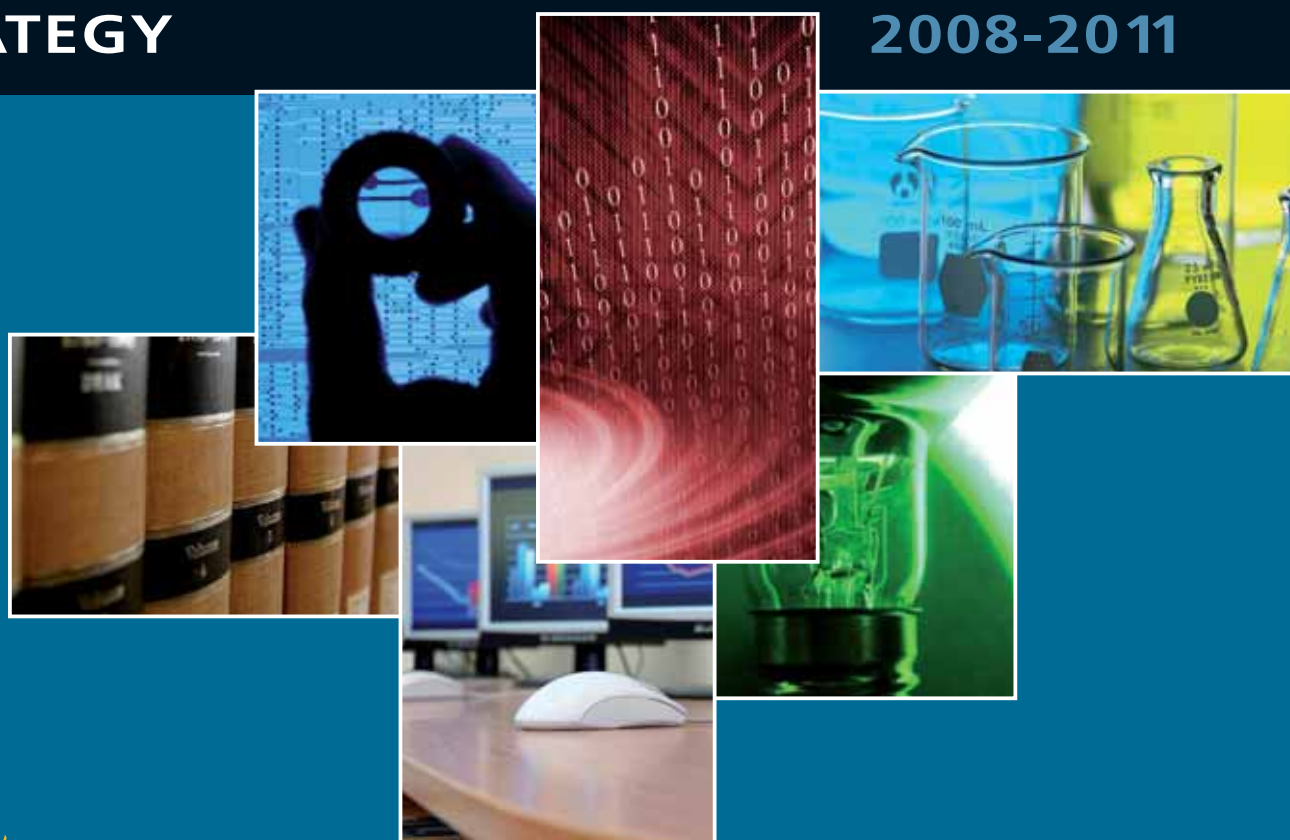




The "Castilla y León University–Business Strategy 2008-2011" was developed by the Science & Technology Coordination Commission and approved by the Cabinet of the Regional Government of Castilla y León on 25 September 2008.

## REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008-2011





**REGIONAL  
UNIVERSITY – BUSINESS  
STRATEGY  
2008-2011**

**Edición: Junta de Castilla y León**

Depósito Legal: VA-998/2008



**REGIONAL  
UNIVERSITY – BUSINESS  
STRATEGY  
2008-2011**

REGIONAL  
UNIVERSITY – BUSINESS  
STRATEGY  
2008-2011



# SUMMARY

---

|  |           |
|--|-----------|
| <b>INTRODUCTION</b>  | <b>7</b>  |
| <b>CASTILLA Y LEÓN</b>   | <b>9</b>  |
| <b>1. REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008 – 2011: THE CONTEXT</b>   | <b>13</b> |
| 1.1. Cooperation between university and business on R&D and innovation   | 15        |
| 1.2. University – business cooperation in education and training   | 16        |
| <b>2. THE UNIVERSITY – BUSINESS SYSTEM IN CASTILLA Y LEÓN</b>  | <b>17</b> |
| 2.1. University system   | 19        |
| 2.2. Technology centres  | 22        |
| 2.3. Business  | 24        |
| <b>3. UNIVERSITY – BUSINESS COOPERATION: THE SITUATION TODAY</b>   | <b>25</b> |
| 3.1. University – business cooperation   | 27        |
| 3.2. Technology centre – business cooperation  | 29        |
| 3.3. System indicators   | 30        |
| 3.4. The university – business system: the situation today   | 32        |
| <b>4. UNIVERSITY – BUSINESS STRATEGY 2008-2011: THE OBJECTIVES</b>   | <b>35</b> |
| <b>5. REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008-2011: LINES OF ACTION</b>   | <b>39</b> |
| Measure 1. Consolidation of knowledge transfer structures  | 42        |
| Measure 2. Identification and consolidation of technology supply and demand  | 43        |
| Measure 3. Cooperative R&D and innovation  | 44        |
| Measure 4. Protection and exploitation of knowledge  | 45        |
| Measure 5. Entrepreneurial activity and the creation of technology-based businesses  | 46        |
| Measure 6. Dissemination   | 47        |
| Measure 7. Business at university  | 48        |
| Measure 8. The university in business  | 49        |
| Measure 9. Permanent dialogue between university and business  | 50        |
| 5.1 Correspondence between measures in University – Business Strategy for Castilla y León<br>2008-2011 and RRDIS 2007-2013 | 51        |
| <b>6. IMPACT INDICATORS AND FOLLOW-UP INDICATORS</b>   | <b>53</b> |
| 6.1. Impact indicators   | 55        |
| 6.2. Follow-up indicators  | 55        |
| <b>7. RESOURCES MOBILIZED</b>  | <b>57</b> |
| <b>8. ACRONYMS</b>   | <b>61</b> |





## INTRODUCTION BY THE PRESIDENT OF THE REGIONAL GOVERNMENT OF CASTILLA Y LEÓN

---

*It is almost a year to the day since the government of Castilla y León launched its “Regional Science, Technological Development and Innovation Strategy 2007-2013”, which embodied our determination to concentrate on technological innovation as a key political priority for the modernization of the region. This strategy, developed with the active participation of the regional science, technology and business system, established an innovation-based approach designed to improve competitive levels in the region and stimulate the start-up and location of knowledge-intensive business projects, goals oriented towards economic growth and the creation of quality employment.*

*Castilla y León has a powerful university system with critical mass and experience in areas that are crucial for economic and social development. The region also has a network of mature, experienced technology centres, which, because of its proximity to local business, makes the ideal vehicle for transferring knowledge. There is also a major network of areas ready to house innovative and technology-based business projects at our science and technology parks, as well as the innovation areas created at business parks. All these initiatives enjoy the proactive support of the regional government of Castilla y León, which now has a number of increasingly specific mechanisms in place to stimulate and encourage innovation. These mechanisms are ever more closely matched to the needs of players in the system.*

*However, as in most European Union regions, connections between the players in the University – Business system in Castilla y León remain weak. Indeed, this problem is so widespread that it is actually referred to as “the European paradox”: the results of academic research are simply not transferred to businesses as they should be and, as a result, the research potential of our university system (which accounts for more than 60% of all research workers in the region) is not effectively or efficiently transformed into business innovation, which means economic growth and employment.*

*University and business are both essential to the creation of the region’s competitive advantage, but they still need to work more closely together to contribute to economic and social development in Castilla y León. That they don’t is mainly due to mutual unawareness resulting from poor communication, weak interface structures and the fact that scientific activity is largely carried on independently of the needs of business in the region. An additional problem is the shortage of R&D staff in business, this being a major obstacle to the kind of agile interaction needed with universities and technology centres in the innovation spiral.*

*To overcome these challenges is the ultimate goal of this “University – Business Strategy for Castilla y León 2008-2011” presented here. Rather than an isolated initiative, the strategy is actually a part of Castilla y León’s overarching “Regional R&D and Innovation Strategy 2007-2013”. It is therefore a major milestone on the road to implementing the knowledge society and the knowledge economy in Castilla y León and should help to reinforce interaction between the vertices of what is known as the knowledge triangle: innovation, research and education.*

*In particular, the University – Business Strategy's targets are to firmly orient the science and technology supply towards regional business demand and to stimulate the transfer of knowledge, entrepreneurial capability and the creation of technology-based firms and in general favour the convergence of the academic world with business in education and permanent training.*

*All the players in the science, technology and business system in Castilla y León (the business world, the university system, including universities, science parks and interface organizations, and the technology centres) must be actively involved if the Strategy is to be a success. But the regional authorities also have a major part to play, in particular in synchronizing the efforts made by different government departments with powers in these areas. I would like to take this opportunity to ratify my firm, unequivocal commitment to the goals, aims and targets mentioned above.*

*In the current international scenario, knowledge is more than ever the driving force behind development. University and business alike must improve mutual relations if they are to contribute to economic and social development in Castilla y León. This is not just a necessity; it is also an obligation.*

**JUAN VICENTE HERRERA CAMPO**

President, Regional Government of Castilla y León

## CASTILLA Y LEÓN

---

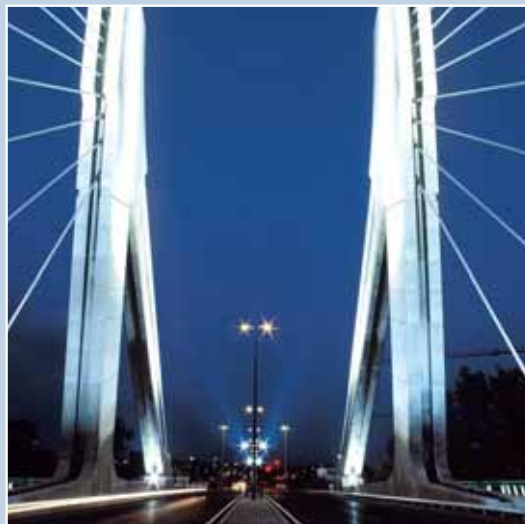
*At 94,225 km<sup>2</sup>, Castilla y León is Spain's largest region and the third largest in Europe, a fact that conditions social and economic life there. Located in the northwest of the Iberian Peninsula, it has nine provinces in all: Ávila, Burgos, León, Palencia, Salamanca, Segovia, Soria, Valladolid and Zamora.*

