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**Supporting the Contribution of Higher Education Institutions
to Regional Development**

Self-Evaluation Report:
Region of Valencia, Spain

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METHODOLOGY

Chapters 1 and 2 of this self-assessment report are based on statistical information collected from various sources in accordance with the guidelines set out in the self-assessment guide. The other chapters (3, 4, 5 and 6) of the report are based on information provided by the universities themselves by means of a questionnaire which posed the questions set out in the self-assessment guide for these chapters. This questionnaire was reviewed and completed by the Steering Committee¹ before being sent to the universities and the regional administration. The universities had to answer the whole questionnaire apart from one section from chapter 6, which had to be answered by the regional administration.

The university representatives in the Steering Committee suggested the figure of an intermediary to liaise with the universities and the team in charge of drawing up the report. These intermediaries were responsible for dividing up the questionnaire according to the subject matter and sending it to the people best qualified to answer the questions in the university. The completed questionnaires were then sent via e-mail to the editing team. In some universities, the information for questions in chapter 6 was collected by personal interviews and in these cases, members of the editing team travelled to the universities.

Once all the data had been compiled, all the university representatives from the Steering Committee were sent a copy of the completed questionnaire from their university for its validation. Chapters 3, 4, 5 and 6 of the report were based on information obtained from the completed and validated questionnaires. On occasions, this information was backed up with material from other sources in order to ensure the homogeneity of the data.

The SWOT analyses which make up the conclusions of chapters 3, 4 and 5 have been produced by summarising the proposals put forward by the members of the Steering Committee.

All the chapters of the report were sent to the members of the Steering Committee and discussed in successive joint sessions.

In essence, it can be said that the methodology used to compile the information from the universities was in general appropriate, although there were certain shortcomings. There were some differences in the quantity of replies received from the different universities, and there were some variations in the information provided by each university. There were also some differences with regard to the form and clarity of the replies. These shortcomings may have been the result of the internal policies of each university, in addition to whether or not people were available to provide the information. In any case, as mentioned previously, these weaknesses were resolved by using supporting data from other sources which allowed the information to be homogenised.

Once the first draft of the report had been completed, meetings were held with employers from the three provinces of the region to examine the results and to ask their opinion, in particular with regard to the SWOT analyses.

¹ The Steering Committee: A committee made up of representatives of each university (led by the vice rector of research), of the Regional Ministry of Business, University and Science, of the Valencian Business Confederation (CEV) and of the INNOVA Foundation. The regional coordinator of the project and the working group attended the meetings of the Steering Committee.

Chapter I. OVERVIEW OF THE REGION OF VALENCIA

Summary

The Region of Valencia is a region of Spain with a considerable level of political and administrative autonomy. It is situated on the Mediterranean coast and has a surface area of approximately 23,000 square kilometres, representing 4.6% of the whole country. It has a population of slightly more than 4.5 million inhabitants, 10.5% of the population of Spain. It is a region to which internal migrants have traditionally come to and in recent years there has been a significant influx of foreign immigrants. In 2002, GDP per capita was slightly over 16,000 euros, a figure similar to the national average. In terms of Net Added Value (NAV), the region's economic structure is very similar to that of Spain and it is also becoming a tertiary economy like the majority of the other advanced economies. The productive sector is mainly made up of small and medium-sized companies in traditional industrial sectors. There are few companies working in knowledge-intensive sectors (pharmaceutical industry, electronics, ICT, etc.) and although there are a considerable number of innovative companies, innovation intensity is low. At present, the region's activity rate is almost 59% of the population, the occupation rate is 52% and the rate of unemployment is 11%. Total regional expenditure on R+D was 0.87% of GDP in 2003 and the business sector accounted for 35% of this figure. In addition, the level of penetration of information and communication technology is similar to levels in Spain as a whole.

1.1 The administrative system

The Region of Valencia is one of 17 autonomous regions which make up the Spanish State. It is divided into three provinces (from north to south: Castellon, Valencia and Alicante). It is governed according to the 1982 Statute of Autonomy, which establishes the general guidelines of its political and administrative organisation and its range of responsibilities. Three different levels of state administration coexist and interact in the region: the central administration, the regional administration and the local administration.

The structure of the *Central Administration* in the Region of Valencia is coordinated by the Regional Office of the Central Government and is made up of three provincial branch offices (Alicante, Valencia and Castellon) which assume the responsibilities assigned to this level of administration in each of the provinces.

The Generalitat Valenciana (*Regional Administration* of the Region of Valencia) is made up at legislative level by the Valencian Parliament and at executive level by the Regional Government. The Parliament is elected every four years by universal suffrage and its mission is to legislate within its area of responsibility and monitor the government. The Regional Government is formed according to the composition of parliament. It proposes legislation and is responsible for implementing and managing budgets in accordance with the policies which come from parliament.

Local Administration is structured around municipal and provincial councils. The municipal councils are responsible for providing services which are more directly related to citizens, while the provincial councils are responsible for providing services common to all municipal councils.

The way in which responsibilities are shared among the three different administrative levels in the region is not clearly defined and in almost all cases there is joint responsibility. This is true to the extent that even in areas which are, in theory, the exclusive responsibility of one administration, responsibility is in fact shared. One example is foreign trade, which, in theory, is the exclusive responsibility of the central administration, but which is in fact jointly administered with the regional administration.

An outline of how responsibilities are shared among the different administrations can be seen in Table 1.1, in which the intensity of the different shades of grey in the cells indicates which administration has greater responsibility in the region in each of the areas.

Table 1. 1. Shared Responsibilities

Area	Central Administration	Regional Administration	Local Administration
Public Services			
• Roads			
• Rail Transport			
• Airport Infrastructure			
• Seaports			
• Telecommunications			
Economy			
• Economic Development			
• Fiscal Policy			
Education			
Research and Development			
Health and Welfare			
Social Security			
Cultural Provision			

As can be seen, apart from Social Security and some public services, the other areas of public administration are, to a greater or lesser extent, shared by more than one administration.

1.2 The region and its transport links

The Region of Valencia is situated in the east of Spain between the regions of Catalonia and Murcia. The region forms a strip with some 400 km of Mediterranean coastline and extends approximately 60km inland.

Transport links within the Region of Valencia and to other regions are based on an infrastructure of road and rail networks, two international airports and a large number of seaports of various different sizes and uses.

Figure 1. 1. The Region of Valencia: Alicante, Valencia and Castellon.



In 2003, the road network in the Region of Valencia covered approximately 8,500km (5.2% of the national road network). Within this road network, high capacity roads are particularly important because of what they represent in terms of the internal and external organisation of the region. As can be seen in Table 1.2, in 2003 the Region of Valencia had approximately 1,200km of such roads (toll motorways, motorways and dual carriageways), representing 14% of the whole Valencian road network. There has been a significant increase in this figure since 1990 and the number of kilometres has more than doubled.

Table 1. 2. Network of motorways and dual carriageways in the Region of Valencia Km

	1990	1995	1999	2000	2001	2002	2003
Region of Valencia	561	820	940	963	1.042	1.087	1.164
Spain	5,126	8,133	10,306	10,443	11,152	11,406	12,009
VR/Spain	10.94%	10.08%	9.12%	9.22%	9.34%	9.53%	9.69%

Source: Directorate General of Roads. Ministry of Development, Autonomous Regions, Provincial Councils

Most of the railway network in the Region of Valencia belongs to the state and is run by the Spanish National Railway Network (RENFE), which is a state-owned company. This company provides long-distance transport for passengers and goods and a local passenger train service. The railway network is organised in a similar way to the road network and consists of a main line which runs from the north to the south of the region and links the three provincial capitals. This main line continues on to Barcelona and the French border in the north and to Murcia in the south. There are also three transverse branch lines; two of these connect the region with Madrid and Andalusia and the other with the north of Spain. In addition, the Region of Valencia has its own railway network which is run by the publicly-owned company Ferrocarriles de la Generalitat Valenciana and which provides passenger transport services in metropolitan areas, particularly in Valencia.

The airport infrastructure of the Region of Valencia comprises two airports situated near Alicante and Valencia. Both airports cater for domestic and international passengers. In 2003, Valencia

airport handled approximately 2.5 million passengers, the majority being domestic passengers (65%). Alicante airport handled more than 8 million passengers, 81% of whom were travelling to or from other European countries.

The Region of Valencia , with more than 400km of coastline, has a seaport system which has a large number of ports of various different types, sizes and ownership. Basically, the ports in Valencia are used for three types of activities: sea transport, fishing and sport and leisure, the latter being associated with the tourist industry. The ports of Alicante, Valencia and Castellon, which deal mainly in the transport of goods, belong to the State-Owned Port System. The rest of the ports are regionally owned. Shipping traffic in the ports of Valencia in 2003 was 1.1 million tons, which represented 9.3% of the shipping traffic in all Spanish ports.

Another important part of the regional infrastructure is the region's university campuses. As the following chapter shows, there are 7 universities in the Region of Valencia , 5 of which are publicly-owned and 2 of which are privately-owned. The campuses of these universities are situated in the large urban centres of the region. There are 6 campuses in the city of Valencia and its metropolitan area. Three of these belong to the University of Valencia, one to the Technical University of Valencia, another to the Cardenal Herrera University (in the town of Moncada) and the other to the Catholic University of Valencia. At Alicante province, the University of Alicante has the Sant Vicent del Raspeig campus and, the Miguel Hernandez University, has four campuses: Elche, San Juan, Orihuela y Altea. The campus of the Jaume I University is situated in Castellon. In addition, there are two centres belonging to the Technical University of Valencia in Gandia (Valencia) and Alcoy (Alicante). Finally, there is an educational centre belonging to the University of Valencia in Onteniente.

1.3 The demographic situation

In 2004, the Region of Valencia had a population of slightly over 4.5 million inhabitants, representing 10.5% of the total population of Spain. Demographic density was high in comparison with the Spanish average (195 inhabitants per km² compared to the national average of 85 inhabitants per km²). The population distribution among the three provinces was extremely uneven. The average population density in the province of Alicante was 272 inhabitants per km², compared to 228 in Valencia and 77 in Castellon.

Table 1. 3. Population changes in the Region of Valencia and in Spain

Year	Spain	Region of Valencia	Region of Valencia /Spain
1950	28,117,873	2,307,068	8.2%
1981	37,742,561	3,646,765	9.7%
1998	39,852,651	4,023,441	10.1%
2000	40,499,791	4,120,729	10.2%
2002	41,837,894	4,326,708	10.3%
2004	43,197,684	4,543,304	10.5%

Source: National Institute of Statistics. Population changes

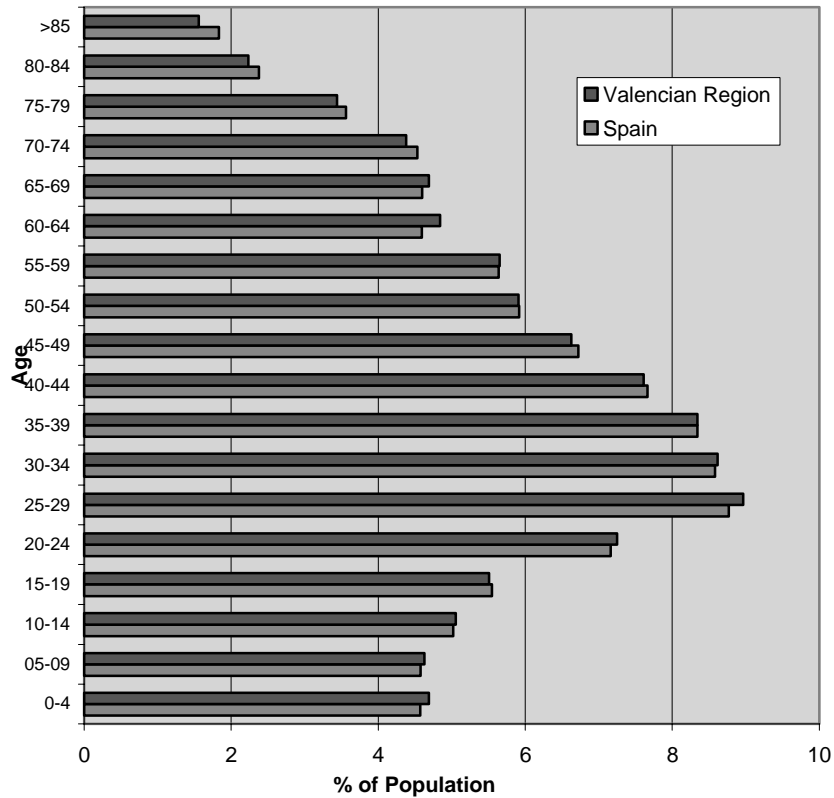
During the period 1950 – 2004, the population of the Region of Valencia almost doubled, with a growth rate of 97% (Table 1.3). During this same period the population in the whole of Spain increased at a slower rate (57%), meaning that the demographic weight of the Region of Valencia as part of the total population of Spain increased from 8.2% in 1950 to 10.5% in 2004.

At present, 83% of the towns in the Region of Valencia have fewer than 10,000 inhabitants and these represent 18% of the population. There are 36 towns with more than 25,000 inhabitants and these represent 61% of the population. There are only 4 towns which have more than 100,000

inhabitants (the three provincial capitals and the city of Elche) and 32% of the region's population live in these cities. Valencia has the largest number of inhabitants, with 33.3% of the population of its province and 17.3% of the total population of the region.

In terms of the population distribution by age, it can be seen that the population in the Region of Valencia is slightly younger than in Spain (Graph 1.1).

Figure 1. 2. Population Pyramid for the Region of Valencia and Spain



Demographic growth in the Region of Valencia over the last ten years has mainly been due to migratory movements in and out of the region, since the vegetative growth during this period was only 0.4%. In fact, as can be seen in Table 1.4, between 1994 and 2003 there was a positive migratory balance of almost 450,000 people, of whom 23% came from other autonomous regions and the remaining 77% from foreign countries.

Table 1. 4. Domestic migration and external immigration of Spaniards and foreigners by autonomous regions

1994-2003	Domestic Migration	External Immigration. Spaniards	External Immigration. Foreigners	Total	%
Andalusia	-19,199	31,066	195,932	207,799	9.9%
Canary Islands	61,855	20,061	121,690	203,606	9.7%
Catalonia	-14,854	29,715	233,664	248,525	11.9%
Region of Valencia	102,970	24,963	318,768	446,701	21.3%
Madrid	-117,159	40,616	577,224	500,681	23.9%
Rest of the Regions	-13,613	106,421	396,969	489,777	23.4%
Spain	0	252,842	1,844,247	2,097,089	100.0%

Source: National Institute of Statistics. Statistics on Residential Variations

With regard to the proportion of the local population attending higher education, the proportion of the population aged between 25 and 34 with higher education qualifications in the Region of Valencia increased from 18% in 1992 to 30% in 2002 (Table 1.5). This is slightly higher than the figure for all OECD countries (29% in 2002)². However, despite the significant increase, this indicator for the Region of Valencia for 2002 was lower than the national average.

Table 1. 5. Proportion of the population aged 25 – 34 with higher education qualifications

	1992	1994	1996	1998	2000	2002
Spain	22.2	24.9	28.2	31.2	34.1	36.7
Region of Valencia	17.9	20.2	22.8	27.5	30.6	30.2
Alicante	13.3	14.8	17.8	24.1	26.7	26.8
Castellon	16.8	20.6	22.9	23.1	28.3	28.9
Valencia	21.0	23.5	26.0	30.4	33.7	32.5

Source: National Institute of Statistics, 2004 Social Indicators. Education.

Life expectancy in the region is slightly lower than the national average both for men (74.7 years compared to 75.6 years) and for women (81.4 years compared to 82.9 years). Even so, these figures are still among the highest in the world.

In 2002, there were 423 doctors for every 100,000 inhabitants in the Region of Valencia, a figure which is close to the average for the whole of Spain (447). However, there were only 28 hospital beds for every 10,000 inhabitants, 77% of the national average.

Changes in GDP per capita (Table 1.6) in the region have been similar to those in the whole of Spain. From 1995 to 2002, the figure varied between 95% and 96%, with no clearly appreciable trend in the degree of convergence. However, as in Spain as a whole, there was clear convergence with the fifteen-member European Union. In the period at hand, GDP per capita in the Region of Valencia increased from 59.8% of European GDP in 1995 to 66.6% in 2002.

² OECD 2005. (www.oecd.org/edu/eag2005)

Table 1. 6. GDP per capita at market prices in the Region of Valencia and in Spain (Euros)

	1995	1996	1997	1998	1999	2000	2001	2002
15-Member EU	17,700	18,600	19,500	20,400	21,400	22,800	23,500	24,200
Spain	11,127	11,775	12,503	13,316	14,191	15,179	16,085	16,898
Region of Valencia	10,579	11,185	12,003	12,850	13,648	14,601	15,454	16,112
Region of Valencia /15-Member EU	59.8%	60.1%	61.6%	63.0%	63.8%	64.0%	65.8%	66.6%
Region of Valencia /Spain	95.1%	95.0%	96.0%	96.5%	96.2%	96.2%	96.1%	95.3%

Source: Eurostat. National Institute of Statistics, 2004 Social Indicators. Income

1.4. The regional economy

In general terms, the Region of Valencia can be regarded as a peripheral region in the context of the European Union. As we have seen, in 2002 its GDP per capita was slightly lower than the national average and far lower than the European average. As can be seen in Table 1.7, the region's participation in the national economy is slightly lower than its demographic weight. In terms of GDP, in 2003 it represented 9.7% of the Spanish economy. The province of Valencia, with 54.8%, is the one which made the greatest contribution to the regional economy. The province of Alicante contributed 31.5% and the province of Castellon 13.7%.

Table 1. 7. Nominal changes in GDP in the Region of Valencia and Spain at market prices (thousand €)

	1995	1997	1999	2001	2003
Spain	437,787,000	494,140,000	565,419,000	653,927,000	744,754,000
Region of Valencia	41,374,468	47,233,520	54,434,391	63,693,073	72,319,484
Valencian R./Spain	9.45%	9.56%	9.63%	9.74%	9.71%
Alicante	13,036,129	14,729,527	16,538,722	19,805,006	22,780,982
Castellon	5,605,510	6,497,161	7,589,139	8,862,077	9,841,592
Valencia	22,732,829	26,006,832	30,306,530	35,025,990	39,696,910

Source: National Institute of Statistics. Regional Accounts of Spain. Base 1995

Between 1995 and 2003, the Region of Valencia was among the Spanish regions which underwent the greatest changes. In this period the accumulated increase in GDP at market prices was 75%, slightly higher than that of the whole of Spain, which experienced an increase of 70%.

1.4.1 The productive structure

As can be seen in Table 1.8, considering the participation of the major productive sectors in total Net Added Value, the economic structure of the Region of Valencia has moved towards a tertiary economy, just like the majority of other developed economies. In 2002, this structure was very similar to that of the rest of Spain, although in relative terms industry played a more significant role in the region (21% compared to the national average of 18.9%), as did the construction industry (9.2% as opposed to 8.6%).

