“SUPPORTING THE CONTRIBUTION OF HIGHER EDUCATION INSTITUTIONS TO REGIONAL DEVELOPMENT”

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SELF–EVALUATION REPORT

Canary Islands, Spain

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Consejería de Educación, Cultura y Deportes

Agencia Canaria de Evaluación de la Calidad y Acreditación Universitaria

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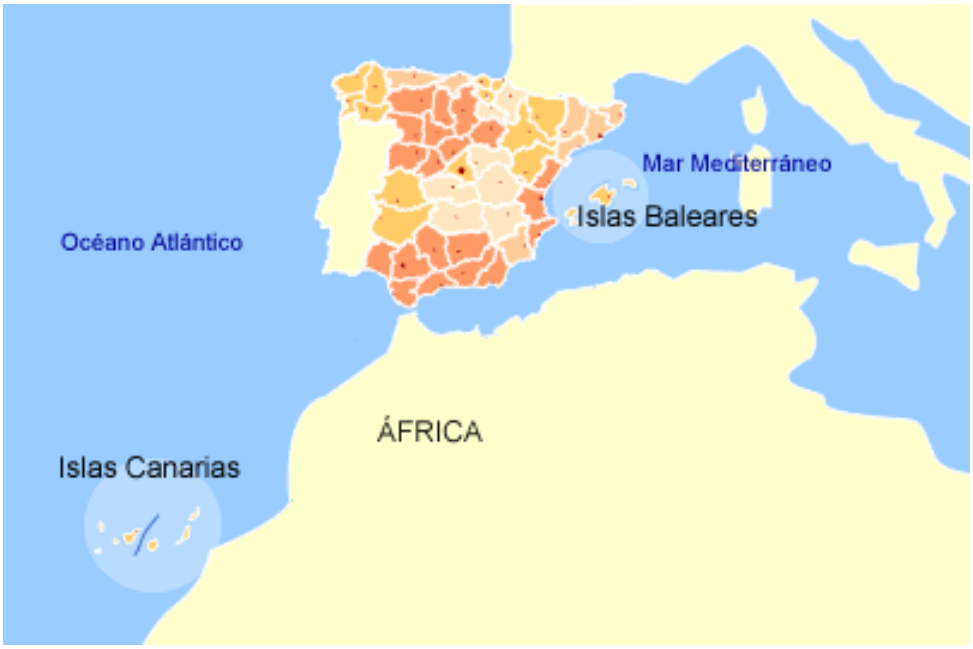
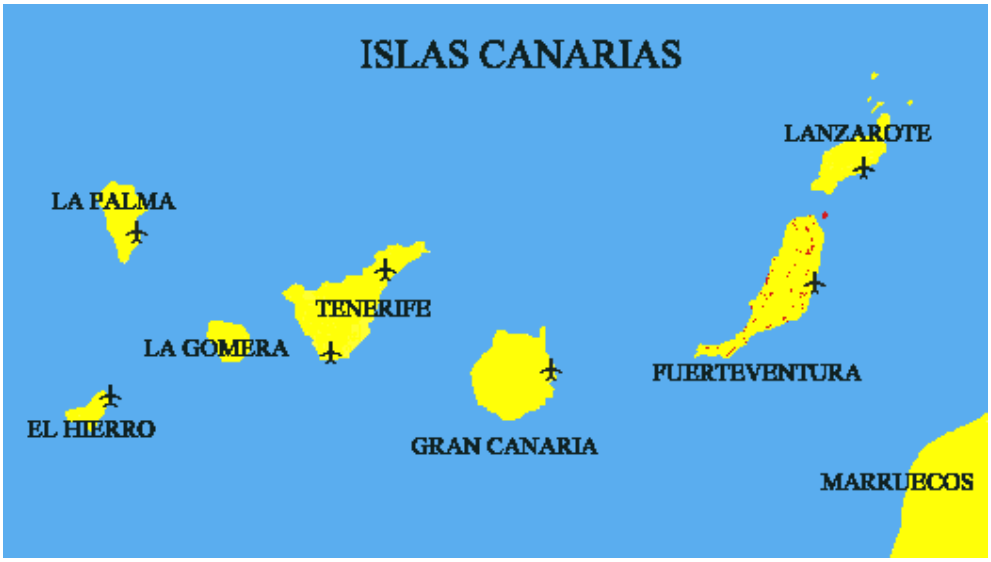
ACRONYMS

ACECAU:	Quality Assurance and Accreditation Agency
ACEG:	Canarian Association for Globalization Study
ANECA:	National Agency for the Evaluation of Quality and Accreditation
ANEP:	Spanish Ministry of Education's Evaluation Agency
ARETHUSE:	Association de Rencontres Thématiques Economique des Universités du Sud de l'Europe
ASCRI:	Spanish Association of Risk Capital Entities
ASINCA:	Canarian Industry Association
BOC:	Official Gazette of Canary Islands
BOE:	Official Gazette
CC:	Canarian Coalition
CCOO:	Trade Union "Comisiones Obreras"
CDC:	Central Directory of Companies
CDTI:	Centre for the Technological and Industrial Development
CEOE:	Spanish Confederation of Business Organizations
CES:	Economic and Social Council of the Canary Islands
CICYT:	Committee on Science and Technology
COTEC:	Spanish Innovation System
CRUE:	Conference of Rectors of the Spanish Universities
CSIC:	Higher Council of Scientific Research
CV:	Curriculum Vitae
CULTESA:	Tenerife In-Vitro Crops
DIRCE:	Directorio Central de Empresas
DGFIIT:	Directorate General for Industrial Development and Technological Innovation General
DGUI:	Directorate General for Universities and Research
DK/NC:	Don't know/No comment
EC:	European Commission
ENISA:	National Innovation Enterprise
ERDF:	European Fund of Regional Development
EU:	European Union
EUA:	European Universities Association
FTE:	Full-Time Equivalent
FECAM:	Canarian Federation of Municipalities
FEU:	Foundation of Companies of the University of La Laguna
FIFEDE:	Canary Islands Institute for Business Training, Employment and Development
ESF:	European Social Fund
FUNCIS:	Canarian Foundation for Health Research
FULP:	University Foundation of Las Palmas
G.C.:	Gran Canaria
GDP:	Gross Domestic Product
GRAFCAN:	Canarian Cartography
GRANTECAN:	Canarian Large Telescope
GVA:	Gross Value Added
HE:	Higher Education
HEI:	Higher Education Institutions
IAC:	Astrophysics Institute of the Canary Islands
IASS:	Social Service and Social Health Care
ICAP:	Canarian Public Administration Institute
ICCM:	Canarian Institute for Marine Sciencies
ICIA:	Canarian Institute for Agricultural Research
ICT:	Information and Communication Technology
IDE:	Incorporation of Doctors to Enterprises
IEO:	Spanish Oceanographic Institute
IPNA-CSIC:	Institute for Natural Products and Agrobiology
INICIATIVA NEOTEC:	Support Initiative for New Technology- Base Firms
INE:	National Statistics Institute
ITC:	Canarian Technological Institute
ITER:	Technological Institute of Renewable Energies
LEADER:	Liaison Entre Actions de Développement de l'Économie Rurale