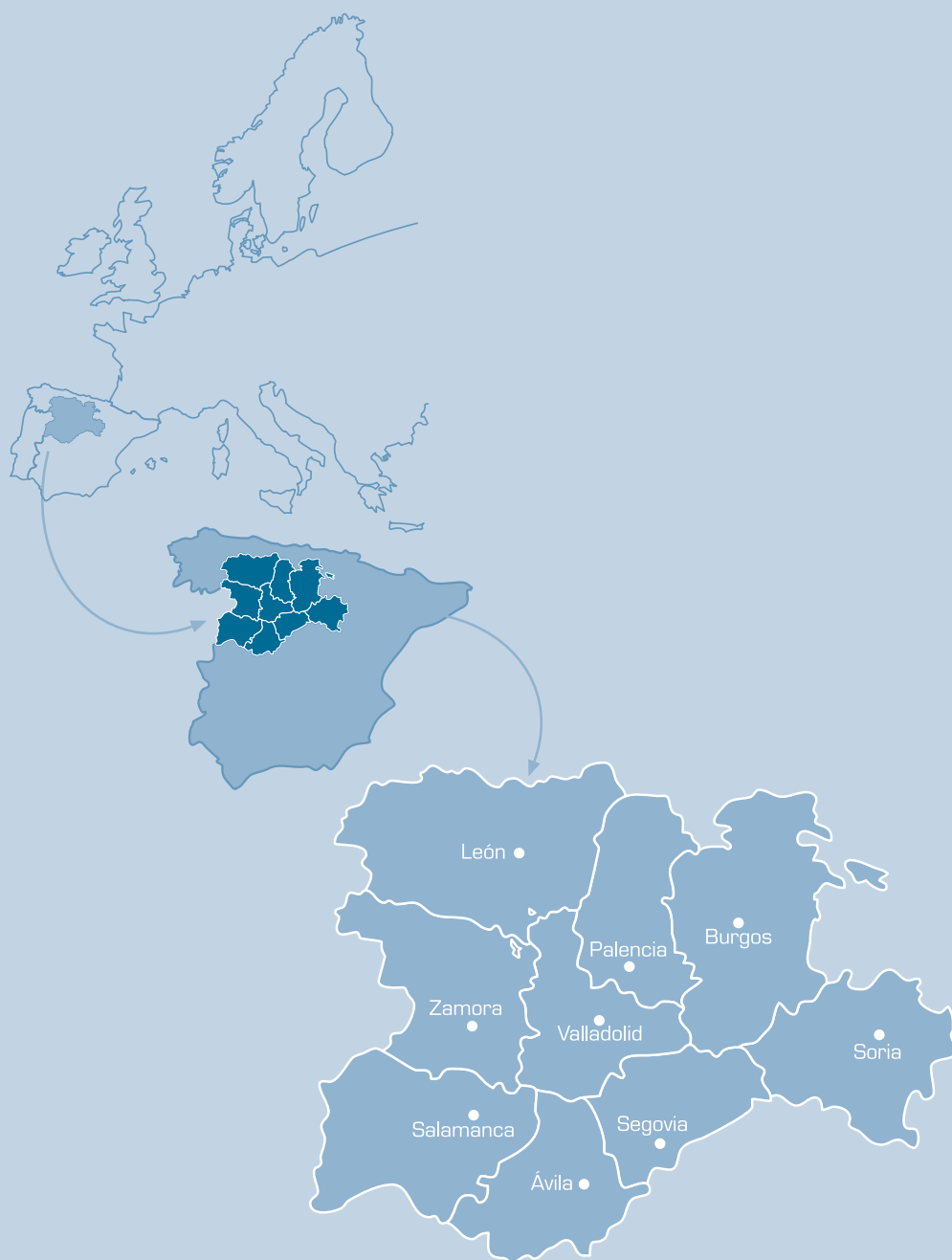
*In 2006, Castilla y León's census registered a population of 2,523,020, a slight increase in comparison with previous years, largely due to immigration and an upturn in birth rates. So there are 26.8 inhabitants per square kilometre, meaning that Castilla y León has some large peripheral areas (the region borders 9 other Spanish regions and Portugal) and highly depopulated zones, factors that directly affect the production structure and economic development in the region.*

*Until recently, agriculture was one of its major economic sectors, although the region is concentrating increasingly on the development of a knowledge-based economy by promoting sectors such as the aerospace industry, renewable energy and information and communication technologies, and modernization and the introduction of the innovation culture in, among others, the food industry, the metal machining industry and the services sector, all considered traditional industries with deep roots in Castilla y León. Furthermore, the regional production sector is widely scattered, with small, family firms predominating. The region has eight universities, with research groups of excellence in a range of areas, including veterinary studies, engineering and medicine. Research activity is complemented by the excellent work done in recent years at the region's technology and research centres.*



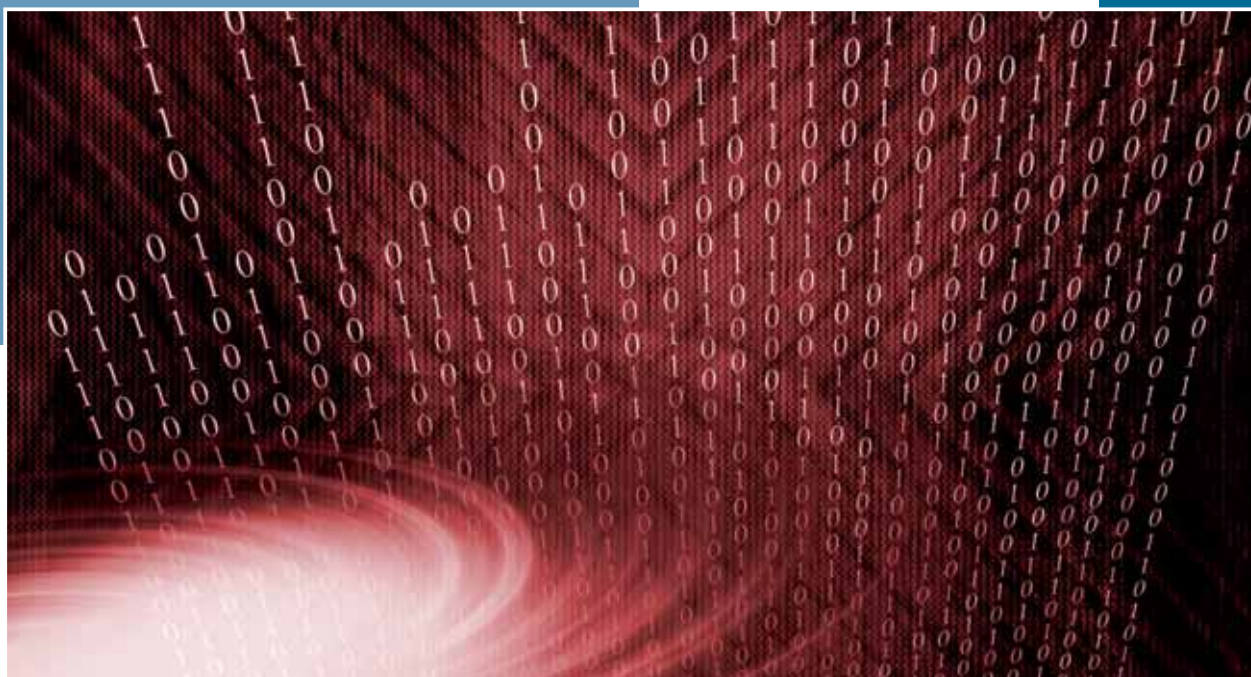
*As regards the public sector, the regional government, Junta de Castilla y León, has worked hard to develop infrastructures and premises related to innovation (technology parks, business and innovation centres, incubators, etc.) and to research (science parks, research centres, major science infrastructures, etc.), all supported by policies that, since 1997, when the First Regional Technology Plan was launched, have gradually defined and developed until the Regional Scientific Research, Technological Development & Innovation Strategy of Castilla y León 2007-2013. The success of these policies is clear from the fact that, among other things, Castilla y León has pulled itself by its own efforts out of the European Regional Cohesion Policy's "Objective 1" category, and has created a powerful regional R&D+I system, in which cooperation between business, universities and other research bodies and social players is a reality, earning the region recognition in Europe as the "region most committed to R&D (...), a prime example of how to formalize and implement a solid industrial development strategy based on innovation (...), by reinforcing regional guidelines around traditional sectors such as farming products, wood and furniture, mechanics, textile, natural stone, automotive components, and promoting new emerging sectors such as biotechnology and aeronautics Industry ("European Trend Chart on Innovation: Annual Innovation Policy Trends and Appraisal Report 2004-2005").*







# 1



## REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008 – 2011: THE CONTEXT







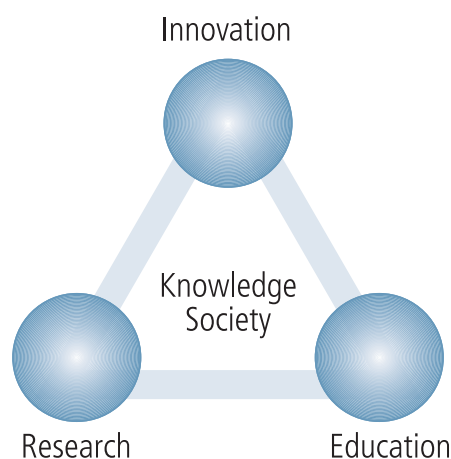
# 1. REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008–2011: THE CONTEXT

## 1.1. COOPERATION BETWEEN UNIVERSITY AND BUSINESS ON R&D AND INNOVATION



The academic and business worlds are two key players in implementing the knowledge economy. The university is in an exceptional position to integrate what is referred to as the knowledge triangle, being at the hub of education, research and innovation. In addition, businesses are an irreplaceable agent in the implementation of innovation as a basic factor in the economy.

Historically, research and teaching have been considered the two main missions of the university. Today, however, nobody questions the role of the academic world contributing to technological development through the transfer of knowledge, what is now known as the third mission. Although the two traditional missions must be maintained, universities have to assume their role in the economy, by being capable of responding better and faster to market demands and of developing alliances that can make good use of the scientific and technical knowledge they possess<sup>1</sup>. In turn, many companies have now incorporated the “open innovation” approach, based on cooperation with universities, using public research as a strategic resource and thereby consolidating the universities’ third mission.



<sup>1</sup> Communication from the Commission to the Council and the European Parliament. Delivering on the modernisation agenda for universities: Education, Research and Innovation. COM(2006) 208.

## 1.2. UNIVERSITY – BUSINESS COOPERATION IN EDUCATION AND TRAINING

---

Education is a central policy in the knowledge society. In line with the Lisbon Strategy, curricular developments based on the spirit of continuous training in society are nowadays accepted as a key factor in economic growth.

In recent years, European countries have realized the need for changes in their educational systems, as the labour market not only requires graduates with knowledge and skills of a professional nature, but also demands their ability to adapt to new areas of professional development not necessarily related to their specific fields of study. Indeed, one of the priority lines in the process of adaptation to the guidelines laid down by the European Higher Education Area refers to the development of teaching-learning methodologies in developing competencies.

Qualified, skilled professionals will be the main competitive advantage of the businesses in the future. The availability of qualified human capital with specific skills and competencies is a decisive factor in persuading large companies to set up in a particular place. For SME, which are a major part of our business world, this is a crucial resource, particularly as they simply may not choose their locations so easily.

In this scenario, universities are responsible for providing the skills and competencies needed for success in a globalized, knowledge-based economy. This requires a suitable frame and an intense, ongoing dialogue between academe and business, in order to encourage convergence between supply and demand.



# 2



## THE UNIVERSITY – BUSINESS SYSTEM IN CASTILLA Y LEÓN



## 2. THE UNIVERSITY – BUSINESS SYSTEM IN CASTILLA Y LEÓN

### 2.1. UNIVERSITY SYSTEM

There are three major players in the university system in Castilla y León: the universities themselves, the university interface agents and the science parks.

#### UNIVERSITIES

Castilla y León's university education system comprises 4 public universities (Burgos, León, Salamanca and Valladolid) and 4 private universities (Católica in Ávila, Europea Miguel de Cervantes in Valladolid, Pontifical University in Salamanca and IE University in Segovia). These universities are quite different in many aspects, the size (measured in number of students and lecturers) being one of the most relevant dissimilarities. The older public universities are considerably larger than the rest.

Besides teaching, these universities have research groups working on basic research (medicine, veterinary, biotechnology) and on more applied research (engineering). A high-level research group register (the so called "Groups of Excellence") has been created by the regional government, as a means of stimulating quality research, and promoting its visibility, as well as the formation of research networks, which will make better, more thorough use of the available resources.