Table 1. 8. Distribution of Net Added Value in the Region of Valencia and in Spain by sectors

	Region of Valencia		Spain	
	1986	2002	1986	2002
Primary Sector	5.6	2.9	5.9	4.2
Energy	4.9	2.8	6.3	4.0
Industry	28.3	21.0	24.6	18.9
Construction	5.8	9.2	6.9	8.6
Services	55.4	64.0	56.3	64.2

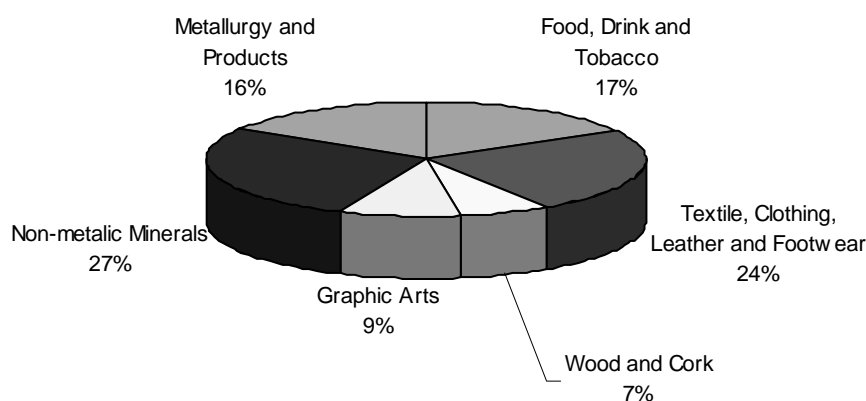
Source: National Institute of Statistics, Regional Accounts of Spain

The **primary sector** is relatively small and is composed of an exporting agricultural industry in which the production of citrus fruits is particularly important.

The Valencian **energy** sector is mainly centred on the production of electricity from thermo-nuclear, fuel oil and to a lesser extent, hydraulic sources. This sector preserves its traditional dependency on energy from other regions (almost 50% of total electricity consumption comes from other regions).

Valencian **industry** is characterised by the concentration of its activities in certain areas and sectors, by the large number of small and medium-sized companies and by the importance of exports. The sector is based on labour-intensive industrial sub-sectors which are mainly involved in the production of intermediate and final consumer goods. Very few companies are involved in knowledge-intensive sectors (pharmaceutical industry, electronics, ICT, etc.). High-technology companies only generate 8% of industrial net added value, whereas low-technology companies generate 65%.

Figure 1. 3. Distribution of Low Technology Net Added Value



The largest part of this 65% of industrial net added value which is derived from companies involved in low-technology activities (Graph 1.2), is made by companies from the “non-metallic minerals” sector (mainly paving and ceramic flooring), which represents 27%. This is followed by the “textile, clothing, leather and footwear” sector with 24% and the “graphic arts” and “wood and cork” sectors with 9% and 7% respectively.

The **construction** industry in the Region of Valencia has grown considerably over the last twenty years. This strong growth has been aided by various different public projects aimed at improving

infrastructure and communications, in addition to the modernisation and adaptation of the tourist sector and the substantial increase in the availability of building land to be used for tourism.

The Region of Valencia's **services** sector has certain sub-sectors which have a long tradition in the region (such as shop-keeping, the hotel and catering business, transport and communications) which account for approximately 50% of net added value and employment in the sector. There are other more modern sub-sectors (such as estate agencies and business services) which, although their contribution to the sector's net added value is still relatively small, have experienced significant growth during recent years.

1.4.2 Foreign trade

The development of the Valencian economy has traditionally been linked to its companies' export activities. The region's foreign trade plays an important role in the national economy and in 2002, exports from the region represented 12.8% of the national total. However, the Region of Valencia has witnessed a slight reduction in its traditionally positive trade balance. In Table 1.9 it can be seen that between 1996 and 2002, the accumulated growth of imports in the region was larger than that of exports (86.1% as opposed to 55.7%). This change led to a marked decrease in the Region of Valencia's trade surplus in 1996. However, the cover rate (the quotient between exports and imports) in 2002 in the region was still 121%, a figure which is clearly above the national average for the same year (75.7%).

Table 1. 9. Accumulated growth of foreign trade in the Region of Valencia and in Spain

1996-2002	Region of Valencia	Spain
Exports	55.7%	67.3%
Imports	86.1%	83.5%
Cover rate (2002)	120.8%	75.7%

Source: Ministry of Economy and Finance – Customs information

The European Union has traditionally been the main recipient of Valencian exports (almost 70% of the total), but in recent years there has been an increase in exports to other Central and Eastern European countries. The main EU recipients are France, Germany and the United Kingdom (the three account for almost 75% of exports). The origin of imports to the region is similar to the export distribution, although it is worth highlighting the fact that Asia has become an increasingly important strategic partner in the region's foreign purchases.

With regard to the sectors involved in foreign trade in terms of foreign sales, these are mainly concentrated in the *transport industry, agricultural products, the stone, cement and ceramic industry* and the *footwear industry*. In 2002, these four sub-sectors accounted for more than 60% of all the region's exports.

For their part, imports to the Region of Valencia mainly include manufactured goods (*machinery and electrical appliances, transport material, common mineral or metal products*). These goods represented 44% of the region's imports in 2002.

1.4.3 The business structure

In 2004, there were over 300,000 businesses in the Region of Valencia, a figure representing 10.7% of all Spanish businesses. The size of Valencian companies is similar to the national average. In both cases, companies with fewer than 50 employees represented 99.1% of all businesses in 2004.

Table 1. 10. Composition of businesses in the Region of Valencia and in Spain by sector

2004	Region of Valencia		Spain		RoV/Spain
	Number	%	Number	%	
Industry	31,285	9.9%	248,289	8.4%	12.6%
Construction	40,905	13.0%	391,487	13.3%	10.4%
Wholesale Trade	24,585	7.8%	205,265	7.0%	12.0%
Retail Trade	59,158	18.8%	544,953	18.5%	10.9%
Hotel and Catering	29,557	9.4%	283,674	9.6%	10.4%
Other services	129,724	41.2%	1,268,915	43.1%	10.2%
Total	315,214	100.0%	2,942,583	100.0%	10.7%

Source: National Institute of Statistics. Central Directory of Companies

1.4.4 The job market

The activity rate in the Region of Valencia in 2004 was 58.6% and the employment rate was 52.1%, in both cases two points above the figures for the whole of Spain. However, the unemployment rate (11.1%) was slightly higher than the figure for the whole of Spain (Table 1.11). This employment structure contrasts with the situation in 2004 in OECD³ countries as a whole, where the activity rate was 72.3%, the employment rate was 67.4% and unemployment was 6.8%.

Table 1. 11. Changes in activity, employment and unemployment rates in the Region of Valencia and in Spain.

Year	Activity Rate		Employment Rate		Unemployment Rate	
	Region of Valencia	Spain	Region of Valencia	Spain	Region of Valencia	Spain
1966	51.45	50.98	51.17	50.37	0.55	1.19
1976	50.57	49.90	48.78	47.41	3.54	4.98
1986	48.58	47.79	39.08	37.64	19.56	21.23
1996	52.58	51.49	40.99	40.31	22.04	21.72
1998	52.95	52.26	44.24	42.69	16.44	18.32
2000	54.55	53.90	48.39	46.60	11.30	13.54
2002 ¹	56.15	54.61	49.86	48.32	11.22	11.51
2004	58.61	56.60	52.09	50.52	11.12	10.74

(1) A change in the methods and criteria used to define unemployment was introduced

Source: National Institute of Statistics. Active Population Survey.

The activity rate in the Region of Valencia has traditionally been higher than the Spanish average and changes have generally been more favourable. During the last forty years it has varied between 48% of the population in the 1980s and the current figure of 59%. There have been similar changes in employment and unemployment rates during this period.

³ <http://www1.oecd.org/scripts/cde/> OECD's Corporate Data Environment (CDE).

Table 1. 12. Changes in the number of people employed in the Region of Valencia by economic sector

Sector	1996		2004		Growth 1996-2004
	No. employees ¹	Structure	No. employees ¹	Structure	
Agriculture	81.9	6.2%	81.4	4.2%	-06%
Industry	342.6	26.1%	416.2	21.3%	21.5%
Construction	128.4	9.8%	262.2	13.4%	104.2%
Services	761.1	57.9%	1193.8	61.1%	56.9%
Total	1314	100	1953.7	100	48.7%

(1) Thousands of people

Source: National Institute of Statistics. Active Population Survey.

Table 1.12 shows the employment structure by economic sectors and the changes which have taken place in recent years. As can be seen, services accounted for 61.1% of the total number of employees in the Region of Valencia in 2004, followed by industry (21.3%), construction (13.4%) and agriculture (4.2%). In addition, the table illustrates the changes which took place in the structure of employment during the period 1996 – 2004. These years witnessed a significant increase in the importance of the service sector (an increase of 3.2 points) and the construction sector (3.6 points) at the expense of the industrial sector, whose relative importance decreased by almost 5 points, and of the agricultural sector, which lost 2 points.

Salaries in the Region of Valencia are considerably lower than the national average. The average salary of Valencian workers in 2003 was slightly less than 16,000 Euros, the twelfth highest figure among all Spanish regions and only 74% of the average salary of workers in the region of Madrid, where salaries were highest.

1.4.5 Innovation and new technologies

According to the information provided by the National Institute of Statistics and the 2003 Technological Innovation Survey (Table 1.13), the business world displayed a more positive attitude towards innovation in the Region of Valencia than in the rest of the country. In fact, the number of innovative companies (EIN) in the Region of Valencia represented 12.3% of the total number in Spain, 1.6 points higher than the proportion of all Valencian businesses in the national total.

Table 1. 13. Some innovation indicators for the Region of Valencia and Spain

2003	Region of Valencia	Spain	Region of Valencia /Spain
Number of companies involved in innovation	2,912	23,721	12.3%
Expenditure on innovation (thousand euros)	647,824	11,198,505	5.8%
Innovation intensity (EIN)	2.28	1.98	
Percentage of turnover from new products (EIN)	19.10	16.32	

Source: National Institute of Statistics. 2003 Technological Innovation Survey

However, innovative effort, measured by the expenditure on innovation undertaken by businesses in the Region of Valencia, was very low. It represented only 5.8% of the expenditure of Spanish companies, a percentage which only represented just over half the Region of Valencia's contribution (9.7%) to national net added value. However, when considering figures for innovation intensity for innovative companies, it can be seen that Valencian businesses invested a greater percentage of their turnover in innovation. This situation can be explained by the fact that Valencian innovative

companies are smaller than their Spanish counterparts. In addition, it can be seen that the Valencian innovative companies' turnover from new products was 3 percentage points higher than the figure for Spain as a whole, which fits in with its greater innovation intensity.

Table 1. 14. Investment in R+D in the Region of Valencia and in Spain

(%GDP)	1995		2003		Growth (95-03)	
	Region of Valencia	Spain	Region of Valencia	Spain	Region of Valencia	Spain
<i>Business Sector</i>	0.15	0.40	0.30	0.60	98%	50%
<i>Higher Education</i>	0.27	0.26	0.47	0.33	71%	29%
<i>Public Administration</i>	0.08	0.15	0.11	0.17	32%	12%
Total expenditure on R+D	0.50	0.81	0.87	1.10	73%	36%

Source: National Institute of Statistics. Statistics on R+D activities, Regional Accounting for various years and own data.

In 1995, internal expenditure on R+D in the region was 0.50% of GDP and in 2003, the figure was 0.87%, which represents an increase of 73% during this period compared to the 36% increase in the national average (Table 1.14). Despite this significant increase, it is worth noting that companies in the Region of Valencia invested relatively little. In 1995, their share of the region's expenditure on R+D was only 30% and in 2003, the figure was 35%. The largest part of expenditure on R+D in the region was still undertaken by universities and in 2003, this represented 53% of total investment in R+D. This spending structure contrasted with the situation in the country as a whole, where 54% of total expenditure on R+D was undertaken by businesses and 30% by higher education institutions. This structural imbalance becomes even clearer if we compare it with the average for OECD⁴ countries, where expenditure on R+D by the business sector (1.4% of GDP) represented 62% of the total in 2002 and expenditure by higher education institutions (0.41% of GDP) represented 18%.

Table 1. 15. Penetration level of Information and Communication Technology in households and businesses

	Region of Valencia	Spain
% Businesses with access to the Internet (2003)	86.14	87.44
% Businesses with broadband access to the Internet ¹ (2003)	78.15	81.21
% Businesses with access to the Internet and a web site ¹ (2003)	42.1	45.45
% Households with access to the Internet (2004)	28.59	30.85
% Households with broadband access to the Internet (2004)	13.65	13.78

(1) Percentage of the total number of businesses with Internet access

Source: National Institute of Statistics. 2003 Survey on the use of Information and Communication Technology and Electronic Commerce and 2004 Survey on Information Technology in the home.

As can be seen in Table 1.15, the penetration level of information and communication technology is similar to the national average. In terms of the business sector, in 2003, the percentage of Valencian companies with access to the Internet was 86%, which was slightly lower than the average for Spain. The figure for the percentage of companies with access to the Internet and a web site was also over three points lower than the national average. With regard to the penetration level of information and communication technology in households in the Region of Valencia, 28.6% of homes had access to the Internet (30.8% in Spain) and approximately half of these had broadband access.

⁴ OECD Statistics: Main Science and Technology Indicators: Plus Research and Development Statistics 2004.

Chapter II. OVERVIEW OF THE NATIONAL AND REGIONAL HIGHER EDUCATION SYSTEM

2.1 Introduction

In general terms, the higher education system in Spain is made up of universities. At present, there are a total of 70 universities, 50 of which are public and 20 private. In 2004, the total number of students enrolled was 1.5 million and 8% of these students were enrolled in private higher education institutions. Formally, all universities have similar structures and objectives as a result of rigid state regulations. In principle, all universities can offer programmes at any level and they are all involved in research activity.

The last three decades have been a period of rapid growth for the Spanish university system and it has become a mass system which takes in a large proportion of secondary school pupils. Very recently, the system has begun to stabilise in terms of student numbers and this has largely been due to low demographic growth. At the same time as the system has grown rapidly, there has also been a complete legal and structural revolution which has radically changed the higher education system.

2.2 A brief history

The first Spanish universities were founded in the Middle Ages. Universities at that time had little in common with the universities we are familiar with today. They were small institutions which concentrated on subjects such as Law, Philosophy and Theology and in which the Kings and Queens and the Church played a significant role, although there were some universities such as the University of Valencia, which was founded in 1499 and was the first university to be created under the tutelage of the city. The number of universities and the way they were organised changed very little in almost four centuries. Although the Industrial Revolution did not, as in other countries, lead to the appearance of new institutions, the nineteenth century was nonetheless a key period for Spanish universities, just as it was for other universities in continental Europe.

At the beginning of the nineteenth century, the tide of liberalism which came in the wake of the French Revolution changed the structure of the state. Under the Napoleonic system of higher education which was adopted by Spain, universities were organised as state institutions which were fully regulated by the laws and regulations enacted by the state at national level. Universities did not have a specific budget and even the finest details concerning expenditure were controlled by the state. Until very recently, academic qualifications were exactly the same in all universities. The syllabi were also exactly the same and there were not even any differences in the subject matter of the courses. Such a strictly regulated higher education system was also extremely elitist and its main objective was to prepare the future leaders of the modern state, especially future civil servants. As a result of this, Spanish universities had (and with certain exceptions, still have) a strong orientation towards professional studies. The education process was based on the transfer of knowledge which was essential to undertaking certain professions, many of which were designed to meet the needs of the state civil service.

2.3 Recent changes

The situation described above began to change during the 1970s, when the system started to change from an elitist system to a mass system. Legislative changes aided this radical reform of the higher education system. After the restoration of democracy and the enactment of the new Constitution in 1978, the transformation of the university system was one of the main political objectives of academics and politicians and as a result, the first changes to the education system involved reforming higher education. In 1983, the University Reform Law (*Ley de Reforma de la Universidad - LRU*) was passed and led to profound changes in the Spanish higher education system.

The law established the way to free the higher education system from state control, as occurred in other European countries during that same decade. The law introduced the following changes:

- Universities became autonomous institutions able to introduce their own qualifications, although regulations did apply to the syllabi.
- The teaching staff, who were part of a national body and who were assigned to the various different universities, began to belong to each university.
- Responsibility for universities was transferred to the regional governments, although the Council of Universities (currently named the University Coordination Council) was set up to coordinate the whole system.
- Public institutions began to receive public funding from the regional government in the form of a global sum and were responsible for the internal administration of these funds.
- Private universities could be established (until that time only universities which depended on the Catholic Church were permitted).

It is worth highlighting that at present, the seventeen regional governments are responsible for funding and administering their universities. However, the Napoleonic tradition of “national qualifications” has remained and the teaching staff are still civil servants, meaning that central government can still determine the general norms of the syllabi in addition to staff salaries in all public universities. The central government, therefore, has considerable power due to the influence it can have on deciding the degree programmes on offer and in addition, it has control over the working conditions of the majority of university staff.

Another noteworthy consequence of the University Reform Law was the “democratisation” of the internal structure of universities. Decision-making power regarding important subjects was transferred to collegial bodies in which non-academic staff and students were well-represented (approximately one third of the members). The University Senate was given considerable power, including the ability to appoint the Rector. Different types of commissions, made up of a large number of members, oversee the various administrative levels (centres, departments etc.) and they also decide which people are to occupy the respective posts (dean, centre and departmental heads). The Social Council was also established as an external body to represent the general interests of society in the university.

The situation changed once again, although not as drastically, at the beginning of the new millennium, when Spanish universities entered a new environment due to:

- A new legal framework which was designed by the central government at the end of 2001 (the Organic Law of Universities - LOU).
- An agreement reached by all European governments to transform the structure of higher education in European countries (the Bologna Declaration)
- A decrease in the number of students as a result of a spectacular drop in the birth rate.

The Organic Law of Universities (LOU) introduced some changes to the legal structure of higher education. The law gave rise to the following changes: a) the incorporation of people from outside the university community in the Governing Council (albeit a minority group); b) the election of the Rector by direct ballot; c) an increase in the representation of doctor – lecturers in collegial bodies; d) the requirement that all academic staff must obtain national authorisation before being named by the university; and e) the need for all degree programmes to be accredited by the new National Agency for the Evaluation of Quality and Accreditation (ANECA).

2.4 The demand for higher education

The growth of higher education in Spain began in the early 1960s. During this decade, the number of students doubled and twenty years later, it doubled again and then once again before

1995. In the mid 1990s, the growth suddenly stopped and during the last decade the number of university students stabilised at approximately 1.5 million students. This stability is the result of the constant and significant drop in the birth rate in Spain since 1975, which has recently stabilised at a very low level. While the number of students enrolled has remained constant, the rate of participation in higher education has risen considerably. It is estimated that almost 50% of young people of school-leaving age enrol in higher education.