LOU:	Law for the Organization of the University 6/2001
LPGC:	Las Palmas de Gran Canaria
MA:	Master of Arts degree
MEC:	Ministry of Education
NA:	Not Available
NDL:	Non-distance-learning
NGO:	Non-Governmental Organization
NIS:	National Innovation System
OECD:	Organisation for Economic Co-operation and Development
OCTI:	Office of Sciencie, Technology and Innovation
OPI:	Public Research Body
OTRI:	Research Results Transfer Offices
PACTI:	National Programme to Promote the Science-Technology-Industry System
PC:	Personal Computer
PCT:	Patent Cooperation Treaty
PETRI:	Programme to Stimulate Research Results Transfer
PDCAN:	Plan for the Development of the Canary Islands
Ph. D:	Doctor
PDINCA:	Plan for the Industrial Development of the Canary Islands
PEINCA:	Strategic Plan of Innovation of the Canary Islands
PIC:	Plan of Integrated Development of the Canary Islands
PP:	Popular Party
PPP:	Annual expenditure per student
PROEXCA:	Canarian External Promotion Company
PROFIT:	Programme of Promotion of Technical Research
PSOE:	Spanish Socialist Workers Party
QA:	Quality Assurance
R+D+I:	Research Development and Innovation
R+D:	Research and Development
REA:	Special Supply Regime
REF:	Canarian Economic and Fiscal Regime
RIC:	Reserve for the Investments of the Canary Islands
RIS +:	Regional Innovation Strategy implementation phase
RITTS:	Regional Innovation Technology Transfer Strategies
SCI:	Science Citation Index
SCS:	Canarian Health Service
SCTe:	Santa Cruz de Tenerife
SME:	Small and Medium Company
SEIRC:	Southern Europe Information Relay
SIECAN:	Canarian Business Information System
SEMALL:	Environment Service
SODECAN:	Canarian Economic Development Company
SPIDI:	Service for the Promotion of Research, Development and Innovation
STREP:	Specific Projects to Targeted Research
SWOT:	Strenghs, Weaknesses, Threats, Opportunities
ULL:	University of La Laguna
ULPGC:	University of Las Palmas de Gran Canaria
UNED:	National University of Distance Learning
UPC:	Technical University of the Canary Islands
UPI:	Innovation Promotion Unit
WTO:	World Trade Organization
ZEC:	Canarian Special Zone

GEOGRAPHICAL LOCATION





CHAPTER 1. THE REGION AND ITS SOCIAL AGENTS

1.1. Economic base, cultural activities, employment structure and business activity: regional characteristics

The small size of the region's economy and its remoteness from developed parts of Europe has always been a crucial factor in the Canarian economic base. Both have combined throughout the Islands' history to curb growth opportunities. Size and remoteness have been such important constraints on development that they have been recognised in the Treaty on European Union (article 299.2) under the concept of outermost region (applicable to a small number of EU regions: Martinique, Guadeloupe, Reunion, French Guyana, the Azores, Madeira and the Canary Islands). Under article 299.2 of the Treaty, these regions are afforded special treatment as regards the application of community policies, including -in some cases- derogation.

Prior to the mid-20th century, the export base of the region's economy consisted of two activities derived from the Islands' geographical location on maritime routes between Europe, Africa and America: a) the provision of services in Canarian ports, together with some commercial activity; b) exports of agricultural products which were highly appreciated on continental markets (sugar, then cochineal, and later wine). In tandem with these exports, a domestic market economy also existed, with a certain degree of complementarity between the different islands, especially until the free ports were created in 1852.

The geographical location of the Canary Islands and the resulting economies has traditionally conditioned economic development in the region. Today the Islands aim to become a logistics platform for South-South trade between Africa and America and North-South-North trade between America-Europe-Asia. To that end, Canarian ports are adapting to the new requirements of large-scale container transport.

On account of the special constraints imposed by geographical remoteness, size and location, the Canary Islands have benefited from a favourable economic and fiscal regime from the early days of Conquest by the Crown of Castile at the end of the XV century to the present day. The desire to capitalise on the geographical opportunities and minimise the drawbacks of remoteness and size lay at the heart of these special arrangements, which are laid down expressly in the region's Statute of Autonomy (Law 10/1982, 10 August). Article 46 of the Statute states expressly that "the Canary Islands enjoy a special economic and fiscal regime, which is recognised in the Constitution and reflects their historical background. This special arrangement is based on the freedom to engage in import and export trade, the non-application of monopolies and tax-free entry of consumer products". Over and above the recognition contained in the Statute of Autonomy and in the aforementioned article 299.2 of the Treaty on European Union, under the Spanish Constitution of 1978 (Additional Provision III) the region must be consulted on any modifications to its economic and fiscal regime. In this way, a constitutional guarantee is provided for the special economic and fiscal arrangements accorded to the Islands.

Thanks to these favourable arrangements, the Canary Islands enjoy relatively low indirect taxation compared to the rest of Spain, not to mention substantial fiscal incentives for business activities to set up in the archipelago. The regime has received European Union approval, while article 299.2 of the Treaty on European Union grants important exemptions with respect to community policies.

