%	-0,3%	3,0%	4,8%	2,9%	2,2%	-0,2%	0,2%	2,1%
Total	1,6%	2,2%	2,9%	3,4%	2,3%	2,0%	1,0%	-3,5%	-0,6%	0,5%

Source: own creation from Eustat's figures

"Information and communications services" is a sector also on the rise in employment throughout the years up to 2009, when they tend to drop, while at a different intensity, they then are maintained in later years.

IT activities are what most increase in terms of employment up to 2008, while telecommunications best resist the crisis, with a retrogression in employment at a slower rate than the other activities.

Variations of employed individuals in different activities Information and communication services

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Publishing, image, radio and television	4,2%	1,5%	3,3%	2,3%	-0,1%	-0,6%	0,1%	-4,4%	-1,4%	-5,0%
Telecommunications	6,1%	-1,1%	0,9%	1,4%	4,6%	-1,4%	1,7%	0,6%	0,3%	-0,2%
IT	2,3%	3,4%	4,3%	3,2%	4,3%	6,3%	4,6%	-3,7%	-1,2%	-4,2%
Total	3,4%	2,1%	3,5%	2,7%	2,9%	3,2%	2,9%	-3,4%	-1,0%	-3,9%

Source: own creation from Eustat's figures

Together with "Other service activities," the "**Financial intermediation**, **real estate and rental activities and business services**" sector shows the best behaviour in terms of employment, maintaining a yearly growth that ranges from 3% to 5% up to 2008. In 2008 it maintains a positive variation, but less so, forecasting the later, more negative results, while still showing a greater resistance to the crisis than the aforementioned sectors.

In terms of activities, the differences are established mainly in two of them, with opposing trends. On the one side, "real estate activities" suffer considerable decreases in recent years, marked mainly by the changes in 2008-9 and 2012-11.

On the opposite end, "research and development" activities that in 2001-2006 increased their workforce 17.5%, easily surpassing employment generation in later years, increasing by 40.9% between 2006 and 2011.

Variations of employed individuals in different activities Financial intermediation, real estate & rental activities and business services sector



	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Finance and insurance	-0,4%	-0,4%	2,0%	-2,8%	2,2%	1,1%	0,2%	1,8%	-2,6%	-2,3%
Real estate	6,0%	5,0%	5,9%	4,9%	5,0%	5,9%	-2,1%	-11,0%	-1,5%	-10,3%
Consulting and technical activities	3,5%	4,6%	7,8%	6,0%	5,2%	4,3%	0,8%	0,4%	2,5%	0,6%
Research and development.	3,4%	4,7%	-0,2%	1,9%	6,8%	6,7%	8,5%	7,2%	6,8%	6,3%
Other professional activities	1,8%	5,3%	8,5%	2,5%	5,1%	3,2%	0,7%	0,3%	-1,6%	-0,9%
Auxiliary services	4,8%	7,8%	4,1%	5,2%	5,0%	4,3%	1,0%	-0,2%	0,9%	-1,5%
Total	3,3%	5,1%	5,0%	3,8%	4,7%	3,9%	0,9%	0,0%	0,8%	-1,1%

Source: own creation from Eustat's figures

"Other services activities" rises as a sector with improved results in its employment trends, with unequal results in yearly growth, with a late reaction to the crisis, in 2008, from which the variations in employment are maintained positive, while less intensely.

This trend is repeated in all sector activities, except "Home activities," which expands employment 8.8% in 2011. This is the year in which all activities, except "education" and "healthcare" have a negative change.

Variations of employed individuals in different activities Other service activities

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Public administration and defence	1,4%	1,5%	1,5%	1,0%	1,2%	2,2%	2,3%	1,0%	1,1%	-0,4%
Education	1,5%	1,7%	1,0%	1,6%	3,1%	5,4%	4,1%	4,3%	1,4%	1,9%
Healthcare	1,7%	1,3%	1,9%	2,5%	2,2%	7,8%	5,9%	4,3%	1,4%	0,1%
Social services	0,7%	-2,2%	6,8%	2,7%	4,0%	5,4%	4,5%	-1,6%	2,9%	-2,3%
Recreational and cultural activ.	2,8%	4,3%	6,3%	2,3%	6,2%	1,2%	5,0%	-0,9%	5,2%	-1,5%
Other services	3,6%	3,1%	6,4%	6,7%	1,9%	1,7%	0,0%	-0,4%	-0,3%	-1,0%
Home activities	5,7%	4,6%	4,0%	6,7%	3,8%	1,0%	3,3%	2,2%	2,0%	8,8%
Total	2,5%	2,1%	3,0%	3,2%	2,9%	3,6%	3,6%	2,1%	1,6%	2,0%



#### **Evolution of Gross Domestic Product and Employment**

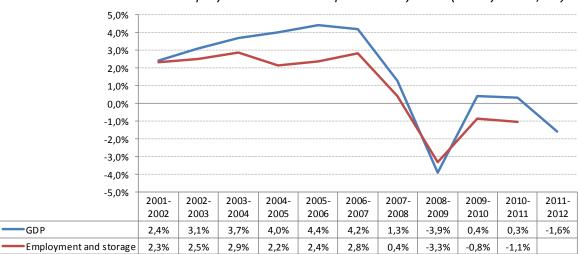
The graph of the evolution of the GDP and employment show a clear downward sloping trend since 2007, which supposes an abrupt end to the period of growth experienced since the mid-nineties. Both the gross domestic product and employment suffer a severe retrogression and decrease in 2009, and then slightly recuperate, reaching positive growth rates for GDP which are maintained until 2011. However, it is still too small to boost employment.

The relationship between GDP and employment shows how in 2007 and 2008 the GDP goes from growing 4.2% to 1.3%, a clear sign of the recession which has its effect on employment, which goes from growing 2.8% to only 0.4%. But still maintains the positive sign. However, the decrease in GDP to 3.9% in 2009 drags employment down almost just as much. Still, when GDP recovers, employment does not follow, but maintains a negative sign and continues so until the following year.

Therefore, while the relationship between both indicators is not in question, the doubt arises at what thresholds of change could one indicator indicate the other, which could provide the key level of growth in GDP that generates net employments and help reduce the unemployment rate.

The 2012 socioeconomic report by the Basque Country's A.C. created by Eustat makes mention of Okun, which establishes the relationship between economic growth and the unemployment rate. So, according to recent estimates of the CRL (2011) for the Basque Country the reduction in the unemployment rate requires at least a GDP growth of 2.6%.

Another of the sources consulted in this report, from the BBVA Research Service, claims that above the growth threshold of 1.7%, for each point gained in the GDP the unemployment rate would fall 0.6 points.



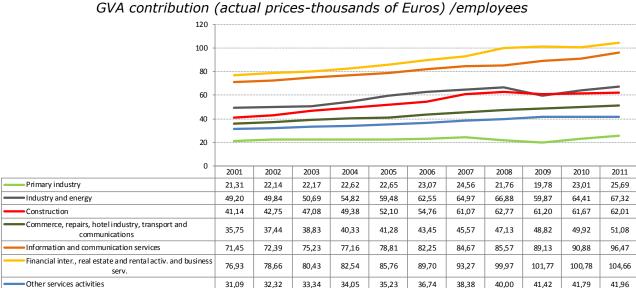
Evolution of GDP and employment in the Basque Country C.A. (Yearly rates, %)



Productivity, measured from GVA, per employee, shows higher and increasing rates in "Financial intermediation, real estate & rental activities and business services," together with "information services and employment."

On the other hand, with lower productivity rates, the primary industry becomes the activity with the most employment intensive activity followed by "other services activities" and "commerce, hotel industry and transport."

Overall, productivity shows a growing and continued trend in all activities except "industry and energy," which in 2009 suffers a rate-drop which it recovers from in the following years.





#### Employment of population with university degree by sector

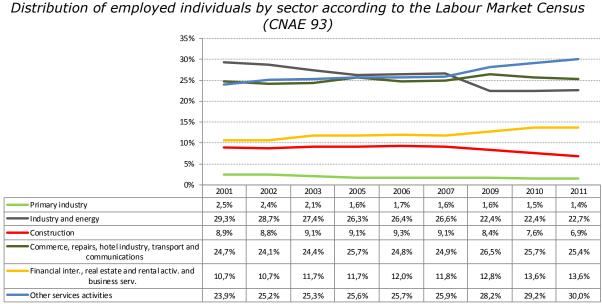
Up to now we have analyzed the employment figures by sectors with the aim of understanding which sectors and activities have had the greatest capacity to hire and the greatest resistance to the crisis in maintaining its staff.

The Labour Market Census figures allow us to go further, analyzing the population by educational levels, enabling us to see each sector's employment behaviour for university graduates.

The CMT figures (offer) show some divergence with respect to the Eustat figures due to the different forms of measuring data, but it does provide us information on trends and supports an idea of unequal weight and evolution in sectors employing university graduates.

The Labour Market Census provide CNAE 93 data for dates prior to 2009, so Eustat's data is only comparable after this date. Below are the graphs from 2001 to 2011 with CNAES 93 and CNAE2009 data from 2009-2011, which gives a more exact picture of the productive sector's reality.

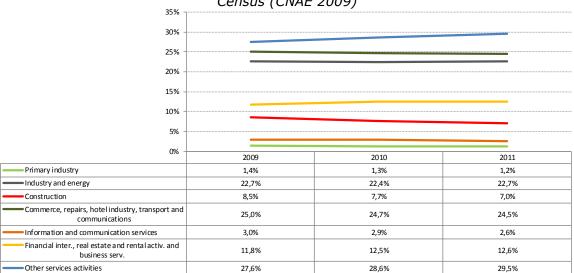
The CMT figures for the total population show the same trends as those of Eustat.



Source: own creation from Labour Market Census figures Employment department and social policy Basque Government



Distribution of total employed individuals by sector according to the Labour Market Census (CNAE 2009)



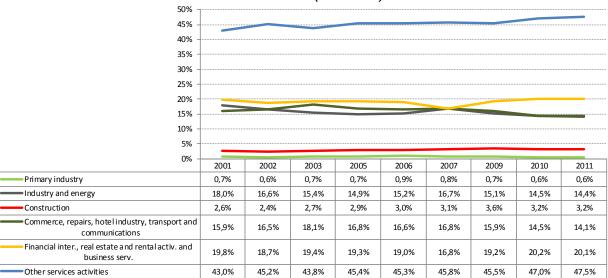
Source: own creation from Labour Market Census figures Employment department and social policy Basque Government

With these global trends the panorama completely changes for university graduates, with the "other business activities" sector being the one that most employees almost half of these, with a slightly upward sloping trend.

"Financial intermediation" supposes 20.1% of the employed university graduates in 2011, with an increase in weight since 2007.

It is worth noting the fact that the weight of employed university graduates in the different sectors shows a more reliable trend than seen in the total employed population.

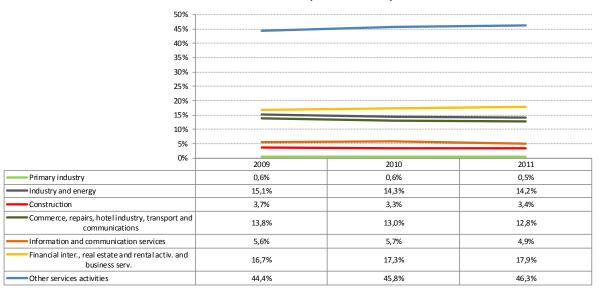
Distribution of total employed university graduates by sector according to the Labour Market Census (CNAE 93)



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government



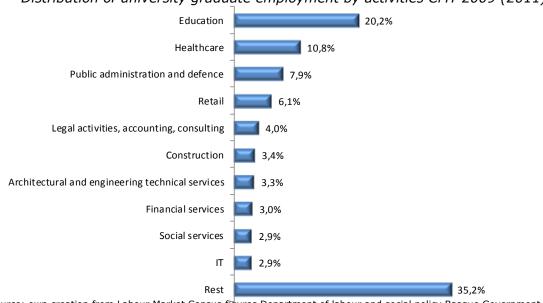
Distribution of total employed university graduates by sector according to the Labour Market Census (CNAE 2009)



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

The activity areas that employ a greater number of university graduates are education, followed by healthcare, which employ a third of all employed university graduates.

Distribution of university graduate employment by activities CMT 2009 (2011)

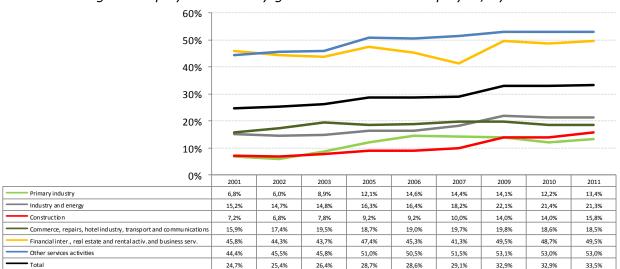


Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

A third of the employed individuals are university graduates, which increases proportionally uninterruptedly since 2001. This increase in employment qualification is repeated in all of the sectors in a more or less sustained fashion, with slight variations but more evidently in "Other services activities" which goes from having 44.4% university graduates amongst its employees in 2001, to more than half in 2011. This trend in employment distribution



by training level is maintained even after 2007, which leads us to think that in the case of staff reductions, employed university graduates are less often affected.