During these years it has become significantly easier for women to get a university education. In 1970, the proportion of women in higher education was only 26%, but in 1986, the proportion had reached 50% and continued to rise during the following years. Today it stands at approximately 54%. There is a particularly large number of women studying subjects in areas such as health science (mainly in short-cycle degree programmes), social sciences, education and humanities.

Access to higher education is relatively open. After finishing their secondary studies, students must pass a university entrance exam if they want to study long-cycle university degrees. This exam is organised by the universities at regional level. Having passed the entrance exam, students may apply for a place to study any university degree, usually at a university in the same region. The students who pass the exam are awarded a total mark which is used, together with the marks from secondary school, as the criterion to determine which students may study each degree depending on their own preferences and the availability of places.

It is surprising that the significant rise of numbers in higher education in Spain has never been accompanied by any explicit statement from the government recommending or supporting access to higher education. The growth of higher education has clearly been a process led by demand. However, central and regional governments have introduced policies to meet the high demand for higher education. The number of places offered by universities and the resources available increased spectacularly, although supply always lagged behind demand and there was little planning. This increase in resources has been particularly important since 1984, when the autonomous regions began to take responsibility for higher education.

2.5 Financial resources

In 1985, the total funds available for higher education only amounted to 0.54% of GDP but by 2001, this figure had reached 1.2% (OECD, 2004). The current percentage is equivalent to the average for European countries, although it is far from the level of expenditure in the USA. Despite the considerable increase in the amount of resources allocated to higher education, there are certain special characteristics which must be taken into account.

Firstly, significant resources have been spent on funding new infrastructure. During the 1990s, a big effort was made to solve one of the main problems: the shortage of buildings and equipment. In 2000, for example, Spain allocated 20.6% of total spending to capital investment (compared to the OECD average of only 11.6%). As is to be expected, this percentage has decreased over recent years as requirements have decreased.

Secondly, a large proportion of the normal expenditure of the Spanish higher education system is spent on staff costs. This means that traditionally, the percentage of resources reserved for other expenses, such as goods and services which allow universities to develop better quality systems, has been less than optimal.

Thirdly, the private sector's role in funding higher education increased during the 1990s. In 1991, approximately 20% of university funding came from the private sector. In 1999, this figure had increased to 25.8%. From a comparative perspective, it is important to mention that during this period, private funding of higher education increased in Spain, whereas it decreased in other

European Union countries. In 1995, private sector funding of higher education in the EU averaged 15.6% of total expenditure and in 1999; this figure had fallen to 13.8%.

Finally, an important feature of higher education funding in Spain is the shortage of resources allocated to providing financial aid to students. Only 0.08% of GDP is used for student grants and there is no student loan system either.

2.6 Academic staff

The University Reform Law brought about considerable changes to the situation of academic staff in Spain. However, the law did not alter their legal situation. Academics with permanent posts (almost 70% of the total) are state civil servants (here we are referring exclusively to public universities), which contradicts the autonomy of the universities and the regions. On the one hand, central government determines general staff policies (basic structure, teaching load and salaries), whereas the regional governments are responsible for funding the universities and, indirectly, paying staff salaries in public universities.

Universities can establish their own staff policies. Decisions regarding the number of members of staff (made by the universities) and decisions regarding salaries (made by the central government) have a direct effect on the costs which regional governments must meet. It is obvious that such a complex structure, with three different levels making decisions on matters related to university staff, is a constant source of conflict. Fortunately, although there are regular conflicts, they are less hostile than could perhaps be expected in such a conflictive system.

The Organic Law of Universities has maintained the same structure of civil service posts, but has allowed the creation of new posts for lecturers who may be contracted under standard labour legislation.

2.7 Some organisational features of universities

As mentioned previously, one of the consequences of the University Reform Law was the democratisation of the internal structure of universities (here we are referring exclusively to public universities). These changes were regarded as both positive and necessary at the time, after having suffered almost half a century of dictatorship.

The change from direct state involvement to institutional autonomy has not been accompanied to a large enough extent by the introduction of competition (between students, staff, funds and reputation), the diversification of resources, an increase in the power of demand or institutional accountability. These features were not developed sufficiently in Spanish universities among other reasons due to: a) the lack of a tradition of serving the community because of the origins of the bureaucratic model; and b) the lack of government policy regarding higher education given that regional governments, with few exceptions, have not been able to draw up higher education policies, set targets for public institutions or demand that universities reach certain objectives.

In Spain, “mass” higher education has been achieved by means of the geographic expansion of the higher education system throughout the whole country: from the 14 universities which existed in the late 1960s (the majority in large cities), there are now 70 public and private institutions all over the country. Initially, it was reasonable to suppose that regionalisation would increase differentiation. However, each region and in many cases each university wants to offer a full range of degree courses and research activities.

Moreover, student mobility is very limited due to cultural tradition, but also due to the lack of an efficient system of student grants. Universities have a captive market because young people tend to study in the closest universities regardless of the quality of their degree courses.

2.8 Higher education in the Region of Valencia

The Valencian Higher Education System is made up of 7 universities, 5 of which are public and 2 private. They are listed below, together with the year in which they were founded:

Public Universities:

- UV. University of Valencia (1499)
- UPV. Technical University of Valencia (1971)
- UA. University of Alicante (1979)
- UJI. Jaume I University of Castellon (1991)
- UMH. Miguel Hernández University de Elche (1997)

Private Universities:

- UCH. Cardenal Herrera University (2000)
- UCV. Catholic University of Valencia (2004)

Four of these universities are located in the city of Valencia, one is in Castellon, another in Alicante and the other in Elche. Some of them have campuses situated in other towns. In line with the Spanish tradition, all of them undertake research activities but logically, the intensity and quality of the research is different for each department, subject and institution.

There are approximately 146,000 students enrolled in the Valencian university system and of these, 13,000 are in the private sector (7,000 in private universities and 6,000 in private centres attached to public universities). The number of students has remained stable in recent years (see Table 2.1).

Table 2. 1.- Basic information about Valencian Universities, 2004.

	Public Universities					Private Universities	
	UA	UJI	UMH	UPV	UV	UCH	UCV
Degree Courses	44	26	34	45	59	14	15
Students *	27,957	13,179	9,771	35,718	46,488	6,740	2,522
Credits *	1,720,650	852,124	672,121	2,248,588	2,846,046	-	163,278
Teaching and Research Staff	1,870	844	963	2,577	3,183	-	-
Administrative Staff	1,108	435	399	1,476	1,682	-	-
Budget M€ (2002)**	156.5	86.2	75.8	241.6	278.9	-	-

* Information provided by the universities 03/04

** The Spanish University in Figures (2004)

*** Regional Ministry of Enterprise, University and Science

The Generalitat Valenciana (Autonomous Government of the Region of Valencia) is responsible for funding the public universities (by means of direct subsidies and by regulating the price of student tuition fees), endorsing new degree programmes and universities and it is responsible for some issues related to non-civil servant teaching staff.

The Generalitat Valenciana was the first regional government to introduce a funding model for public universities in 1994. This model was renewed in 1999. This set the Valencian system apart from other regional systems in Spain, because the model was a means of clearly stating the

objectives of Valencian universities and of linking part of their funding to objectives and performance. As a result of greater rationality, in comparison with the systems in other autonomous regions, the Valencian Public University System is one of the best funded in Spain and Valencian universities are more efficient than the Spanish average according to education indicators (fewer students drop out and courses are completed in a shorter time) and research.

Traditionally, universities were dependent on the Regional Ministry of Education. More recently, the Regional Ministry of Enterprise, University and Science has been created and has taken over the responsibility for universities and also for technological and scientific activities and the development of business and trade. Its aim is to introduce a policy which links regional development with universities, something which has yet to be achieved by the central government, although other regions are introducing similar policies. Clearly, the aim of this new structure is to increase the relationship between universities and regional development.

Universities have been located in the main cities of the region with the implicit aim of playing an important role in the region's economic, social and cultural development and it is explicitly intended that all the institutions support this development. However, there are no major incentives (either financial or political) to do this, perhaps because they are unnecessary due to the close relationship between the majority of institutions and the people in Spanish regions. However, to a certain extent this regional or even local proximity can be so strong (especially when contracting teaching staff and enrolling students) that there is a tendency towards "localism".

Chapter III. THE CONTRIBUTION OF RESEARCH TO REGIONAL INNOVATION

3.1 Solutions to the needs and demands of the region

Research activity in higher education institutions in the Region of Valencia is mainly carried out in public universities, which account for practically all the sector's expenditure on R+D (99.6% of expenditure, not including staff or infrastructure). Private universities make only a symbolic contribution. The fact that these universities play such a minor role in the region's research activity, among other reasons because they have been in existence for a relatively short time, means that they shall not be taken into consideration in the analysis undertaken in this chapter.

As we have seen in previous chapters, there have been positive changes in the R+D work carried out by the higher education institutions in the Region of Valencia. In 2003, expenditure in this sector was 0.47% of the region's GDP, whereas the figure for all Spanish universities as a whole was 0.33% and the figure for all OECD countries was 0.41%. This dynamism is reflected in the changes in the research budget of Valencian universities (Table 3.1), which has increased by almost 80% over the last five years, partly due to the greater possibilities of receiving external funding, but also because of the universities' willingness to invest their own funds in R+D.

Table 3. 1. Changes in the research budgets of universities and their funding over the last five years (thousand euros)

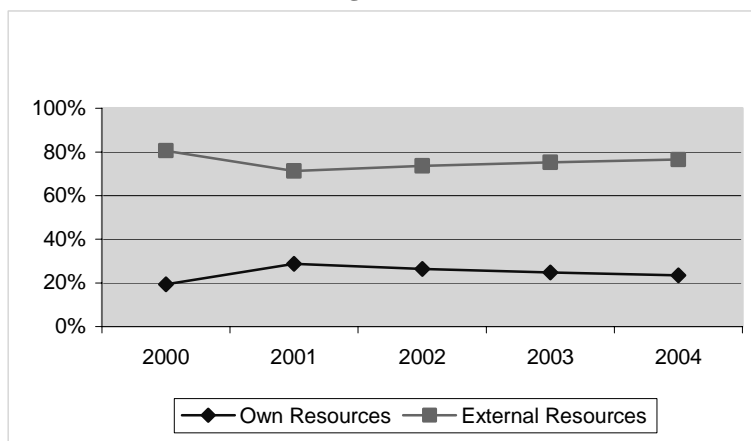
Year	Budget (*)	Funding	
		Own Resources	External Resources
2000	83,568.08	16,234.06	67,334.02
2001	101,392.98	29,185.11	72,207.87
2002	123,307.48	32,506.86	90,800.61
2003	141,138.07	34,986.04	106,152.03
2004	149,104.62	35,073.53	114,031.09

(*) This research budget does not include expenditure on staff or investment in scientific infrastructure

As can be seen in Graph 3.1, most of the research budget was funded by external resources and between 2000 and 2004, this contribution reached almost 80%. Valencian universities are better at accessing this type of funding than Spanish universities in general, as can be seen from the information provided by the Conference of Rectors of Spanish Universities (CRUE)⁵. In 2002, external resources obtained by Valencian universities to fund R+D activities represented over 12% of the global budget, whereas for Spanish universities, this figure was only 10.5% of the budget. During the period under analysis, approximately 70% of the external resources obtained by Valencian universities came from the public sector and 30% from the private sector.

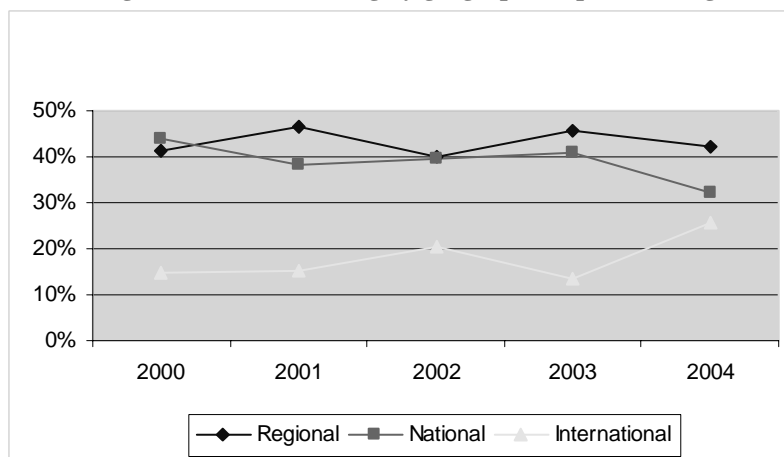
⁵ CRUE (2004) Academic, productive and financial information regarding Spanish public universities. 2002. University indicators – academic year 2002/2003.

Figure 3. 1. Structure of the R+D budget of Valencian universities, 2000-2004.



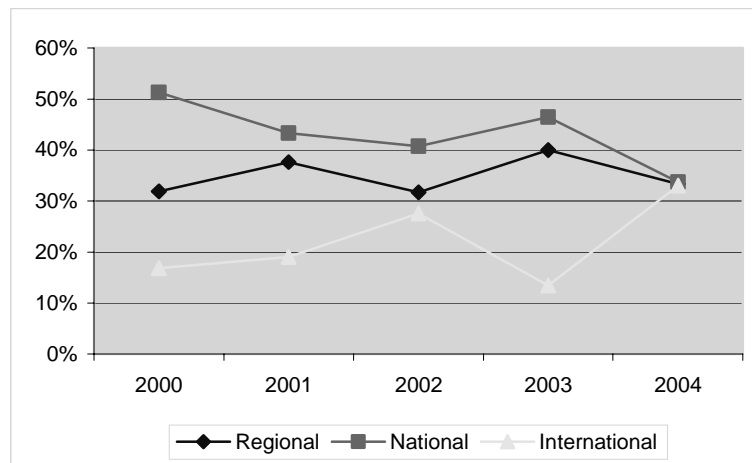
Considering the fact that the various social agents are increasingly interested in promoting university involvement in regional development, often understood in terms of contracts with businesses and other local institutions, it is particularly important to analyse the structure of the external funding of university expenditure on R+D according to the geographical area it comes from. As can be seen in Graph 3.2, during the period 2000 – 2004, between 40% and 47% of funds came from regional sources, showing a slight upward trend. However, there was a decrease in funds from national sources, from 44% in 2000 to 32% in 2004. This decrease in funds from national sources has been compensated by an increase in funds from international sources, which in 2004 provided 26% of total external funding.

Figure 3. 2. Changes in external funding by geographical place of origin, 2000 – 2004.



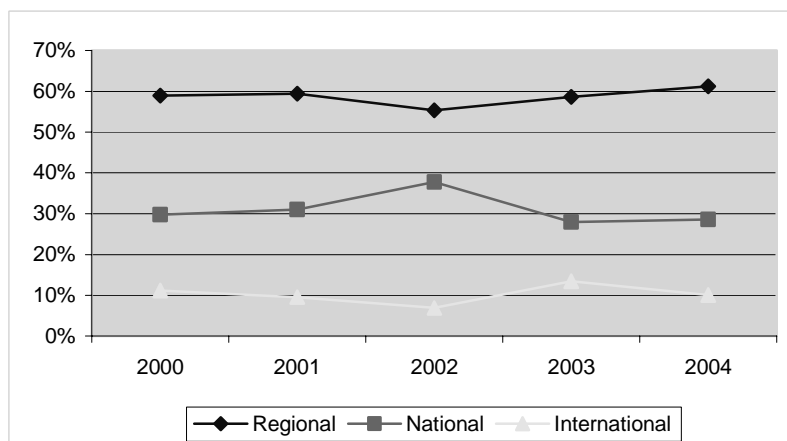
When examining only the external funding provided by the public sector, as in Graph 3.3, it can be seen that there has been a change in structure. The contribution made by the regional administration did not vary a lot, but there was a clear drop in the contribution made by the national administration and an increase in contributions from the international public sector. During the five years analysed here, the structure changed from 32%, 51% and 17% respectively in 2000, to the situation in which each administration contributed one third of funding in 2004.

Figure 3. 3 Changes in external public funding by geographical place of origin, 2000 – 2004.



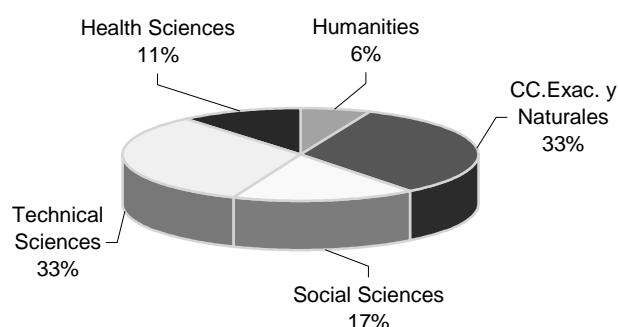
The structure of external funding provided by the private sector was relatively stable (Graph 3.4). The largest contribution from this sector came from regional sources, which provided approximately 60% of total contributions from private sources. Approximately 30% of private sector funding was from national sources and approximately 10% came from international sources.

Figure 3. 4 Changes in external private funding by geographical place of origin, 2000 –2004.



We can see the type of research offered by the Valencian University System by the way in which the total budget of all the universities is distributed according to scientific areas. According to the figures provided by the universities for 2004, most financial resources went towards funding Exact and Natural Sciences and Technical Sciences, which each received 33% of the system's resources. Social Sciences received 17%, Health Sciences 11% and Humanities 6% as shown in Graph 3.5.

Figure 3. 5. Distribution of the research budget of Valencian universities by scientific areas.



Research subjects differed from one university to another and some were clearly oriented towards a particular subject. As can be seen in Table 3.2, only the Technical University of Valencia undertook highly specialised research, insofar as it devoted over 75% of its research budget to a single scientific area, Technical Sciences. On the other hand, only the University of Valencia carried out research in a wide range of subjects, with 75% of its budget being shared between four different subject areas. Strangely enough, these were the two biggest universities in the region. The other universities were somewhere in between, focusing most of their research on two scientific areas. Exact Sciences and Natural Sciences were predominant at the University of Alicante and the Miguel Hernandez University and Social Science at the Jaume I University of Castellon.

Table 3. 2. Distribution of the 2004 university research budget by scientific areas

Subject Area	UA	UJI	UMH	UPV	UV
Humanities	3.7	3.0	4.8	5.0	15.1
Exact and Natural Sciences	45.5	33.0	44.4	15.0	41.0
Social Sciences	12.3	45.0	(a)	4.0	25.1
Technical Sciences	32.8	19.0	16.3	76.0	(b)
Health Sciences	5.7	0.0	34.5		18.8
Total	100.0	100.0	100.0	100.0	100.0

(a) Social Sciences are included in Humanities.

(b) Technical Sciences are included with Exact and Natural Sciences

It is not easy to determine the extent to which the R+D undertaken by universities meets the socioeconomic requirements of the region. However, data is available which confirms that universities are making a considerable effort to respond to the needs of the region, as can be seen from the fact that the majority of external private funding for R+D comes from regional sources. Similarly, analysis of the socioeconomic orientation of private entities which contract R+D also provides information about this. Table 3.3 illustrates private sector demand for the R+D work carried out by Valencian universities. The table reflects the value of R+D contracted by private entities in 2004 and how this was distributed according to the branch of economic activity to which the entity belongs.