#### PUBLIC UNIVERSITIES IN CASTILLA Y LEÓN



##### University of Burgos

Founded in 1994.  
8,050 students.  
687 lecturers.  
Campus in Burgos.



##### University of Salamanca

Founded in 1218.  
25,959 students.  
2,438 lecturers.  
Campus in Salamanca, Ávila and Zamora.



##### University of León

Founded in 1979.  
12,735 students.  
950 lecturers.  
Campus in León and Ponferrada.



##### University of Valladolid

Founded in the XIII Century.  
26,507 students.  
2,606 lecturers.  
Campus in Valladolid, Palencia, Segovia and Soria.

## PRIVATE UNIVERSITIES IN CASTILLA Y LEÓN

**Catholic University of Ávila**

Founded in 1997.  
652 students.  
84 lecturers.  
Centres in Ávila.

**Miguel de Cervantes European University**

Founded in 2002.  
1,484 students.  
136 lecturers.  
Centres in Valladolid.

**Pontifical university of Salamanca**

Founded in 1947.  
4,425 students.  
264 lecturers.  
Campus in Salamanca y Madrid.

**IE- University\***

Founded in 1997.  
1,139 students.  
192 lecturers.  
Centres in Segovia, Palencia, Salamanca and Madrid.

NB: Data for 2007-2008 academic year. Numbers include students and lecturers at centres in Castilla y León only

\* Name currently in registration procedure.

## SCIENCE PARKS

The table below provides a summary of the areas of specialization at science parks linked to the universities of Castilla y León:

## SCIENCE PARKS IN CASTILLA Y LEÓN

| PARK   | YEAR CREATED | SPECIALIZATION  |
|--|--------------|---|
| UNIVERSITY OF BURGOS SCIENCE & TECHNOLOGY PARK | 2005         | Food and agriculture, chemical, computation, construction, engineering and physics.   |
| UNIVERSITY OF LEÓN SCIENCE PARK                | 1994         | Biotechnology and energy.   |
| UNIVERSITY OF SALAMANCA SCIENCE PARK           | 2004         | Biomedicine, pharmacy, biotechnology, nanotechnology and nano-bio-engineering and innovation in food industry, chemical industry. |
| UNIVERSITY OF VALLADOLID SCIENCE PARK          | 2007         | ICT, industrial engineering, chemistry, physics, environment, metrology, food and agriculture, health and biotechnology.          |





## INTERFACE AGENTS

Bearing in mind their relations with the region's universities, these include:

## UNIVERSITY INTERFACE BODIES

**University of Burgos**

- General Foundation of the University of Burgos
- Office for the Transfer of Research Results

**University of León**

- General Foundation of the University of León and Business
- Office for the Transfer of Research Results

**University of Salamanca**

- General Foundation of the University of Salamanca
- Office for the Transfer of Research Results
- Research Management Agency

**University of Valladolid**

- General Foundation of the University of Valladolid

**Pontifical University Salamanca**

- Knowledge Transfer Office



## 2.2. TECHNOLOGY CENTRES

Technology centres are basic components of the regional R&D and innovation system, because of their linking role between the generation of scientific and technological knowledge and the application of such knowledge in business, and because of the high level of the R&D and innovation activities they perform. The following table shows their main areas of activity.

### TECHNOLOGY CENTRES IN CASTILLA Y LEÓN



Process control and automation, energy, environment, ICT, robotics, artificial vision, food technology, mechanical engineering and biomechanical engineering.



Telecommunications, ICT, automation, Information Society.



Automotive and aerospace industries, transport, materials, products, processes, energy and environment.



Environment, materials, processes, products and manufacturing.



Genomics, proteomics, micro-organisms physiology, microbial products, bioconversions.



Industrial management, production, organization, industrial computer science, automation, artificial vision, fast prototyping, mechanical calculation and design.





## TECHNOLOGY CENTRES STAFF 2007

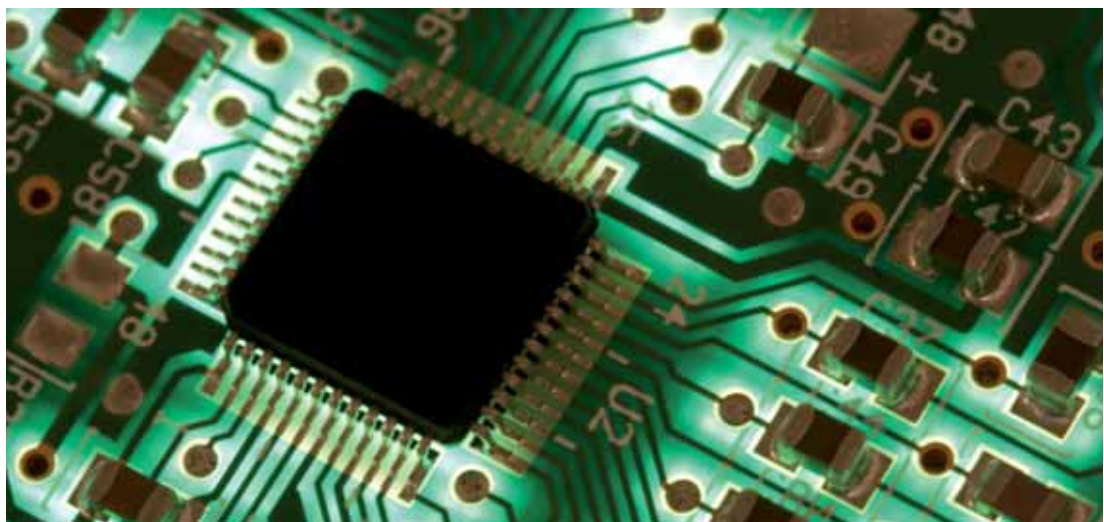
|   | 2007       |                |
|---|------------|----------------|
|   | Nº         | %              |
| Full-time staff                                 | 609        | 80.03%         |
| Higher academic qualifications                  | 319        | 41.92%         |
| Medium qualifications                           | 102        | 13.40%         |
| Others (administrative and Vocational Training) | 188        | 24.70%         |
| Part time collaborators                         | 91         | 11.96%         |
| Scholarships and grant holders                  | 61         | 8.02%          |
| <b>Total staff at centres</b>                   | <b>761</b> | <b>100.00%</b> |

## TECHNOLOGY DEVELOPMENT PROJECTS AND TECHNOLOGY CENTRES EARNINGS

|                                     | 2007     |
|-------------------------------------|----------|
| No. technology development projects | 886      |
| Total earnings                      | 64,663.0 |
| Billing to companies                | 33,712.9 |
| Admin. subsidies. Castilla y León   | 19,047.3 |
| National programmes                 | 3,355.7  |
| European programmes                 | 2,122.0  |
| Others                              | 6,425.1  |

(figures in K€)

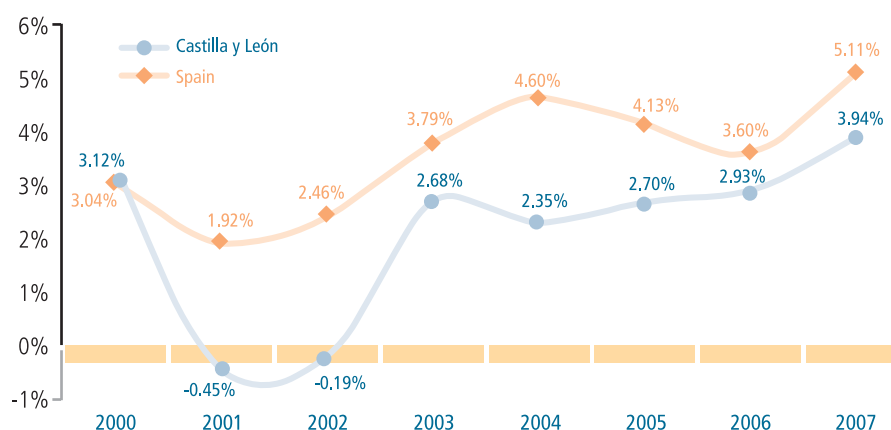
Source: ADE Inversiones y Servicios (Regional Development Agency).



## 2.3. BUSINESS

Although the number of companies in Castilla y León has grown in recent years, the global growth rate in Castilla y León was slightly lower than the Spanish average for 2007. Nevertheless, the gap has been closing since 2004, with 2007 showing the best figures since 1999, when the Spanish National Statistics Institute (INE) began its records.

NUMBER OF BUSINESSES IN CASTILLA Y LEÓN AND SPAIN. VARIATION FROM PREVIOUS YEAR.



Source: INE (National Statistics Institute).

Although Castilla y León has fallen behind in Spain's business population, the real situation is quite positive if we examine this indicator differentially, as the following table shows.

VARIATION IN NUMBER OF COMPANIES IN CASTILLA Y LEÓN AND SPAIN, 2006-2007

| Variation in number of companies in Castilla y León acc. to no. of wage earners<br>2007 — 2006 |                 |       |       |       |         |         |         |           |           |           |              |               |
|--|-----------------|-------|-------|-------|---------|---------|---------|-----------|-----------|-----------|--------------|---------------|
| Total  | No wage earners | 1 - 2 | 3 - 5 | 6 - 9 | 10 - 19 | 20 - 49 | 50 - 99 | 100 - 199 | 200 - 499 | 500 - 999 | 1,000 - 4999 | 5,000 or more |
| 3.94%  | 3.71%           | 3.99% | 4.91% | 2.68% | 5.89%   | 4.50%   | 1.90%   | 6.80%     | 12.61%    | -1.55%    | 13.04%       | 0.00%         |
| Variation in number of companies in Spain acc. to no. of wage earners<br>2007 – 2006           |                 |       |       |       |         |         |         |           |           |           |              |               |
| Total  | No wage earners | 1 - 2 | 3 - 5 | 6 - 9 | 10 - 19 | 20 - 49 | 50 - 99 | 100 - 199 | 200 - 499 | 500 - 999 | 1,000 - 4999 | 5,000 or more |
| 5.11%  | 5.52%           | 5.76% | 3.59% | 2.28% | 3.22%   | 3.43%   | 4.31%   | 5.61%     | 7.93%     | 7.31%     | 3.95%        | 6.45%         |

Source: INE (National Statistics Institute)

While the Spanish average is higher as regards the creation of companies with fewer than 2 people on the payroll, Castilla y León generally grows more than Spain as a whole in businesses with 3 to 50 employees, as it does in firms with 100 to 500, and even in businesses with 1,000 to 5,000. It is in this segment of industry and business where university–business cooperation has the greatest potential and value added.

# 3



## UNIVERSITY – BUSINESS COOPERATION: THE SITUATION TODAY

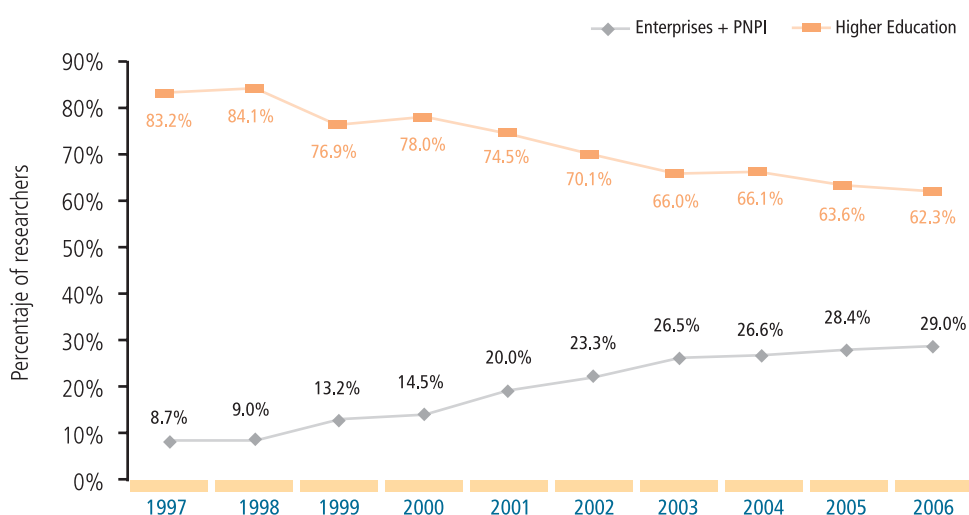


### 3. UNIVERSITY – BUSINESS COOPERATION: THE SITUATION TODAY

#### 3.1. UNIVERSITY – BUSINESS COOPERATION

Generally speaking, in Castilla y León, the academic world has greater influence in R&D than it has in the rest of Spain. More than half of the region's R&D personnel (52.58%, as opposed to the Spanish average of 37.54%), and nearly two-thirds of researchers in the region (62.31%), work at universities. However, this percentage has dropped over the last decade, as the number of research workers in business has increased.