Today, the regional economy is driven largely by tourism (34% of GDP), with other activities contributing somewhat less to regional GDP. Examples include export crops (bananas, tomatoes, flowers, plants, onions, potatoes, peppers, etc), trade and services in ports and airports, oil refining and cigarette and cigar production.

Activities for domestic demand have grown since the mid-20th century due to the increased population (now 1,968,280), income (87.8% of the average per capita GDP of the enlarged EU) and tourism (10-12 million tourists annually). Most internal demand is met through imports from mainland Spain, although the relatively low tax has permitted a certain amount of trade with other parts also. The remaining internal

demand is covered by local businesses, which enjoy partial protection in the form of a selective import duty on inbound goods (called the 'Island Levy on Imported Goods').

The Islands' geographical location led to considerable growth in tourism after the boom in air travel as of the mid-20th century, which was accompanied by higher incomes in central European economies and changing demand towards sun and beach tourism, a year-round possibility in the Canary Islands. However, although tourism-related activities have increased, constraints such as small market size and remoteness from major markets have curbed the growth of industrial, agricultural and services activities, which are sensitive to distance.

For all the above reasons, the archipelago's economy is one in which the services sector contributes the bulk of GVA (Table 1.1).

Table 1.1
Gross Value Added at basic prices (2004) and employment (2003)
Canary Islands
2004
(GVA in millions of euros)

Sectors	GVA	%	Jobs	%
Agriculture, livestock and fisheries	522,418	2.0	37,100	5.06
Energy	765,782	3.0	4,000	0.54
Industry	1,448,175	5.9	40,200	5.48
Construction	3,910,233	11.2	103,300	14.1
Market services	19,033,799	60.8	395,900	54.04
Non-market services	4,740,910	17.1	152,000	20.75
Financial intermediation services, measured indirectly	(1,058,113)			
Total	29,320,859		732,500	

SOURCE: National Statistics Institute. *Spain: Regional Accounts.*

The growth in tourism over the last forty-five years and in services directly or indirectly linked to tourism is understandable in terms of economic logic: the archipelago has capitalised on its comparative advantage. Business activities geared to meeting the demands of visitors have had important knock-on effects on the Canarian economy. For example, construction has grown at high rates, not just due to tourism but also because of the demand for infrastructure and housing. The income-elasticity and GDP-elasticity of tourism-derived activities have been extremely high, given that the Islands' initial situation was one of underdevelopment. However, these elasticities are likely to be lower in years to come.

Economic growth differs markedly between the seven islands. Three levels of income and economic growth can be said to coexist: a) Gran Canaria and Tenerife are mature economies, the southern parts of both islands enjoying major growth in recent years.; b) Lanzarote and Fuerteventura's growth rate and income have risen considerably over the last ten years; c) La Palma, La Gomera and El Hierro retain their traditional and largely agriculture-based production structures, and mass tourism is still in the very early stages.

The export base and domestic market economy, both of which are conditioned by the small size and remoteness of the region, have produced a business fabric largely made up of young and small-scale firms. Almost half of all Canarian firms have no employees, while 93.70% employ 10 or fewer people. This is a common feature of businesses in Spain as a whole and in all Spain's regions (the average figure is 93.09% for the country overall, with no region recording a figure below 93%, according to data for 2004 – Confederación Canaria de Empresarios (Canarian Employers' Confederation), 2004:6, Table 0.2.1). Sales are aimed almost exclusively at local markets in most cases. The "Export Index"[1] of Canarian firms is a mere 9.59 compared to 28.59 for Spain and the very high figure of 85.57 for Catalonia

[1] Export index = number of firms with export activity per 100 firms.

(Confederación Canaria de Empresarios, op-cit.). Interior trade could benefit from the development of new information and communications technologies (ICTs), which may well foster integration in a fragmented territory such as the Canary Islands. However, if the region is to find a place in this emerging market it needs to invest in appropriate training. The job requirements in this sector entail new demands that the current working population is unable to meet since it lacks the qualifications for high-skilled positions (Economic and Social Council, CES, 2000: 369). Moreover, the number of Canarian firms that engage in high-technology activities is low compared to the rest of Spain. According to the aforementioned report by the Canarian Employers' Confederation (2004:6, Table 0.2.1), the "Technology Content Indicator"[2] for the region is 1.50, compared to an average of 1.94 for Spain (the figure is higher in some regions: Catalonia, 2.48, Madrid, 3.44, Navarre, 2.03).

The growth of the export base of the Canarian economy since the 1960s has been accompanied by similar growth in the local market economy. The public sector has been another driving force of economic activity. In the 25 years since the region gained formal autonomy, the public administration (6.9% GVA at basic prices) and the provision of public goods and services (education, 4.6%, and health 3.5% of GVA at basic prices) have accounted for an increasing share of regional Gross Value Added. The Canary Islands were, and to some extent still are, seriously deficient in the delivery of education, health, justice system, housing, and culture. Although self-rule has allowed these deficiencies to be remedied with respect to other regions in Spain, the gap has not been eliminated by any means. Regional public sector growth has been a major motor of both the economy and employment during this period.

The combined growth in the export base and the internal market economy has led to high rates of economic growth since the beginning of the 1960s. As a result, considerable convergence in per capita GDP has been achieved with respect to pre-enlargement European Union countries. By way of indication, the per capita GDP of the Islands with respect to the European Economic Community in 1959 was 45.45%; by 2001, i.e. prior to the recent enlargement, it had reached 79%. The convergence process depends on high growth rates achieved in the expansive stages of short-term cycles, a situation which occurred during the first half of decades from the 1960s onwards. Convergence stabilises during depression phases, as has been the case since 1999 due to the combined effect of moderate economic growth and higher population growth rates.

The growth process has triggered widespread debate on aspects such as a) the costs of growth; b) population growth; c) income distribution; d) unemployment; e) wages; e) integration of the domestic market.