Percentage of employed university graduates over total employed, by CNAE93 sector

Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

From the CMT figures we can get the employment rate of change for individuals with university education. Since the census lacks data for the years 2004 and 2008, because the census was taken from 2001 to 2003, 2005 to 2007 and 2009 to 2011, it is not possible to get a year-on-year analysis. That's why we decide to calculate the average of each missing year from the previous and following years, which allows us to continue a historical tracking and enable a year-on-year analysis. This is done for both all university graduates and for the analysis of university graduates by productive sectors.

So as the results show, the year-on-year change of employed university graduates in the different sectors also shows a different behaviour with respect to total employed individuals. The evolution of the years prior to the crisis is unequal, with a greater resistance allowing it to delay a negative change until 2010, in smaller terms and with a slight recuperation in the last year analyzed.

35%



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

The year-on-year change of employed university graduates in the different sectors also shows a different behaviour with respect to total employed individuals.

"Industry and energy" starts from destroying employment two years in a row to a period of growth from 2004 to 2007. While this last year supposes a key upturn that then leads to an abrupt drop in employment with negative changes until 2001.

Between 2002 and 2003 the employment of university graduates in the "commerce, hotel industry, transport and communications" sector experiences a noteworthy growth, which weakens until 2010 when it starts to lose employment of university graduates in this sector.

The "Financial intermediation, real estate & rental activities and business services" sector also starts from a negative situation in 2002, which it recovers from in the following three years, then suffering a drop in 2006 until reaching almost 0 growth, and this intensifies in 2007 with a 9.8% loss in university graduate employment. While this appears to be an interim situation, since the recovery in 2008 and 2009 is noteworthy. While the last two years analyzed again suppose a worsening of employment until again reaching a growth of zero, we must ask ourselves if the following data will also be negative.

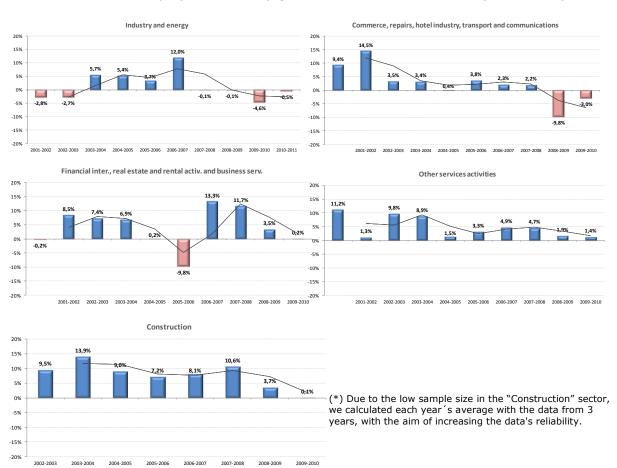
The "Other services activities" sector is the only sector that has maintained rising university graduate hiring rates throughout the years, although with different variations and at a much lower level as of 2006.



"**Construction**" also shows positive variations in university graduate employment, but with ups and downs that culminate in 2010 with growth tending towards zero (\*).

One of the sectors in which university graduates hold a lot of weight is the **"Information** and communication services" sector, for which we have figures from the CNAE 2009, and for the years 2009-2011 in the Labour Market Census. The data on its evolution show an abrupt drop in employment in the last year measured, of 13.9%, versus a growth of 1.1% in the previous year.

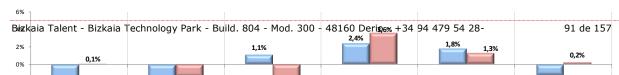
#### Variation of employed university graduates in different sectors (2001-2011)



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

#### Variation of employed personnel in different sectors (2009-2011) CNAE 2009

**■**2009-2010 **■**2010-2011





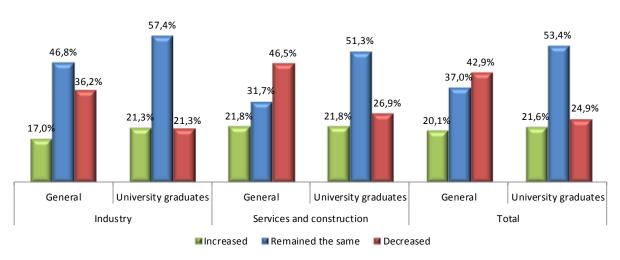




#### **Hiring trends**

For researching the current and future trends of Basque businesses in terms of the hiring of employees we had human resource managers fill in a questionnaire to understand their hiring activity in the last 5 years, along with a 5 and 10 year forecast. The aim was to discover the demand, both of new employees for creating new positions and of staff turnover.

The hiring trend seen up to now tends towards a decrease in hiring, while this differs in two ways: the industrial sector maintains its hires, while this is mainly only for university graduates.



Hiring trends in the last 5 years

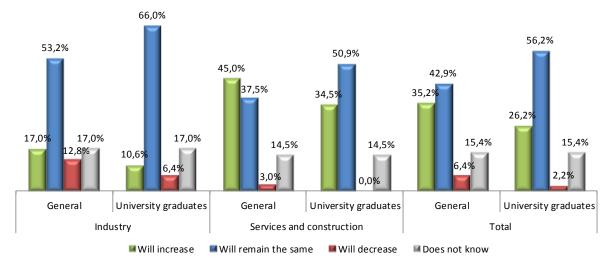
Base: 103 companies

In terms of future hiring, uncertainty is noteworthy when looking at the next 10 years, while companies are more certain in the short-term (5 years).

With this in mind the terms are inverted: on the one hand industry tends to maintain its hiring while service companies show signs of expected recovery by increasing their hiring both in general, but less so of university graduates and/or post-graduates.

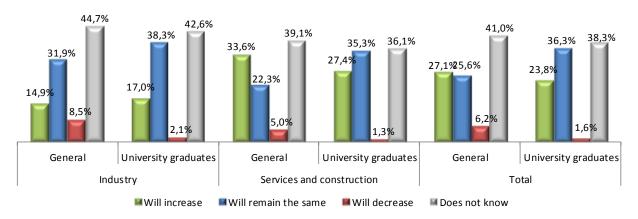


### Forecasted hiring trends in the next 5 years



Base: 103 companies

#### Forecasted hiring trends in the next 10 years



Base: 103 companies

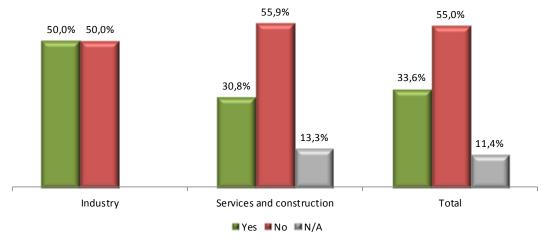


Of the employment agencies consulted, they note that in the near future there will be a need for graduates in the following knowledge areas:

	Bio-health					
	Chemical engineering					
	Chemical engineering (sales)					
EXPERIMENTAL	Technical environmental engineering					
	Biological engineers					
	Doesn't know					
	Food technology					
	Engineering					
	Engineering with sales abroad					
	Industrial engineering					
TECHNICAL	Computer engineering					
TECHNICAL	Mechanical engineering					
	Nanotechnological engineering					
	Aeronautical telecommunications engineering					
	Machine technicians					
	Nursing					
HEALTH	Geriatric nursing					
	Radiological research					
	Law					
	Economy					
	Business					
SOCIAL AND LEGAL	Psychology					
STUDIES	Internet					
	Labour relations					
	Sociology					
	Social Communications					
HUMANITIES	English Philology					

On the one hand, a third of all businesses foresee the creation of new jobs in their businesses, more common in the industrial sector.

Q15. In the future, do you expect to create new jobs with currently non-existent job profiles?



Base: 103 companies



The expected new jobs are mainly technological and more than half of the businesses cover them with university degrees:

Technological jobs	Other jobs
<ul> <li>Lab technician</li> <li>Engineering technician</li> <li>Engineering</li> <li>Project Manager</li> <li>Computer Science</li> <li>New technologies</li> <li>Research with new technologies in computer engineering</li> <li>Quality</li> <li>Architects</li> </ul>	Economists with knowledge of reports     Social worker

New graduates will mainly come from the following technical areas:

- Food science
- o Engineering
- General engineering
- o Industrial/mechanical engineering
- Computer engineers
- Mechanical engineers
- Marketing
- o Architects
- o Telecommunications
- Electronics



#### Hiring trends by knowledge area

In terms of the demand for degrees by knowledge areas, below we present the main characteristics in each area, its evolution, current situation and forecast in terms of the market's demand.

For the year-on-year change in employment for the different fields of knowledge we use the data from the Labour Market Census and in this case we were confronted with two problems:

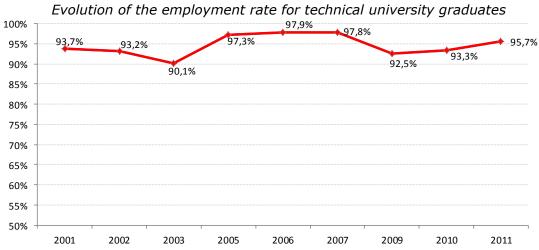
- ➤ A lack of data from 2004 and 2008: just like in the total university graduates, the data for these years are calculated from the average of the previous and following years. This way we could calculate the total employed university graduates in each knowledge area.
- ➤ However, when calculating employment by sectors in each of the knowledge areas, the reduction in sample size considerably affected the data.

To resolve this we decided to calculate the three consecutive year average in order to obtain more reliable data. This way, for example, the data from 2003 is the average of 2002, 2003 and 2004. On the other hand, we could not analyze sectors with three year sample sizes less than 200 questionnaires.



#### **Knowledge area: Technical degrees**

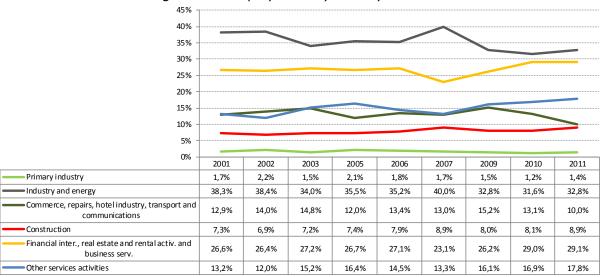
The employment rate of technical graduates surpasses 90% of all years analysed, even though up to 2003 it follows a downward slope, while recovering in 2005 and then maintaining three consecutive years until dropping again in 2007. While this drop does not continue, recovery is not evident until 2011, reaching 95.7% of employment.



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

In terms of activity sectors that employ technical graduates, the industrial sector constitutes the main employer, even though its weight decreases; the "Financial intermediation, real estate & rental activities and business services" sector increases its importance as employer of these graduates; with "information and communications services" holding a lot of weight within this area, just as shown in the distribution graph by CNAE2009 that accounts for these activities as a new sector.

Distribution of technical graduate employment by activity sector CNAE93



Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

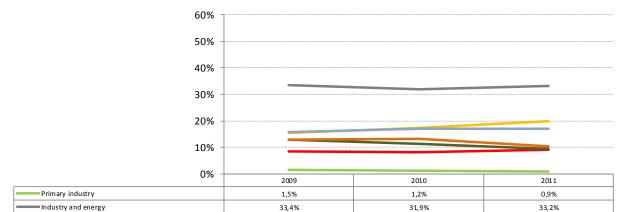


9.2%

9,3%

10,5%

19,9%



8.2%

11,3%

13,1%

17,2%

Distribution of technical graduate employment by activity sector CNAE2009

Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

8.4%

12,9%

12,8%

15,3%

Const ruction

IT and communications

Commerce, repairs, hotel industry, transport and

Financial inter., real estate and rental activ. and business

In terms of specific activities associated to sectors, the "Technical architecture and engineering services", "education," "construction," and "IT-related activities" are the specific activities that employ a large percentage of technical university graduates, with the first two activities gaining weight over the rest.