RESEARCHERS IN CASTILLA Y LEÓN



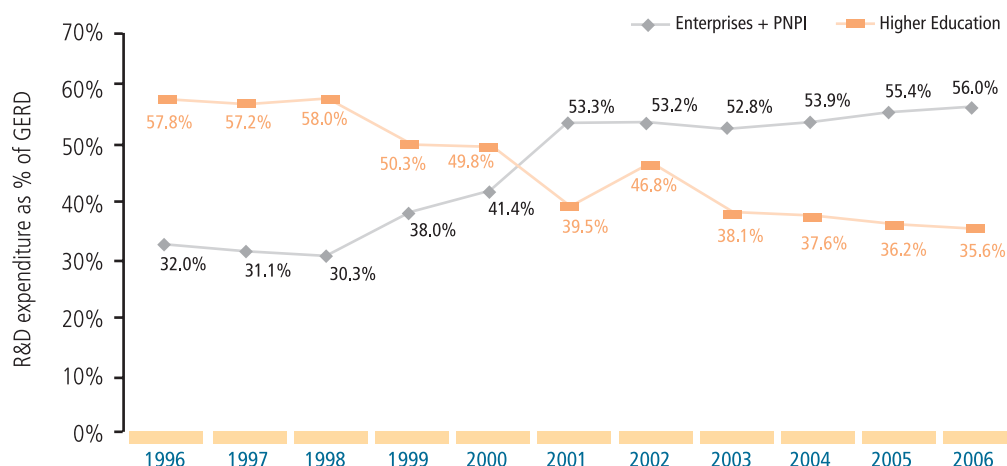
Source INE (National Statistics Institute)

Universities in Castilla y León spent more than €182 million on R&D in 2006<sup>2</sup>, accounting for 35.64% of the total regional R&D expenditure (as opposed to the average of 27.64% in Spain as a whole and about a third in Europe).

<sup>2</sup> Most recent figures available from INE.

The way the percentage of R&D expenditure has developed means that today's scenario is substantially different from the one a decade ago. Today, businesses execute a greater percentage of expenditure, despite having fewer R&D workers, a situation clearly favouring cooperation with the academic world.

#### R&D EXPENDITURE IN PERCENTAGES



Source INE (National Statistics Institute)

Given that, in terms of percentages, universities in Castilla y León actually perform more R&D than is the case in Spain and Europe, developing efficient knowledge transfer processes is also more important. The following table summarizes technology transfer indicators at universities in Castilla y León.

#### REGIONAL SYSTEM FOR TRANSFERRING KNOWLEDGE FROM UNIVERSITY<sup>3</sup>

|  | Castilla y León |         |        | % Spain (2006) |
|--|-----------------|---------|--------|----------------|
|  | 2005            | 2006    | 2007   |                |
| Researchers (Higher education)   | 3,682.8         | 3,779.9 | *      | 6.82%          |
| Earnings from R&D contracts and business consultancy services (€ 000s) | 8,770           | 12,255  | 13,868 | 4.76%          |
| OEPM** patent applications   | 7               | 10      | 9      | 2.49%          |
| Patent licence and rights transfer agreements                          | 4               | 2       | 4      | 1.04%          |
| Earnings from patent licence and rights transfer agreements (K€)       | 52.4            | 48.4    | 44.8   | 2.02%          |
| Spin-offs created  | 3               | 7       | 5      | 4.90%          |
| Professionals in knowledge transfer                                    | 15              | 15      | 15     | 3.16%          |
| Researchers per knowledge transfer technician                          | 246             | 252     |        | 136.95%        |
| Inscriptions Intellectual Copyright Register                           | 2               | 2       | 26     |                |

\*Not available

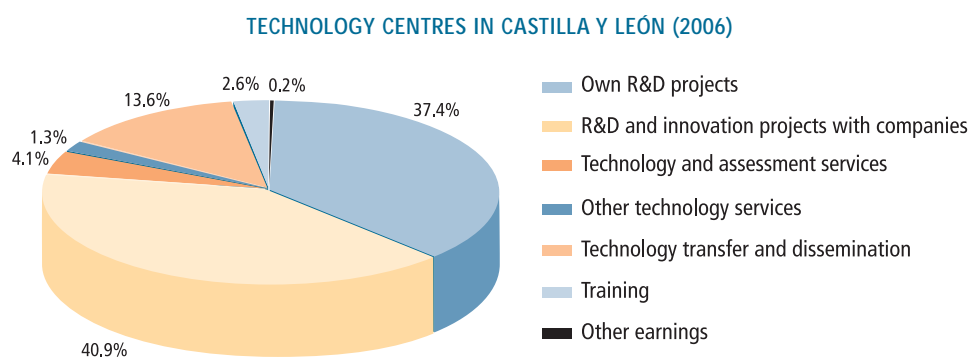
\*\* Spanish Patent and Trademark Office

<sup>3</sup> Aggregate data for University of Burgos, University of León, Pontifical University of Salamanca, University of Salamanca and University of Valladolid.  
Source for Spanish figures: Researchers and earnings from contracts: INE. Rest: RedOTRI (Spanish Research Results Technology Transfer Offices network).



### 3.2. TECHNOLOGY CENTRE – BUSINESS COOPERATION

The chart below gives current state of interaction between the region's technology centres and the business world, showing aggregate figures for knowledge transfer and related activities in 2006. During that year, more than 60% of the budget of the technology centres of Castilla y León corresponded to collaborative activities. Concerning business – technology centre activities, three main collaborative tools can be highlighted: R&D projects, technology advisory, and other technology services. During 2006, the technology centres developed 191 R&D collaborative projects with a total budget close to 19 M€.



Source ADE (Regional Development Agency)

Nevertheless, the level of collaboration with the business sector depends greatly on the size of the technology centres, the two bigger (CIDAUT and CARTIF) representing 90% of the total budget.



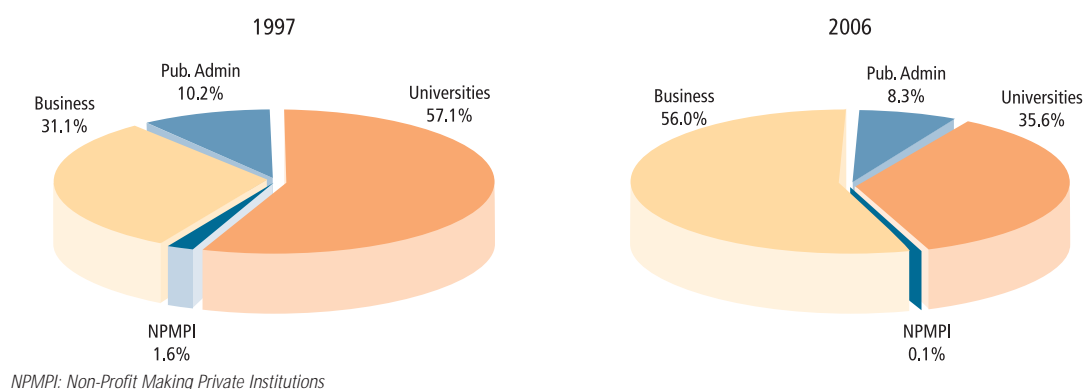
### 3.3. SYSTEM INDICATORS

#### R&D EXPENDITURE

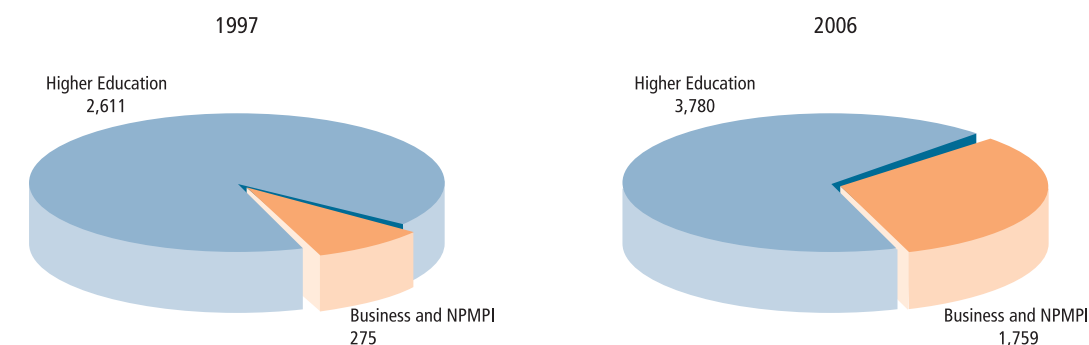
In 2006, businesses in Castilla y León spent €560.92 million on innovation<sup>4</sup>, making it the eighth region in Spain. Of the total expenditure on innovation, €272.14 million was paid out by SMEs, and €288.79 million by large companies. Castilla y León accounts for 3.39% of all business expenditure on innovation in Spain, a percentage lower than the region's actual standing in the Spanish economy (5.4% of the GDP in 2006<sup>5</sup>), and R&D expenditure (4.3% of national R&D outlay in 2006<sup>6</sup>). The percentage of innovative companies (23.28% in 2006<sup>11</sup>) was lower than the Spanish average (25.33%).

The scenario regarding expenditure on R&D and R&D personnel has changed substantially in the last decade. Today businesses account for 56% of R&D expenditure, despite only having 29% of all personnel working in R&D, as opposed to 62.3% at the universities.

#### R&D EXPENDITURE SECTOR BY SECTOR



#### RESEARCHERS



Source: INE. "R&D Statistics".

<sup>4</sup> INE, In-house technological innovation figures, 2006 (provisional results as of 13/12/2007).

<sup>5</sup> INE, Regional accounts in Spain, base 2000.

<sup>6</sup> INE, R&D statistics, 2006.



## REGIONAL R&D AND INNOVATION PROGRAMMES

One way of defining the current cooperation system between businesses, universities and technology centres is their joint participation in the frame of financial support lines for regional R&D and innovation, in particular the line of business R&D projects.

The table below gives a breakdown of research centre participation (i.e. technology centres, universities and other research bodies) in these business projects, where they act as organizations subcontracted by the firm in question.