A study of the convergence attained in terms of per capita GDP leads necessarily to discussion of the costs of growth, since the process described above came at the expense of intensive and extensive consumption of natural resources. Growth in tourism-related activities (accommodation, trade, transport, leisure and others) impacts negatively on the territory, adding to pressure on water, land and energy. Pressure is also placed on natural resources by population and income growth (housing, roads, health, education and transport infrastructure, etc). Moreover, given that Canary Islands is Europe's richest region in terms of biodiversity, much of the territory is protected by conservation legislation (49%). Recent years have seen increased opposition in society to the growth process. In 2002 the Canarian Parliament passed General Planning and Tourism Directives, which aim to limit further expansion of economic activities and pressure on resources, and also place a ceiling on the number of tourism beds. The new strategy may contribute to a change in the bases of economic growth - or at least that is the intention, in line with the wishes expressed by society.

Economic and employment growth has attracted immigration and has led to an increase in the population, which has grown in a sustained manner over the last three decades. The population rose by 21.5%, 9.2% and 19.3% during the 1970s, 1980s and 1990s, respectively. Immigration in recent years has led to accelerated growth, doubling the rates recorded in the latter part of the 1990s. Between 1996 and 2000 annual rates varied between 1.12% and 1.70%, except in 1998 (2.34%). They subsequently increased to

[2] Technology Content Indicator = % of firms with high-tech activities.

3.79% and 3.67% in 2001 and 2002 (Gobierno de Canarias, Comité de Expertos sobre población e inmigración en Canarias[3], 2003:17). The base of the population pyramid has narrowed while the upper part has widened, and the number of persons in the 20-30 age group (the most common age among non-retired immigrants) has risen. The Canarian population is still young but is tending to grow older due to the falling vegetative growth and mortality rates. Immigration may help reverse the ageing trend.

In addition to the problems arising out of the costs of economic and population growth, there are also those caused by the concentration of income distribution and poverty. Poverty indicators drawn up by the National Statistics Institute show that 24.1% of Canarians are below the poverty threshold, a figure higher than the national average for Spain (19.1%). Unemployment and low relative earnings are two of the factors that influence poverty.

Economic growth has been insufficient to maintain the full employment enjoyed in the 1960s. At the beginning of the 1970s, as a result of the international crisis and the internal accumulation process, unemployment rates rose and full employment became an increasingly remote prospect. During the 1970s, 1980s and first half of the 1990s, jobless rates were very high, peaking at 28.22% in 1993. Since 1994 rates have fallen rapidly and now are close to the Spanish average, although still a long way from full employment (11.05%). Differences in unemployment rates between men and women are considerable (9.23% for men compared to 13.64% for women). Although women now play a fuller part in the labour market and the difference in employment rates has narrowed to some extent, a substantial gap remains (48.7% for women, 69.66% for men). In addition to unemployment, the other major problem in the labour market is the high number of temporary contracts, a situation affecting women and young people most.

Average real wages are lower in the region than elsewhere in Spain (although the gap has tended to narrow in recent years), as is natural given the characteristics of the Canary Islands' economic base, where the activities generating most employment are low-skilled. That said, the long-term tendency is towards improved qualification of the economically active population in the Islands. Since the 1990s, the percentage of workers who are illiterate, or have no or just primary schooling, has fallen while the number who have completed secondary or university education is increasing (CES, 2000:319; Legna, 2004).

Economic growth has not been enough either to integrate the different island economies and the domestic market sufficiently. Transport infrastructure problems and inter- and intra-island mobility difficulties continue to be a permanent constraint on the development of the internal market.

SWOT Analysis [4]

Srengths

- Favourable legislative framework for economic activities, with major direct and indirect taxation incentives (Canarian Economic and Fiscal Regime (REF)).
- Comparative advantages for tourism development, on account of the Islands' geographical features and location, and tourism management training potential.
- Traditional export crops.
- Growing internal demand due to resident population, visitors and earnings.
- Existence of several core activities with capacity for growth and competitiveness other than tourism and construction, and which are -or could be- innovative.
- Potential development as a logistics platform for international trade between America, Europe and Asia.

[3] This document will be referred to henceforth as "Committee of experts, 2003"

[4] A range of studies of the Canarian economy and society have been used for the SWOT analysis: Plans implemented by the Canarian government; studies and reports compiled by trade unions and business associations; LEADER, INTERREG and EQUAL programmes; Legna 2004a, 2004b, 2002a 2002b y 2001; Legna and Rivero Ceballos 1999, 2202a and 2002b; Rivero Ceballos and Legna 1998a and 1998b; and Rivero Ceballos 2000.

- Young population, better educated than previous generations, receptive to the information society and with the capacity to adapt to ICTs.
- Existence of public R+D+I centres and HEI researchers, with the potential to make significant contributions to innovation development in the Canary Islands.
- Good infrastructure to enhance the region's cultural offer.
- Substantially improved transport infrastructure and communications between and within islands and with other continents. Improvements have mitigated the negative impacts of double insularity, insularity and the distance to Europe and other continents.
- The existence of agglomeration economies in some urban subsystems has facilitated the development of skilled services, innovation and cultural offer.
- Substantial increase in the cultural level of the population and a clear demand for cultural activities.
- An environment with characteristics and specificities that lend themselves to the study of biodiversity, as well as to sky and ocean observation and tropical disease research.
- Region's status as part of a developed region of the world (Europe) affords comparative advantages.

Weaknesses

- The region's geography, including distances to industrialised areas, leads to market fragmentation and reduces market size, creating high transport and communications costs between the islands and the rest of the world, restricting the possibilities for developing activities with economies of scale, as well as curtailing the overall number of activities that can be undertaken competitively (these limitations have led to the designation of the region as an 'outermost region' by the European Union in Article 299.2 of the Treaty on European Union)
- Dependence on external demand shocks caused by changes in tourism patterns.
- Weak R+D+I system and low spending on these activities in GDP terms. Low application of ICTs in the public sector and business. Few companies engage in activities with high-tech content.
- Existence of uncompetitive components in primary sector, which survive only thanks to the protection received against other companies and to the Common Agricultural Policy.
- The design and implementation of business strategies do not take innovation into account as the route to increased profitability.
- High share of low-skilled and low per capita productivity jobs, along with lower real salaries than in other Spanish regions except Extremadura and Andalusia.
- Low general level of education of population, although tending to increase thanks to marked improvement among recent generations. Percentage of working population with basic schooling only is higher than EU average.
- High number of temporary employment contracts compared to other regions in Spain and to EU average.
- Difficulties encountered in efficient development of activities requiring medium or large economies of scale, both in economic and cultural-scientific spheres.
- Major environmental deterioration in some areas and subsystems of the Canary Islands. Tourism development model produces negative effects on the environment due to extensive land use required by growth.
- High cost of drinking water and water for industry/agriculture; great pressure on aquifers.
- Scarcity of traditional raw materials for industry; growth of productive activities is restricted by the need to import in most cases.
- High level of waste generation.
- Inter-island disputes hinder rational allocation of resources.