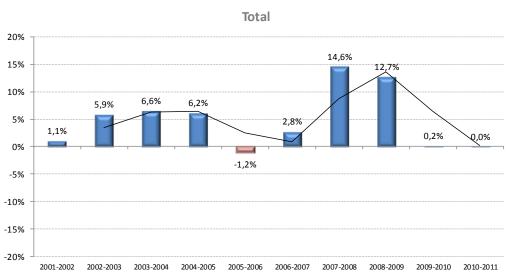
Distribution of technical graduate employment by activities CNAE2009

	2009	2010	2011
Architectural and engineering technical services	6,3%	9,3%	11,7%
Education	6,7%	7,8%	9,3%
Construction	8,4%	8,2%	9,2%
ІТ	8,7%	11,1%	9,1%
Machinery manufacturing	4,8%	4,2%	5,3%
Public administration and defence	5,6%	5,7%	4,6%
Research and development	3,0%	2,8%	3,2%
Manufacturing of motor vehicles	2,9%	2,2%	3,0%
Manufacturing of electronic material and equipment	1,9%	2,1%	2,9%
Wholesale	2,1%	2,2%	2,4%
Rest	49,5%	44,5%	39,1%

Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government



The graphs on employment variation show that technical graduates suffered, just like all university graduates, their worse year in 2006, even though with a more abrupt drop that leads them to destroying employment. After a recuperation in 2007, the 2008-2009 period supposes years of considerable growth in employment for this profile that ends in 2010 with a growth that tends towards zero, which continues in 2011.



Change of employed technical graduates (2001-2011) CNAE93

Source: own creation from Labour Market Census figures Department of labour and social policy Basque Government

It is in the "Other services activities" and "Financial intermediation, real estate & rental activities and business services" sectors where the decrease experienced in 2006 is made evident, even though in both the later recuperation is very noteworthy, but with a slight slowing down in the growth of the last year analysed.

On the other hand, both "industry" and "construction" sectors present positive variations throughout the years, with greater resistance to the recession which becomes evident later on in 2009.

With regards to the "Commerce, repairs, hotel industry, transport and communications" sector, technical graduates' employment goes from their worst years from 2003 to 2006 to a strong recuperation that ends in 2009 with a drop in growth, followed by a year with a negative change in employment.



#### Change of employed technical graduates, by sectors (2001-2011) CNAE93



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

Despite having limited analysis bases to use in the business surveys, and having to dispense with data in Humanities and Healthcare because of this same reason, the hiring trend results for university graduates offer information that corroborate both the qualitative analysis and the reality of each of the business areas.

The technical degrees are what have the most chances of increasing hiring in 5 to 10 years, especially the different engineering degrees.



#### Past and future trends in hiring technical university graduates Will not hire 71.2% 59.2% 12,6% Computer engineering 11.7% Industrial engineering 46.4% 46.0% 46.1% Architecture Technical topographer Telecommunications engineering 23,3% 18,89 Mechanical engineer 2,9% Electrical engineer Environmental engineer 1.9% Last 5 years The next 10 years The next 5 years Organization Engineering 1,0% ■Increasing ■Will remain the same ■ Decreasing ■ N/A Renewable energy Can not specify 1,0% Base: 82 businesses with technical graduates in their staff, in the past or present. Telecommunications engineer 1.0% Technical Industrial Engineering 1.0% Naval engineer 1.0% System's maintenance engineer 1.0% Mechanical industrial engineer Planning engineer 1.0% Civil engineer 1.0% Control engineer 1.0%

In the future, from a qualitative perspective, the technical knowledge area is expected to offer the greatest professional demand, and therefore, a greater deficit of university professionals in the future (even though this can also be extended to professional training).

Base: all businesses 103

Aeronautics | 1,0%

The fields with the most potential to create employment are areas involving advanced manufacturing and electronics...

To this regards, engineering is the degree with the highest prevision of job opportunities. The decrease in some specialties is compensated by the growth in others, which makes the variability of the whole tend towards zero. Those focusing on the development of applications are key: industry, telecommunications, mechanical, electronic, materials, manufacturing, computer science.

Another field of opportunities, which is part of the RIS3 design, is the healthcare market, from a healthcare equipment design perspective, where the Basque Country is not well positioned despite having an large market but limits itself to exporting.

Other degrees, with a more transversal profile relative to ICTs, where a talent deficit is expected, are computer science, digital electronics and telecommunications.



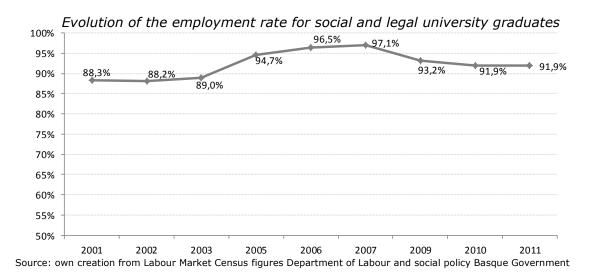
One of the entities consulted notes ICTs as digital content generators, one of the proposals for a sector with a potential for growth.

On the other hand, technical degrees like architecture, mining...which during the economic growth had ample employability, will not experience a large boost in the near future.



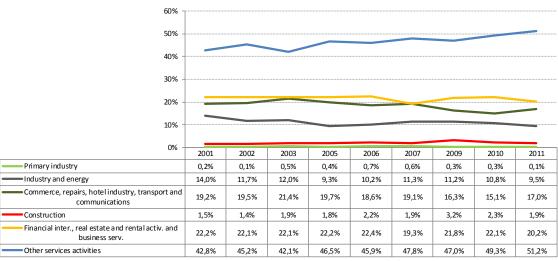
#### **Knowledge area: Social Sciences and Legal Degrees**

Social and legal university graduates show lower employability than those trained in technical areas, while in 2006-2007 they reach similar rates. Even though in 2009 there is a similar decrease to that of technical degrees, there is a downward trend for social and legal degrees.



The sectors employing social and legal graduates are: "Other services activities," which employ half of them with a growing weight throughout the years. And much further down we see the other sectors with "Financial intermediation, real estate & rental activities and business services" together with "Commerce, repairs, hotel industry, transport and communications" in second and third place for the highest capacity to hire social and legal graduates.

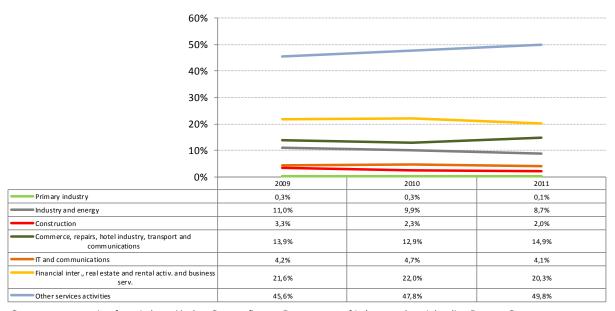
Distribution of Social and Legal graduate employment by activity sector CNAE93



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government



Distribution of Social and Legal graduate employment by activity sector CNAE2009



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

"Education" together with "Public administration and defence" are the employers of Social and Legal graduates, making up 37.7% of the employment and with increasing weight in Education, while staying the same in the case of Public administration and defence.

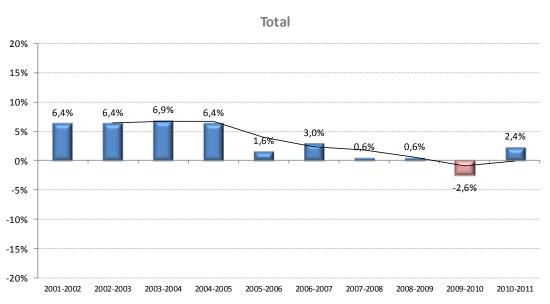
Distribution of technical graduate employment by activities CNAE2009

	2009	2010	2011
Education	21,9%	23,0%	25,6%
Public administration and defence	12,6%	12,0%	12,1%
Legal activities, accounting, consulting	7,9%	8,1%	7,3%
Retail	6,9%	5,4%	7,0%
Financial services	5,2%	5,6%	5,6%
Social services	4,1%	4,2%	4,3%
Healthcare	2,4%	2,9%	3,3%
Hotel industry	2,3%	2,1%	2,3%
Construction	3,3%	2,3%	2,0%
Insurance, reinsurance and pension funds	1,5%	1,2%	1,9%
Rest	31,9%	32,9%	29,1%

Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government



The years 2001 to 2005 are a growing period in the employment of Social and Legal graduates, followed by a drop that breaks this trend until reaching a loss of employment in 2010 which continues with a slight recuperation of 2.4% growth in 2011.



Change in employed social and legal graduates (2001-2011) CNAE93

Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

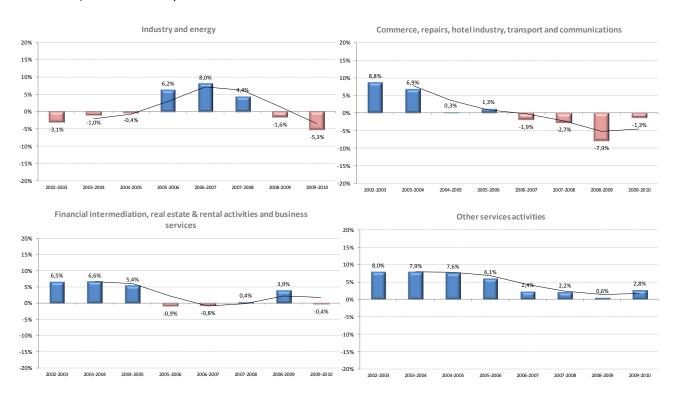
The sectors show varying behavioural trends in the employment of this graduate profile. While "industry and energy" starts with three years of backsliding, then recuperates in the following three years to again drop in the last two years studied.

On the other hand, "Commerce, repairs, hotel industry, transport and communications" starts 2003 with growth in the employment of these graduates, and then slows its growth until going backwards in 2007, reaching its worse figure in 2009 after which it achieves some sort of recuperation.

The "Financial intermediation, real estate & rental activities and business services" sector presents an opposite trend with three straight years of growth and a low period between 2006 and 2008, to then recuperate in the following years. However, just like with the previous sectors, 2010 also ends up with losses in employment.

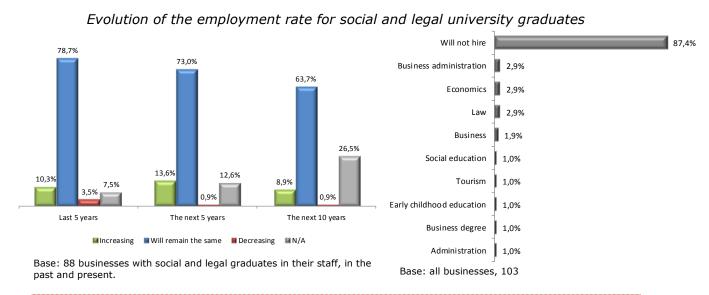


"Other services activities" is the only sector that maintains employment of Social and Legal graduates because of its weight in Education and Public Administration as anchors of employment in this profile. While the trend is towards a drop in the continued growth up to 2009, it takes an upturn in 2010.



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

When asking the companies about the hiring of social and legal graduates they claim a trend to maintain the hiring, with a slight increase in hiring, while the 10 year prevision is uncertain.





We obtained a more detailed qualitative analysis from university personnel interviewed, who present different perspectives on the different social and legal degrees.

Law is presented as a degree that has changed and that currently requires combinations with other knowledge areas, which translates into double degrees that bring about the opportunity for a more ample and interdisciplinary specialisation (especially in the Law degree): engineering law, international law, corporate law...

With regards to businesses and degrees, a conservative approach is to have an appropriate proportion between degrees offered and what the market demands, which results in high employability.

Education is seen as a stable degree in time, with a high impact in the university demand due to high employability in kindergarten and grade school. Growth is expected because of the growing number of retirees that began working in the eighties, even though this will depend on the cuts and necessity, or not replacing the jobs, besides the necessary adjustment due to the change in demand (continued drop in birth-rate).

Social education and social work are degrees that have suffered in the last 5 years of crisis and the consequent reduction in public resources. However, just like occurred with medicine, growth is expected because of the aging population, dependence, disability and immigration, etc. which are currently social problems, and in many cases on the rise.

The degree in psychology experienced an increase in demand a decade ago due to the interest in understanding the human mind, introspection, etc. However, currently it is experiencing problems because of the problems of being included in the business world, which has become more humane via the union of business and economy with coaching, mentoring and leadership...

It also has had problems with inclusion in healthcare since medicine has been "psychologised" to some degree.



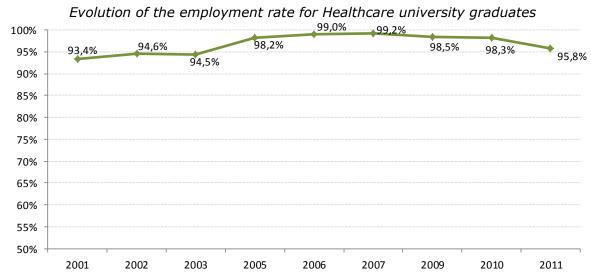
In terms of sociology and political science degrees, the unemployment rate cannot be lowered. From a university perspective they are considered very necessary in that they provide an in-depth view of society, but from a business and institutional perspective (with the need to humanize processes and values) this business relevance is not granted. The fundamental problem is that it provides an intangible skill, difficult to measure and quantify, so they are left out of business strategies.