### UNIVERSITY, TECHNOLOGY CENTRE AND RESEARCH BODY PARTICIPATION

| Castilla y León                          |   |               |                          |               |  |              |                          |               |
|--|---|---------------|--------------------------|---------------|--|--------------|--------------------------|---------------|
| Organization                             | No. projects organization takes part in |               |                          |               | Total budget subcontracted by business to organization |              |                          |               |
|  | 2005<br>call for tenders                | %             | 2006<br>call for tenders | %             | 2005<br>call for tenders                               | %            | 2006<br>call for tenders | %             |
| Universities                             | 35                                      | 13.26%        | 65                       | 28.51%        | 1,505,084.82 €   | 1.00%        | 2,780,131.00 €           | 2.61%         |
| Technology centres                       | 65                                      | 24.62%        | 56                       | 24.56%        | 12,165,539.00 €  | 8.07%        | 7,721,610.00 €           | 7.24%         |
| Reg. Gov. Castilla y León (ITACyL)       | 5                                       | 1.89%         | 5                        | 2.19%         | 113,615.00 €   | 0.08%        | 313,245.00 €             | 0.29%         |
| CSIC (National Science Research Council) | 0                                       | 0.00%         | 0                        | 0.00%         | 0  | 0.00%        | 0                        | 0.00%         |
| <b>Total</b>                             | <b>105</b>                              | <b>39.77%</b> | <b>126</b>               | <b>55.26%</b> | <b>13,784,238.82 €</b>                                 | <b>9.14%</b> | <b>10,814,986.00 €</b>   | <b>10.15%</b> |

| Outside Castilla y León                  |   |               |                          |              |  |              |                          |              |
|--|---|---------------|--------------------------|--------------|--|--------------|--------------------------|--------------|
| Organization                             | No. projects organization takes part in |               |                          |              | Total budget subcontracted by business to organization |              |                          |              |
|  | 2005<br>call for tenders                | %             | 2006<br>call for tenders | %            | 2005<br>call for tenders                               | %            | 2006<br>call for tenders | %            |
| Universities                             | 13                                      | 4.92%         | 6                        | 2.63%        | 789,651.00 €   | 0.52%        | 379,617.00 €             | 0.36%        |
| Technology centres                       | 16                                      | 6.06%         | 5                        | 2.19%        | 656,637.00 €   | 0.44%        | 394,636.00 €             | 0.37%        |
| Reg. Gov. Castilla y León (ITACyL)       | 0                                       | 0.00%         | 0                        | 0.00%        | 0  | 0.00%        | 0                        | 0.00%        |
| CSIC (National Science Research Council) | 6                                       | 2.27%         | 8                        | 3.51%        | 366,836.00 €   | 0.24%        | 481,128.00 €             | 0.45%        |
| <b>Total</b>                             | <b>35</b>                               | <b>13.26%</b> | <b>19</b>                | <b>8.33%</b> | <b>1,813,124.00 €</b>                                  | <b>1.20%</b> | <b>1,255,381.00 €</b>    | <b>1.18%</b> |

Source: ADE

Cooperation between universities and technology centres and businesses in regional R&D and innovation lines is solid and improving. It is increasingly frequent to find R&D centres cooperating on company projects, with such cooperation accounting for a greater proportion of the total budget (9% in 2005, 10% in 2006).

Businesses tend to cooperate more with technology centres (8% of the budget in 2005, and 7.24% in 2006), than with universities (1% in 2005, 2.61% in 2006), although things do seem to be improving here.



### 3.4. THE UNIVERSITY – BUSINESS SYSTEM: THE SITUATION TODAY

Having succinctly described the situation regarding cooperation among the leading players in the system, this section reviews how it works:

#### HOW THE UNIVERSITY – BUSINESS SYSTEM WORKS

A functioning university–business system needs to be based on three essential features: the identification of (and incentives for) technology supply and demand, the channelling of supply and demand (effective interconnection) and the availability of structures guaranteeing that the system operates and is stimulated. The following charts show the opportunities, weaknesses and requirements identified in each of the key operational features of the university – business system in Castilla y León.

#### OPPORTUNITIES FOR IMPROVING UNIVERSITY – BUSINESS SYSTEM

##### OPPORTUNITIES FOR UNIVERSITY – BUSINESS SYSTEM

- Land and infrastructures available in innovative milieus (science, technology and business parks).
- Experience and excellence in regional research and existence of research groups with increasing experience in areas of knowledge crucial to productive specialization in Castilla y León.
- Critical mass, experience and resources in academic world to offer lifelong learning training and development of professional profiles suited to business requirements.
- Wide-ranging cooperation in R&D between technology centres and regional business. Extensive knowledge of business realities and their technological needs.
- Best practices in cooperation that could act as catalysts of the University – Business Strategy. Possibility of using such examples for orienting modes of work and connection within strategy.
- Value of trust and creation of loyalties. Technology centres have a long record of cooperating with businesses and are now a valuable source of knowledge transfer and have perfected links and work methods.
- Castilla y León regional government-backed support bodies working in the University – Business Strategy have extensive knowledge of real situation in regional business and sectors.
- Growing awareness of and commitment towards innovation as a basic element of business development and competitiveness.
- Commitment to improve and train human resources in businesses to provide them with specialized staff, both in R&D technical and management areas.



### OPPORTUNITIES IN INSTITUTIONAL SUPPORT FRAME

- Authorities have experience in and commitment to R&D and innovation policies
- Regional policies in support of scientific research and business innovation planned jointly through the regional R&D and innovation strategy (optimization of resources). Knowledge transfer one of the priorities of current regional R&D and innovation strategy, 2007-2013.
- Priority given to proactive initiatives in programmes and measures affecting business R&D and innovation.
- Priority given to R&D and innovation in the region's strategic sectors through programmes requiring participation in cooperation of all players in the university – business system.
- Sector strategic research plans developed as part of the Regional R&D and innovation strategy for Castilla y León 2007-2013, for instance the Biomedicine Strategic Research Plan.
- Collaborative environment between public administration and technology centres, through which key needs for collaboration with business are addressed.
- Spanish Public Act of Parliament (LO) 4/2007 modifying the Public Act of Parliament on Universities (LOU), profiling a more favourable environment for the involvement of university staff in business activities, including the creation of new technology-based businesses.
- Availability of a new, broader, more flexible and ambitious set of R&D and innovation aid schemes giving priority to key areas in the development of the university – business system (including strategic programmes, effective cooperation projects, aiding Technology Based Business (TBB) and HR mobility and specialization.
- Development of national and European technology platforms, which may act as trampolines for the internationalization of research in key sectors for Castilla y León and in projects of major impact. .
- Encourage innovative business associations as scientific, educational and business meeting grounds.
- Develop a broadband communications network in order to facilitate connections between players in the university – business system and with other Spanish and foreign players taking part in R&D and innovation activities.



## WEAKNESSES OF THE SYSTEM AND NEEDS IDENTIFIED

---

### DYSFUNCTIONS AND STRUCTURAL NEEDS

- Basic research rarely transferred to businesses because of the difficulties inherent in the process.
- Limited size and specialization affecting most university – business interface structures. Lack of effective professionalized knowledge transfer services and few businesses created at universities and technology centres.
- Rules governing academic cooperation unsuited to meet business requirements, complex, rigid red tape. Lack of incentives for improving motivation for research staff to become involved in production sector.
- Lack of specialized technical and management staff in businesses to promote and develop university – technology centre – business cooperation and assimilate knowledge, while also contributing to understanding and valuing the importance of R&D and innovation activities as a powerful business competitiveness tool.
- Poor communications infrastructure between players in the university – business system, which hinders interaction and transfer of information and knowledge.

### DYSFUNCTIONS AND REQUIREMENTS IN MUTUAL KNOWLEDGE AND COMMUNICATION BETWEEN PLAYERS IN THE SYSTEM

- Scientific activity not sufficiently oriented towards real regional business needs, derived from lack of interaction between businesses and research groups.
- Technology and research supply at universities poorly disseminated.
- Little or no patenting activity at regional universities.
- Technology centre development strategies pay little heed to strategic regional objectives, particularly the ones concerning strategic and emerging sectors.
- Universities know very little about business demands in strategic sectors in the region, whether technology- or education- or training-oriented (professional competencies and skills).
- Businesses tend not to take real potential of cooperation with university research groups seriously.

### DYSFUNCTIONS AND REQUIREMENTS FOR PLAYER-TO-PLAYER INTERACTION

- Little cooperation in higher education and lifelong learning, hindering the development of the professional profiles companies need.
- Little or no cooperation between technology centres and businesses and university research groups on high level developments significantly improving the system's technological and competitive levels. Little relation between technology centres and universities, which often depend on personal relations between researchers at the two.
- Little or no cooperation between technology centres on transversal projects involving different areas of development.
- Private sector and regional business players absent from process of generating and consolidating TBB from technology projects developed at technology centres and universities.
- Very short-term vision at businesses about R&D and innovation projects.
- Lack of agile, flexible financing instruments suited to the needs of technology-based business projects, and which promote the participation of private sector in TBB.
- Little use of mechanisms designed to aid recruitment of research staff by businesses and of lifelong learning of company technical staff.

# 4



## UNIVERSITY – BUSINESS STRATEGY 2008-2011: THE OBJECTIVES





## 4. UNIVERSITY – BUSINESS STRATEGY 2008-2011: THE OBJECTIVES

---

The general objective of the University – Business Strategy 2008-2011 is to strengthen the knowledge triangle as a basis for building competitive advantage in Castilla y León, by stimulating technological innovation in businesses through the transfer of knowledge generated at universities and by laying the foundations of sustainable economic and technological growth and the creation of quality employment.

THIS GENERAL OBJECTIVE IS DEPLOYED THROUGH THE FOLLOWING STRATEGIC OBJECTIVES:

- a) Strengthen knowledge transfer structures and specialized human resources at universities and technology centres. Have available human resources specializing in R&D and innovation activities in businesses. Have a communications infrastructure that facilitates the transfer of information and knowledge.
- b) Generate and strengthen technology supply at universities and technology centres, orienting it to business demand at a regional level, by promoting mutual knowledge (disseminate supply and channel demand).
- c) Promote university – business cooperation through participation in R&D and innovation programmes and initiatives in cooperation.
- d) Stimulate the identification, protection and exploitation of industrial and intellectual property rights in academe.
- e) Generate and consolidate new technology-based business activities.
- f) Promote the innovative and entrepreneurial culture in the university – business system and in society in general.
- g) Promote university–business convergence in higher education and lifelong learning.



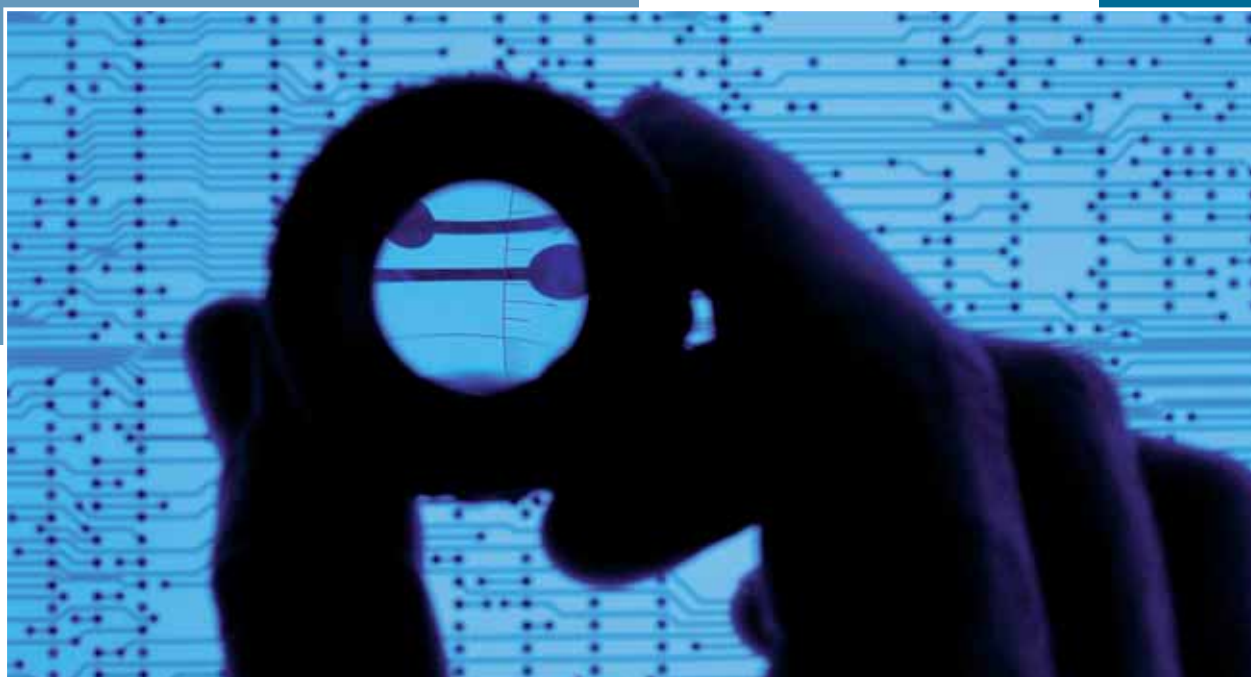
For specific Strategy objectives for players in the university, technology centre, and business system, the following objectives were set:

| Strategic objectives   | Specific objectives  | Universities | Technology centres | Businesses |
|--|--|--------------|--------------------|------------|
| a) Strengthen knowledge transfer structures                                      | - Businesses recruit R&D and innovation staff from universities/technology centres.                              |              |                    | ●          |
|  | - Action and measures on specialist HR in business.  |              |                    | ●          |
|  | - Inclusion of specialized human resources in knowledge transfer offices at universities and technology centres. | ●            | ●                  |            |
| b) Generate and strengthen technological supply oriented towards business demand | - Increase in science and technology supply from universities and technology centres.                            | ●            | ●                  |            |
|  | - Increase in the use of university and technology centre infrastructures by companies.                          | ●            | ●                  | ●          |
| c) Promote joint R&D   | - Increase in cooperation in regional programmes.  | ●            | ●                  | ●          |
|  | - Increase in national programmes in cooperation.  | ●            | ●                  | ●          |
|  | - Increase in participation in European/international Programmes.  | ●            | ●                  | ●          |
|  | - Increase in innovating clusters.   | ●            | ●                  | ●          |
|  | - Measures to improve university researchers and lecturers mobility to businesses.                               | ●            | ●                  | ●          |
| d) Promote exploitation of knowledge   | - Increase in number of patents applied for by universities and technology centres.                              | ●            | ●                  |            |
|  | - Increase in patents exploited by businesses.   | ●            | ●                  | ●          |
| e) Generate and consolidate technology-based business activities                 | - Increase creation of technology-based spin-offs from research results.   | ●            | ●                  |            |
|  | - Improve performance of existing TBB.   | ●            | ●                  | ●          |
| f) Promote innovative culture  | - Increase dissemination and awareness of players involved and society in general.                               | ●            | ●                  | ●          |
| g) Strengthen university-business convergence                                    | - Consolidate figure of BLAL <sup>7</sup> .  | ●            |                    | ●          |
|  | - Increase financing for university – business. Chairs   | ●            |                    | ●          |
|  | - Increase number of business-oriented training actions.   | ●            |                    | ●          |

<sup>7</sup> BLAL: Business-linked associate lecturer



# 5



## REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008-2011: LINES OF ACTION



## 5. REGIONAL UNIVERSITY – BUSINESS STRATEGY 2008-2011: LINES OF ACTION

---

The University – Business Strategy involves 9 measures organized into three areas:

### **Area 1. Knowledge transfer and R&D and innovation**

1. Consolidation of knowledge transfer structures.
2. Identification and consolidation of technology supply and demand.
3. Cooperative R&D and innovation.
4. Protection and exploitation of knowledge.
5. Entrepreneurial activity and creation of technology-based businesses.
6. Dissemination.

### **Area 2. Education, lifelong learning and university – business convergence**

7. Business at university.
8. The university in business.

### **Area 3. University – business forums.**

9. Permanent dialogue between university and business.



**MEASURE 1.****CONSOLIDATION OF KNOWLEDGE TRANSFER STRUCTURES****OBJECTIVES:**

1. Consolidation of specialist human resources. Introduction of work tools and development of strategic plans for Knowledge Transfer Offices (KTO).
2. Consolidation of science parks at universities, areas and innovation infrastructures and technology parks, as spaces for technology transfer.

**DESCRIPTION OF CONTENTS:**

1. Consolidation of human resources specialized in knowledge transfer and the creation of businesses at universities and technology centres.
2. Introduction of result- and market-oriented work tools.
3. Strategic plans for KTO.
4. Extra backing for KTO at universities and technology centres.
5. Specialized training for technical staff at Knowledge Transfer Offices in university – business cooperation.
6. Skill training programmes and inclusion of R&D and innovation HR in the businesses and staff specialized in knowledge transfer in KTO.
7. Specific measures fostering science parks.

**ORGANIZATIONS RESPONSIBLE:**

- The Regional Government Department of Education is responsible for implementing and running activities in the academic milieu including measures at KTO, identification of knowledge-based business ideas and specific action at science parks.
- The Regional Government Department of Economy & Employment is responsible for activities at technology centres and businesses, including action at KTO, consolidation of human resources, specific action at science parks and HR skill and training programmes.
- The Regional Government Department of Health is responsible for activities favouring efficient management and consolidation of human resources working on knowledge transfer at health centres and services running R&D and Innovation activities.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General of Universities & Research, Universities of Castilla y León Foundation.
- Regional Government Department of Economy & Employment: ADE Inversiones y Servicios, ADEuropa Foundation, Technology Parks of Castilla y León, S.A., GESTURCAL S.A.
- Regional Government Department of Health: Regional Health Management, Directorate General for Public Health & R&D and innovation.

**MEASURE 2.****IDENTIFICATION AND CONSOLIDATION OF TECHNOLOGY SUPPLY AND DEMAND****OBJECTIVES:**

1. Analysis of supply and demand in the system via support bodies of the regional government of Castilla y León, interface agents and KTO at universities and technology centres.
2. Establishment of communication protocols linking business demand and university technology supply effectively.
3. Introduction of innovation advisory services and support for international technology transfer programmes.

**CONTENTS:**

1. Analysis of supply and demand. Establishment of communication protocols promoting the effective identification of business demand and technology supply at universities and technology centres.
2. Creation of technology supply catalogues and databases.
3. Databases available in Internet with research groups and technology supply.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible, in the academic world, for launching supply-demand identification and communication protocols, creating technology supply catalogues and databases and launching an online database.
- The Regional Government Department of Economy & Employment is responsible for launching business demand identification activities, and developing online catalogues and databases of supply at technology centres.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General of Universities & Research, Universities of Castilla y León Foundation.
- Regional Government Department of Economy & Employment: Directorate General for Industry, ADE Inversiones y Servicios, ADEuropa Foundation.



**MEASURE 3.****COOPERATIVE R&D AND INNOVATION****OBJECTIVES:**

1. Stimulate cooperative research between academic and business worlds, particularly in developing strategic R&D and innovation projects.
2. Promotion of participation by businesses, university research groups and technology centres from Castilla y León in international and Spanish programmes, networks, technology platforms.
3. Creation and consolidation of Innovating clusters.

**CONTENTS:**

1. Valuation of business cooperation and transfer of results in the evaluation phase of proposals presented to calls for tenders for research projects, groups of excellence and technical support staff.
2. Support for participation in Spanish and European projects. Programmes to stimulate participation in Spanish and international networks, technology platforms, Joint Technology Initiatives (JTI), R&D and innovation programmes. Programmes for joining consortia in international projects.
3. Cooperation in strategic regional, Spanish and European projects by universities, technology centres and businesses.
4. Promotion of cooperation projects between universities, technology centres and innovative business associations.
5. Lines of financing for R&D and innovation projects: repayable loans, bonus loans and guarantees on subsidy advances.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible for introducing results transfer criteria in competitive calls for tenders, for supporting university groups for their participation in Spanish, European and strategic projects and for promoting cooperation projects.
- The Regional Government Department for the Economy & Employment is responsible for supporting participation in Spanish, European and strategic projects, for promoting participation in international networks, technology platforms and consortiums and for promoting cooperation projects.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation.
- Regional Government Department of Economy & Employment: Directorate General for Industry, ADE Inversiones y Servicios, ADEuropa Foundation, ADE Financiación.
- Regional Government Department of Health: Directorate General for Public Health and R&D and innovation.
- Regional Government Department of Agriculture & Livestock: Agricultural Technical Institute of Castilla y León.

**MEASURE 4.****PROTECTION AND EXPLOITATION OF KNOWLEDGE****OBJECTIVES:**

1. Introduce services for effective transfer of knowledge in KTO.
2. Stimulate knowledge transfer and internal awareness.
3. Identification of inventions, as well as industrial and intellectual copyright.
4. Licence, commercialization and exploitation of industrial and intellectual copyright.

**CONTENTS:**

1. Stimulate knowledge transfer at universities and technology centres, and internal awareness.
2. Orient graduate, postgraduate and end-of-career projects towards businesses.
3. Identification at universities of inventions and industrial and intellectual copyright.
4. Intellectual copyright licence.
5. Initiatives related to protection of industrial copyright.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible for stimulating knowledge transfer at universities, for implementing systems of identification and industrial protection, and for orienting graduate, postgraduate and end-of-career projects towards businesses.
- The Regional Government Department of Economy & Employment is responsible for stimulating knowledge transfer and the promotion of the identification, protection and exploitation of knowledge in businesses and technology centres.
- The Regional Government Department of Health is responsible for stimulating the dissemination of knowledge transfer at health research centres, by promoting the use of the scientific knowledge from the academic world in the university – business system.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation.
- Regional Government Department of Economy & Employment: ADE Inversiones y Servicios, ADEuropa Foundation.
- Regional Government Department of Health: Regional Health Management, Directorate General for Public Health and R&D and innovation.



**MEASURE 5.****ENTREPRENEURIAL ACTIVITY AND THE CREATION OF TECHNOLOGY-BASED BUSINESSES****OBJECTIVES:**

1. Identification of business ideas that may be converted into businesses and stimulation of technology-based businesses projects (TBB).
2. Financial support for TBB plus other tools, including specific training plans.

**CONTENTS:**

1. Promotion of entrepreneurial culture in the university:
  - a. Identification of business ideas that may be converted into businesses.
  - b. Training and advice on the creation of businesses.
2. Stimulating TBB projects:
  - a. Promotion of TBB at technology centres, identification and promotion of potential TBB arising from projects involving cooperation between businesses and university groups.
  - b. Channelling identified university TBB ideas towards regional support and financing programmes.
  - c. Business creation programme (technology-based businesses).
  - d. Capturing technology-based business projects via the identification of resources in specific areas of R&D.
3. Support for TBB financing:
  - a. Financing programmes for TBB, financing via investment lines and Young and Innovative Business Programme.
  - b. Financial support for R&D projects involving loans and management of guarantees on subsidy advances.
4. Support for TBB through other tools: specific training programmes for TBB (business, management plans, etc.), participation of private sector in university TBB.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible, in the academic milieu, for promoting business culture, stimulating business creation projects and running specific training programmes on creating TBB.
- The Regional Government Department of Economy & Employment is responsible for stimulating business creation projects from the technology centres and for TBB support measures including creation, financial support instruments and training programmes.
- The Regional Government Department of Health is responsible for implementing dissemination measures covering R&D and innovation activities in health.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation.
- Regional Government Department of Economy & Employment: Directorate General for Economy, European Affairs & Financial Policy, ADE Inversiones y Servicios, ADE Financiación, EBIC, ADEuropa Foundation.
- Regional Government Department of Health: Directorate General for Public Health and R&D and innovation.

## MEASURE 6. DISSEMINATION

### OBJECTIVES:

1. Raise society's awareness of research, technological development and innovation and make people understand the scope and impact of the results of scientific, technological and innovative activity.
2. Evaluation of the role of the researcher and the creation of a global regional business and innovation culture.

### CONTENTS:

1. Science-technology encounters between researchers, technology centres and businesses.
2. Dissemination of R&D and innovation activities.
3. Dissemination of University – Business Strategy 2008-2011 and of supply and demand in the university – business system: Dissemination through sector plans and through plans for business monitoring of R&D and innovation.