Threats

- Loss of status as eligible region in EU convergence objective and cuts in EU funding
- Inadequate use of certain instruments for raising employment in the regional economy.
- Inability to adapt rapidly to new scenarios (e.g. in relation to WTO).

- Difficulties in establishing negotiations with neighbouring country in Africa, which are potential markets for Canarian exports.
- Negative impact of mass tourism on natural resources and sustainable development.
- Degradation of the environment (including the social environment) may affect tourism. Loss of competitive advantage with respect to other tourism destinations.
- Slow progress in consolidation of R+D+I. The lack of ties between research centres (including the Canarian universities), the public sector and business is an obstacle to the introduction of innovation in production. Incentives in research centres and private companies do not coincide.
- Difficulties in incorporating skilled human resources into productive activities. Growing problems for university graduates to enter labour market (particularly graduates in experimental disciplines, which contribute most to innovation). Sense of frustration among young people with education but no jobs.
- Stagnation of growth in labour productivity and negative impact on real wages and per capita income.

Opportunities

- Access to specific European funding and possible continued application of specific policy instruments, as an outermost region.
- Use of Canarian Special Zone (ZEC) to locate new, high-skill industries and services. Similarly for Canarian Investment Reserve (RIC). These instruments could be harnessed to increase employment, the average skill level of labour, labour productivity and, consequently, per capita income.
- Consolidation of Canary Islands as a logistics platform for international trade.
- Development of trade ties with neighbours in continental Africa.
- Strengthening R+D+I system and speeding up the incorporation of ICTs in the economy, government and at individual level. Similarly, strengthening of links between Canarian universities, business and government bodies in order to develop R+D+I.
- Harnessing the competitive advantages accruing from the combination of geographical situation and local R+D capacity: sky exploration (astrophysics), study of oceans (oceanography), development and export of renewable energy and water treatment technology, agricultural techniques such as desalination, etc. Exporting R+D+I services in these fields.
- Appropriateness and necessity of developing the application of ICTs to reduce the negative effects of long distances to main markets and innovation centres.
- More intensive application of new technologies, particularly ICTs, to increase the competitive advantages of branches of the economy related to tourism and services.
- Consolidation of transformations in Canarian productive model aimed at increasing labour skills and productivity, ensuring sustained growth in per capita income and improving the natural and social environment (which also entails reducing poverty, social exclusion and the income differences between the different groups in society).

1.2. Characteristics of institutional networks

The Autonomous Community (region) of the Canary Islands is part of the Kingdom of Spain and has two provinces: Las Palmas and Santa Cruz de Tenerife. The former comprises the islands of Gran Canaria, Lanzarote and Fuerteventura, while the latter is made up of the islands of Tenerife, La Palma, La Gomera and El Hierro. The capitals of the two provinces are Las Palmas de Gran Canaria and Santa Cruz de Tenerife, respectively.

The Canary Islands were granted Autonomous Community status in 1982 and the region’s devolved powers are set out in its Statute of Autonomy, which was passed that same year (Law 10/1982 10 August, subsequently amended by Law 4/1996, 30 December). Further modifications to the Statute are currently under discussion. Legislative power is exercised by the Canarian parliament, while the Canarian government is the executive power. The region has seven island councils or ‘Cabildos’ (one per island) which, according to the Statute, "are the Units of government, administration and representation of each island". Local government corresponds to the town halls.

Education provision covers nursery schools to university-level education and vocational training. The region has two publicly-funded universities: La Laguna in Tenerife and Las Palmas de Gran Canaria. The total number of students enrolled for academic year 1998/99 was 48,040 (estimated by Prof. J.M. Cabrera using data from the National Statistics Institute). The regional Ministry for Education, Culture and Sport is responsible for all levels of education in the Canary Islands. Within the Ministry, the Directorate General for Universities and Research has specific responsibility for the universities. Educational courses are available also through Spain's National Distance University (UNED).

1.3. Expectations of regional agents with respect to HEIs. HEI's regional engagement objectives

The main expectation of university students, and secondary school pupils intending to continue on to university, is to obtain a university qualification which will enhance their employment prospects. Lined to this expectation are others, such as wages, social status and vocation (Borges del Rosal, 2002:133 ff.).

Although HEI mission statements reflect objectives concerning their involvement in regional development, it has been difficult to carry all of these objectives forward in a systematic manner (the Statutes of the two Universities). Which is not to say that important work is not done in support of the region's scientific and technological development and the development of the business sector, or to improve social and environmental conditions? Such actions tend to be undertaken by researchers and academic staff at the universities, through agreements involving the La Laguna University-Business Foundation and Las Palmas University Foundation, as well as research institutes.

1.4. New forms of governance and changes in government

1993 saw the creation of a regionalist-insular[5] political party, the Canarian Coalition (CC), which has governed the region for the past decade in alliance with the two mainstream Spanish parties at national level (Spanish Socialist Workers Party, PSOE, and Popular Party, PP). Save for a couple of years, none of the three parties has enjoyed sufficient support from the electorate to govern alone, and a coalition of at least two of the three has been required. CC has always taken part in such alliances and has therefore been in government at all times during the last decade. The pact between CC and PP came to an end recently, leaving the former to govern in a minority traditionally, the CC has allied itself with the party in government at national level and shortly after the PSOE replaced the PP in Madrid the regional power-sharing agreement between the PP and CC was terminated.