Its employment opportunities are varied since its line of thinking is very interesting for problems that businesses and institutions must face: from international relations because of its valuable capacity for inter-culturalability, its knowledge of human nature, knowledge of languages...up to the union of technology with language and communication, economy and institutions...



#### **Knowledge area: Health sciences**

Healthcare graduates obtained an employment rate of 95,8% in 2011. The evolution of employment in this area shows a positive evolution sustained from 2003 to 2007, years in which the rate increases by almost 5 points. After those years employment drops little more than 3 percentage points until 2011.

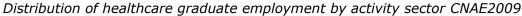


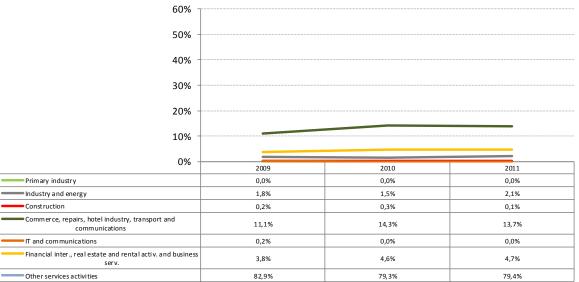
Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

"Other services activities" are the main activities that employ the highest percentage of healthcare graduates, much more than any other activity and with a trend of slight variations in time. "Commerce," because of the pharmaceutical activities makes up more than 10% in the employment of these graduates, and also shows an evolution of slight variation.

Distribution of Healthcare graduate employment by activity sector CNAE93 70% 60% 50% 30% 20% 10% 0% 2003 2007 2009 2001 2002 2005 2006 2010 2011 Primary industry 0,6% 0,3% 0,4% 0,0% 0,8% 0,4% 0,2% 0,0% 0,0% Industry and energy 4,1% 3,9% 2,4% 4,0% 3,1% 3,3% 2,1% 1,5% 2,0% ·Commerce, repairs, hotelindustry, transport and 10,7% 11,2% 13,9% 13,6% 14,2% 14,5% 11,3% 14,5% 13,9% communications Construction 0.2% 0.6% 0.8% 0.2% 0.2% 0.3% 0.2% 0.1% 0.1% Financial inter., real estate and rental activ. and 1.2% 1.3% 1.0% 3.6% 3.9% 3 5% 2 4% 3.8% 4.1% Other services activities 83.3% 82,6% 81,5% 78.7% 77.9% 78.0% 83.8% 80.1% 79.9%







Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

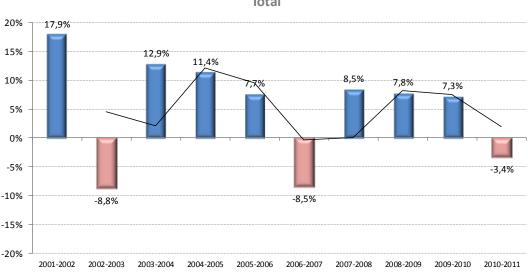
Healthcare activities suppose 7 of 10 employment with a decreasing weight since 2009.

Distribution of technical graduate employment by activities CNAE2009

	2009	2010	2011
Healthcare	73,5%	70,3%	69,6%
Retail	8,4%	11,9%	12,7%
Social services	3,1%	3,2%	3,6%
Insurance, reinsurance and pension funds	1,1%	2,9%	3,3%
Public administration and defence	0,5%	0,8%	2,9%
Education	3,2%	3,5%	2,1%
Hotel industry	1,2%	1,0%	0,9%
Home activities	0,4%	0,8%	0,9%
Manufacturing of electronic material and equipment	0,0%	0,0%	0,7%
Other professional, scientific and technical activities	1,2%	1,0%	0,6%
Rest	7,5%	4,5%	2,4%



Every 4 years the employment data for healthcare graduates have severe turning points, with negative variations, hardest in 2003 and 2007. These periods of recession are followed by periods of growth of increasingly less intensity.

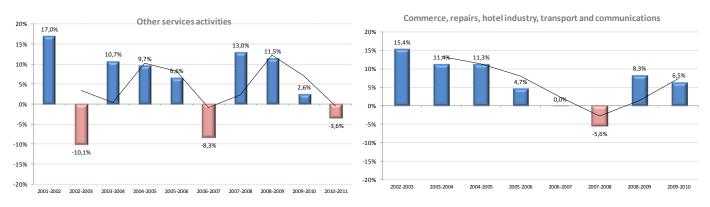


Change in employed healthcare graduates (2001-2011) CNAE93
Total

Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

The significant weight that the "other services activities" sector supposes in the employment of healthcare graduates makes this the one that marks the general tendencies. Yet while it experiences greater growth in 2008 and 2009, it then has a sharper drop than the overall sector.

The commerce activity sees employment drop since 2003, finishing with a destruction in employment in 2008 to then recuperate in later years.



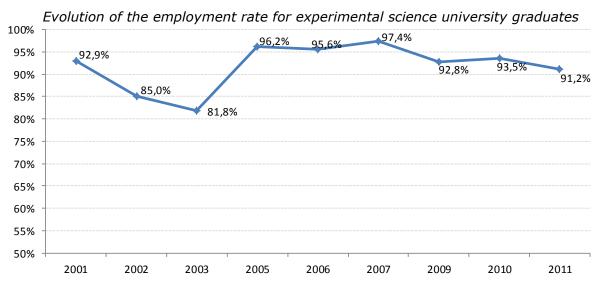


From a qualitative perspective, medicine is noted as the degree with highest university demand, due to its historically high employability. Moreover, with the aging population demand is expected to continue increasing, despite the cuts applied from the crisis.



#### **Knowledge area: Experimental Science Degrees**

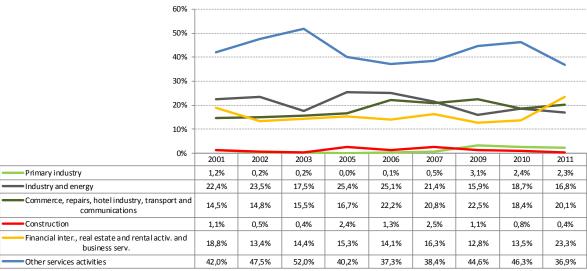
2005 is again the turning point for employability, in this case, amongst the experimental science graduates, with the employment rate staying above 95%. However, in 2009 there is a negative growth period that ends in the last year analyzed with a rate of 91.2%.



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

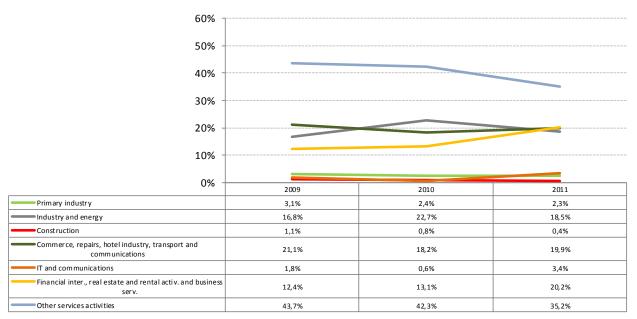
In terms of employment sectors, employed experimental science graduates are distributed amongst different sectors, with "Other services activities" as the main employer. While its weight suffers ups and downs throughout the years, it has a downward sloping evolution from 2010 to 2011, while gaining weight in the sector of "Financial intermediation, real estate & rental activities and business services."

Distribution of Experimental science graduate employment by activity sector CNAE93





Distribution of Experimental science graduate employment by activity sector CNAE2009



Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

Education again positions itself as a leading employer in this university profile, while its importance is reduced drastically since 2009. On the other hand, research and development gain presence by doubling its weight in the three years studied.

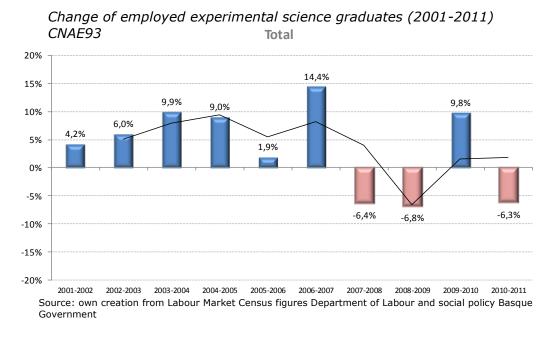
We can assume that there is an increasing selection of research and development activities over teaching on behalf of experimental science graduates.

Distribution of experimental science graduate employment by activities CNAE2009

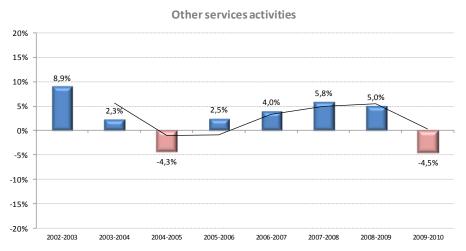
	2009	2010	2011
Education	30,4%	27,3%	21,9%
Research and development.	5,8%	7,3%	10,2%
Retail	6,4%	6,7%	6,9%
Hotel industry	5,3%	3,9%	6,1%
Public administration and defence	5,5%	7,0%	3,9%
Other food industries	0,8%	1,7%	3,1%
ІТ	0,4%	0,4%	3,1%
Storage and transport activities	1,9%	2,1%	3,0%
Healthcare	4,6%	2,5%	3,0%
Architectural and engineering technical services	1,4%	1,2%	2,6%
Rest	37,6%	40,0%	36,3%



For experimental science graduates, 2005 breaks the growing trend with a slight drop, which is intensified in 2006. However, the recuperation in the following year is notable, obtaining its maximum growth of employment in the period analyzed. While this increase cannot be maintained, with the later years, 2008 and 2009 result in loss of jobs. In 2010 there is a recovery by generating employment, but again leading to another year of recession.



Keeping in mind that the sector that most employs experimental science graduates is "other services activities", there are again ups and downs with a loss of employment in 2005 and 2010.



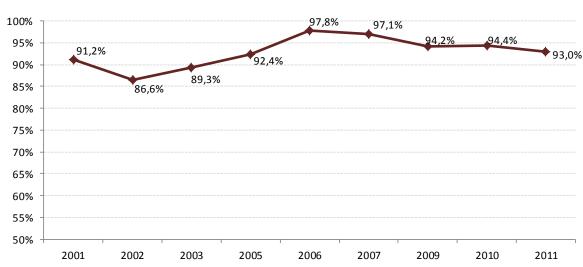
Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

In terms of specific degrees, qualitatively they mention chemical degrees as having a role in the energy sector and biology as expected to have a visible growth with the biotechnology sector.



#### Areas of knowledge: Humanities degrees

Graduates in humanities had, in 2011 a 93% employment rate. The increase of employment rate began previous to other areas, in 2002. In 2006 it reached 97.8%. But after that the drop has continued year-by-year.



Evolution of the employment rate for Humanities graduates

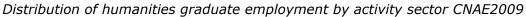
Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

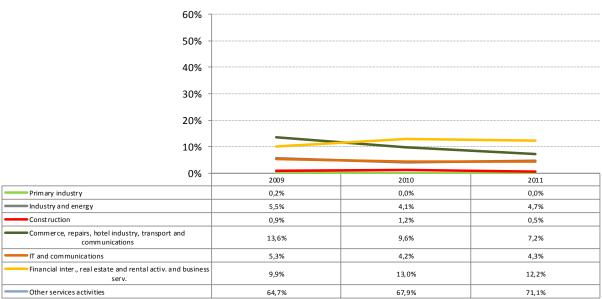
The sector corresponding to "Other services activities" employees the majority of employed humanities university graduates. After a drop in 2007 to 2009, this sector recuperates its weight in hiring.

80% 70% 60% 50% 40% 30% 20% 10% 0% 2001 2002 2003 2005 2006 2007 2009 2010 2011 Primary industry 0,8% 0,1% 0,8% 0,4% 0,8% 0,5% 0,2% 0,0% 0,0% Industry and energy 5,2% 7,2% 5,6% 7,5% Commerce, repairs, hotelindustry, transport and 11,7% 12,4% 13,0% 11,0% 10,4% 8,5% communications 1,2% 0,5% 1,0% 1,1% 1,0% 1,2% 0,5% 0,9% 0,9% Financial inter., real estate and rental activ. and 12,9% 13,1% 7,2% 9,8% 7,0% 7,0% 7,8% 10,4% 14,1% business serv. 68,6% 73,0% 70,9% 73,2% 72,9% 66,7% 69,3% 72,6% Other services activities 74,6%

Distribution of humanities graduate employment by activity sector CNAE93







Source: own creation from Labour Market Census figures Department of Labour and social policy Basque Government

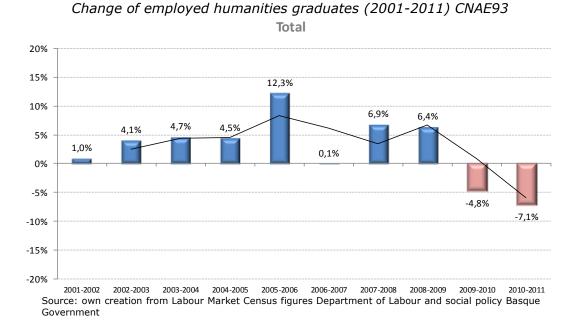
Education is again the activity that sustains employment in university graduates, this time in Humanities, making up almost half of the employment of these university graduates and with a growing weight with respect to 2009.