Disregarding the section entitled “Others”, which includes R+D contracted by businesses, entities or individuals that do not belong to any of the other groups or that could not be classified, it can be seen that the presence of traditional sectors from the Region of Valencia was very small; only businesses associated with the ceramics industry had any significant impact. However, this is not surprising since most of the region’s industrial sectors are not knowledge-intensive and as a result, their demand for R+D is limited.

Table 3. 3. Value of research contracted with universities by the private sector during 2004 and its distribution by socioeconomic area.

	UA	UJI	UMH	UPV	UV	SUV
Private Contracts (thousand Euro)	3,981.6	2,007.0	2,028.6	18,534.0	9,872.0	36,423.2
Socioeconomic Area	%	%	%	%	%	%
Agriculture	0.0	0.0	0.1	2.4	0.2	1.3
Food, beverages and tobacco	2.4	0.0	0.9	1.3	3.7	2.0
Textile, clothing and fur	0.1	0.0	0.7	0.3	0.4	0.3
Leather and footwear	2.0	0.0	0.0	0.1	0.4	0.4
Furniture	0.0	0.6	0.0	0.5		0.3
Chemical industry	7.1	23.9	21.9	10.6	6.3	10.4
Rubber and plastic	2.4	0.1	0.6	0.4	0.3	0.6
Non-metallic mineral products (ceramics)	2.3	10.2	0.0	0.3	0.6	1.1
Basic metallurgical products and metallic products (except machinery and equipment)	0.0	0.0	0.0	0.6		0.3
Machinery and mechanical equipment	0.0	2.1	0.0	0.2	2.0	0.8
Electrical equipment, instruments and Electronics	0.4	0.0	28.0	1.6	1.6	2.8
Transport material	0.1	0.6	1.3	13.3	3.6	7.8
Construction	11.8	5.9	6.2	6.2	2.1	5.7
Information and communication technology	24.5	0.2	0.2	3.0	17.3	8.9
Health and veterinary services, social services	4.1	0.0	11.1	0.3	13.5	4.9
Tourism (hotel and catering, travel etc.)	3.7	3.1	1.9	0.2	6.1	2.4
Technological institutes (R+D)	1.8	9.6	0.1	30.0	(*)	16.0
Others (**)	37.3	43.5	26.9	28.8	42.0	34.0

(*) Included in related sectors. In 2004, the University of Valencia received contracts from Technological Institutes worth €43,140.

(**) This group included the companies, entities and individuals that do not belong to any of the other groups, or that could not be classified.

With regard to the geographical area from which the entities contracting R+D with higher education institutions in the Region of Valencia come from, the data in Table 3.4 confirms that Valencian universities work closely with the region’s socioeconomic agents. As can be seen in the table, most of the R+D projects were contracted by entities from the region, which represented approximately 70% of the total.

Table 3. 4. Changes in the number of R+D projects contracted by public and private entities by geographic area of origin.

Year	Businesses and Private Entities			Public Administration		
	Regional	National	International	Regional	National	International
2000	2,824	961	81	411	154	20
2001	2,731	958	64	500	115	21
2002	2,162	1,767	87	302	266	31
2003	3,151	1,079	151	456	256	23
2004	3,648	1,172	187	569	213	38

Source: Produced using information provided by the universities of the Region of Valencia

These figures reflect the fact that the universities are concerned about meeting regional needs. However, the same universities admit that in general, their research projects do not take these needs into account beyond the issues which appear in competitive invitations to tender which are issued by the regional administration and which normally give priority to regional issues. They also admit that, in general, their teaching and research staff have no particular incentive to work on subjects of interest to the region.

Until now we have attempted to analyse how the universities themselves regard the regional dimension of their R+D strategies. It must be pointed out that in order to develop these strategies, the universities also rely on external agents. In this respect, Valencian universities engage in a wide range of joint R+D projects with external agents. As can be seen in Table 3.5, joint R+D projects disregarding specific projects, which generally have set time limits, can be classified in five groups with five types of agents that participate in them.

Table 3. 5. Types of joint R+D projects undertaken by universities with external agents.

Type of project	Type of external agent				
	Public Research Institutes	Universities	Regional Public Administrations	Business Associations	Individual Companies
Research Institutes	■				
Interuniversity Institutes		■			
Technological and R+D Institutes			■	■	
R+D Departments					■
Certification Laboratories			■	■	
Business Incubators			■		

Source: Produced using information provided by the Region of Valencia's universities

In terms of the importance and number of joint projects undertaken by universities with external agents, the most important were *Research Institutes* and *Technological and R+D Institutes*. In the first case, the projects were undertaken with national Public Research Institutes and collaboration was generally aimed at reaching objectives which were more of a scientific nature than of a regional socioeconomic nature. In the case of *Technological and R+D Institutes*, the type of agents involved were, in all cases, the Regional Administration and Business Associations and although open to national companies, the businesses involved were mainly from the region. In these cases, collaboration was aimed at meeting regional socioeconomic objectives, although the scientific research carried out was also important. Although less significant in number, another important type

of research involved *Interuniversity Institutes*, in which the external agent is another university from the region.

The other types of joint research projects, involving *R+D Departments*, *Certification Laboratories* and *Business Incubators*, were largely aimed at meeting the needs of businesses. In the case of *R+D Departments*, research projects generally involved individual companies which make use of the R+D potential of a particular research group to set up a joint collaboration. *Certification Laboratories* work along the same lines as the technological institutes, but their objectives are more limited. They involve associations of small companies, generally from the region, and are supported by the Regional Administration. With regard to university Business Incubators, these have been set up in collaboration with some of the regional incubators dependent on the Regional Administration and provide support to the companies which are created at the university.

3.2 The framework for the promotion of research and innovation

The Spanish policy on science and technology has two clear lines of action: the National Plan for Scientific Research and Technological Innovation⁶ (National Plan for R+D+i) and projects from the Ministry of Industry, Tourism and Trade (MITYC).

The National Plan for R+D, which began in 1988, established the priorities regarding the activities carried out, the administration of the resources available and the integration of R+D projects from productive sectors, research institutes and universities. In economic terms, the National Plan provided funding for national R+D projects. This was intended to promote basic and applied scientific research, promote coordinated projects and foster relations between universities, public research institutes and companies. Whereas the National Plan for R+D was oriented towards basic and applied research, the Ministry of Industry, Tourism and Trade is involved in industrial innovation and implements technological policies. In particular, it aims to provide incentives for companies to implement technological developments and incorporate advanced technologies, in addition to helping Spanish industry remain competitive by improving the quality of its products.

In the case of the Region of Valencia, the Valencian government has attempted to introduce and promote a science and technology policy in order to increase public and private investment to the same levels as the most advanced regions of Spain and Europe. The Valencian Plan for Scientific Research, Technological Development and Innovation (PVIDI) was formulated in 1997 (Generalitat Valenciana, 2001), and has used national and European science and technology programmes as a benchmark.

By means of this plan, the Valencian government promotes a number of projects designed to develop the socioeconomic potential of the region, mitigate any shortcomings and decide which direction future proposals should take. It is structured around three large programmes and involves R+D projects, programmes to support scientific infrastructure, the training of research staff and the provision of support to established research groups. The various different actors participate in the Valencian Plan by means of annual invitations to tender under competitive conditions. The proposals are assessed by means of a dual review procedure (groups of scientific experts selected by the National Evaluation Agency (ANEP) assess the proposals presented in accordance with scientific and technological criteria set down in the framework of the invitation to tender).

In this context, Valencian universities carry out their research activities in order to support innovation and base their relationships with the socioeconomic environment on various different instruments. Amongst the different instruments, neither visits to companies by teaching-research staff nor the issuing of patents appeared to be widely used. With regard to mobility, the universities

⁶ Prior to 2000, this was entitled: The National Plan for Scientific Research and Technological Development (National Plan for R+D)

point out that they have no specific programmes aimed at interchanging teaching and research staff with companies. There are currently no government programmes to promote this instrument either. During the 1990s, the Ministry of Education and Science promoted a programme of this type in which teaching staff from the university could take part, although low levels of participation led to the programme being suspended.

Patents, which in accordance with the Spanish Law on Patents are considered to be the result of the work of the inventor and are as such the property of their titleholder, are still not widely used, although there has been a significant increase in recent years in their use thanks to the work of the Office for the Transfer of Research Results (OTRI). Each university, in accordance with its statute, reserves the right to apply for the patent as the titleholder, respecting the right of the researchers to appear as the inventors. If a university does apply for the patent, it must meet the application and maintenance costs. If the patent generates any profits, a percentage of between 33% and 80% is decided on for the group of inventors and the rest goes to the university. If the university decides not to apply for the patent, the researchers may do so in their own name and in this case, the university demands a small percentage of any profits obtained.

Each university has its own view of university-business relations and the factors which condition this relationship. The universities confirm that there are problems involved with collaborating with companies, and quote the following as being the most significant barriers:

- “Cultural” differences between the two different types of institutions, given the different ideas they have regarding deadlines and reducing costs when undertaking any research project, and the fact that for the majority of small and medium-sized enterprises (SMEs), research is regarded at best as a requirement accepted “in theory”, but something which is rarely undertaken and much less in collaboration with universities, which are still regarded as distant.
- Generally, companies in the region are not involved in high technology industries, meaning that the problems put forward are not of sufficient scientific interest to the researchers. This means that the researchers’ productivity, measured using the usual scientific indicators, will suffer since the results of these types of projects do not have a global impact, but instead produce small, gradual improvements in the company.
- There is little risk culture, expenditure and commitment are low, it is difficult for companies to accommodate a research or technological development unit and there is a certain amount of scepticism among SMEs with regard to the benefits of collaborating with universities. For that reason, a high percentage of companies only contract R+D projects if they receive economic incentives from the government. They do not generally value the work of the researchers and their budgets are usually too low to meet the needs of as onerous an activity as research.
- There are certain cultural barriers within the university system: “research freedom” and “scientific merit” come into conflict with the idea of administering university knowledge as a resource which has an economic and social value. In addition, there are restrictions which affect cooperation between the public and the private sectors with regard to the confidentiality of the results and the economic administration of contracts and licences.
- There are very few or no incentives for teaching staff transfers, they are not valued highly enough and there is little external recognition (six-yearly salary increases).
- There are, in fact, shortcomings in the transfer support mechanisms and a good structure and model is required for the new support structures (science and technology parks, mixed centres, business incubators). In addition, SMEs seldom take advantage of the tax incentives arising from R+D.
- There are also legal barriers, such as the Law of Public Administration Contracts, the Law of Subsidies, and the Organic Law of Universities itself, which does not directly tackle the subject of teaching staff mobility or the rights of interns, or Law 53/1984 on incompatibilities, which limits the participation of teaching staff in academic spin-offs, etc.
- All in all, there is the need for an area in which the productive environment and universities can coexist, in which there can be synergy between the two and in which technology can be transferred.

The information collected from the universities also explored the reasons and incentives most highly valued by universities with regard to the university-business relationship. These reasons were:

- It increases practical knowledge of the technologies used by the productive sector.
- It provides an opportunity to obtain supplementary economic resources to fund R+D.
- The prestige of lecturers and researchers vis-à-vis society is increased by undertaking these types of activities (R+D contracts, obtaining patents etc.).
- There are support programmes from the different administrations to promote such relations.
- There are economic incentives in the form of additional income for lecturers (Article 83 of the Organic Law of Universities).
- It helps university undergraduates find work experience placements which provide an opportunity to actually join the company once the work experience is over.
- It promotes the creation of technology parks as a meeting point for agents from the productive sector and the university.

3.3 Interface mechanisms for the transfer and use of knowledge

In recent years, Valencian universities have made considerable efforts to strengthen what is referred to in university circles as the “third mission”. These efforts have involved implementing actions among which it is worth highlighting the introduction of interface structures and instruments designed to promote university-business relations. Among these instruments, it is worth noting the creation of a technological supply structure and the introduction of mechanisms for its promotion and for the advancement of external relations.

With regard to interface structures, all Valencian universities have an Office for the Transfer of Research Results (OTRI) to deal with university-business relations. The offices of the three oldest universities were set up in 1989 and the offices of the two newest universities were set up in 1996 and 1997, coinciding with the foundation of the university in the first case and five years after the second university was founded. In general, and in the context of university-business relations, they act as a “one-stop shop” both internally as well as externally, although it should be noted that in three of the universities analysed, their technology transfer offices were also responsible for administrating the university’s research activities.

The data in Table 3.6 illustrates the relative strength of university-business relations in the universities of the region in comparison with public universities in Spain as a whole. It can be seen that income derived from R+D and strategic research was higher and the universities of the region lent more support to the Offices for the Transfer of Research Results.

Table 3. 6. Data regarding University-Business Relations in the universities of the Region of Valencia

Data for 2002	Budget of the Office for the Transfer of Research Results (% University Budget)	Income from R+D (% University Budget)	Income from Competitive Research (% University Budget)
Valencian Universities	0.33	3.74	8.43
Spanish Universities	0.11	3.24	7.34

Source: *Conference of Rectors of Spanish Universities (CRUE) Academic, productive and financial information regarding Spanish public universities. 2002. University indicators – academic year 2002/2003. Annual Report of the OTRI network and own sources*

In fact, the amount of resources that Valencian universities assigned to these structures practically doubled between 2000 and 2004, as can be seen in Table 3.7, mainly due to increased expenditure on

permanent staff. This is a clear indication of university interest in promoting and demonstrating the worth of their research results through the transfer of knowledge.

Table 3. 7. Changes in the budget (in euros) of all the Offices for the Transfer of Research Results in the Region of Valencia .

Year	Budget	Staff	Goods and Services
2000	1,242,940	967,200	275,740
2001	1,493,942	1,134,716	359,226
2002	1,909,130	1,557,740	351,390
2003	2,081,503	1,628,030	453,473
2004	2,374,262	1,910,170	464,092

The administrative and promotional activities of these structures (OTRI) were mainly oriented towards the immediate socioeconomic area and in all cases most of their time (*around 55%*) was spent on establishing and maintaining relations within the region. In contrast, only 25% of their time was spent on relations at national level and in most cases, less than 20% was spent on establishing relations at international level.

With regard to the mechanisms set up to create and promote the transfer of knowledge to these agents, it is clear from the information provided by the universities, as shown in Table 3.8 and 3.9, that by far the most widely used instruments were the “technological support and consultancy services” and “R+D contracts”. All the instruments experienced sustained growth except “on-demand training”, which has tended to decrease.

Table 3. 8. Frequency of use of the different instruments for fostering university-business relations

Instruments – Total Activity	2000	2001	2002	2003	2004
R+D Contracts	433	439	529	592	641
Technological Support and Consultancy Services	1,409	2,029	2,128	2,045	2,250
Patent Licences	7	7	26	12	12
Business Creation	1	6	6	3	7
On-demand Training	30	42	48	34	35

Source: *Produced using information provided by the universities of the Region of Valencia*

With regard to regional participation, it can be seen that the most commonly used instruments were “R+D contracts”, “technological support and consultancy services” and “on-demand training”. However, among the least used instruments, such as patent licences and business creation, only a relatively small percentage are undertaken with agents from the region.

Table 3. 9. Changes in rate of activity with agents from the region

% Activity undertaken with Agents from the Region	2000	2001	2002	2003	2004
R+D Contracts	62%	61%	59%	63%	63%
Technological Support & Consultancy Services	45%	31%	34%	52%	53%
Patent Licences	14%	14%	11%	0%	17%
Business Creation	100%	33%	33%	33%	29%
Training Contracts on demand	80%	79%	52%	65%	51%

Source: *Produced using information provided by the universities of the Region of Valencia*

In addition to the abovementioned structures and instruments, Valencian universities have also developed other interrelation mechanisms such as science parks and business incubators. There is a common trend towards introducing mechanisms of this type and to develop new facilities aimed at providing the area with better services. The creation of science parks was considered to be a priority objective in four universities and there was a clear interest in achieving good levels of R&D cooperation between the university and the region's industrial fabric.

This same interest has given rise to the existence of specific technological proposals and mechanisms for their promotion. In one way or another, all the universities display their technology on their web site and although it is not well organised, the use of key words allows people to find out what knowledge is available and how the groups which have the particular knowledge required can be contacted.

What is more, all the universities have their own mechanisms to promote the technology they offer and to foster external relations. This promotional activity is undertaken at a political level, which is the responsibility of the vice-rectorates concerned, and at an operational level, which is the responsibility of the different interrelated structures of the university and mainly of the Offices for the Transfer of Research Results (OTRI). The instruments used to this end do not differ greatly from one university to another and all of them claimed to have some type of specific programme. Among the activities organised through these promotion programmes, it is worth mentioning the publication of the technology on offer on the web site; coverage by means of specific articles and reports in the press about applied research results; the organisation of technical conferences on issues concerning transferable research; the organisation of forums by sectors with businessmen and women to present the technology related to that sector and to look into any problems; and the work of technological promoters whose function is to identify cooperation possibilities and to help strengthen the links between companies and universities.

Among the programmes designed to promote university technology, it is worth mentioning the INNOVA Programme at the Technical University of Valencia, mainly because of the philosophy behind the project. This programme, which has a yearly budget of approximately 600,000 euros, considers the research groups themselves to be the promotional agents and funds specific activities designed to promote the technology they offer and finance the involvement of specialised technological promoters.

In addition to Valencian universities' own promotion mechanisms, others have been created in cooperation with other universities and other socioeconomic agents from the area. As well as collaborating with foundations backed by the universities themselves, all the universities singled out the Association of Valencian Universities for the Promotion of Research, Development and Innovation (RUVID) as one of the most important joint promotion initiatives of recent years. This initiative has allowed universities to make use of a mechanism for the joint diffusion of their initiatives, resources, capabilities and R+D results. The Innovation Relay Centre of the Spanish Mediterranean (CENEMES) was also considered to be a well-established initiative for joint promotion. This mechanism, set up and coordinated by the University of Alicante, has fostered close cooperation between universities and provided regional support for the trans-national transfer of technology. Other joint promotion mechanisms referred to included agreements established with the Valencian Institute for the Small and Medium-Sized Industrial Enterprise (IMPIVA) and with the Region of Valencia's Network of Technological Institutes (REDIT), which were considered to be good means of diffusion.

3.4. Conclusions. SWOT Analysis

Strengths

- Valencian universities have good scientific knowledge and are highly dynamic. They have highly qualified staff undertaking both basic and applied research of considerable national and international renown and there is great potential.
- The universities are devoting more and more of their own resources to the promotion of R+D+i activities.
- The universities provide consultancy services and have a wide range of experience in undertaking R+D projects with external agents.
- They have professional human resources which are highly qualified and have a wide range of experience in managing university-business relations and the transfer of knowledge.
- They are ready and willing to establish and maintain relations with their environment.
- The universities are actively involved in regional, national and international knowledge transfer networks.