The fact that power-sharing alliances have been required in regional politics has meant that few major differences exist between the three parties in terms of day-to-day ideology, i.e. in the policies implemented while in government. There may, of course, be differences at the 'declaration' level but in terms of specific measures broad areas of similarity exist, at least with respect to the most important policy decisions affecting regional development and the various economic and social groups. Examples include the Economic and Fiscal Regime (REF), the Canarian Special Zone (ZEC), Canarian Investment Reserve (RIC), Special Supply Regime (REA) and policies on health, education and major infrastructure works.

[5] "... the political programme of the Canarian Coalition seeks to build the Canary Islands from the bottom upwards, based on the Islands as physical, political and social realities; not from top to bottom, as the national parties do. We have made our move; it is now up to them to do likewise. No scare-mongering, no empty arguments. We want the best possible Statute but without electoral reform, which we nationalists are committed to, being used as a brake in any way. Achieving a better Statute is a question of will and responsibility", remarks by Paulino Rivero, chairman of CC, in the Diario de Avisos newspaper, Tenerife, 23/10/05.

1.5. Main factors driving regional political decisions; funding mechanisms and opportunities for promoting economic, social and cultural development

The tendencies and forces commented in the previous section are a more or less permanent feature, although changes and fluctuations do occur in political decisions, as a result of the internal workings of Canarian politics. To borrow from Easton's view of political systems, one might say that the majority of the policy measures implemented by successive Canarian governments are in response to demands and pressures from citizens and pressure groups. Government action is thus the outcome of negotiations and of the respective strengths of each group; changes in the relative strengths of the groups is what leads to fluctuations.

Other factors also influence policy changes, among them inter-island disputes and the electoral law. The disputes arise because some social, political and media sectors insist on measures and resources being allocated to them not just to address real needs but to ensure that the 'other island does not receive more' (irrespective of which island it is). The actions of such groups are driven -as is clear in the language used in the media- by the desire to ensure the 'other' island does not do better.[6] Clearly, this leads to irrational allocation of resources. For its part, the electoral law lends itself to such pernicious social games, given that it grants minorities on some of the islands higher representation per inhabitant in the regional Parliament. Under the current system not everyone is equally represented and some islands have a Parliamentary weight that is disproportionate to their population. As a result, their support is needed to govern and is negotiated in return for policies and positions in government. All this produces frequent changes in senior government positions and in decisions.

Since the decisions taken are the result of the interplay of the pressure and agreements described above, government tends to suffer from a general lack of anticipatory strategies.

In terms of resources for development, the Canary Islands have benefited greatly from European instruments, both as an Objective one region and also as an outermost region. A challenge which needs to be faced in the near future is the loss of Objective one status. One instrument which is particularly important for financing economic growth is the Canarian Investment reserve (RIC), which allows businesses to reduce their company tax bill if they invest part of their profits in the region.

1.6. To what extent is there a tradition of coordination and coherence in regional government?

The coordination problems that exist between the various sectors of the regional administration in the Canary Islands impact significantly on development. Some examples are included here by way of illustration. The CC.OO. trade union notes in its submission to the present report that there is a 'lack of departmental coordination among the various levels of administration with regard to employment policy'. Regarding R+D+I, according to the document entitled "Bases for a strategy to kick-start the information society in the Canary Islands" compiled by the region's Economic and Social Council, "the networks and services of the Canarian government are not coordinated in the form of a regional policy ". In its contribution to the document, the Tenerife employers' association (CEOE) draws attention -again regarding R+D+I- to "...the vital importance of maximising synergies among the different actions by implementing an integral policy approach for this field".
Coordination of competences between the State administration and its regional, island and local counterparts is a serious problem in the region. The complex mesh of powers divided up among the four

[6] Some comments made by the media and by political leaders on the subject are illustrative of the situation: Canarias 7 newspaper, 27/6/2005, "The head of the Canarian Employers' Confederation, Mario Rodríguez, today denounced that the imbalances in the Canary Islands in recent years have led to a slowing down of the economy in the province of Las Palmas, especially Gran Canaria, compared to Tenerife"; Mario Rodriguez stated further "speaking as a doctor, I can say that the dispute between islands is a disease that has been developed and incubated in the neighbouring island" (Canarias 7, 27/6/2005). Notably also, the remarks by the President of the Canary Islands, Adán Martín: "in ten years time, the dispute between the islands will be a thing of the past and confined the sporting arena"; it will be "purely anecdotal, not something that will hinder the balanced development of the Canary Islands" (Canarias 7, 27/7/2005).

levels of government can often cause coordination difficulties, even if this division of powers has been approved by law. In some areas, planning and legislative powers are separate from implementation powers (for instance, in regional planning, waste treatment, social assistance).

1.7. Participation of the region in the European RIS (Regional Innovation Strategy)/ RITTS (Regional Innovation and Technology Transfer Infrastructures and Strategies) programmes

The region participates in the RIS and RITTS programmes. Further details can be found in Chapter 3 of this document.

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CHAPTER 2. CHARACTERISTICS OF THE HIGHER EDUCATION SYSTEM

2.1 The Spanish Higher Education System[7], [8]

The Spanish HE sector consists of 47 state-funded **non-distance-learning** universities[9] and one distance-learning university (UNED) which caters for the whole of Spain. Private provision consists of 22 non-distance-learning universities and one distance-learning university based in Catalonia (*Universitat Oberta de Catalunya*).

The last two decades have seen major growth in student numbers due to perceived enhanced employment prospects and social status for graduates. This has been accompanied by a notable increase in the number of universities, as well as in facilities and human resources. However, the growth in student numbers has now slowed and, based on new student intakes, may be declining as a result of demographic factors and an oversupply of graduates entering the job market.

University graduates (including those with doctorates) account for 18% of the 25-64 age-group in Spain, more than the OECD average of 15%. However, the recently improved participation rates in HE are reflected in the fact that amongst Spaniards aged 25-34 the figure rises to 26%, a percentage bettered in the OECD context by five just countries (USA, Norway, Korea, Denmark and Canada), the OECD average being 20% (see Table 2.1).