Distribution of humanities graduate employment by activities CNAE2009

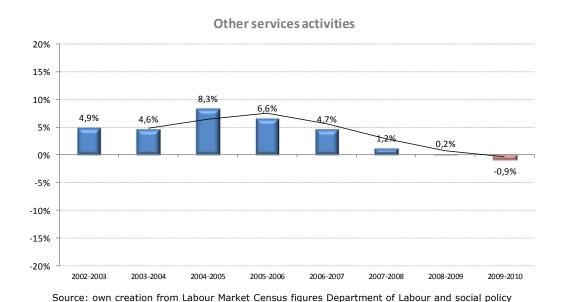
	2009	2010	2011
Education	42,3%	42,8%	48,4%
Public administration and defence	8,5%	9,4%	6,3%
Creative and performance arts	4,3%	5,1%	4,7%
Other professional, scientific and technical activities	3,3%	4,6%	4,1%
Association activities	2,7%	2,1%	3,4%
Retail	7,2%	4,9%	3,0%
Auxiliary business activities	1,3%	2,3%	2,7%
Healthcare	2,6%	2,9%	2,5%
Advertising and market research	0,8%	2,3%	2,4%
Film and television	1,3%	1,6%	1,9%
Rest	25,5%	22,2%	20,5%



While in 2007 there is an abrupt drop in the generation of employment, the population of humanities graduates suffers most from the recession in the last years studied, with a considerable loss of employment.



Looking at "Other service activities" in itself, the trend is clearer, with a continued reduction of employment since 2005 until reaching negative data in the last year studied.



Basque Government



## A QUANTITATIVE APPROXIMATION OF THE BASQUE COUNTRY'S TALENT NEEDS

In order to estimate the number of university graduates necessary (UG) in 2020, we must begin with the following formula:

No. of new UG needed= Total no. of G that will retire from the market + Total no. UG employed in 2020 - Total no. of UG employed in 2012

#### Total number of university graduates that will retire from the market

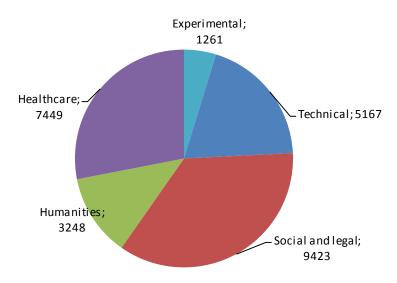
Here we must calculate the number of professionals that will no longer be active in the labour market, because of their age, and they should be replaced. This analysis can then create an approximation by analyzing the sociodemographic pyramid of the employed population.

On the other hand, it is completely useless to try and estimate other reasons for a change in status from active to inactive in the labour market.

Therefore, we must recur to the CMT (Labour Market Census) created by the Department of Labour and Social Policy in order to estimate the number of employed individuals, with university education, that in 2020 will be older than 65, as an approximate threshold for retirement.

Since CMT provides detailed data up to 2001, we must calculate from this the number of people that up to 2014 have abandoned the labour market. With these projections, we can estimate that in 2020, 26,548 people currently employed and with a university degree, will have turned older than the retirement age.

ESTIMATE OF PEOPLE CURRENTLY EMPLOYED, BY AREA OF KNOWLEDGE, AND IN 2020 WILL BE OLDER THAN THE AVERAGE RETIREMENT AGE



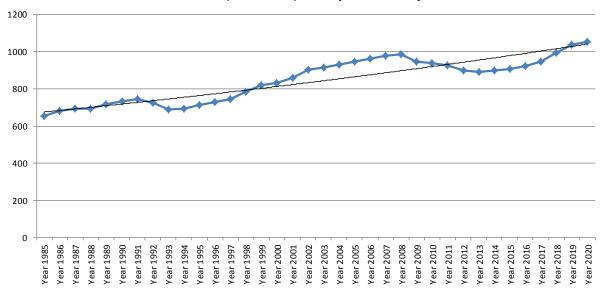


#### Estimate of the number of employed university graduates in 2020

The difficult economic situation western economies are experiencing, together with the difficulty in understanding the technological evolution and resulting productivity (like a lack of necessity of labour force), makes it difficult to estimate the evolution of employment in the mid and long-term. This data is key to be able to make a quantitative estimate of the number of professional needed, since this is the base population.

But by analyzing different time series from the PRA (Population Survey relative to Activity), and considering the scenarios established by different institutions, we can estimate a plausible scenario where we are at a inflection point in the destruction of employment, and that gradually the job creation process will recuperate by 2020. In this scenario, after 2018 the total number of employed individuals will surpass the numbers prior to the crisis.

## Evolution of the number of employed people, and forecasts as of 2014 (included). Basque Country



From the Labour Market Census (CMT), and since 2001, we can analyse 100 current (and past) jobs, how many are occupied by university graduates, by sector and branch of activity. While the labour force may be absorbing overqualified professionals and therefore cannot conclude that all jobs taken by university graduates are suited to their degree; but we could argue that the market always selects the best available resources, and especially in circumstances like we face now. According to the 2014 Adecco Report on the most employable degrees, workers with post-graduate and university degrees are the most demanded (6 out of 10 qualified offers) and they are also the highest paid in the country's labour market.



So coming back to the CMT's data, in 2001-2011, as an average, out of every 1000 employed individuals in the Basque economy, 275.5 were university graduates, most of them in the SOCIAL and LEGAL knowledge area.

UNIVERSITY GRADUATES IN EACH KNOWLEDGE AREA, EMPLOYED IN THE SECTOR, FOR EVERY 1000 INDIVIDUALS IN THE TOTAL JOB MARKET

Average 2001- 2011	PRIMARY/EXTR ACTIVE	INDUSTRY	CONSTRUCT ION	COMMERCE AND BUSINESS SERVICES	OTHER SERVICES	TOTAL
Technical	1.15	21.80	4.96	25.06	9.58	62.55
Social and legal	0.64	15.10	2.83	55.18	64.43	138.19
Humanities	0.10	1.61	0.24	5.75	19.06	26.77
Healthcare	0.10	0.95	0.10	5.45	27.37	33.97
Experimental	0.17	2.89	0.17	4.83	5.97	14.03
Total	2.17	42.36	8.30	96.27	126.41	275.50

However, this reality has been transforming little by little. From 2001 to 2011, and again from the CMT figures calculated by the Basque Government's Department of Labour and Social Policy, we can see that in a decade, employed higher education graduates have gone from being 234 of every 1000 employed to more than 314 out of 1000 employed. While all areas of knowledge have grown, it has been the technical areas and healthcare that have grown most in general.

UNIVERSITY GRADUATES IN EACH KNOWLEDGE AREA, EMPLOYED IN THE SECTOR, FOR EVERY 1000 INDIVIDUALS IN THE TOTAL JOB MARKET

2001 2011



Thousands of individuals	PRIMARY/E XTRACTIVE	INDUS- TRY	CONS- TRUC- TION	COMMERCE AND BUSINESS SERVICES	OTHER SERVI- CES	TOTAL	PRIMARY /EXTRAC TIVE	INDUS- TRY	CONST RUC- TION	COMMERCE AND BUSINESS SERVICES	OTHER SERVI- CES	TOTAL
Technical	0.97	20.06	3.85	20.79	6.97	52.64	1.09	25.68	7.00	30.68	13.91	78.36
Social and legal	0.43	16.56	1.84	49.53	51.18	119.5 4	0.32	14.25	2.95	56.56	77.85	151.94
Humanities	0.20	1.66	0.28	5.28	16.20	23.61	0.01	1.60	0.13	6.11	20.81	28.65
Healthcare	0.15	1.11	0.06	3.17	22.34	26.84	0.00	0.83	0.03	7.30	32.48	40.63
Experimental	0.14	2.63	0.13	3.91	4.93	11.74	0.36	2.56	0.07	6.60	5.62	15.20
Total	1.88	42.01	6.16	82.68	101.62	234.3 6	1.77	44.91	10.1 8	107.26	150.6 7	314.79

Therefore, we must apply prevision models based on trends in the previous ten year period, in order to try and understand how to configure the demand of professionals in 2020.

From these analyses, we could conclude that from here to 2020 the participation of university graduates in the labour market will increase, expecting to reach 410 of every 1000 employed individuals.

ESTIMATE OF UNIVERSITY GRADUATES IN EACH KNOWLEDGE AREA, EMPLOYED IN THE SECTOR, FOR EVERY 1000 INDIVIDUALS EMPLOYED IN THE TOTAL JOB MARKET

Thousands of individuals	PRIMARY/ EXTRACTIVE	INDUSTRY	CONSTRUC TION	COMMERCE AND BUSINESS SERVICES	OTHER SERVICES	TOTAL
Technical	1.01	32.78	9.97	43.18	20.14	107.08
Social and legal	0.72	16.14	5.75	63.04	101.88	187.54
Humanities	0.00	1.83	0.31	9.81	27.79	39.75
Healthcare	0.01	0.47	0.01	11.15	43.85	55.49
Experimental	0.76	3.10	0.24	8.73	7.77	20.60
Total	2.50	54.33	16.29	135.90	201.43	410.45

This supposes, in comparison to 2011, an absolute growth of about 119,270 employed university graduates, without including the need to replace retirees or those leaving the job market. While social and legal fields continue to dominate, in absolute values the demand for technical degrees takes a dominant position not just in industrial sectors, but also in the service and construction sectors.

ESTIMATE OF THE ABSOLUTE EVOLUTION OF THE NUMBER OF UNIVERSITY GRADUATES BY KNOWLEDGE AREA, EMPLOYED IN THE SECTOR.



Difference 2020-2011	PRIMARY/ EXTRACTIVE	INDUSTRY	CONSTRUC- TION	COMMERCE AND BUSINESS SERVICES	OTHER SERVICES	TOTAL
Technical	0.00	9.03	3.50	14.80	7.26	34.59
Social and legal	0.42	2.96	3.03	10.72	29.87	47.00
Humanities	-0.01	0.36	0.19	4.15	8.55	13.24
Healthcare	0.01	-0.29	-0.02	4.39	13.81	17.90
Experimental	0.43	0.73	0.18	2.62	2.58	6.54
Total	0.86	12.79	6.87	36.69	62.06	119.27

Therefore, by considering not only the increase in the number of employed individuals with university degrees and adding the need to respond to those retiring in 2020, by 2020 145,820 university graduates will have been incorporated, mainly in social and technical fields.

ABSOLUTE TALENT NEEDS IN 2020

	People older than the retirement age in 2020	Absolute increase of professionals in 2020	Total demand
Technical	5,167	34,591	39,758
Social and legal	9,423	46,997	56,420
Humanities	3,248	13,242	16,490
Healthcare	7,449	17,903	25,352
Experimental	1,261	6,540	7,801
Total	26,548	119,272	145,820

#### Estimate of the offer/demand of university graduates in 2020

Once having obtained the demand of university graduates, we calculated the offer yearby-year with the aim of understanding the difference between the graduates in the Basque Country and the demand created by the employers.

For this, two economic scenarios are considered:

- **1-Conservative scenario**, supposing that the employment numbers stagnate, even though within this group the weight of university graduates grows in line with the past trends.
- **2-Employment growth scenario** This supposes that the number of employed individuals grows gradually until recuperating to its highest levels around 2020. We begin with the



analysis of the historical employment figures (since 1985), its cyclical evolution, and the GDP growth previsions as predicted by various sources: the Basque Government and the BBVA Research Service for 2014 and 2015. These sources forecast economic growth in 2015 of around 1.7%, and growth in employment of around 0.7%.

For an estimation of the supply and demand for graduates of university education we consider the following variables:

**Total offer** 

No. of graduates from 3 Basque universities in the reference year.

No. of unemployed by the end of the reference year (minus those older than the average retirement age): 67 years for healthcare professionals and 64 for the remaining professionals.

Total demand

Individuals who in the reference year are older than the average retirement age: 67 years for healthcare professionals and 64 for the remaining professionals.

Absolute increase of professionals in the reference year (different in each scenario).

#### 1. Conservative scenario

The total graduate supply and demand calculations are shown to have a surplus throughout the years (the number of university graduates exceeds that needed to cover job vacancies), even though this imbalance is reduced in time (going from a surplus in 2015 of 21,131 to 13,916 in 2020).

But analysing the different variables of origin, the data shows that even in the most conservative scenario which maintains the employment generation trends, there is a year-on-year increase in the number of professionals demanded, whether due to the creation of new employment or the replacement of retired workers; and from 2016 on the number of university graduates entering the labour force is lower than the number needed to cover said demand.