Weaknesses

- The Valencian model of university funding is based almost exclusively on teaching activity.
- There is a need for a common space in which industry and university can co-exist. The professional demands placed on lecturers to further their academic careers and the demands of Valencian businesses are different: basic science versus development, high technology versus improvements to conventional technology.
- The main purpose of collaboration with companies is not the transfer of research results or “technological packages” and relations are often limited to the provision of services. In addition, patents and licences are seldom used for the administration of research results.
- A proper structure and model is required for new support instruments and structures. For example, the systems used to promote technology-based companies (EBTs) in Valencian universities, except for certain noteworthy exceptions, are not well developed.
- There are few or no incentives for teaching staff transfers, given that they are not directly related to promotion and that there is little external recognition (six-yearly salary increases).
- The majority of university personnel are permanent civil servants with few incentives. Research activity in general and transfers in particular are often incidental and undertaken on a voluntary basis.
- There are few instruments aimed at encouraging the incorporation of suitably-trained human resources in R+D.

Opportunities

- The decline of labour intensive industries and the fact that these industries need to be restructured offers the opportunity to diversify the productive sector by investing in new industrial sectors which have a high added value and which require R+D.
- The support provided by the regional and national government to develop interface structures such as Science Parks and Central Services promotes and encourages collaboration with businesses and increases awareness of university R+D.
- Changes which must be made to the universities to adapt to the “European Higher Education Area” (Bologna Declaration) may allow them to restructure the time lecturers spend teaching and carrying out research, putting R+D on the same level as other university activities.
- The decrease in the time spent teaching due to the fall in the number of students means that academic staff may spend more time on R+D.

Threats

- There is a poorly-organised science-technology-business system and few instruments to link them. There is no common space in which universities and businesses can coexist, cooperate with each other and allow the transfer of knowledge.
- Businesses in the area do not have great technological knowledge. The importance of knowledge-intensive industrial sectors, such as biotechnology, information and communication technology and new materials is limited, which means that there is limited demand for R+D.
- The low demand for R+D is compounded by the existence of a low-technology service economy.
- The small size of Valencian companies makes it difficult to set up R+D units in the companies themselves, which does not favour the development of strategies based on technological innovation. In fact, a large proportion of companies only contract R+D if they receive economic incentives from the public administrations.
- The bureaucracy associated with tax incentives for R+D means that SMEs rarely benefit from such incentives. This leads to a certain degree of scepticism and makes them consider R+D as a concept which is inaccessible.
- The Valencian Plan for R+D follows the same guidelines as the National Plan. It is characterised by defining and coordinating a series of activities which clearly promote certain priority areas, both supporting current economic activity and supporting R+D activities associated with emerging economic sectors as a future strategy to define the competitiveness of the region.
- There is a certain degree of financial uncertainty and a lack of funding. On the one hand, the current system of funding is based mainly on the number of students, which in the short term may have a negative impact on university funding due to a drop in the student population unless this model is changed to include funding for research. On the other hand, a drop in or the disappearance of European Regional Development Funds (FEDER) funds in 2006 means that the future is unclear in terms of the funding of scientific-technical infrastructure.

Chapter IV. THE ROLE OF EDUCATION AND TRAINING IN ACQUIRING SKILLS AND GAINING ENTRY TO THE LABOUR MARKET

4.1 The learning process background

The role of university education in training, the acquisition of skills and gaining entry to the labour market in the Region of Valencia is based on two types of education: regulated and unregulated.

Regulated university education, understood as that which leads to the acquisition of a qualification which enables a person to practise a particular profession, has a three-tier structure: First Cycle studies, which lead to students being awarded Associate Degree qualifications; Second Cycle studies, which lead to Bachelor's Degree qualifications; and Third Cycle studies, aimed mainly at training researchers, which lead to students being awarded a Doctorate.

Unregulated education, also referred to as “complementary studies”, is aimed at the promotion of lifelong learning and continuing education, and leads to students being awarded qualifications from the university which runs the courses (they are not official qualifications like the ones awarded by regulated courses). There are three categories within this type of qualifications: Master's, Expert and Specialist, depending on the qualifications required to undertake the different courses and their duration.

This section analyses these two different types of education in the context of the Valencian University System (SUV).

4.1.1 First and second cycle studies

As we saw in Chapter 2, there are seven universities in the Valencian university system (5 of them public and two private) with 142,000 students (9.7% of the Spanish university population) and there are a total of 223 programmes with 110 different degree qualifications.

Table 4.1 shows the distribution of students by universities and the student structure by area of knowledge in each of them. As can be seen, most students (93%) attended courses in public universities. The two private universities (Cardenal Herrera University and the Catholic University of Valencia) are the smallest and also the newest.

Table 4. 1. Distribution of students in universities by areas of knowledge. 2004.

Area of Knowledge	UA	UJI	UMH	UPV	UV	UCH	UCV	Total
Total	27,957	13,179	9,771	35,450	46,488	6,715	2,522	142,082
Percentage	20%	9%	7%	25%	33%	5%	2%	100%
Percentage of students by area of knowledge in each of the universities								
Humanities	10.6%	8.7%	5.7%	5.9%	14.4%	0.0%	1.4%	9.5%
Exact and Natural Sciences	9.4%	4.9%	9.0%	2.3%	12.4%	0.0%	1.0%	7.6%
Social Science	54.8%	55.2%	22.6%	9.2%	56.7%	50.1%	95.0%	42.5%
Engineering and Technology	22.1%	31.1%	40.1%	82.5%	4.1%	10.3%	2.5%	32.4%
Health Sciences	3.1%	0.0%	22.6%	0.0%	12.4%	39.6%	0.0%	8.0%

Source: *Ministry of Education and Science. Forecast 2004-2005*

The highest demand was for Social Science courses: 42% of students were enrolled in degree courses in this area of study, and in five of the seven universities, over 50% of students were enrolled in these courses. Thirty-two percent of students were enrolled in Engineering and Technology courses, mainly at the Technical University of Valencia, where 82% of students attend degree courses in this area.

Table 4.2 shows that in terms of the whole Valencian university system, almost 80% of students came from the province in which their university was situated (30% from the same city and 49% from outside the city but from the province in which the university was situated). Students from other areas of Spain accounted for 7% and those from other countries accounted for 3%.

Table 4. 2. Distribution of first and second cycle students by place of origin (%)

Students' Place of Origin (%)	UA	UJI	UMH	UPV	UV	UCH	UCV	SUV
City	27.0	32.96	(*)	32.7	37.0	36.4	32.0	30.6
Rest of the Province	62.3	41.8	67.0	40.3	45.4	35.0	57.0	49.0
Rest of the Region	2.6	22.1	8.0	13.6	9.0	20.2	10.3	10.1
Rest of Spain	8.0	2.9	21.0	8.5	4.2	7.6	0.6	7.1
International	0.1	0.1	4.0	5.0	4.4	0.7	0.0	3.1
Unknown	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0

(*) The UMH does not disclose the city or province its students come from.

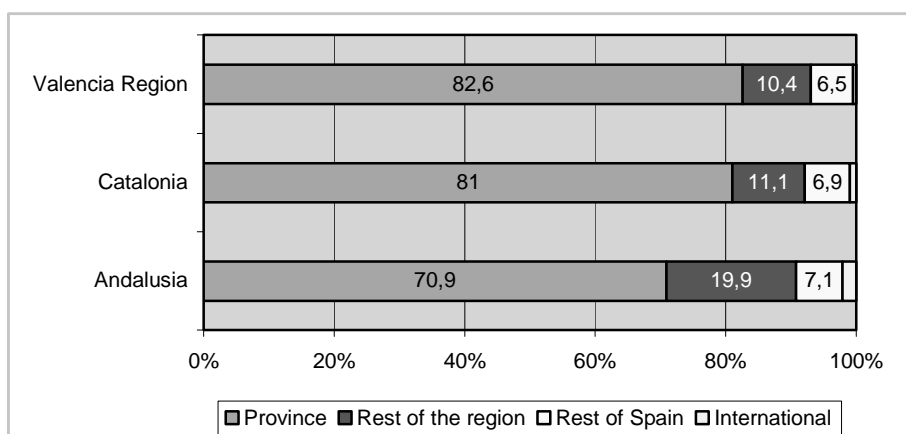
Source: *Information provided directly by the Region of Valencia's universities*

In each university, the situation was similar to the overall situation, with the exception of the Miguel Hernandez University, in which students from the rest of Spain (outside the region) represented 21%, although 40% of these students came from Murcia Region which is next to the province of Alicante, where the university is located.

If the places of origin of Valencian students are compared with other Spanish regions with similar university systems, such as Catalonia or Andalusia⁷, it can be seen that the situation is similar, as shown in Graph 4.1. However, Valencian universities are slightly less open to other regions than universities in Catalonia and Andalusia, and they have a slightly more provincial dimension to them.

⁷ Catalonia and Andalusia, just like the Region of Valencia, are autonomous regions of the Spanish State. The three regions have more than one province and each of the provinces has at least one university.

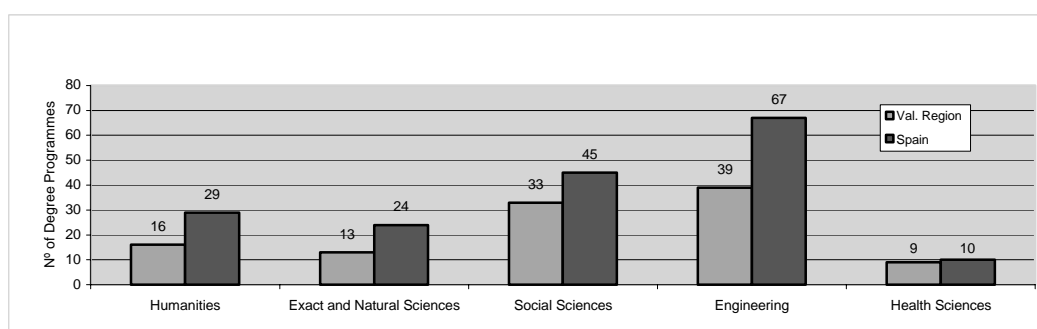
Figure 4. 1. Place of origin of 1st and 2nd cycle university students in the Region of Valencia, Catalonia and Andalusia.



Regardless of the extent to which they are open to students from other areas, all the universities of the region have some type of system in place to help students from outside the city adapt to life in the city. In some cases, these consist of a special unit; in others, they are part of one of the existing student support units. In the case of international students, providing such support is the responsibility of the International Relations Unit all universities have and which is generally in charge of running student exchange programmes.

The 223 courses taught in the Region of Valencia correspond to 110 different degree programmes, meaning that on average each degree programme is taught at two different universities. These 110 degree programmes taught in the Valencian university system represented 63% of all official qualifications registered by the University Coordination Council (175). Their distribution by area of study and a comparison with the Spanish university system for each of those areas is shown in Graph 4.2.

Figure 4. 2. Number of different university degree programmes taught in the Region of Valencia and in Spain



4.1.2. Third cycle studies

This educational cycle prepares students to achieve doctoral qualifications and is mainly aimed at preparing research staff. In 2004, there were 6,773 students enrolled on 286⁸ doctoral programmes, a figure which represented 11% of the students undertaking such studies in Spain and 12% of all current programmes. The distribution of third cycle students in the Valencian university system according to universities and areas of knowledge is shown in Table 4.3. Almost all the students were in public universities. Despite the fact that the two private universities claimed to have formally

⁸ This data corresponds to the 2002-2003 academic year from the *Conference of Rectors of Spanish Universities (CRUE-2004)* Academic, productive and financial information regarding Spanish public universities. University indicators – academic year 2002/2003.

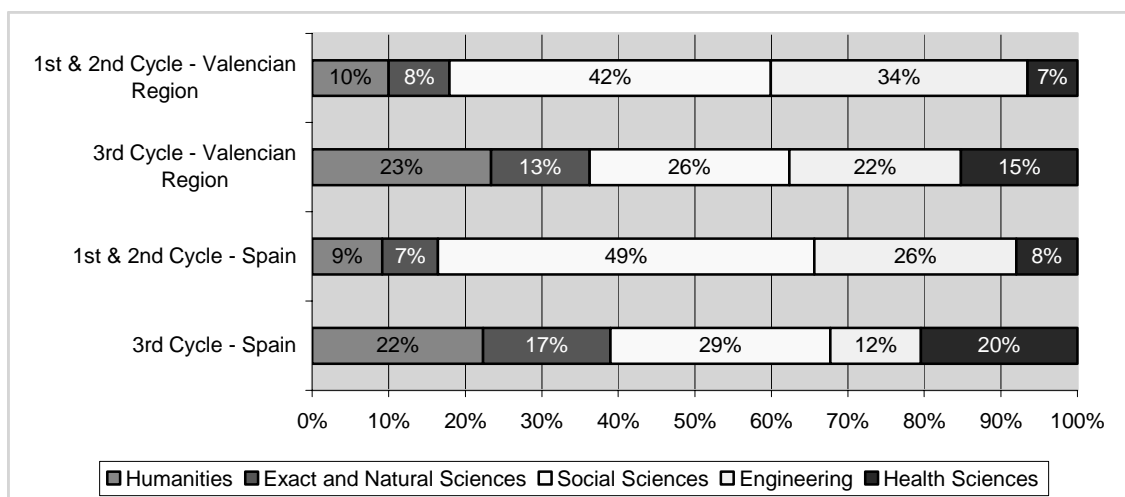
operative doctoral programmes, they accounted for only 1.3% of third cycle students enrolled in one of the two universities, which once again can be explained by the fact that they have only been in existence for a relatively short period of time.

Table 4. 3. Distribution of third cycle students by area of knowledge. 2004.

	UA	UJI	UMH	UPV	UV	UCH	UCV	SUV
Total	1,115	425	470	1,827	2,848	88	0	6,773
Percentage	16.5%	6.3%	6.9%	27.0%	42.0%	1.3%	0.0%	100%

Figure 4.3 shows the structure of doctoral students according to the area of knowledge of the subject they study. This structure is different to that of the whole of Spain, the most significant differences being in the areas of Engineering and Technology, in which the percentage of doctoral students in the Region of Valencia was 10 points higher, and Health Sciences, which was 5 points lower.

Figure 4. 3. Structure of 1st, 2nd and 3rd cycle students by areas of knowledge in the Region of Valencia and in Spain



The place of origin of third cycle students in the Valencian university system shows a similar pattern to that of first and second cycle students. Table 4.4 shows that most students came from the same province (76%) and only 7.6% came from a different province in the same region. Students from the rest of Spain and international students both accounted for just over 6%.

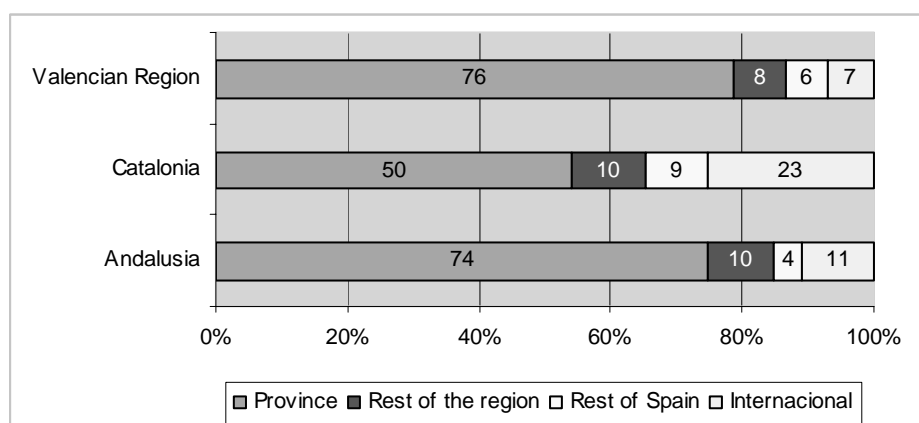
Table 4. 4. Distribution of third cycle students by place of origin (%)

Students' Place of Origin (%)	UA	UJI	UMH	UPV	UV	UCH	SUV
Province	70.3	44.9	85.5	68.0	87.1	70.2	76.4
Region	1.8	5.4	4.3	11.6	8.2	19.8	7.6
Rest of Spain	7.9	1.9	8.0	9.2	4.2	7.4	6.3
International	19.8	1.6	0.9	11.2	0.5	2.6	6.8
Unknown	0.2	46.1	1.3	0.1	0.0	0	3.1

Source: Conference of Rectors of Spanish Universities (CRUE-2004) Academic, productive and financial information regarding Spanish public universities. Academic year 2002/2003.

When comparing the place of origin of third cycle students in the Valencian university system to the regions of Catalonia and Andalusia⁹, it can be seen, as shown in Graph 4.4, that the situation with regard to the place of origin of students in the Region of Valencia is similar to that of universities in Andalusia (74% from the same province and 10% from the rest of the region). The figure for universities in Catalonia was much lower (50% from the province and 10% from the rest of the region). In addition, it is worth mentioning the low percentage of international students undertaking doctoral studies in universities in the Region of Valencia. This percentage was 4 points below the figure for Andalusia and 16 points lower than the figure for Catalonia.

Figure 4. 4. Place of origin of third cycle students in the Region of Valencia and in Spain



These figures show that in terms of third cycle studies, Valencian universities were on a par with Andalusian universities but much less open to students from other regions than universities in Catalonia.

4.1.3. Unregulated education. Complementary studies.

Unregulated education provided by universities consists almost entirely of what have come to be referred to as “complementary studies” or “postgraduate courses”. These types of courses are aimed at promoting lifelong learning and developing continuing education and lead to students being awarded qualifications from the universities themselves. This type of qualifications includes three categories: Master’s, Expert and Specialist, depending on the entrance requirements of the different courses and their duration. However, this classification, which is generally accepted by all universities, does not imply that the courses offered by the university system are homogeneous or that they can be compared, since each university has total freedom to determine the type and content of postgraduate courses on offer.

⁹ In the academic year 2002-2003, the number of doctoral students in Catalonia was 11,423 and in Andalusia the figure was 10,613

As can be seen in Table 4.5, in 2003, the Valencian university system offered a total of 323 postgraduate programmes, of which 46% were Master's Degrees accounting for 36% of students; Specialist qualifications represented 30% and accounted for 40% of students; and Expert qualifications represented 24% and also accounted for 24% of students.

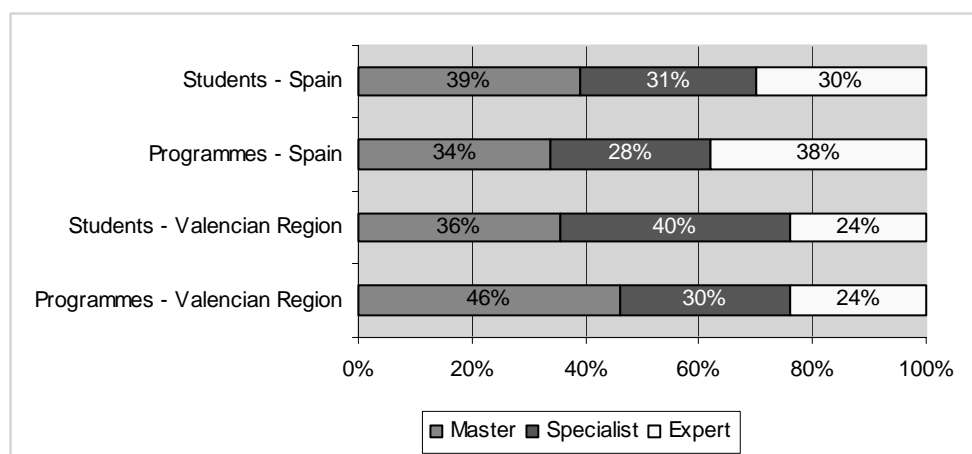
Table 4. 5. Distribution of postgraduate programmes and students by type in the Region of Valencia and in Spain.