The following institutions are involved in the delivery of university-level programmes[10]:

a) ***Escuelas universitarias*** (university colleges) deliver **short cycle** or **first cycle** programmes, lasting three years and leading to a **diploma** or to a professional qualification in quantity surveying or technical enginnering. These courses are largely vocationally oriented.
b) ***University Faculties and Technical Schools*** offer **long cycle** or full degree programmes[11] lasting four or five years, leading to degrees or higher level professional qualifications in architecture and engineering, or as a **'licenciado'**.

State-funded universities may also have **affiliated institutions,** which can be private or publicly-funded but do not form part of the University as such. In the case of these affiliated institutions, the University is the awarding body for the programmes of study delivered and is responsible for assuring the quality and delivery of these.

University admission usually requires successful completion of the '**bachillerato'** or final stage of secondary education (see Appendix I). However, higher-level vocational qualifications may also be used to gain admission.[12]

An entrance examination organized jointly by universities and the *bachillerato* examination boards must be passed in order to be admitted to the full degree programmes. Although not required for entry to

[7] Many of the concepts covered in Chapter 2 are defined in this opening section.
[8] No meaningful comparison can be made between the HE statistical data which the Spanish Ministry of Education provides to OECD, using its specified criteria, and those which it gathers on Spain's regions for its own nationwide analysis, since a different methodology is employed to collate these. This opening section provides a comparative overview of Spanish and OECD averages for HE, whilst later sections focus on comparing Canarian and Spanish HE averages.
[9] At non-distance-learning universities, most teaching takes place on campus via direct lecturer-student contact. Distance-learning universities use personal tutorials and the possibilities provided by new technology (ICT) to support teaching. However, non-distance-learning universities may also offer some courses via distance learning.
[10] Many aspects of the current structure of Spanish HE are being altered to adapt to the requirements of the European Higher Education Area e.g. the length and content of programmes of study.
[11] On long-cycle programmes, no additional qualification is awarded for successful completion of the first stage, which is not recognised as a separate professional qualification.
[12] A small percentage of HE places are earmarked for specific groups, namely, students from other EU countries, mature students (aged 25 or above), students holding certain vocational training qualifications, and outstanding athletes.

shorter programmes, students normally sit this examination since successful candidates are given priority in the admissions process, making it a good indicator of admission to HE.

Student numbers for Spanish universities in the academic year 2002-2003[13] totalled 1,507,147, with a new intake of 328,800 (21.8 % of the total). Numbers are distributed unevenly amongst the publicly-funded universities: the Complutense University in Madrid is the largest[14] with 87,501 students, whilst the smallest - the Universidad Politécnica de Cartagena - has 6,004 students. Although student numbers for private universities have been growing in recent years, they remain small, only 12 % in total, which is half the OECD average of 22.4 % (see Table 2.1). Spain thus follows the model found in most European countries, with publicly-funded universities being the major players in the sector.

Decentralization has meant major changes in the education sector in Spain. However, central government is responsible for ensuring uniformity of quality standards in the nation's HE system, mainly by means of a regulatory framework. All the *Autonomous Communities* (regions) are responsible for the governance and management of their own Universities and related institutions.

The core curriculum for each programme of study is laid down by the Spanish government and accounts for 30-45% of the total in first cycle programmes, 25-40% in second cycle Bachelor's degree programmes. Beyond that, each university has academic freedom to decide the content of the remaining components of its programmes (compulsory subjects, options and electives).

Tenured academic staff account for over half the staff in publicly-funded universities and are governed by state regulation. New forms of non-tenured positions have been created recently and staff in this category is employed by the region (they may not account for more than 49% of the total academic staff at any given university). National pay scales apply for academic staff and the criteria for obtaining research-related discretionary increments for every six years of service are also agreed centrally. In recent years, regions have also established their own mechanisms to provide discretionary increments on the basis of individual merit.

Some 72% of academic staff in publicly-funded universities are employed on a full-time basis and have eight hours per week of lectures (12 for those working in an 'escuela universitaria') plus six hours of student consultation time. The rest of the working week is used for research, administration and management-related tasks.[15]

The student-staff ratio (full-time equivalents) was 13.3 in 2003 (Table 2.1), below the OECD average of 15.7, although this figure varies significantly from country to country. The ratio has fallen in Spain in recent years due to falling student numbers. (In 2000, Spain was above the OECD average).

Spain's publicly-funded universities receive their core income from their regional authorities.

Calculated as a percentage of the GDP, total expenditure on HE in Spain stand at 1%, slightly below the OECD average of 1.1 %. The difference can be explained by the lower expenditure (in relation to GDP) in the privately-funded sector, 0.3 for Spain compared to an OECD average of 0.8.[16]

This lower overall expenditure, coupled with Spain's higher student numbers in HE, means that the expenditure per student, proportionally adjusted for GDP per capita, is 35 in Spain as opposed to the

[13] Source: Spanish Ministry of Education and Science.
[14] Although UNED has 136,784 students from Spain as a whole, it is not classed as being the largest due to its distance-learning status.
[15] The number of hours spent on teaching may be less. No figures exist for either the number of hours or the proportion of time overall that academic staff should spend on research and administration.
[16] The public/private funding ratio in relation to GDP has been calculated by taking the total funding for whole of the tertiary education sector. Thus in Table 2.1 the same figure appears for public expenditure as a percentage of GDP and for total expenditure as a percentage of GDP (based only on the HE sector).

OECD-country average of 42 (Table 2.1). A comparison of expenditure per student (US$ PPP) shows a marked difference between the Spanish average of 8,020 and that of OECD countries as a whole (13,343).

Table 2.1
Comparative indicators for higher education: Spain-OECD
2002

	SPAIN	OECD
Percentage of graduates in population aged 25-64	18	15
Percentage of graduates in population aged 25-34	26	20
Percentage of total students in publicly-funded universities (2003)	88	77.6
Student-Staff (Full-Time Equivalent) ratio (2003)	13.3	15.7
Total expenditure as a percentage of GDP	1.0	1.1
Expenditure as a percentage of GDP by source of funding: public (1) (2)	1.0	1.0
Expenditure as a percentage of GDP by source of funding: Private (1) (2)	0.3	0.8
Annual expenditure per student as a proportion of GDP per inhabitant	35	42
Annual expenditure per student (US $ PPP) (1) (2)	8,074	13,343
Note: OECD average calculated from country data available		
(1): Total OECD Average		
(2): Covers whole tertiary sector		

SOURCE: OECD *Education at a Glance* 2005

The HE sector is Spain is undergoing a period of significant change, as it emerges from a phase when efforts were channelled into keeping pace with the growth in student numbers to another in which the overriding goal will be quality enhancement. The HE sector in Spain thus faces a number of major challenges:

a) Its incorporation into the European Higher Education Area and the changes this will entail.
b) A reduction in student numbers, due to demographic changes and increasing competition from advanced vocational training courses (see Appendix I).
c) Controls on public-sector spending and the efficiency requirements imposed.
d) Worsening labour market prospects and the loss of status of many HE qualifications.