Therefore, the surplus of professionals in a conservative scenario is mainly generated from the surplus of unemployed which the increase in demand of 2020 cannot absorb, even though the trends aim towards their absorption in later years.

# Projection of supply/demand total university graduates 50000 45000 21.131 19.746 17.602 16.761 15.299 13.916

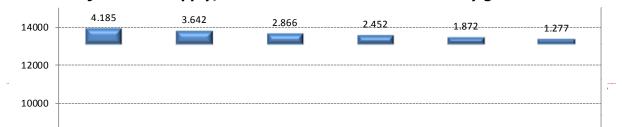


Looking by areas of knowledge, we see differences. On the one hand, Humanities and Healthcare are the only areas of knowledge that, in 2020, will have a graduate deficit, while the rest will still have a surplus.

In the **Technical Area** the number of graduates remains practically the same throughout the years, while the number of unemployed is reduced considerably.

Therefore, even in this scenario with a conservative increase in employment, where we begin with a clear surplus of graduates, in the following five years supply and demand in the technical area aim towards converging, mainly due to the loss of supply, which allows us to expect that in a few years there will be a deficit of professionals with degrees.

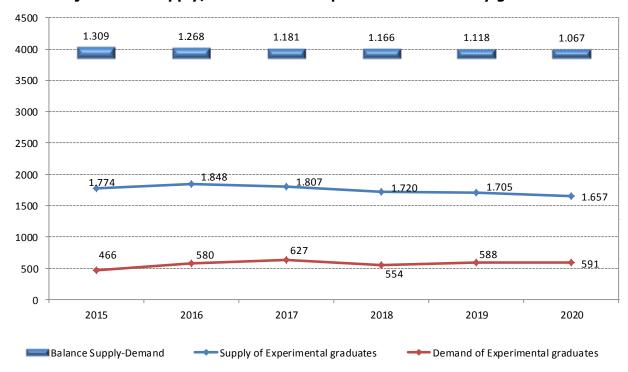
#### Projection of supply/demand Total Technical university graduates





In terms of the **Experimental** graduates, supply and demand also approach each other, but at less visible levels than in the Technical area since, despite its demand showing slight increases with regards to 2015, the supply, while decreasing slightly, maintains its high levels both in the number of graduates and the number of unemployed.

#### Projection of supply/demand total Experimental university graduates



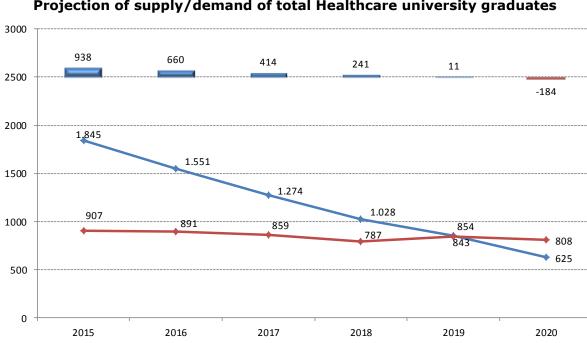
In **Healthcare**, the situation commences with a surplus of graduates in 2015, but in 2019 it turns into a shortage of professionals. The drop in unemployed, together with the number



Demand of Healthcare graduates

of graduates staying the same makes the total offer gradually decrease. From a demand perspective, we see a strong demand to replace retirees, which results in an elevated need for professionals to cover said demand.

However, Healthcare professionals with employment opportunities depend mainly on the offers of public employment, making the Basque Government's decisions what determine the future scenarios.

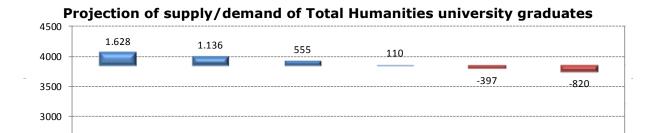


#### Projection of supply/demand of total Healthcare university graduates

Humanities behaves in a similar fashion as Healthcare, with a deficit of professionals in this area since 2019, mainly due to a reduction in the number of unemployed, which together with the number of graduates being maintained, provokes a drop in the supply, while the demand increases with slight variations.

Supply of Healthcare graduates

Balance Supply-Demand





The **Social and Legal area** presents a completely different scenario to the previous knowledge areas.

The total supply of graduates in this area remains high since the number of graduates and unemployed vary only slightly through the years. The increase in demand, while existent, is far from absorbing the surplus of resulting graduates, maintaining the balance between supply and demand, with a large surplus of graduates, at similar levels throughout the years.

While we must highlight that the Social and Legal area is made up of many different degrees, of various natures and different levels of employability, so an analysis by degree would present opposing scenarios (but because of the small sample size this analysis by degree is not possible).

#### Projection of supply/demand total Social and Legal university graduates





It is worth noting that the calculation of the supply of graduates includes the active population (unemployed + recently graduated that take newly created positions or replace retirees). However, we do leave out people who are inactive that may return to the graduate supply and cover employment vacancies since it is impossible to calculate.

The average number of university graduates, older than 24, younger than 65 and inactive between 2001 and 2011 approaches 40,000 individuals (according to the Labour Market Census by the Department of Labour and Social Policy).

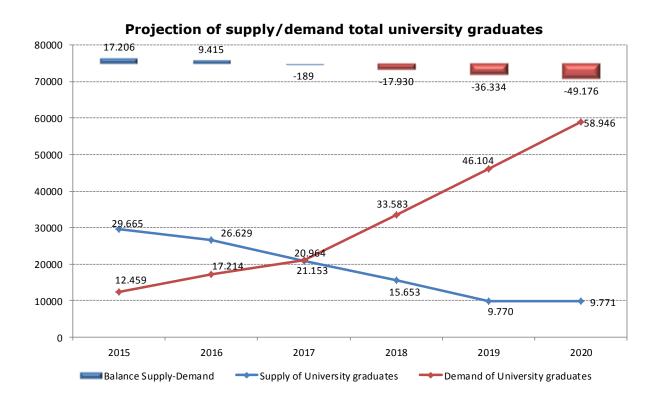
While in a conservative scenario only Healthcare and Humanities require an increase in the activity's rate because of the inclusion of these individuals, in an optimistic job creating scenario, this need expands quite a bit throughout all knowledge areas.

#### 2. Growth scenario in employment in the Basque Country



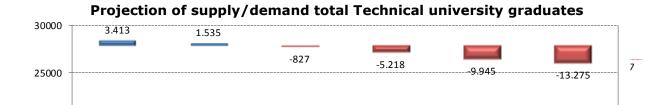
In a less conservative scenario based on employment creation, the surplus of graduates continues until 2017, the year in which the supply and demand converge. This, however, does not suppose that the employment generated completely fits.

From 2018 on the situation takes a turn, with the demand generated for professionals is greater than the supply. Here we find ourselves with three consecutive years with a deficit of professionals, caused mainly by a progressive growth in demand, which the number of available professionals cannot cover.



Just like with the total number of university graduates, from 2017 on the surplus in graduate supply in the **Technical area** takes a turn, resulting in a deficit of professionals from 2018 to 2020.

The gap between supply and demand is mainly derived from a strong growth in the number of jobs available while the number of professionals stagnates, distancing the possibility of covering these vacancies.

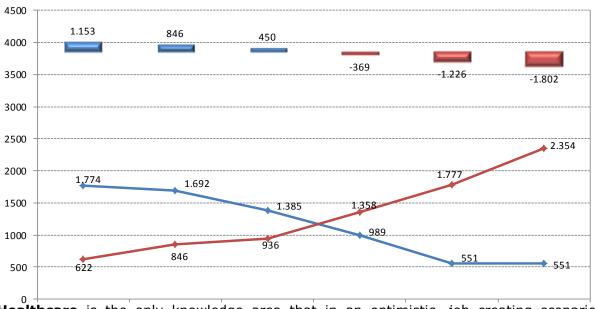




The **Experimental area**, despite having a decreasing supply of graduates, resists one more year with more professionals than the employment demand, mainly due to the surplus of unemployed in the field (to which we must add the constant number of new graduates incorporated into the job market).

However, from 2018 on the growth in the number of jobs is made evident while the number of available graduates continues to drop until stagnating. This situation provokes a significant deficit in professionals in the years 2019 and 2020.

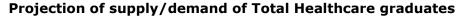
#### Projection of supply/demand of Total Experimental university graduates

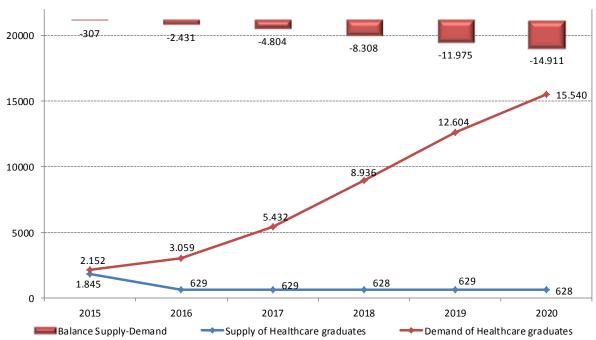


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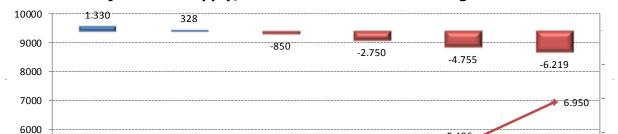
increase in the number of jobs, which can absorb the surplus of graduates currently unemployed and those that are newly incorporated into the job market after graduating.





For **Humanities**, the deficit in the supply of graduates occurs already in 2017 and continues in 2020, presenting a wide gap caused by the increase in demand as well as the drop in the number of available graduates: the number of unemployed falls and a stable number of new graduates are incorporated into the job market.

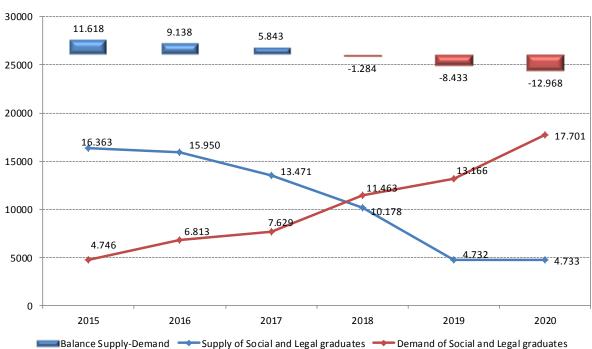
#### Projection of supply/demand of Total Humanities graduates





Despite a notable increase in the demand for professionals, a result of the growth in employment since 2015, it is not until 2018 when there is a deficit of professionals in the **Social and Legal area**. The strongest resistance from the supply is the large number of unemployed individuals and a flow of new graduates that is constant throughout the projected years.





#### SKILLS AND ATTITUDE REQUIRED OF UNIVERSITY GRADUATES



Throughout the interviews with human resource departments and technological centres and experts, there is a greater concern for matters beyond that of specific degrees, but that of skills and attitudes towards employment. Currently and in the short/mid-term, most company interviews were of the opinion that there will eventually be a good balance between university degrees and demand in the business network.

However, both the universities and administrations talk about the need for current and future workers in the Basque Country to develop attitudes and skills beyond that of the knowledge from a degree, something which businesses, in their specific demands, corroborate with. The idea comes from the uncertainty the country faces, making it difficult to specify specific short-term targets, making it even more necessary for people to be capable of providing skills, abilities, attitudes, capacity and vision.

They discuss a change in attitude towards work, since we find ourselves in an economic system of uncertainty that limits a clear view of the future, requiring employee attitudes to change in order to stop being a comfortable society looking for long-term jobs from an employer, with specific conditions.

These are matters that the university is handling and has integrated into its educational system; while the change in mentality making this visible will take a long time to consolidate:

- > Skills: teamwork, adapting to the environment, leadership, communication, project management, clients, working as a team; the capacity to be creative and improve.
- > Attitudes and values: market orientated to development something for somebody (not scientific research production), focus on innovation, results oriented, quality oriented, commitment, effort, initiative, proactive, flexibility and level-headed when acting, an entrepreneurial profile: people who think of creating, taking risks, failing....
- > From the companies interviewed we must also add specific topics relative to language proficiency (even suggesting a third and fourth language) and with geographic flexibility and openness to the world, which often comes together with an experience abroad. The latter part is suggested from different companies that notice a reluctance to move projects abroad.



#### THE BASQUE COUNTRY AND TALENT: TO ATTRACT AND RETAIN

The Basque Country presents itself as an attractive place to live, an opinion shared by all individuals interviewed, and becomes vital when attracting talent, since the decision to move for a job is a "family" decision. The Basque Country is considered to be potentially very highly ranked in this sense since it offers a pleasant social environment with all sorts of services, all-in-all a high quality of life. There is a need, however, for creating dynamics for people that arrive to socially integrate, trying to open one's mind to diversity, otherwise retaining talent becomes difficult.