### BODIES RESPONSIBLE:

- The Regional Government Department of Education is responsible for the dissemination of university R&D and innovation activities.
- The Regional Government Department of Economy & Employment is responsible for publicising the lines of financing available and business R&D and innovation.

### BODIES INVOLVED

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation, Social Councils of the Universities of Castilla y León.
- Regional Government Department of Economy & Employment: Directorate General for Industry, ADE Inversiones y Servicios, ADEuropa Foundation.



**MEASURE 7.****BUSINESS AT UNIVERSITY****OBJECTIVES:**

1. Strengthen presence and involvement of businesses in university training activities through the role of the Business linked associate lecturer (BLAL) and establish Business Chairs.

**CONTENTS:**

1. Business linked associate lecturers: Programme in which innovation project managers from businesses and technology centres in the region give lectures to students at public regional universities to bring the two worlds, both crucial for regional development, closer together.
2. Business chairs: Permanent cooperation between the university and certain businesses, integrating teaching in industry and facilitating the participation of leading professionals as professors.
3. Additional training in areas of interest to business for university students, depending on sector demand.
4. Educational innovation projects designed to develop professional profiles, training programmes for professionals (lifelong learning) and mobility initiatives.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible for dealing with the additional demand in matters of interest to business, for promoting the creation of business chairs and the BLAL programme.
- The Regional Government Department of Economy & Employment is responsible for meeting specific training demands in the field of innovation, for promoting business chairs and the BLAL programme.
- The Regional Government Department of Health is responsible for dealing with demand for training that will stimulate health innovations.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation, Universities of Castilla y León.
- Regional Government Department of Economy & Employment: Directorate General for Industry, ADE Inversiones y Servicios.
- Regional Government Department of Health: Regional Health Management, Directorate General for Public Health and R&D and Innovation Directorate General for Planning, Quality, Organization & Training.
- Regional Government Department of Agriculture & Livestock: Agricultural Technical Institute of Castilla y León.
- Business organizations.

## MEASURE 8.

### THE UNIVERSITY IN BUSINESS

#### OBJECTIVES:

1. Develop excellent, competitive human capital in the global environment, by renewing teaching methodologies for teacher training, as a means of converging with the European Higher Education Area.
2. Promote mobility oriented towards business training for students and first job placement for recent graduates.
3. Establish permanent contact with business colleges and associations to help these two agents approach to each other.

#### CONTENTS:

1. In-house training in businesses during academic year, particularly for particularly for students on Master's courses.
2. Possibility of doing end-of-degree projects at businesses.
3. Help to achieve first jobs.
4. R&D and innovation managers programme facilitating annual training for university graduates in R&D and innovation management, and their recruitment by businesses in Castilla y León.
5. Mobility of researchers from university and technology centres to businesses. Lines permitting researchers to go to businesses, and specialist training for university graduates at R&D and innovation centres of national and international excellence, for their subsequent recruitment by businesses in Castilla y León.

#### BODIES RESPONSIBLE:

- The Regional Government Department of Education is responsible for launching educational innovation projects, in-house training and end-of-degree projects in businesses, for training measures in response to business demand and for promoting the mobility of university researchers towards businesses.
- The Regional Government Department of Economy & Employment is responsible for the measures designed to help graduates find their first jobs, for the R&D and innovation managers programme, for providing support for the recruitment of researchers by businesses and for in-house training at businesses.
- The Regional Government Department of Health is responsible for starting up networks to promote researcher mobility and attracting talented people in the health sector in Castilla y León, and for business-oriented training activities.

#### BODIES INVOLVED

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation, Universities of Castilla y León.
- Regional Government Department of Economy & Employment: Directorate General for Industry, ADE Inversiones y Servicios, ADEuropa Foundation.
- Regional Government Department of Health: Regional Health Management, Directorate General for Public Health and R&D and Innovation, Institute of Health Sciences Studies.
- Regional Government Department of Agriculture & Livestock: Agricultural Technical Institute of Castilla y León.
- Business organizations.

**MEASURE 9.****PERMANENT DIALOGUE BETWEEN UNIVERSITY AND BUSINESS****OBJECTIVES:**

1. Encourage academic and business worlds to work together on identifying opportunities for cooperation in R&D and innovation and knowledge transfer.
2. Establish permanent contacts between universities and businesses in education and lifelong learning for the development of professional profiles.

**CONTENTS:**

1. R&D and innovation and knowledge transfer forum:
  - a. Analysis of business demand on R&D and innovation and knowledge transfer.
  - b. Production and dissemination of reports on technology supply and demand in Castilla y León.
  - c. University – business R&D and innovation exchange encounters and forums.
2. Education and lifelong learning forum:
  - a. Analysis of generic and specific competencies required by business sectors in Castilla y León
  - b. Help to orient university teaching towards business demand.
  - c. Production and dissemination of reports on supply and demand for professional skills and competencies in Castilla y León.
  - d. University – business training and employability exchange encounters and forums.

**BODIES RESPONSIBLE:**

- The Regional Government Department of Education is responsible for implementing and running university – business forums, and getting academic players involved.
- The Regional Government Department of Economy & Employment is responsible for starting up and running university – business forums, and getting business players involved.

**BODIES INVOLVED**

- Regional Government Department of Education: Directorate General for Universities & Research, Universities of Castilla y León Foundation, Universities of Castilla y León.
- Regional Government Department of Economy & Employment: Regional government sub-department for Employment, Directorate General for Industry, ADE Inversiones y Servicios, ADEuropa Foundation.
- Business organizations.

## 5.1 Correspondence between measures in University – Business Strategy for Castilla y León 2008-2011 and RRDIS 2007-2013

The table below shows how measures included in the University – Business Strategy 2008-2011 correspond to the Regional R&D and Innovation Strategy 2007-2013:

| University-Business Strategy 2008-2011 Measure                      |   | Regional R&D and Innovation Strategy 2007-2013 Measure  |
|---|---|---|
| 1. Consolidation of knowledge transfer structures                   | Specialist human resources knowledge transfer offices   | R-7.1 Promote business-oriented regional research   |
|   | Implementation of work tools  |   |
|   | Strategic plans for knowledge transfer offices  |   |
|   | Reinforcement of knowledge transfer offices from technology centres and universities  | IDT-7.1 Improve transfer bodies and mechanisms<br>IDT-6.1 Develop technology centres as key tool for improving competitive levels of businesses in Castilla y León<br>IDT-6.2 Diversification and specialization of technology centres and services |
|   | Specialized training for technical staff at knowledge transfer offices on university - business cooperation   | IDT-1.2 Training workers, businessmen and managers<br>IDT-1.3 Attract, recruit and keep specialized staff (technology officials and researchers)  |
|   | Skill and recruitment programmes for R&D and innovation HR in businesses and staff specializing in knowledge transfer at KTO  |   |
|   | Action at science parks   | R-6.1 Definition and development of a science park strategy around the universities of Castilla y León  |
|   |   | R-6.2 Promotion and extra backing for shared infrastructures<br>IDT-6.3 Development and extra backing for innovation areas in Castilla y León   |
| 2. Identification and consolidation of technology supply and demand | Analysis of supply and demand. Establishment of communication protocols promoting the identification of business demand and the technology supply at universities and technology centres                            | IDT-7.1 Improve transfer bodies and mechanisms<br>IDT-3.3 New innovative practices in businesses  |
|   | Creation of technology supply catalogues and databases  |   |
|   | Online databases available with research groups and technology supply   |   |
| 3. Cooperative R&D and innovation                                   | Evaluation of criteria for business cooperation and the transfer of results in aid schemes for financing groups of excellence, support for research projects and technical support staff for stable research groups | R-2.2 Consolidate groups of excellence in Castilla y León. Encourage the creation and progress in excellence of consolidated groups   |
|   |   | R-3.1 Extra backing and promotion of stable research groups   |
|   |   | R-3.2 Backing and promotion of new research groups  |
|   | Support for participation in Spanish and European projects  | R-2.3 Encourage participation in knowledge networks.  |
|   |   | IDT-2.1 Participation in Spanish and international R&D and innovation networks, technology platforms and programmes   |
|   | Cooperation between universities, technology centres and businesses on strategic regional, national and European projects   | R-7.1 Promote business orientation of regional research<br>IDT-2.2 Strategic R&D and innovation projects<br>IDT-7.3 Cooperative Research  |
|   | Promotion of projects involving cooperation between universities, technology centres and innovative business associations   | IDT-7.2 Establishment of Innovative Clusters Associations   |
|   | Lines of financing for R&D and innovation projects  | IDT-3.1 Extra backing for financial tools for aiding SME  |
|   |   | IDT-3.2 Support for R&D and innovation projects   |

| University-Business Strategy 2008-2011 Measure                          |   | Regional R&D and Innovation Strategy 2007-2013 Measure  |
|---|---|---|
| 4. Protection and exploitation of knowledge                             | Stimulate knowledge transfer and internal awareness                                 | R-7.1 Promote business orientation of regional research<br>R-5.1 University of Castilla y León as entrepreneur university<br>R-5.2 Orientation of university teaching and research towards promoting entrepreneurial spirit and business creation   |
|   | Orient graduate, postgraduate and end-of-degree projects to business                |   |
|   | Identification of inventions and intellectual and industrial copyright              |   |
|   | Licence of intellectual protection  | IDT-5.1: Support for the identification of business ideas in knowledge-based activities   |
|   | Measures related to protecting industrial copyright                                 |   |
| 5. Entrepreneurial activity and creation of technology-based businesses | Promotion of entrepreneurial spirit at university                                   | IDT-2.3 Attraction of knowledge- based businesses<br>R-5.1 University of Castilla y León as entrepreneur university (tutoring entrepreneurial activity)<br>R-5.3 Extension of entrepreneurial culture (implementation of actions in Higher Education oriented towards business creation)<br>IDT-5.1 Support for identification of business ideas in knowledge-based activities. |
|   | Added backing for TBB projects  | IDT-5.2 Financing TBB   |
|   | Support on financing TBB  |   |
|   | Support for TBB via other tools and channels  | IDT-5.3 Non-financial tools for promoting technology-based businesses.  |
| 6. Dissemination  | Science-technology encounters between researchers and businesses                    | R-8.1 Promotion of science culture.<br>R-8.2 Dissemination of science and research activit  |
|   | Dissemination of R&D and innovation   | IDT-8.1 Dissemination of innovative activity<br>IDT-8.2 Recognition of scientific and innovative activity   |
|   | Dissemination of strategy and supply and demand in the university - business system |   |
| 7. Business in the university   | Business linked associate lecturers   | R-7.1 Promotion of business orientation in regional research  |
|   | Business Chairs   |   |
|   | Additional training in issues of interest to business                               |   |
|   | Educational innovation projects   |   |
| 8. The university in business   | Educational innovation projects   | R-5.1 University of Castilla y León as entrepreneur university<br>R-5.2 Orientation of university teaching and research towards promotion of entrepreneurial capacity and business creations  |
|   | In-house training   |   |
|   | Doing end-of-career projects in businesses  |   |
|   | Help from tutor to find first job   |   |
|   | R&D and innovation management programme   |   |
|   | University and technology centre researcher mobility to businesses                  |   |
| 9. Permanent university – business dialogue                             | R&D and innovation and knowledge transfer forum                                     | R-5.2 Orientation of university teaching and research towards promotion of entrepreneurial capacity and business creations  |
|   | Education and lifelong learning forum.  |   |



# 6



## IMPACT INDICATORS AND FOLLOW-UP INDICATORS





## 6. IMPACT INDICATORS AND FOLLOW-UP INDICATORS

Implementation and follow-up of the strategy should involve a small but quantifiable number of indicators facilitating regular monitoring of the measures introduced and evaluation of how the measures are evolving in light of the planned objectives, as well as evaluating the impact of the initiatives implemented and introducing, where appropriate, any necessary corrective action.