Type of Programme	Valencian University System		Spain		Region of Valencia /Spain	
	Programmes	Students	Programmes	Students	Programmes	Students
Master's	149	2,741	1,219	27,912	12%	10%
Specialist	97	3,120	1,031	21,882	9%	14%
Expert	77	1,859	1,371	21,384	6%	9%
Total	323	7,720	3,621	71,178	9%	11%

Source: *Produced using information from the Conference of Rectors of Spanish Universities (CRUE - 2004) Academic, productive and financial information regarding Spanish public universities. Academic year 2002/2003.*

A comparison between the structure of postgraduate education in the Region of Valencia and in the whole of Spain is shown in Figure 4.5.

Figure 4. 5. Structure of students and postgraduate programmes in the Region of Valencia and in Spain



The distribution of students enrolled on postgraduate programmes in the Region of Valencia and in Spain by areas of knowledge is reflected in Table 4.6. This shows that the majority of postgraduate students in the Valencian university system attended courses in Social Sciences, representing 57% of students from the Region of Valencia and 15% of students from the whole of Spain.

Table 4. 6. Distribution of postgraduate students by area of knowledge

Area of Knowledge	Valencian University System		Spain		Region of Valencia / Spain
	Number	%	Number	%	
Humanities	565	7%	5,898	8%	10%
Exact and Natural Sciences	285	4%	3,296	5%	9%
Social Sciences	4,385	57%	29,818	42%	15%
Engineering and Technology	1,407	18%	18,540	26%	8%
Health Sciences	1,078	14%	13,626	19%	8%
Total	7,720	100%	71,178	100%	11%

Source: *Produced using information from the Conference of Rectors of Spanish Universities (CRUE - 2004) Academic, productive and financial information regarding Spanish public universities. Academic year 2002/2003.*

Most of the students on postgraduate courses came from the same region, with figures varying between 50% and 85% depending on the university. International postgraduate students made up over 20% of postgraduate students at the Technical University of Valencia.

This type of education is mainly funded by the students themselves, although some courses are co-financed by subsidies or grants from businesses, institutions or public administration. In general, all universities contribute to the funding of these activities by providing the basic infrastructure (lecture rooms, furniture, electricity, administration services etc.).

All Valencian universities had some type of internal or external structure by means of which they organised postgraduate course activities. In addition, universities collaborated, albeit only at specific times, with other regional players to provide professional continuing education. Such collaboration was usually undertaken with the regional public administration, with associations such as Chambers of Commerce and Professional Associations and in some cases with private entities.

4.1.4. Other educational support activities

In addition to postgraduate courses, universities offer other educational courses which are generally oriented towards social objectives. These activities include educational activities for the elderly which have grown in importance over the past few years and are aimed at students who, having reached retirement age, wish to fulfil their dream of studying at university and obtaining an academic qualification. All the public universities in the region have introduced programmes of this type under different names.

Among this type of activities, the region's universities have also introduced various different operative mechanisms to increase access to university for students belonging to minority groups who have traditionally had a limited presence in higher education.

In the case of the University of Alicante, the Work Experience and Student Support Office provides special support for students with disabilities or with chronic illnesses, for foreign students from countries outside the EU, for students with special economic needs, and for students with personal or family problems, among others. The Guidance and Information Service of the Teaching Support Unit at the Jaume I University provides assistance to members of the university community with different levels of disabilities, and the Permanent Immigration Observatory is involved in trying to fill the vacuum which exists in terms of research, education and awareness regarding immigration in the region of Castellon. The Miguel Hernandez University has support programmes aimed at students with disabilities and at student tutors/guides, and has introduced support for foreign students, mainly to speed up the necessary paperwork with the immigration department.

The Technical University of Valencia provides support disabled students via the CEDAT Foundation. There are programmes which fund certain courses and priority is given to minority groups. There is also a support policy to fund postgraduate courses for people with limited economic resources. The University of Valencia's support programmes include support for students with limited economic resources from European Union countries, which are administered by the Student Assessment and Support Centre (CADE); study grants administered by the *Patronato SUD-NORD* (North-South Trust) for students from developing countries; support for third cycle students from the *V Segles* Programme; and support for disabled students requiring special technical resources in order to follow their courses. The Cardenal Herrera University has a programme by means of which disabled students have guaranteed access without having to pay tuition fees, in addition to making improvements to allow physical access (furniture and architecture), access to study materials, syllabus changes and technical assistance. The Catholic University of Valencia has introduced a policy of grants aimed at students who have been victims of terrorism by means of a blended learning system (classroom and online) which allows professionals from a wide range of sectors to follow its degree programmes. There are also collaboration agreements to allow young mothers on low income and disabled people to gain access to the university.

4.2 Entry to the labour market and regional employment

As we saw in the first chapter, the percentage of the population with higher education qualifications in the Region of Valencia has risen significantly in recent years. This increase, which has basically resulted in increased competitiveness since workers are able to access jobs with a higher added value, has led universities to consider carrying out studies to determine the employability of their graduates, to identify the real situation facing their graduates when they enter the labour market and the difficulties involved in looking for a job, in addition to the relationship between the education received and the extent to which it fulfils the requirements of the current labour market.

In the 1990s, Valencian universities began to develop a programme to help their graduates enter the labour market, considering this to be a strategic question and one of the main objectives of university policy. The information obtained is of fundamental institutional and social interest. Firstly, it is a basic reference point for university planning, assessment and innovation; secondly, this information is fundamentally important in order to inform and advise students and graduates; and finally, knowledge of how and to what extent graduates are able to get onto the labour market ladder are key factors when it comes to improving relations between the academic world, the labour market and society at large. A wide range of mechanisms were used to implement this policy, as we shall see below.

Work experience, aimed at undergraduates who have successfully completed half the credits of their degree. This is paid and generally lasts for four months with the option of extending it for another four months. Work experience is a fundamental part of students' supplementary training since it is carried out as part of an educational project within the framework of the degree programme they are studying (in fact, work experience is a compulsory element of some degree courses in certain universities). During this period of work experience, undergraduates have the chance to apply the knowledge they have acquired at university to solve real problems, in addition to allowing them to make personal and professional contacts within the company and with other companies they work with. These relationships are an important tool when seeking employment after graduation.

Table 4.7 contains information regarding the number of students who did work experience placements during the 2003/2004 academic year (2004) and the percentage distribution by area of knowledge. Over 23,000 students from all the region's universities did work experience placements in 2003/2004. By area of knowledge, the figures show that the number of students who did work experience was greater according to the speciality of the university. For example, the majority of

students at the Technical University of Valencia did work experience placements in Engineering and Technology related areas (86%). The number of students who did work experience in the area of Social Sciences was high at the Jaume I University (66%), at the University of Valencia (53%) and at the University of Alicante (52%). The Miguel Hernandez University stood out because of the high number of work experience placements in the area of Health Sciences (48%). The organisation of work experience placements by private universities reaches the same level than older universities. It should be pointed out that at the Catholic University of Valencia, the vast majority of work experience placements were in the Education sector, more specifically in response to requests from private and grant-maintained schools, academies and leisure centres.

Table 4. 7. Number of students who did work experience placements by area of knowledge. 2004.

	UA	UJI	UMH	UPV	UV	UCH	UCV	VU System
Total	3,891	2,921	2,121	7,843	6,052	1.047	532	23,360
<i>Percentage</i>								
Humanities	3	7	2	3	23	-	-	9
Natural Sc.	5	2	12	3	8	-	-	5
Social Sc.	52	66	15	9	53	72,4	100	37
Engineering	18	24	24	86	4	2,4	-	38
Health Sc.	21	0	48	0	12	25,2	-	11

Source: *Produced using information provided by the universities*

All the universities offer *career guidance* to graduates to a greater or lesser extent by means of classroom and on-line training courses intended to teach students how to write their CV and how to approach work interviews. Graduates are also offered support and consultancy services to set up companies in order to promote self-employment. All these measures are designed to increase the employability of graduates.

In a similar way, universities act as intermediaries to help graduates enter the labour market by creating job banks which allow them to coordinate job offers and help graduates to find the most suitable job offer to match their skills and ambitions. Likewise, they try to help graduates find employment by arranging special events such as on-campus company presentations, forums, fairs and talks in which jobs are presented and an explanation given regarding the skills and knowledge required to work for the company, etc.

In order to reach their objectives of helping graduates get a footing on the job ladder, universities have established *collaboration agreements with other bodies and institutions*. These include agreements with the Regional Employment Office (Servicio Valenciano de Empleo y Formacion), with the National Employment Office (Instituto Nacional de Empleo) and with the European Centre for Innovative Businesses (Centro Europeo de Empresas Innovadoras – CEEL) to help set up companies. Similarly, they collaborate with public employment projects of a social nature, participate in subsidised programmes offering career guidance and support to unemployed people under 30 years old and in programmes allowing new graduates to undertake placements in European businesses or organisations, such as the Leonardo da Vinci Programme.

Information is *studied and analysed* by the universities' occupational observatories in order to allow universities to identify the extent to which graduates are able to gain access to the labour market and the career prospects of the various different degree courses each year, in addition to determining the demand for qualified university graduates in the labour market and making adjustments between what the market requires and what universities offer.

4.3. The design process for the regional education system

The universities claim to have a coherent vision of the education system at regional level. In this respect, they point out the fact that they periodically collaborate with the Regional Government to draw up White Papers on the Valencian university system, and their role in defining the university funding programmes. At this particular moment in time, all the universities are adapting their educational programmes to the demands of the Bologna declaration in order to create the European Higher Education Area.

In general, Valencian universities also acknowledged the need to develop education at regional level, even though they highlighted the fact that there needs to be greater coordination in order to make progress in this direction. More specifically, they were critical in some cases of the lack of cooperation between universities when determining which degree programmes to offer and how these were distributed within the system, and they considered that there was a need for a range of degree programmes which fulfilled the requirements of the region.

For all the universities in general, the creation of new degree programmes is the responsibility of the Central Board of the different faculties or schools. Once a proposal has been approved, it is sent to the university's Governing Council for endorsement. However, in order to introduce a new degree programme, this has to be included in the range of degree programmes negotiated with the regional government and required the regional government's authorisation. This requires the corresponding reports to be drawn up as stipulated in the existing state and regional regulations. The Governing Council then appoints a commission which is responsible for drawing up a proposal for the syllabus of the new degree. The degree programmes have a percentage of optional credits of free choice, from which students may choose (in accordance with what each university offers) and thus personalise their curriculum.

With regard to analysing the supply and demand of higher education, there are no mechanisms to support regional collaboration between universities other than periodic meetings of the Valencian University Council. Neither does there appear to be any system for the exchange of knowledge, nor any bilateral collaboration. In general, Valencian universities are critical of this situation.

In this context, the universities do not appear to have any clearly defined processes in order to determine exactly what the supply of higher education in the region is. In some cases, supply is determined by analysing demand by means of student applications, figures regarding graduate integration in the labour market and graduates' degree of satisfaction. In other cases, supply is determined by evaluating the business sector's demand for professionals and by analysing the results of questionnaires completed by graduates regarding their professional careers. However, in order to determine demand, all Valencian universities share the information which appears in applications for official first and second cycle degree programmes, which contains a large amount of data regarding what is offered by universities and what students demand. This data is used to carry out studies about the supply and demand for new degree programmes. The regional government also has access to this information.

4.4. New initiatives regarding the provision of education

Valencian universities are highly computerised. They all offer their users instruments such as virtual campuses, high-speed computer networks etc., to allow university staff (teaching, administrative and service staff) and students access to an email account and access to the Internet at any time from all the offices and from free-access computer rooms.

It is worth highlighting that the Technical University of Valencia, the University of Valencia and the Cardinal Herrera University offer blended online postgraduate courses in which students also

have to attend some parts of the course. None of the universities offer degree programmes taught exclusively online. They all offer the use of their virtual campus, where students may consult teaching material, attend tutorials, attend forums to exchange opinions and ideas, consult the various different libraries etc. Two universities, the Technical University of Valencia and the University of Valencia have campus satellites and undertake activities abroad, especially in Latin America.

In general and with regard to postgraduate education, all Valencian universities are designing new courses based on information and communication technology to a greater or lesser extent. In terms of degree programmes, work is being undertaken on methods to strengthen the teaching-learning process with the help of information and communication technology. Teaching projects are also being designed to allow particular groups to follow education courses, such as part-time students who wish to combine their studies with another activity.

As yet, the co-existence of classroom learning and virtual learning does not appear to have caused any tension in universities and, in general, all the universities attribute this to the fact that there are still no online degree courses. When studying a degree programme taught exclusively by classroom learning, it is the lecturer or team of lecturers that determine and adopt flexible alternatives for blended learning. On the other hand, in postgraduate education, the department or centre which offers the course decide on the teaching methods. In all these cases, there is an organisational problem regarding the need to establish assessment criteria for the teaching activities other than simply counting the number of teaching hours, since such a calculation is meaningless in virtual courses or in the new teaching-learning methods to be introduced when changes are made to adapt to the European Higher Education Area.

4.5 Conclusions. SWOT Analysis

Strengths

- The university system offers quantity, variety and quality in its teaching activities, thus allowing a high percentage of students to study a university degree in their own province.
- The Valencian university system offers a considerable range of third cycle programmes and the number of students is comparatively higher than the rest of Spanish universities.
- Unregulated education is well-suited to the specific demands of the environment.
- Work experience in companies is organised for students at institutional level and policies have been introduced to help graduates gain access to the labour market.
- Assistance is available to help students from outside the city adapt to life at university.
- The Valencian university system is capable of adapting to new requirements and uses mechanisms which improve university access for students from specific or minority groups (e.g. mature students over 25 years old, disabled students, etc.).
- Information and communication technology is widely used for administrative and teaching purposes (e.g. Self-enrolment, virtual campus, etc.).

Weaknesses

- There are shortcomings in coordination which need to be overcome in order to further develop education at regional level. Decisions regarding the organisation of study programmes are made too quickly.
- The range of degree courses is poorly planned and there is a lack of cooperation. The procedures used to determine the degree programmes on offer is unclear.
- There is limited ability to attract research students from other regions in comparison with the rest of Spain.

Opportunities

- The need to adapt teaching programmes to demands made by the Bologna Declaration.
- New demands made by society and the importance of lifelong learning give universities an important and long-lasting role as training centres in all aspects.
- The introduction of information and communication technology when redesigning teaching processes.
- The internationalisation of the supply and demand of university studies.

Threats

- The possible stagnation of certain sectors of the Valencian economy may have a negative short-term impact on job creation.
- Adapting to the new framework of the Bologna declaration may give rise to importance imbalances. The period of changeover is too long, which means that the old and the new systems have to coexist at the same time. This may lead to uncertainty over the educational programmes on offer in the future.

Chapter V. THE CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT

5.1 The contribution to social development

Valencian universities actively develop and maintain their links with the region through a range of centres, services and activities. This is not only done by means of education and research, but also by contributing to social development. In general, the universities are open and well-integrated in the region and they provide various different social services which can be classified as follows.

Sports facilities: in general, the universities provide the whole university community with a considerable number of sporting opportunities, most of which are totally free of charge. The possibility of enrolling for specific activities and an extensive timetable means that doing sport for recreational, health and leisure purposes is simple and fully compatible with academic life. All activities and courses are managed and organised by the corresponding vice-rectorate through the respective department of sport. This type of service is not only open to university students and staff, but also to the general public. In this case, sports facilities may be reserved in advance, although occasionally a fee is charged. These fees are always lower than in other non-university sports centres, which explains why there is such a high percentage of users from outside university circles taking part in the wide range of physical activities on offer (gym, swimming pool, table tennis, tennis courts, squash courts, tatami, aerobics, keep fit, bodybuilding, karate, ballroom dancing, etc.).

Library Service: access is free to everyone, although certain services are restricted to members of the university community. In particular, it is worth noting the following services:

- (i) Inter-library loans service: the Inter-library Loan Unit deals with requests to borrow books, articles from journals (photocopies and digital copies) and other types of documents from other libraries in Spain or in other parts of the world, both university libraries and other libraries. These services may be requested by institutions, businesses, individuals, etc.
- (ii) Reference services: the libraries allow all users, both members of the university community and other users, to freely consult all the material in their various different collections – books, journals, cartographic material, videos, microfiche, old editions, etc.
- (iii) Free Internet access: in general, all the libraries have computers with free Internet access available for use by the general public, both to consult the bibliographic catalogue and to consult the electronic resources of the university (data bases, electronic journals, encyclopaedia, dictionaries and other types of electronic reference material), in addition to any other resources or services available over the Internet.
- (iv) User training: although user training is mainly aimed at members of the university community, universities generally offer training sessions to all users on the services they offer, the sources of information which may be accessed and the tools available.
- (v) Agreements regarding lending services: the universities can agree to lend their material to Secondary Education Centres and other entities and institutions.
- (vi) Finally, during exam times, the libraries are open 24 hours per day in order to allow access to students.

Summer courses, spring workshops, “Escola d’Estiu” (Summer School): All these activities are available to everyone, regardless of whether or not they belong to the university community. Enrolment in the *Escola d’Estiu*¹⁰ requires filling out an application form and prices for the summer school vary depending on whether or not the person is a member of the university community.

¹⁰ The “Escola d’Estiu” organises leisure time activities for children and teenagers during the month of July, when schools have usually broken up and when parents are usually still working.

Although priority is given to members of the university community, this service is also open to other people if places are available.

In addition to the above-mentioned services, the universities also provide other social services in collaboration with other regional and national agents which can be summarised as follows:

Support programme for handicapped students: the general aim is to guarantee handicapped university students the right to study and the right to lead a normal university life, to promote the participation of handicapped students in the extra-curricula activities of the education system and to guarantee that they are given professional, top-quality attention. The programme covers all aspects of academic life, from entering the university to graduation and starting work. Since it is fundamentally important to be well-informed about job opportunities, the student services centre works together with other institutions both inside and outside the university, such as unemployment offices, which run programmes to help handicapped people. Thus, potential workers are put in contact with potential employers and also receive job offers for handicapped people. Along the same lines, the universities have cooperation agreements with the ONCE Foundation (Spanish Organisation for the Blind) and with IMSERSO (Institute of Migration and Social Services) in order to try to remove the architectural barriers on campus and to act as a reference for future professionals and for institutions which frequent the university regarding how to design a place which is accessible to all.