In terms of a place to work with a potential to attract and retain talent, there are greater differences of opinion amongst those interviewed.

#### With regards to attracting talent:

- Attractive in terms of:
  - ✓ It has a very established production model, with a strong industrial sector that nourishes the rest of the economy and a very attractive mid/long-term plan.
  - ✓ Currently it is also politically stable.

The data from universities and research centres corroborate in that it can attract talent, since it has a diversity of nationalities amongst its human resources and student body.

- Its handicaps for attracting talent are:
  - Lack of presence in the world.
  - Association to Spain, lack of own brand
  - Own language not connected to others
  - A business network made up of small businesses, with limited hiring capacity.

With regards to **retaining talent**: on the one side it is considered that the Basque identity plays in its favour here, since it has strong national and family roots and most people who emigrate return.

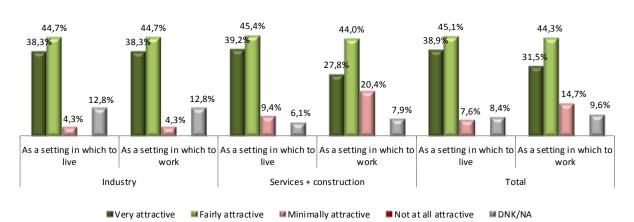
But current economic circumstances make this return difficult in the short/mid-term.



In terms of research, both the attraction and retention or return of researchers is not as dependent on the global economic situation or living environment as on the incentives it can provide its people beyond salary: an interesting project, sufficient lines of research, research teams, cutting edge scientific equipment and infrastructures, and the excitement for a professional degree in the mid/long-term.

In quantitative terms, they corroborate that the Basque Country is an attractive place to live, but there are discrepancies in terms of work placement, mainly amongst the companies in the services and construction sector.

Valuation from companies on the attractiveness of the Basque Country as an environment to live and work



Base: 103 companies



### **MAIN CONCLUSIONS**



According to the results analysed, below are the main conclusions in terms of the supply of university graduates as well as of the corresponding demand on behalf of the job market.

#### REGARDING THE SUPPLY OF TALENT

#### **Knowledge-intense society**

Of the total number of students in the Basque Country, 63.3% are university students (46.3% in 2001), far above the EU28 average of 46.8%.

For the 24-64 age group, in 2013 the Basque Country was above the EU28 average, with 47.5% of the population within this age group holding university degrees, surpassing the goal set for 2014 (45%) in the 2011-2014 University Plan created by the Basque Government's Department of Education, Universities and Research, and close to the 2020 objective (50%).

With regard to the general population, the number of people with university degrees has increased by 65.6% between 1991 and 2001, although this growth shrunk to 20.1% between 2001 and 2011. Professional training has shown an opposite trend; its growth has doubled from 10.8% in the first period to 21.6% in the second period.

Therefore, universities continue to be the most popular choice upon completing mandatory studies, although the weight of their importance has dropped in favour of a rise in professional training. The search for more direct job opportunities seems to be gaining popularity over university education. This is evident in the drop in university enrolments since 2009, while professional training continues attracting students.

The increase in professional training and in university education as an option following mandatory studies represents lower school drop-outs, with a rate of 8.8% that is below the EU28 average (11.9%) and far from the Spanish average (23.5%).

This situation, which is beneficial for the Basque Country, has two results:



- Training is adapted to the reality of the Basque Country's business network. It is an advanced economy with a developed production of higher value added goods, in which the technological load will grow and increasingly qualified workers will be needed, leaving little room for individuals without training. In fact, this reality is increasingly closer due to the fact that unqualified jobs represented 30.9% of the job market in 2005, but this percentage dropped to 19.3% by 2011.
- One of the negative effects of the growing level of training in the general population is the potential phenomenon of over-qualification, which means that university graduates will hold positions that require lower qualifications. According to CMT data for 2011, 10% of unqualified jobs are carried out by people who hold university degrees, and according to Lanbide data, more than two of every ten 2008 graduates do not perform duties that are in line with the required university degrees. We will have to wait and see if these numbers increase or decrease in the future, depending on higher education trends.

Continuing with what could be the image of future training in the Basque Country, Eustat projections regarding the school-age population indicate a continued drop in the number of potential university students (young people between the ages of 18 and 23) for 2020, although this situation will recover in the next period (2026). However, this growth will be related to the present since the expected population reduction in lower instructional levels will mark a new drop in the pool of university students for the future.

The base of the issue lies in this reflection: the demographic drop since education level data show positive results for the Basque Country because they expose a knowledge-intense society, with instructional levels in which university educations and professional training increase in weight, and in which dropping out of school becomes less of an alternative following mandatory education. History and forecasts are clear: if in 2001, 23.4% of people with jobs held university degrees, in 2011 that figure reached 31.4% and the trend expects that percentage to reach 41% by 2020.



However, reading the data from the relative weight of the results can be deceiving since it is not just a matter of asking whether the distribution by training levels is appropriate and evolves along the path of knowledge maximisation, but also of whether the foundation that it is based on (population data) is also on the rise. In other words, whether a trained population exists, and whether that population is sufficiently large.

This is where the debate on the labour force's sustainability emerges and where different perspectives are created.

It is undeniable that the demographic drop is a fact and that the reversion of the population pyramid is a reality. It is reality that directly affects the production system because it challenges the sustainability of pension systems as well as of the actual productive business network:

- The average number of children per woman in 2012 was 1.35, far from the generation renewal threshold of 2.1.
- The actual balance of the population changed from 2.8 in 2001 to -3.5 (per thousand residents) in 2012.
- The situation in the Basque Country is more extreme than in Spain and Europe, with the lowest percentage of people under 19 and the highest percentage of the population over 64.
- Since 2001, the weight of the senior citizen population in the Basque Country has grown more than the youngest population (under 19), and this has not occurred in the EU28 or in Spain.
- Deterioration of the future situation: the drop in births is a difficult issue to face, and in fact it is likely to worsen according to Eustat's population projections. By 2020, the Basque Country will have lost 2.4% of the population, and this number will increase by 4% in the five following years. This translates into a progressively ageing society, and in 2020 the population over 65 will increase by 10%, doubling this variation in the five following years. Younger people will not compensate this ageing, and in fact their numbers will remain the same between now and 2020, and then drop by -4.5% in the following five-year period.



• In terms of the population capable of filling the positions that become available from people over 64, these individuals are already in the system and their numbers are also dropping (by -7.3% between now and 2020, and by -5.7% in the 2020-2025 period), so the generational changeover will be unbalanced. In fact, the replacement rate is worsening. It is currently at 3.16 people between the ages of 15 and 64 for every person over 64 who leaves the job market (3.9 in 2002), and this situation will worsen in the future, dropping to 2.5 - 2.09 employable individuals for every person who leaves the job market (depending on a better or worse possible population scenario, as projected by Eustat).

However, the reflections of experts that have been consulted bring face to face two perspectives that foresee the demographic results of the employment situation from two visions:

- More negative: The shortage of people is already a reality that is disguised by the effects of the crisis. When the economic recovery occurs and jobs are created, there will be a labour force shortage to fill all the positions of the people who leave.
- More positive: Despite awareness of the issue that could lead the demographic drop to the job market, this has not yet occurred and it will take time for various reasons, including the time needed for the economic recovery to restore employment (it must be considered that this will not occur in a 2020-2025 time frame) and the effects of "technologisation", which will reduce labour force needs.

In any case, the experts consulted and the studies performed consider possible actions to be carried out in order to minimise the effects of demographic changes on the job market:

- Restoring the population that is left out of the job market: Inactive population, population without training or employment, long-term unemployed workers, delayed retirement age, return to full employment, extended work hours, etc.
- Attracting labour force: Attracting university talent, immigrants, etc.
- Increasing the supply of human capital: Lowering school drop-out rates, increasing
  the percentage of students who complete non-mandatory studies, increasing the
  time and resources for continued education at work, developing active policies to
  train unemployed individuals.



 Structural transformation of the production model: Increased capital stock, more resources aimed at creating knowledge, increased productivity of production factors.

The above provides an image of the past and future trends in terms of the population's education levels. However, just as it is important to know the number of university graduates, it is also important to know whether the knowledge obtained by the total number of graduates will cover the needs of the current and future production network. In this regard, the image of university degree selection has historically shown more weight for social sciences and legal fields over other knowledge areas, to the point that technical degrees are doubled.

In the case of the younger generations, technical degrees attained a greater weight as of the crisis, while social and legal degrees dropped. However, in recent years, the historical trend has once again taken shape.

The latest enrolment data confirms the predominance of social and legal degrees far beyond the rest, but the data does show a noticeable drop. However, this drop is more alarming for technical degrees, which have fallen 5% in the last seven years as part of a continuously decreasing trend.

Taking into consideration variations in enrolments, the effect of birth rates is unquestionable since the loss of students is apparent in all knowledge areas, except during one year for social sciences and legal fields, and in general, in the health field. These last fields have uninterruptedly increased their number of students year after year.



#### REGARDING THE DEMAND FOR TALENT

#### Global employment, university and economic trends

The increased number of enrolments for health degrees is a positive fact from a demand perspective since it is likely to be a future need due to the ageing population. It is estimated that nearly 25,000 new professionals within the field will find jobs.

Health fields form part of RIS3 (Research and Innovation Smart Specialisation Strategy), which has the following priorities:

- Advanced manufacturing
- Energy
- Health & Biosciences
- Niches linked to the region: urban planning and regeneration, ecosystems, leisure and entertainment

In addition, in a 2010 report, the Lehendakari's Advisory Council for Socio-Economic Matters defined the following strategic sectors, with high opportunities for growth associated with the macrotrends detected: healthcare services, energy, social services, ICTs and electronics, and biosciences.

Therefore, it seems clear that health and technical knowledge areas will play a main role in the strategic development of the Basque Country, and this theory is confirmed by the experts consulted, who have established the following growth areas: energy, sustainable construction, industry, mobility, health and ICTs.

Although future views pass through the need of a greater number of university graduates in technical and health fields, it is important to remember that:

A country is not just what it produces; instead, there are a series of social, cultural
and leisure services, etc., aside from those that sustain businesses, and without them
a country would not make sense.



• It is also important to remember the three sectors that are key sources of employment: administration, education and healthcare. Their need for a generational changeover is imminent, for which there must be a talent pool available for the various knowledge areas. Based on the 2011 analysis, in 2020 the percentage of people between the ages of 55 and 64 will be 41.8% for the Public Administration, 33.1% for Education, and 34.7% for Healthcare.

To estimate the actual labour force volume needs for these activities, the actual possibilities for replacement must be considered, and they are subject to budget cuts, elimination of jobs, and in the case of education, readjustments according to demand (downward trend).

In terms of the economic and employment trends detected to date, 2012 ended with a decreasing GDP following two years of recovery after the harsh drop experienced in 2009. Forecasts expect a GDP recovery in 2014 and 2015 (with a growth of 1% and 1.7%, respectively).

In terms of employment, 2009 was also a point of inflection, with negative job loss rates that continued through 2011, although less intensely.

The recession has resulted in a lower GDP, which shifted from 4.2% of growth in 2007 to 1.3% in 2008. This had an effect on employment, which shifted from 2.8% of growth to 0.4% during the same period. The 2009 drop in GDP to -3.9% also dragged employment levels to similar negative rates. While the GDP was able to recover in 2010 and 2011 (with positive variation rates), employment did not follow this trend and it remained negative. According to sources consulted, job creation will pass through a growth in GDP above 2.6%, so taking into consideration the GDP forecasts listed earlier, this will not become a reality until 2015.

GDP and employment trends vary considerably in accordance with production sectors, which are able to mark future positions:



# **Industry and energy**

- **GVA**: provided 23.3% of the GVA in 2012, with a fall in weight. Continuously rising year-on-year GVA variation rates, with a drop in 2009 and a recovery in subsequent years, that was interrupted in 2012.
- Activities with better GVA results: machinery, equipment and transport materials.
- **Employment**: employs 20.9% of workers, although its weight is falling. Job losses between 2007 and 2011, with a greater intensity in 2009.
- Activities with better employment results: water supplies, sanitation, syngas and oil refining.
- **Graduate employment**: industry is the third leading employer of university graduates, with a fall in weight in recent years. The period of growth between 2004 and 2007 was followed by job losses involving university graduates until 2011. That year, universities represented 14.3% of job offers. In any case, between now and 2020, it will be the line of activity with the second highest demand for university graduates with technical degrees.

#### Construction

- **GVA**: provided 7.2% of the GVA in 2012, with a fall in weight. Continuously falling year-on-year GVA variation rates, dropping since 2009.
- **Employment**: represents 7.6%, with a fall in weight since 2008. Negative variation rates since 2008, with the worst result in 2011.
- **Graduate employment**: construction provides 3.4% of graduate jobs, with a negative contribution to total employment in recent years. It shows positive variations in graduate employment, but with ups and downs that culminated in 2010 with growth towards zero. This trend will continue in the future. Of every 1,000 jobs created, 6.87 will be for university graduates in the construction sector. The graduate jobs that are created will primarily be in technical fields, followed by social and legal fields.