### 6.1. IMPACT INDICATORS

A few indicators will enable the evaluation of the impact of the University – Business Strategy for Castilla y León 2008-2011 to be evaluated.

| INDICATOR  | Current value | 2011  | Source |
|--|---------------|-------|--------|
| Researchers in business sector (in % over total)                         | 29%           | 40%   | INE    |
| % of R&D expenditure executed by private sector                          | 56.1%         | 61%   | INE    |
| % of regional businesses with more than 10 employees that are innovative | 23.3%         | 28.6% | INE    |
| % of HAMHIT <sup>a</sup> businesses out of total regional businesses     | 1.96%         | 3.2%  | INE    |

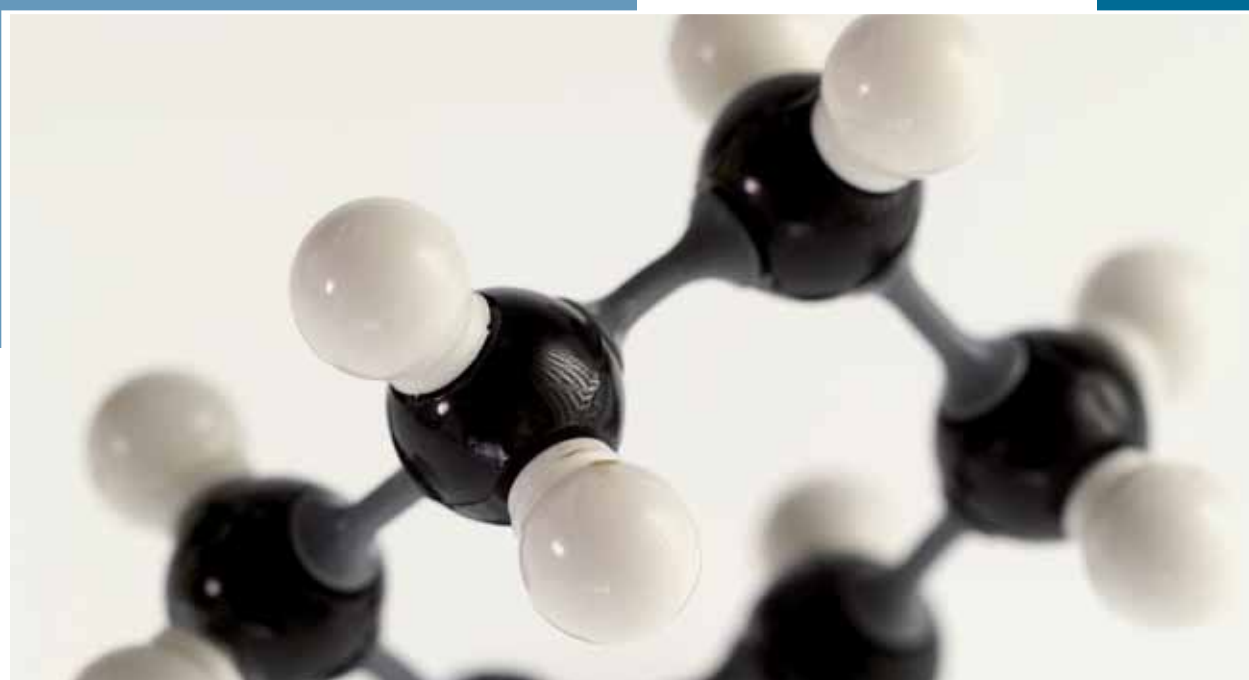
### 6.2. FOLLOW-UP INDICATORS

Strategy follow-up indicators are directly related to their specific objectives, enabling the degree of compliance with each target to be monitored while actions and initiatives are live. As these objectives are of course related to the measures to be implemented, deviations from the impacts envisaged will be detected early and put right by introducing suitable corrective actions.

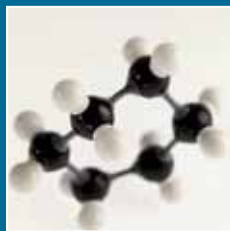
<sup>a</sup>HAMHIT: High and-Medium High Technology



| Strategic objectives   | Specific objectives   | Indicators   | 2006  | Target 2011 | Source  |
|--|---|--|-------|-------------|---|
| Strengthen knowledge transfer structures                                   | Businesses recruit specialized HR   | Percentage of researchers in business  | 29%   | 40%         | INE   |
|  | Specialist human resources join knowledge transfer offices at universities and technology centres       | Researchers per knowledge transfer technician  | 252   | 150         | University RRTO network                       |
| Generate and strengthen technology supply oriented towards business demand | Increase in science and technology supply from universities and technology centres to production sector | Percentage of research groups working with businesses  | 10.5% | 15%         | Technology centres and university KTO         |
|  | Increase in use of infrastructures by businesses  | Annual earnings by universities and technology centres from R&D and science-technology services under contract (M €) | 49.3  | 74.0        | Data from universities and technology centres |
|  | Increase in cooperation in regional programmes  | % total CyL budget in strategic projects (CENIT or similar)  | 10%   | 15%         | ADE lines for business R&D                    |
|  | Increase in participation in Spanish programmes in cooperation  | % presupuesto total CyL en proyectos estratégicos (CENIT o similares)  | 4.75% | 5.5%        | CDTI  |
| Promote R&D in cooperation   | Increase in participation in European/international programmes  | CyL participation (%) in Spanish return from the EU R&D Framework Programme  | 1.8%  | 2.5%        | CDTI  |
|  | Increase in innovating clusters   | Increase in players involved in European programmes and networks   | 30    | 300         | CDTI  |
|  | Increase in number of patents applied for   | Number of innovating clusters generated  | 2     | 10          | MITyC   |
| Promote exploitation of knowledge  | More technology-based spin-offs created from R&D projects   | National patents applied for/million inhabitants in universities and technology centres per year                     | 9     | 15          | OEPM  |
| Generate and consolidate technology-based business activities              | Performance of existing TBB   | Number of spin-offs  | 43    | 70          | KTO at universities and technology centres    |
|  |   | Turnover of spin-offs (M €)  | 16.9  | 28.0        | Mercantile register                           |



## RESOURCES MOBILIZED





## 7. RESOURCES MOBILIZED

The table below provides a summary with an estimate of the resources likely to be mobilized under the University – Business Strategy while it lasts (2008-2011). The resources are broken down year by year in line with the source of financing.

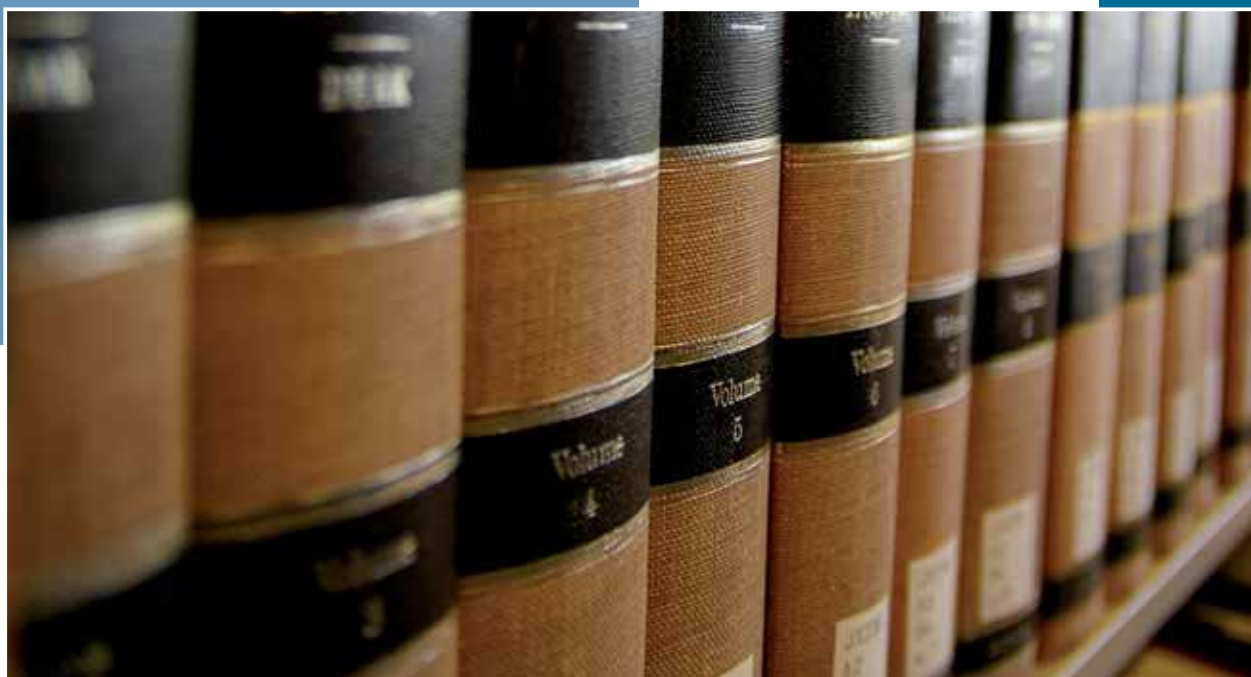
|   | Regional Government Department of Economy & Employment | Regional Government Department of Education | Total Regional Government Castilla y León |
|---|--|---|---|
| <b>Area 1. Knowledge transfer and R&amp;D and innovation</b>                    | <b>118,9</b>   | <b>29,5</b>                                 | <b>148,4</b>                              |
| Consolidation of knowledge transfer structures                                  | 23.2   | 5.1   | 28.3                                      |
| Identification and consolidation of technology supply and demand.               | 0.7  | 3.0   | 3.7                                       |
| Cooperative R&D and innovation  | 86.9   | 11.3  | 98.2                                      |
| Protection and exploitation of knowledge  | 0.8  | 1.9   | 2.7                                       |
| Entrepreneurial activity and creation of technology-based businesses            | 6.8  | 6.1   | 12.9                                      |
| Dissemination   | 0.5  | 2.1   | 2.6                                       |
| <b>Area 2. Education, lifelong learning and university-business convergence</b> | <b>0.2</b>   | <b>0.4</b>                                  | <b>0.6</b>                                |
| <b>Area 3. University-business forums</b>                                       | <b>0.5</b>   | <b>0.5</b>                                  | <b>1.0</b>                                |
| <b>GENERAL TOTAL</b>  | <b>119.6</b>   | <b>30.4</b>                                 | <b>150</b>                                |

Figures in M €





# 8



## ACRONYMS



## 8. ACRONYMS

---

|                |  |
|----------------|--|
| <b>ADE</b>     | Regional Development Agency of Castilla y León       |
| <b>BLAL</b>    | Business-linked associate lecturer                   |
| <b>CDTI</b>    | Centre for the Development of Industrial Technology  |
| <b>CENIT</b>   | Strategic National Consortia for Technology Research |
| <b>CyL</b>     | Castilla y León                                      |
| <b>HR</b>      | Human Resources                                      |
| <b>ICT</b>     | Information and Communication Technology             |
| <b>INE</b>     | National Statistics Institute (Spain)                |
| <b>ITACyL</b>  | Agro-food Technology Institute of Castilla y León    |
| <b>KTO</b>     | Knowledge Transfer Office                            |
| <b>MITyC</b>   | Spanish Ministry for Industry, Tourism and Commerce  |
| <b>OEPM</b>    | Spanish Patent and Trademark Office                  |
| <b>PNPI</b>    | Private Non-Profit Institutions                      |
| <b>R&amp;D</b> | Research and Development                             |
| <b>RRDIS</b>   | Regional R&D and Innovation Strategy                 |
| <b>RRTO</b>    | Research Results Transfer Office                     |
| <b>SME</b>     | Small and Medium Enterprises                         |
| <b>TBB</b>     | Technology Based Business                            |