University social volunteer programme: some of the aims of this programme are:

- (i) to raise awareness in order to bring young people in contact with social reality, making them aware of social inequalities and exclusion;
- (ii) to recruit volunteers, since universities are without doubt the best place for this type of recruitment campaign and the volunteers themselves act as multipliers when inviting other students to take part in such activities;
- (iii) to train university volunteers in order to optimise the quality of voluntary work. Within the volunteer programme, it is worth highlighting the collaboration between the University of Valencia and Valencia Prison (Picassent), where activities such as theatre courses, photography, poetry, exhibitions and literary courses are organised.

Emergency economic aid programme: This programme is organised by the University of Alicante and intends to guarantee first and second cycle students in emergency socioeconomic situations the chance to continue their studies while covering their basic needs. Students are offered a range of technical and material resources which are administered using objective and professional criteria and which allow students to enjoy an acceptable quality of life in special circumstances. In this respect, the programme does not only have its own resources, assistance is also provided by private entities at the university which give dinner vouchers (for coffee bars situated in the University of Alicante) or grants to buy books (in the book shop located on campus).

Programme to promote student accommodation in elderly people's houses: this programme brings together students from other areas who need accommodation and elderly people who live alone and need company.

Local development programmes: the Jaume I University organises two types of programmes: "Solidarity Flats" is a project aimed at strengthening the social fabric of poor and underprivileged neighbourhoods; and other local development programmes for inland areas.

International cooperation: there is an international cooperation department which manages certain institutional cooperation projects, such as the Havana project, the Maghreb project and the 0.7 project. These projects are aimed at funding cooperation activities to foster sustainable development and promote social, cultural and institutional progress in less-developed countries.

There are also doctoral scholarships for students from Latin America and Eastern Europe, in addition to collaboration projects with NGOs to bring immigrants together and promote their social integration.

5.2. The contribution to cultural development

Promoting and spreading culture is a fundamental part of the mission of universities in the Region of Valencia. All the universities have expressed their commitment to promoting and encouraging cultural development, mainly by means of direct action but also through their support of cultural activities promoted by external agents. However, there are no plans to offer cultural services as an additional source of funding and, in this respect, the universities do not have any mechanisms in place to market their cultural services in the region.

The universities themselves hold cultural activities covering a wide range of areas (dance, music, theatre, cinema, conferences, literary events, exhibitions, sporting events, etc.) and various types of instruments are generally used. However, the internal features of each university, such as age, size, specialisation etc, determine the extent to which these instruments are used.

One of these instruments is the promotion of cultural activities open to the public in university facilities or in buildings belonging to other entities. Within this framework, there are practically always conferences, classical and modern music concerts, drama performances, film shows and readings. Likewise, Valencian universities support and cooperate in the promotion of cultural activities organised by external agents by providing space for exhibitions, conferences or musical performances, for example. The universities have a large number of agreements with private sector cultural entities (foundations, cultural associations, companies, etc.) and also with public institutions, such as the Valencian Institute of Music, Theatres of Valencia and the San Pío V Museum, among others.

The promotion and support of well-established cultural groups is another of the instruments used by universities to promote culture. These groups are generally maintained by the Vice-rectorate for University Outreach in some cases and by the Vice-rectorate of Culture in others and they are mainly made up of university staff. These initiatives include the existence of philharmonic orchestras, choir groups, dance groups and theatre groups. Support for these groups varies according to the specific needs of the cultural activity in question, but in general terms, it usually takes the form of publicity and coverage, infrastructure, running specific training courses, etc.

Although involvement is not widespread, the Valencian university system also plays an important role in publishing cultural material. In general terms, Valencian university publishing houses are small in comparison with other Spanish publishing houses. Without competing directly with private publishers, their work is, to a certain extent, supplementary and concentrates mainly on scientific and technical subjects. They publish the results of research and studies on issues concerning or of interest to the region. It is also worth highlighting their contribution to the linguistic wealth and cultural plurality of the region. The University of Valencia's traditional involvement in this area is particularly important.

Special mention should be made of the support lent to art: painting, sculpture, architecture, photography and art related to new media are prominent on university campuses. There are permanent museums exhibiting their own works, such as the University of Alicante Museum (MUA) and the open-air sculpture park at the Technical University of Valencia. There are a considerable number of individual and group exhibitions, in some cases produced by the universities themselves, with a large number of Valencian artists. The exhibitions mainly display art work, but there are other subjects such as the deprived, urban development, the region, social commitment, minority groups, gender, religion etc. In general, these activities are held in common areas on the premises of each

university, but in some universities there are specific facilities for such events, such as for example the Galeria Octubre in the Jaume I University.

On the other hand, it is evident that architectural design in an artistic sense is not a major concern of Valencian universities and new buildings are more functional than decorative. However, some of the universities claim to pay special attention to the design of their premises and as such have attempted to make them pleasing to the eye and attractive.

Sport is also widely promoted in Valencian universities. All the universities are committed to promoting sport as a philosophy of life and consider it to be one of the missions which the university must undertake. There are clear similarities between the activities undertaken by the different universities to promote sport, which, in general, involve supporting the practice of both individual and team sports (football, tennis, swimming, basketball, athletics, sailing), participating in regional and national competitions and also sponsoring sportsmen and women.

Another instrument used by universities to promote culture is specific training courses. In this case, such training is aimed at cultural groups operating within the university and at local agents involved in socio-cultural promotion in order to improve the level of services. In other cases, these are postgraduate courses or specific workshops open to the general public. Independently of the subjects included in degree programmes related to the world of culture, there is at least one course entitled "Postgraduate Course on Heritage and Cultural Management" and there are numerous workshops on art, music, dance, literature, communication, language and writing, cinema, etc. Most universities also offer sports training courses aimed at the university community. Some of these are carried out by the corresponding sports federation and can lead to official sport qualifications. In many cases, university students attending these courses are awarded optional credits.

Valencian universities have considerable cultural assets due mainly to donations from artists and private individuals and the longstanding tradition of holding exhibitions has helped acquire such assets. Works of art are only occasionally purchased, although some universities have funds available in their budgets to make such purchases. However, the amount of money at their disposal is limited and does not allow them to make regular investments. Special mention should be made of the University of Valencia: more than 500 years of history have enabled the university to acquire considerable assets which increase year by year. Two clear examples are the old "Nau" university premises with everything they house and the Botanical Gardens.

5.3. The contribution to environmental development

The 1987 Brundtland Report for the World Commission on Environment and Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Naturally, this takes into account environmental issues since they affect present and future well-being. Sustainability and environmental protection are terms which are often heard and they are issues which concern a large proportion of the population and institutions.

Many Spanish universities have followed this trend and introduced environmental management systems in their schools and/or departments. In some cases, specific environmental management units have been set up to provide information, organise courses, debates, exhibitions etc.

The Region of Valencia`s universities have also followed this trend and they are a fine example of how to approach environmental issues since they are fully involved in protecting the environment.

In fact, some universities have been awarded the ISO 14001¹¹ certification and others, although their environmental management systems are still in their infancy, are heading in the same direction by setting out their environmental policy and considering environmental issues related to education and training.

All the universities considered the recycling of waste materials produced by the everyday use of their facilities to be a priority. Recycling is being introduced by means of selective collection systems and refuse treatment according to the type of waste.

In general, all the universities collaborate with other public and private agents to strengthen the environmental sustainability of the region to a greater or lesser extent. Such collaboration is first and foremost with regional administration and town council organisations and mainly takes the form of scientific and technical input, in addition to volunteer work. At national level, most of the universities participate in the Environmental Quality and Sustainable Development Group of the Conference of Rectors of Spanish Universities (CRUE). Furthermore, the University of Alicante participates in the Spanish Sustainability Observatory (OSE) and the University of Valencia takes part in the Desertification Research Centre (CIDE), a centre jointly established by the Autonomous Government of Valencia and the Spanish National Research Council (CSIC). However, the universities which have not as yet undertaken joint initiatives with regional agents to support environmental sustainability have included the introduction of such collaboration initiatives in their strategic planning.

5.4. Conclusions. SWOT Analysis

Strengths

- There are strong links with the areas where the universities are situated and they contribute to the region's social and cultural development. Extensive use is made of sports facilities, libraries are open to the general public, there are cultural activities, exhibitions, concerts, summer schools, etc.
- Universities provide social services in collaboration with other regional and national agents. Agreements have been reached with organisations such as the INSERSO and the Spanish Organisation for the Blind (ONCE) to develop programmes to support disabled students and with foundations and NGOs to develop social volunteer programmes, among others.
- The universities promote social volunteer work and cooperation among the university community (awareness, recruitment, training).
- There is interest in promoting environmental development. ISO 14001 certification has been awarded to some universities.

Weaknesses

- In some areas, there may not be enough funding to further develop certain plans regarding social issues (e.g. emergency economic aid programmes, international cooperation, etc.).
- Some plans intended to help students with special needs are inadequate. One example of this is the design of buildings, which does not always comply with recommendations to remove physical barriers.

Opportunities

- People are increasingly aware of the social and cultural activities offered by universities and of their role as promoters of this type of activities.

¹¹ ISO 14001 is an Environmental Management Standard approved by the European Committee for Standardisation. It allows organisations to define important environmental aspects and impacts, set objectives and goals, introduce environmental management programmes and define their environmental policy.

- The type and number of agents with which short and medium-term alliances are formed to collaborate in socio-cultural activities can be increased.
- New technology can provide programmes to improve environmental sustainability in universities.

Threats

- Some agents who are particularly important in certain sectors and are mainly involved in social and cultural areas cannot rely on the universities to act as collaborating agents to promote social and cultural development.

Chapter VI. EDUCATION FOR REGIONAL COOPERATION

6.1. Mechanisms to promote university involvement in the Region

The Region's Strategic Plan considers the universities to be a key element in regional development and it was formally expressed as such in the 1997 Law for the Promotion of Research, Technological Development and Innovation and in the Valencian Plan for Scientific Research, Technological Development and Innovation (PVIDI) for 2002 – 2006. In this context, mechanisms have been introduced and resources allocated to support the commitment of the region's universities.

The operative mechanism par excellence to increase university involvement in the region has been the Offices for the Transfer of Research Results (OTRI). As we have seen in previous chapters, the OTRI initially have played a crucial role in bringing universities into contact with the region's businesses. More recently, these mechanisms have been strengthened with new structures for establishing permanent contacts between universities and businesses (INNOVA Foundation) and also with new interrelated instruments such as science parks which are being developed in the region's public universities.

Another mechanism which has been essential to promoting university involvement in the region has been the structural funds, made available to public universities by means of the 2002 – 2006 Operations Plan for Regional Structural Funding. These funds have been a useful tool for directing the development of institutional infrastructure towards fulfilling regional needs. In addition, the Valencian Plan for Scientific Research, Technological Development and Innovation (PVIDI) has provided institutions with feedback regarding the strategic needs of regional policy. Within the framework of this plan and by means of different financial incentives such as R+D+i projects, infrastructure and grants for research groups, attempts have been made to direct the universities' R+D work towards the specific needs of the region.

The instruments described above entail the joint commitment of agents from outside the university (from the administration and businesses) and the region's universities. With regard to regional commitments, the agents involved act in accordance with unspoken or informal agreements in some cases, but in general, formal agreements are established. If it is the regional government working with the university, then specific, structured agreements are established. When the agents working with the university are groups of companies, it is normal to establish some type of formal association agreement, such as those signed with university-business foundations and also with non-profit-making associations in the case of joint R+D institutes. When the universities are the only agents involved, it is normal to establish collaboration agreements or to introduce formulas allowing them to work together (e.g. the Network of Valencian Universities for the promotion of Research, Development and Innovation – RUVID). The changes which have taken place over the last 10 years with regard to university involvement in the region have mainly taken place as a result of efforts by the universities themselves. Their increasing willingness to collaborate with the socioeconomic environment and the efforts they have made to inform the public about their activities have been well received and have led other agents to get involved in the process.

In addition to the resources from the Operations Plan for Regional Structural Funding and the PVIDI, other additional financial resources are available to support the universities' commitments in the region by means of their ordinary budgets. In fact, most public universities' budgets are financed by regional government funds according to a yearly agreement in the Budget Law. This annual contribution corresponds to a multi-annual funding programme based on the size and activities of the universities, and also partly on activities related to regional priorities.

The regional administration has established procedures to monitor and assess the implementation and development of each of the abovementioned plans and instruments. Likewise, there are both official and unofficial mechanisms used to coordinate university activities in the region. The 2002–

2006 Operations Plan for Regional Structural Funding and the 2002 – 2006 Valencian Plan for R + D + i have been designed at regional level taking into account the complementary nature of the actions undertaken by each of the universities.

For their part, in addition to the promotional effect the universities' activities may have on their involvement in the region, there are other actions which also foster this involvement and which are partly responsible for the open image projected to the outside community. These activities include the frequent participation of Valencian university experts in forums promoted by social agents, the presence of university representatives, together with other agents from the region, on committees in regional institutions, such as chambers of commerce, local and regional development agencies, town councils, etc. The participation of university institutions in the public debate regarding issues concerning the region also helps to increase involvement in the region. Such issues include, for example, the debate on stem cells and the water shortage problem, among others.

6.2. Promoting regional dialogue and combining marketing initiatives

Officially, the Social Council plays the most important role in promoting communication and dialogue between the universities and regional agents and this has been confirmed by most of the universities. As stated in the Organic Law of Universities, the Social Council is the means by which society participates in university affairs, and among other things, it is responsible for promoting and assessing relations between the university and its cultural, professional, economic and social environment. As such, it is a way of gauging communication between the university and regional agents. Its composition is determined by law¹² with representation of the following entities and institutions: the governing council of the university, the regional parliament, regional administration, local administration, the major trade union and business organisations, chambers of commerce and professional associations. This composition is intended to ensure that the interests of the various different sectors of the region are represented.

In addition to the Social Council, other more specific mechanisms are available to Valencian universities to promote regional dialogue. At political level and in general terms, all the universities have a Vice-rectorate which is responsible for promoting regional cooperation with the socioeconomic environment. Technology-wise, as we saw in chapters 3 and 4, the universities also have various different mechanisms at their disposal. We are referring here to structures such as the Office for the Transfer of Research Results (OTRI) which act as an interface in the area of R+D+i and to instruments such as the Science Parks, where it is possible to form relations between the university and other agents working in the same areas. In the specific case of postgraduate education, all Valencian universities have either internal or external interface structures for the management and promotion of this type of activities. With regard to graduate integration in the labour market, the universities also have mechanisms which help to promote regional dialogue. Examples include the Occupational Observatories, the Guidance, Information and Employment Centres (COIE) and the University Employment Agencies, in addition to instruments such as work experience placements.

Independently of these structures, another tool to promote communication between the region and its universities is the lecturers themselves by means of official and unofficial contacts with the various different agents in the region. In this respect, it is worth highlighting those members of the teaching staff who work part-time at the university and part-time in private companies or in public administration. According to the report of the Conference of Rectors of Spanish Universities (CRUE)¹³, this type of teaching staff represented approximately 25% of the total, but only 4.5% of part-time lecturers were civil servants and the rest were employed under normal work contracts.

12 Law 2/2003, of 28th of January, of the Region of Valencia al Government, on Social Councils in Valencian Public Universities.

13 Conference of Rectors of Spanish Universities - CRUE (2004) Academic, productive and financial information regarding Spanish public universities. 2002. University indicators – academic year 2002/2003.

All the universities agree that there are few joint marketing initiatives undertaken with other agents to promote the region. However, they expressed their willingness to introduce such initiatives. In fact, an agreement is currently being reached with the Region of Valencia Foundation in Brussels in order to promote the region's universities, what they have to offer and their resources. There are also projects to reach agreements with the Regional Government in order to undertake marketing campaigns to promote the region's research and universities.

6.3. Assessing and planning the impact of the regional higher education system

No references were made to universities having carried out either collective or individual assessment studies with specific quantitative data regarding their impact on the region. However, certain projects along these lines do exist. In particular, the High Consultative Council (ACC) on Research and Development has initiated a study to determine the extent to which university R+D contributes to the economic development of the region. In addition, the White Paper on Valencian Universities, which is currently being prepared, is expected to provide some means of assessing the university system as a whole.

Nonetheless, some universities have undertaken partial studies. The University of Alicante has attempted to determine how it has conditioned the development of its immediate physical surroundings. For instance, it discovered that there are more shops and there has been more construction work (building residential areas) than if the university had not been located in that area. Along the same lines, the Miguel Hernandez University has also carried out a partial analysis of the impact of its presence in the area. Indirectly, the Jaume I University has also undertaken various assessments of this type through self-assessment reports in accordance with the European Foundation for Quality Management (EFQM) excellence model.

As a result of this lack of assessment, there is a shortage of information regarding higher education's contribution to the region. However, almost all the universities have made an effort to introduce mechanisms to increase awareness of their role in society. The most widely used in all the universities are agreements which, insofar as they provide solutions to specific socioeconomic problems, also help to further social acknowledgement of the university. Other more specific mechanisms which are also quite widespread and have similar objectives include university activity dissemination programmes, generally in the form of conferences and seminars aimed at future university students, professional groups, companies etc. Such programmes also involve attending fairs and exhibitions. Within this group it is worth highlighting the fact that all the universities took part in Science Week, during which open workshops and a series of conferences helped to share scientific knowledge with the general public in a simple and easily comprehensible way.

Some universities, such as the Technical University of Valencia, have their own TV and radio stations, by means of which they can constantly broadcast their achievements and their contributions to society. In other universities, such as the University of Valencia, regular visits are made to companies to inform them about what type of research is being carried out and in what areas they could work together. Such projects aim to inspire confidence among business leaders and increase the extent to which universities are seen to contribute to development.

Although in some cases the impact of a certain mechanism is monitored, in general the universities do not have any means of assessing or gauging the result that implementing these mechanisms has on the social acknowledgement of university work. In short, Valencian universities do not have a clearly defined regional action policy.

6.4. Institutional involvement in the region

In general terms, Valencian universities do not specifically deal with regional issues. However, as seen in chapters 3 and 4, the regional aspect does play an important role, especially in terms of

teaching activity. It could be said that there is a regional dimension to Valencian universities and it is, therefore, understandable that changes in administrative teams come about rather as a result of demands from within the university itself than in specific response to regional needs. The same is true of the only strategic plan in operation in one of the universities, which was determined from a regional perspective and as a result, relations with the region are implicit in the objectives it pursues. In short, it could be said that there is a regional aspect to the organisation of Valencian universities and it has, therefore, not been necessary to introduce internal mechanisms to coordinate regional activities within the university, nor create new posts or offices to administer them.

Although universities have not introduced specific areas for communication with the region, channels do exist which allow them to communicate with regional agents. Contacts with the region depend on the issue at hand and not on the geographical area, so for each case and depending on the subject, decisions regarding regional issues are the responsibility of the vice-rectorate in charge of that particular subject area. In some cases, the channels of communication are sometimes through the teaching staff and in other cases, through the interrelated university structures (the Offices for the Transfer of Research Results for R+D, employment agencies for job market issues, postgraduate units for unregulated education issues, etc.) and in other cases, through specific services. In the latter case, it is worth highlighting the universities' contribution to regional infrastructure for information and communication technology and the fact that the universities' own administrative system makes extensive use of such technology.