# Commerce, repairs, hotel industry, transport and communications

- **GVA**: represents 20% of the GVA, with a drop in year-on-year growth but maintaining positive growth rates.
- Activities with better GVA results: hotel industry.
- **Employment**: represents 22.8% of jobs, with a sustained contribution throughout time. Job losses in 2009, with a recovery in subsequent years.
- Activities with better employment results: hotel industry.



• **Graduate employment**: provides just over 12% of graduate jobs, although with a falling trend throughout the years.

2002-2003 were marked by job growth, although this slowed significantly until 2010, and afterwards graduate employment dropped in this sector.

#### Information and communication services

- **GVA**: 3.6% of contribution maintained over the total GVA. Falling year-on-year growth, although maintaining positive rates until 2012, the first year with a drop.
- Activities with better GVA results: telecommunications.
- **Employment**: it is maintained throughout the years with a contribution to employment of just over 2%. Drop in employment variation rates, with ups and downs as of 2009.
- Activities with better employment results: telecommunications.
- **Graduate employment**: following the primary industry, it is the sector with the lowest contribution to graduate jobs with 4.9%, a percentage that has fallen slightly the last year it was analysed. Sharp fall in year-on-year employment in 2011 after slight growth the previous year.

# Financial intermediation, real estate & rental activities and business services

- **GVA:** sector with the highest contribution to the global GVA (25.6%), with a weight on the rise. It is the sector with the best results up until 2008, with a sharp drop and negative variation in 2010, followed by a recovery in the subsequent years.
- Activities with better GVA results: real estate, consultancy and technical activities.
- **Employment:** provides 14.5% of employment, with a slight rise in weight. The year-on-year growth has been falling since 2008 and 2011 ended with a negative variation rate.
- Activities with better employment results: Research and development.
- **Graduate employment:** represents 17% of graduate employment, with a slightly increasing contribution in recent years. 2006 was a year with zero growth followed by a strong loss of graduate jobs, although with a recovery in 2008. After this year, growth continued to fall until zero growth was once again attained in 2011.

### Other service activities



- **GVA**: with a 19.5% contribution to GVA, and on the rise since 2004, this sector has showed the most strength in light of the crisis, although its growth rates have dropped in the last three years, which ended with a fall in GVA in 2012.
- Activities with better GVA results: home activities as well as recreational and cultural activities.
- **Employment:** this is the leading employer, with 30.2% of jobs and a continuously rising contribution. The sector has shown the best results throughout the years along with delayed consequences due to the crisis, which appeared in 2008, and as of this year, employment variations remained positive but less intense.
- Activities with better employment results: home activities, education and healthcare.
- **Graduate employment:** this is the leading employer for graduates, with more than 46% of jobs and a rising weight over the total number of jobs. It is the only sector that has maintained rising university graduate hiring rates throughout the years, although with different variations and at a much lower level as of 2006.

# Graduate employment trends by knowledge area

What seems to be clear is the confirmation that more training results in better employability. For example, in 2011, 81.6% of the population between the ages of 25 and 64 with university degrees had a job, compared to 70.1% of the average population. In addition, one third of employed individuals have university degrees, and this proportion has increased continuously since 2001.

Aside from better employability, higher training levels also result in a stronger resistance to the crisis, with rising unemployment since 2007, but at a lower rate than other educational levels.

The production network's workforce restructuring in times of crisis seems to affect university graduates to a lesser degree. This group seems to maintain or increase its weight over other educational levels in all sectors, except in the "primary industry" and in "commerce, repairs, hotel industry, transport and communications".

Supply and demand projections for the 2015-2020 period show how, in a conservative scenario, the total number of professionals available with university degrees (recent



graduates + unemployed individuals) exceeds the number needed to cover job openings. However, this imbalance will slowly disappear (with a change in the surplus of degree holders of 21,131 in 2015 to 13,916 in 2020), primarily due to a drop in the supply of university graduates.

On the other hand, considering a scenario of job growth, the supply and demand of university graduates will converge in 2017, and as of then, there will be a shortage of university graduates caused primarily by the progressive growth of demand that the number of professionals available, which is already falling, is unable to cover.

It is worth pointing out that these calculations do not take into consideration the total number of inactive individuals that could be recovered in light of a shortage of professionals (nearly 40,000 university graduates between the ages of 25 and 64).

As in the case of the different trends according to education levels, it is not possible to refer to university graduates as a whole. Instead, the employment indicators and trends related to the various production sectors vary according to the different knowledge areas:

#### **Technical Field**

- **Employment rate:** drop in the employment rate after 2007, although with a recovery in recent years and reaching 95.7% employment in 2011. After a year of job losses in 2006, employment improved in the following years, especially 2008 and 2009. However, there was a sharp drop in the next two years, culminating with zero job growth for technical degree holders.
- Leading employers: the industrial sector is the leading employer with more than 30%, although the data shows a decreasing trend. This is followed by "financial intermediation, real estate and rental activities, and business services" and "other service activities", with a similar weight and with stronger roles as employers in recent years. On the other hand, "information and communication services" has also gained importance as an employer for one of every ten technical degree holders.

In terms of **specific activities**, the following stand out: "technical architecture and engineering services", "education", "construction" and "IT-related activities" with the highest percentages of employed technical degree holders.

• **Growth rates by sector**: "Industry and energy" shows rising technical employment rates, maintaining a stronger resistance to the crisis although the situation worsened in the last two years with zero growth.

"Other service activities" and "Financial intermediation, real estate & rental activities and business services" show a greater recovery following job losses of technical degree holders in 2006. However, this positive situation slowed in 2011 with lower job growth.



The "Commerce, repairs, hotel industry, transport and communications" sector created technical jobs from 2003 to 2006, although the growth slowed in the following years until a year was closed with a drop.

The same situation as industry was repeated in construction, which resisted the crisis with positive variations and increased technical employment in recent years, although to a lesser degree.

- **Future trends**: forecasts for increasingly positive employability in 5-10 years, especially in the case of engineering degrees more aimed at the development of applications: industrial, telecommunications, mechanical, electronics, materials, manufacturing and IT. This knowledge area will contribute 27% of newly hired graduates.
- Supply and demand projections for these types of graduates seem to indicate (in a conservative scenario) that in 2020 there will continue to be a surplus of degree holders in this field, although trends indicate that in the following years, the situation will change and there will be a shortage of professionals with these degrees. In a scenario of economic growth, this situation will change as of 2018 due to a significant growth in employment, while the number of professionals will remain the same and veer away from the possibility of filling those positions.

## **Social Sciences and Legal Fields**

- **Employment rate**: drop in the employment rate as of 2007 (when it reached 97.1%), and no recovery until the last year analysed (91.9%).
  - 2006 marked a turning point for university graduates in the fields of social sciences and economics, with a drop in employment growth through 2009 followed by a year of job losses. 2011 was a year of recovery, with a positive variation rate of 2.4%.
- Leading employers: "Other service activities" as an essential employer that provides jobs to half of the graduates in social sciences and legal fields, with a rising weight throughout the years. It is followed, at a distance, by "Financial intermediation, real estate & rental activities and business services" and "Commerce, repairs, hotel industry, transport and communications".
  - In terms of **specific activities**, "Education" and "Public administration and defence" are the leading employers for these university graduates, providing 37.7% of the group with jobs. Rates are on the rise in the case of "Education" and stable for "Public administration and defence".
- **Growth rates by sector**: "Other service activities" is the only sector that has maintained the employment levels for social and legal degree holders, although with a downward trend until 2009 and a rise in 2010.
  - The "Financial intermediation, real estate & rental activities and business services" sector was able to restore jobs for social sciences and legal degree holders in 2008 and 2009, although 2010 ended with job losses for those graduates.
  - "Commerce, repairs, hotel industry, transport and communications" also showed a negative situation, with job losses until 2010.



The period between 2005 and 2008 resulted in job growth for social sciences and legal degree holders in the industrial sector, followed by two years of job losses.

- **Future trends**: trend toward stable employment levels in subsequent years with a slight increase in hiring, but with extensive uncertainty in the 10-year forecast. Improved prospects for: education, social services, social educators, business and law with double awards. The continue representing the majority of employed university graduates, although they are progressively losing weight compared to other technical degrees. In 2001, they represented 51% of employed university graduates. This figure is expected to drop to 45% in 2020.
- **Supply and demand projections**, in a conservative scenario, point towards a situation with a surplus of university graduates in this knowledge area. It will not be possible for those graduates to be absorbed by a demand with a much lower growth rate then the supply.
  - From a job growth perspective, 2018 is when the increased demand will absorb the supply of university graduates available to date. The high number of unemployed individuals and the replacement of new degree holders will remain stable throughout the projected years.

#### **Health Field**

• **Employment rate**: dropping since 2009 and reaching 95,8% of employment amongst degree holders in health fields.

The variation rate shows turning points every four years in terms of job losses. These times of recession are followed by periods of growth of increasingly less intensity.

- **Leading employers**: as is evident, the "Other service activities" sector that houses healthcare activities is the leading employer of graduates with health degrees, with nearly 80% of the jobs. This is followed at a great distance by the commerce sector, which contains more than 10% of the jobs.
- **Growth rates by sector**: the sector that houses healthcare activities marks the employment trends of health sciences degree holders. Although it created more jobs in 2008 and 2009, the drop in the subsequent years was sharper than the industry average.

Up until 2008, commerce had a worse situation, but there have been signs of recovery the last two years.

- **Future trends**: medicine is one of the most demanded university degrees, and it is expected to grow due to the ageing population. In 2001, it represented 11.5% of employed university graduates. This figure is expected to reach 13.5% in 2020.
- **Supply and demand projections** indicate that, in a conservative scenario, the surplus of professionals will switch to a shortage between 2019 and 2020, primarily due to the replacement of retiring professionals.



In a scenario of growth, demand (due to retirements and new jobs) will progressively increase, absorb (as of 2015) and far exceed the number of professionals available each year.

# **Experimental Sciences Field**

• **Employment rate**: dropping following the rise after 2003, experimental sciences graduates reached a 91.2% employment rate in 2011.

Following an increase in 2007, in the next two years these graduates experienced job losses; the situation continues to recover. The last year analysed, 2010, presented negative variation rates.

• **Leading employers**: "Other service activities" is the leading employer of these graduates. However, in recent years its weight has dropped in favour of "financial intermediation, real estate & rental activities and business services".

In terms of **specific activities**, education is the leading employer of experimental sciences graduates, although with a downward trend that is balanced by more research activities.

- **Growth rates by sector**: the leading employer, "other service activities" has shown different variation rates throughout the years, but with a downward trend as of 2009 that resulted in job losses in 2010.
- **Future trends**: chemistry and biology (within the biotechnology sector) are two of the degrees for which a better situation is expected in the future. In the future, this field will maintain its weight amongst the employed graduate population, although representing 5.3% of the demand for recent graduates.
- **Supply and demand projections**, in a conservative scenario, indicate that the number of graduates will approach the number of professionals needed, but in 2020 there will still be a surplus of degree holders (resulting from the total number of unemployed individuals as well as maintaining the number of recent graduates entering the job market).

On the other hand, in a scenario of growth, the rise in demand will require a number of professionals that will not be available, so as of 2018, the shortage of graduates will intensify.

# **Humanities Field**

• **Employment rate**: after a drop in 2002, graduates in the field of humanities were able to recover the employment rate, reaching 97.8% in 2006. As of then, there was a continued drop from year to year, until reaching 93% employment in 2011.

Following a recovery in employment in 2008 and 2009, the last two years have been a period of significant job losses for these graduates.

• **Leading employers**: "other service activities" as the leading employer, with more than 70% of jobs and an increasing contribution in recent years.



In terms of **specific activities**, education represents nearly half of the jobs for these graduates, with a rising weight in recent years.

- **Growth rates by sector**: the "other service activities" sector shows positive variation rates, but continuously decreasing between 2005 and 2010, resulting in job losses.
- **Future trends**: the situation is not expected to improve in terms of employment recovery due to the business network's scarce willingness to hire them into the workforce. As a result, they have gone from representing 10.1% of the employed graduate population in 2001 to 9.1% in 2011, and a forecast that in 2020 that weight will remain stable or increase slightly, at the cost of taking some of the market share from social and legal degree holders.
- **Supply and demand projections** indicate that, in a conservative scenario, just as in the case of the Health field, between 2019 and 2020 the number of people needed in the Basque Country will surpass the number of people available with this type of training, primarily due to the drop in the supply of graduates combined with a considerable growth in demand in 2020.

A scenario of economic growth will establish the shortage of degree holders as of 2017.



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