6.5. The management of human and financial resources

All the universities state that the regional aspect does not play any role in their human resources policy, except in the fact that knowledge of the Valencian language is required or appreciated when contracting or promoting university staff, and in some cases, it is necessary to have thorough knowledge of the region's laws and regulations (Statute of the Region of Valencia, the Civil Service Law, etc.). The universities stress the fact that their administration is not divided according to geographical areas, but by subjects and as a result, no specific training is provided and salaries do not vary for civil servants according to geographical area.

In terms of public universities' financial resources, regardless of their origin, funds are administered in accordance with the Law on Public Accounting. In general, the administration of funds for general university infrastructure is centralised and the administration of funds for research (by projects / staff) and for the day-to-day running of the university is decentralised (by centre or department). There is no link between the type of funding and the expenditure it finances, and in general terms, the funds go to finance the expenses for which they have been obtained, regardless of where they come from. In the case of private universities, the administration of funds is highly centralised.

In public universities, budgets are drawn up and implemented in accordance with the Organic Law of Universities, the Law of Social Councils of the Region of Valencia and the Statutes of each university. With the exception of certain specific variations in each university, the following process is used to draw up and pass the budget: the administration presents the proposed budget to the Governing Council, which issues a report and proposes the yearly budget and the multi-annual programme to the university's Social Council, which is responsible for passing the budget. In private universities it is the Head of Management, on behalf of the Foundation, who is responsible for drawing up and implementing the budget.

The universities identified resources obtained through agreements and contracts with the government and with companies as new sources of funding for their activities within the framework of their commitment to the region. In general, all the universities considered the introduction of Science Parks to be a key instrument in this respect, and they identified Central and Regional Administration, European Regional Development Funds and the European Social Fund as the main

sources of funding. They also specified new funding instruments, such as debts guaranteed by the regional government (mainly to pay for infrastructure) or repayable loans from the government to finance R+D projects. It is still not fully clear how the latter will be administered. In addition, private sector universities are also starting to establish sponsorship agreements.

6.6. Forming a new administrative culture

Over the last forty years, Spanish universities have undergone profound changes marked by three significant facts: the spread of university education to a large sector of society, the reorganisation of the university system, and more recently, the appearance of the “third mission”. These changes have also affected the Valencian university system and as we have seen in previous chapters, the regional dimension plays a predominant role in its teaching activity and its research activities are also closely linked to the region.

All the universities agreed that the interests of the region had to a large extent been incorporated into their teaching and R+D activities. However, there are differences between the opinions of each university, as shown in Table 6.1.

Table 6. 1. The extent to which regional interests have been incorporated into teaching and R+D activities

	UA	UJI	UMH	UPV	UV	UCV	Average
Teaching	2	3	4	2	4	3	3
R+D	3	4	3	3	3	4	3.16
Scale: (1) not at all; (2) limited; (3) fair; (4) good							

Two universities consider that regional interests have not been incorporated into their teaching activities; another two universities consider that they are fairly well integrated and two say that they are well-integrated. All the universities consider that they are fairly or well-integrated with regard to how far regional interests are incorporated into R+D activities.

On the other hand, four of the universities consulted do not recognise the existence of cultural barriers which make it difficult to undertake regional commitments, and two of the universities recognise the existence of some types of barriers, although only one of them can be classed as being of a cultural nature. In general, this view is consistent with the results of a study carried out by the High Consultative Council¹⁴ in 2002 on the position of teaching and business communities regarding university-business relations. In the aforementioned study, it was made clear that the main barrier detected by academics was the limited interest shown by businesses with regard to the research work they did, followed by the shortage of suitable companies to collaborate with and the lack of time available due to teaching activities. These obstacles are not caused by the teaching staff and they are by no means of a cultural nature.

¹⁴ The High Consultative Council on Research and Development of the Generalitat Valenciana. “Analysis of research and development activities and cooperation between the academic and business communities in the Region of Valencia ”. (2002)

Chapter VII: CONCLUSIONS BEYOND THE SELF-ASSESSMENT REPORT

We have seen that Valencian universities are considerably involved in the development of the Region of Valencia in so far as their three missions are concerned: teaching, R&D&I, and relations with society.

To a great extent, universities are located where the population density is heaviest in the Region of Valencia and students at each centre mainly come from the province each university is located in.

The majority of R&D programmes are contracted with regional agents. However, relations with the surrounding environment still need to be encouraged as does a change in the nature of business activities, which are still far removed from the activities that most require R&D&I, i.e. activities that have the greatest added value and who best face up to external competition. However, prioritising this should not lead universities to overlook the importance of basic science.

All Valencian universities are very close and open to society (sport, promoting and carrying out cultural activities, programmes for the underprivileged).

7.1 Practice and methodologies to strengthen regional ability for growth and factors to ensure success

Research-wise, the contribution of Valencian universities to regional R&D (in 2003, university expenditure accounted for 0.47% of the Region of Valencia's GDP) is the largest contribution. The creation of stable research structures such as the University Research Institutes and co-operation with other public research bodies, such as the Spanish Higher Research Council (CSIC), amongst others, have contributed to this situation.

Another practice or methodology which seems to reinforce regional ability for growth is the increase in tangible co-operation between universities and businesses. This co-operation should involve more technology and knowledge transfers, so that research results become more relevant to the social, economic and productive environment and so that more technology-based companies can be created. The role of the universities' Offices for the Transfer of Research Results (OTRI) plays a fundamental role in promoting this university-business co-operation. A basic factor in the OTRIs' role is to inform businesses in an accessible way about what the universities can offer them and reach a mutual understanding which becomes a fluent communication channel for feedback about supply and demand and is useful to both parties.

The factors needed to increase the impact of university R&D on regional development may lie, on one hand, in promoting research and social awareness of the importance and potential of the universities and, on the other, in investing in initiatives which encourage universities to move closer to their productive environment, such as the development of scientific and technology parks and new centres to set up technology-based companies. It would also be a positive step if these measures were accompanied by incentives for businesses and researchers to work together.

Another effective practice is interuniversity co-operation, via networks such as the Association of Valencian Universities for the Promotion of Research, Development and Innovation (RUVID). The co-ordination of regional and national government policies with university policies would also help the region to grow.

Another good practice, this time in the teaching area, is the continuing education programmes, which all Valencian universities play an active role in. These programmes are highly flexible and cater superbly for the social and economic demand in the Region of Valencia. Ideally, this model could also be used by regulated education.

Valencian universities also work very actively with their social and cultural environment. These initiatives include the Adult Education University, which is present throughout the Valencian university system, and the access the universities give the general public to their sports facilities.

7.2 Synergies that exist between institutional and regional intentions and objectives. Conflicts of interest.

The objective of any region is to reach a high social, cultural, economic and productive standard. On the other hand, the universities' objective is basically academic. However, they can contribute to improving the region's productive and therefore, economic standards, via research and results transfer. Universities can also offer society a range of cultural activities, via their cultural programmes which are open to the general public, which provide a welcome addition to municipal and regional authority programmes.

There are implicit synergies between the general intentions and objectives of universities and the region. However, as governments are mainly motivated by political criteria and universities by academic principles, these synergies are not always positive. Universities respond to stimuli sent out by the regional government, especially as far as finance is concerned, and as a result, they are highly restricted in many areas by regional government policies.

7.3 The results of incentive policies aimed at universities (at an institutional, departmental and individual level) to achieving greater commitment to the region.

The design of incentive policies for institutions and individuals is based on results (number of students, graduates, publications, patents, etc.) rather than on geographical functions. In theory, teaching and research staff have no specific incentive to tackle regional issues. What is more, universities do not usually recognise that research is directly related to regional needs. However, the universities' administrative and working environment is eminently regional (administrative dependence, students, R&D contracts, etc.). In addition, regional issues are usually given priority in the regional government's competitive invitations to tender which ends up directing the research activity funded by these tenders towards these issues.

7.4 Major challenges facing the different sets of decision-makers

One of the major challenges facing the different sets of decision-makers, is to find out exactly what regional needs are. Once these regional needs are known, a plan of regional development incentives can be created to keep regional needs in step with the general development of the universities. This requires a joint effort between universities, businesses and the authorities to be able to obtain valid instruments based on the objective to be reached.

Another important challenge is how to increase regional companies' ability to assimilate new technologies. A low capacity to assimilate new technologies will always be an obstacle to greater co-operation between universities and businesses. This is an ambitious challenge as it requires large-scale investment and a great deal of time, which are very difficult to obtain.

Once regional needs have been identified and assessed, mutual recognition work needs to be carried out between businesses and universities to adjust degree programmes to regional needs, as far as possible.

7.5 Strengths, weaknesses, opportunities and threats of increasing university contribution to the region

Strengths

- Valencian universities have good scientific knowledge and are highly dynamic. They have highly qualified staff undertaking both basic and applied research of considerable national and international renown and there is great potential.
- The university system is correctly distributed from a geographic point of view to be able to satisfy regional businesses' specific needs.
- The universities are devoting more and more of their own resources to the promotion of R&D+i activities.

- The universities provide consultancy services and have a wide range of experience in undertaking R&D projects with external agents.
- They have professional human resources which are highly qualified and have a wide range of experience in managing university-business relations and the transfer of knowledge.
- They are ready and willing to establish and maintain relations with their environment.
- The universities are actively involved in regional, national and international knowledge transfer networks.
- The university system offers quantity, variety and quality in its teaching activities, thus allowing a high percentage of students to study a university degree in their own province.
- The Valencian university system offers a considerable range of third cycle programmes and the number of students is comparatively higher than the rest of Spanish universities.
- Unregulated education is well-suited to the specific demands of the environment.
- Work experience in companies is organised for students at institutional level and policies have been introduced to help graduates gain access to the labour market.
- Assistance is available to help students from outside the city adapt to life at university.
- The Valencian university system is capable of adapting to new requirements and uses mechanisms which improve university access for students from specific or minority groups (e.g. mature students over 25 years old, disabled students, etc.).
- Information and communication technology is widely used for administrative and teaching purposes (e.g. Self-enrolment, virtual campus, etc.).
- There are strong links with the areas where the universities are situated and they contribute to the region's social and cultural development. Extensive use is made of sports facilities, libraries are open to the general public, there are cultural activities, exhibitions, concerts, summer schools, etc.
- Universities provide social services in collaboration with other regional and national agents. Agreements have been reached with organisations such as the INSERSO and the Spanish Organisation for the Blind (ONCE) to develop programmes to support disabled students and with foundations and NGOs to develop social volunteer programmes, among others.
- The universities promote social volunteer work and cooperation among the university community (awareness, recruitment, training).
- The universities are committed to promoting environmental development (some of them have the ISO 14001 certificate).

Weaknesses

- The Valencian model of university funding does not explicitly envisage university research activities, as it is based almost exclusively on teaching activity.
- Rigid university legislation makes it difficult to be flexible in adapting to society's varying demands.
- There is a need for a common space in which industry and university can co-exist. The professional demands placed on lecturers to further their academic careers and the demands of Valencian businesses are different: basic science versus development, high technology versus improvements to conventional technology.
- The main purpose of collaboration with companies is not the transfer of research results or "technological packages" and relations are often limited to the provision of services. In addition, patents and licences are seldom used for the administration of research results.
- A proper structure and model is required for new support instruments and structures that promote knowledge transfer. For example, the systems used to promote technology-based companies (EBTs) in Valencian universities, except for certain noteworthy exceptions, are not well developed.
- There are few or no incentives for teaching staff transfers, given that they are not directly related to promotion and that there is little external recognition (six-yearly salary increases).

- The majority of university personnel are permanent civil servants with few incentives. Research activity in general and transfers in particular are often incidental and undertaken on a voluntary basis.
- There are few instruments aimed at encouraging the incorporation of suitably-trained human resources in R&D.
- University activities are not sufficiently well promoted and marketed in the business world. On the other hand, universities have very little information about company needs.
- Minimum impact of ex-alumni associations and of companies linked to university activities in all areas.
- There are shortcomings in coordination which need to be overcome in order to further develop education at regional level. Decisions regarding the organisation of study programmes are made too quickly.
- The range of degree courses is poorly planned and there is a lack of cooperation. The procedures used to determine the degree programmes on offer is unclear.
- There is limited ability to attract research students from other regions in comparison with the rest of Spain.
- In some areas, there may not be enough funding to further develop certain plans regarding social issues (e.g. emergency economic aid programmes, international cooperation, etc.).
- Some plans intended to help students with special needs are inadequate. One example of this is the design of buildings, which does not always comply with recommendations to remove physical barriers.

Opportunities

- The decline of labour intensive industries and the fact that these industries need to be restructured offers the opportunity to diversify the productive sector by investing in new industrial sectors which have a high added value and which require R&D.
- Efficient use of the technological institutes, which are a competitive advantage for the Region of Valencia. They can be used to link the universities and the business world.
- The Valencian universities' ability to establish contacts with international environments which may be of interest to Valencian companies.
- The existence of highly entrepreneurial companies in the Region of Valencia.
- The support provided by the regional and national government to develop interface structures such as Science Parks and Central Services promotes and encourages collaboration with businesses and increases awareness of university R&D.
- Changes which must be made to the universities to adapt to the "European Higher Education Area" (Bologna Declaration) may allow them to restructure the time lecturers spend teaching and carrying out research, putting R&D on the same level as other university activities.
- The decrease in the time spent teaching due to the fall in the number of students means that academic staff may spend more time on R&D.
- New demands made by society and the importance of lifelong learning give universities an important and long-lasting role as training centres in all aspects.
- The availability of new information and communication technologies to redesign teaching processes and make them more flexible.
- The internationalisation of the supply and demand of university studies.
- People are increasingly aware of the social and cultural activities offered by universities and of their role as promoters of this type of activities.
- The type and number of agents with which short and medium-term alliances are formed to collaborate in sociocultural activities can be increased.
- New technologies can provide programmes which improve environmental sustainability in universities, businesses and as a result, in the region.

Threats

- There is a poorly-organised science-technology-business system and few instruments to link them. There is no common space in which universities and businesses can coexist, cooperate with each other and allow the transfer of knowledge.
- Businesses in the area do not have great technological knowledge. The importance of knowledge-intensive industrial sectors, such as biotechnology, information and communication technology and new materials is limited, which means that there is limited demand for R&D.
- The low demand for R&D is compounded by the existence of a low-technology service economy.
- The small size of Valencian companies makes it difficult to set up R&D units in the companies themselves, which does not favour the development of strategies based on technological innovation. In fact, a large proportion of companies only contract R&D if they receive economic incentives from the public administrations.
- Lack of sufficient direct incentives for businesses to promote technological development.
- Valencian companies' lack of importance in designing and taking part in European research projects.
- The bureaucracy associated with tax incentives for R&D means that SMEs rarely benefit from such incentives. This leads to a certain degree of scepticism and makes them consider R&D as a concept which is inaccessible.
- The Valencian Plan for R&D has not managed to define and co-ordinate a series of activities which have clearly promoted certain priority areas, whether to support current economic activity or to back R&D activities associated with emerging economic sectors as a future strategy to define the competitiveness of the region.
- There is a certain degree of financial uncertainty and a lack of funding. On the one hand, the current system of funding is based mainly on the number of students, which in the short term may have a negative impact on university funding due to a drop in the student population unless this model is changed to include funding for research. On the other hand, a drop in or the disappearance of European Regional Development Funds (FEDER) funds in 2006 means that the future is unclear in terms of the funding of scientific-technical infrastructure.
- The possible stagnation of certain sectors of the Valencian economy may have a negative short-term impact on job creation.
- Adapting to the new framework of the Bologna declaration may give rise to importance imbalances. The period of changeover is too long, which means that the old and the new systems have to coexist at the same time. This may lead to uncertainty over the educational programmes on offer in the future.
- Some agents who are particularly important in certain sectors and are mainly involved in social and cultural areas may not rely on the universities to act as collaborating agents to promote social and cultural development.

7.6 The way forward: regional opinions and approaches for future policies.

The policies for the future that are being designed by the regional government centre on reinforcing the role of the science, innovation and technological development system as the driving force behind the Valencian economy.

Legislative proposals have been summarised in two draft policies which complement each other. One draft tackles the Valencian university system and the other deals with the Valencian science, innovation and technological development system. As far as the social impact of research is concerned, these two policies aim to promote the entrepreneurial capacity of research staff in universities and public research bodies.

After discussions with the most important industrial sectors in the Region of Valencia, the regional government has also developed a series of plans to increase competitiveness in industries in

which research and innovation are set to play a fundamental role. These plans mean that universities and research centres will have a catalogue of local industry needs at their disposal to focus their scientific capital and research capabilities on.

A new government initiative aimed at reinforcing the links between knowledge generating centres, such as the universities, and the wealth generating world, i.e. businesses, involves the creation of a network of centres aimed at carrying out strategic reflection on the business opportunities to be gained from innovation. This group of proposals made by the Regional Government aims to provide businesses with all the means they require to make the most of knowledge: technology, training and science, so that Valencian companies can get ready for the leap to innovation that the Region of Valencia's position in a globalised world demands.

GLOSSARY OF ABBREVIATIONS

ACC	High Consultative Council
ANECA	National Agency for the Evaluation of Quality and Accreditation
ANEP	National Evaluation Agency
CADE	Student Assessment and Support Centre
CENEMES	Innovation Relay Centre of the Spanish Mediterranean
CEV	Valencian Business Confederation
CIDE	Desertification Research Centre
COIE	Centre for Guidance, Information and Employment
CRUE	Conference of Rectors of Spanish Universities
CSIC	Spanish Higher Research Council
EBT	Technology-based Companies
EFQM	European Foundation for Quality Management
EIN	Number of innovative companies
FEDER	European Regional Development Fund
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IMPIVA	Valencian Institute of Small and Medium-Sized Industrial Enterprises
IMERSO	Institute of Migration and Social Services
INSERSO	National Institute of Social Services
ISO	International Standards Organisation
LOU	Organic Law of Universities
LRU	University Reform Law
MITYC	Ministry of Industry, Tourism and Trade
MUA	University of Alicante Museum
NAV	Net Added Value
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
ONCE	Spanish Organisation for the Blind
OPI	Public Research Institute
OSE	Spanish Sustainability Observatory
OTRI	Office for the Transfer of Research Results
PVIDI	Valencian Plan for Scientific Research, Technological Development and Innovation
R+D	Research and Development
REDIT	Network of Technological Institutes of the Region of Valencia
RENFE	Spanish National Railway Network
RUVID	Association of Valencian Universities for the Promotion of Research, Development and Innovation
SMEs	Small and Medium-Sized Enterprises
SUV	Valencian University System
UA	University of Alicante
UCH	Cardenal Herrera University
UCV	Catholic University of Valencia
UE	European Union
UJI	Jaume I University of Castellon
UMH	Miguel Hernández University of Elche
UPV	Technical University of Valencia
UV	University of Valencia