2.2 Overview of Higher Education in the Canary Islands [17]

There are two publicly-funded universities in the Canary Islands, the **University of La Laguna (ULL)** and the **University of Las Palmas de Gran Canaria (ULPGC)**, which are situated on the two largest islands. In addition, **UNED,** the state-funded distance-learning university, has centres in both Canarian provinces. Higher education provision in the Canary Islands is mainly delivered via publicly-funded institutions and there are no private universities.[18]

[17] Statistics used in this section have been selected because they provide the basis for meaningful comparisons between the two universities under discussion. They also allow for useful comparisons to be drawn with data representative of the Spanish context as a whole. Sources include the most recent publications by the Spanish Ministry of Education and Science and the Conference of Spanish University Vice-Chancellors (CRUE). The most recent data available are consolidated figures for the academic year 2002-2003 and financial statements for 2002. Whilst it is recognised that this data may not reflect the current state of affairs, it was judged to be the most useful for the purposes of meaningful comparison. It should be noted that the data used has been provided by the universities themselves.

[18] There are only two private institutions. One is affiliated to ULL, the other to ULPGC, and they cater for 194 and 268 students respectively.

Higher education provision began in the Canary Islands at the end of the eighteenth century, with the founding of the University of La Laguna in 1792, followed later by the Polytechnic University of the Canary Islands, which opened in 1971. The original provision reflected the specialization developed by each university, with the University of La Laguna focusing on humanities and sciences, while the Polytechnic University of the Canary Islands offered a narrower range of programmes of a more technical or practical nature.

Although both universities served the entire region, the University of La Laguna largely concentrated its activities on Tenerife whereas the Polytechnic University of the Canary Islands was based in Gran Canaria. However, both maintained a small-scale presence on the other island.

In 1989, against a backdrop of significant growth in demand for HE and vociferous demands from the population of Gran Canaria for a broader range of University programmes than the technically-oriented courses on offer, the Canarian Parliament passed legislation which led to the reorganization of HE provision in the Islands. Under the new system, all existing HE resources on Tenerife, including estates, academic staff, employees from administration and services plus the students themselves, were reassigned to the University of La Laguna. The same process took place on Gran Canaria and the Polytechnic University of the Canary Islands became the University of Las Palmas de Gran Canaria. This reorganization allowed both universities, ULL and ULPGC, to offer a full range of HE provision in the Canary Islands.

In addition to the above, distance-learning provision is offered by UNED. This state-funded university has affiliated centres throughout the islands, having established the first of these on Gran Canaria in 1973. Others are to be found on Tenerife (with smaller centres on La Gomera and El Hierro), Lanzarote, Fuerteventura, and La Palma. These centres have traditionally satisfied the demand for distance education, which is of special importance in the Canary Islands given that travelling to university from the different islands, can pose difficulties for students.

The University of La Laguna comprises 22 centres plus one affiliated institution; in the case of ULPGC, the total is 18 plus one affiliated institution. The range of provision is shown in Table 2.2.

Table 2.2
Types of qualifications

	U. La Laguna	**U. Las Palmas de Gran C.**	**UNED Canary Islands**
Degrees	28	15	20
Engineering	5	7	2
Diplomas	10	7	3
Technical Engineering	6	17	3
Architecture		1	
Quantity Surveying	1		
Teaching	5	7	
MAs	15	19	
Professional Development	7	18	
Note: Students can also study MAs (33) and professional development courses (57) provided by UNED throughout Spain.			

In deciding which programmes to offer, it was judged most important to provide courses which satisfied the potential student demand and added to the range of qualifications offered. As a result, a full range of the usual HE provision is available in the Canary Islands, with many of these programmes of study delivered at both universities.

2.2.1 University admission

An entrance examination must be passed to secure admission to HE. Table 2.3 shows the pass rates for this examination in 1992 and 2003. Despite the increase seen, 24.2 % in 1992 compared to 32.8 % in 2003, pass rates for the Canary Islands are substantially lower than those for Spain as a whole, and the region is among the lowest ranked in the country. There has also been a significant improvement in pass rates among females. Whereas in 1992 there was a difference of 8.4 points between females and males, in 2003 this increased to 14.6 points.

Table 2.3
Gross rate of population passing
University entrance examination

	CANARIES	SPAIN
1992		
Total	24.2	33.2
Males	20.1	
Females	28.5	
2003		
Total	32.8	39.2
Males	25.6	
Females	40.2	
Pass rate for those taking entrance examinations in June and September, as a percentage of the total number of 18-year-olds		

SOURCE: Spanish Ministry of Education and Science. 2005

The lower pass rate in the Canary Islands is linked to significant non-completion rates in pre-university education (the region has the highest non-completion rates in Spain), which reduce the prospects of continuing on to post-compulsory education. Other factors include transport difficulties, socioeconomic and cultural barriers, and the limited outlets for graduates on the Canarian labour market.

The lower rate of HE participation amongst the Canarian population is also reflected in the net rate of participation in HE by age. Table 2.4 shows that HE participation rates for all the age groups studied are significantly lower than the Spanish average. Participation rates for females are also higher than those for males at all ages.

Table 2.4
Net rate of participation in higher education
Academic year 2002-2003

			CANARIES	
AGE	CANARIES	SPAIN	MALES	FEMALES
18	15.3	23.6	11.2	19.5
19	17.7	27.3	13.3	22.1
20	18.5	29.2	14.6	22.6
21	17.9	28.9	14.6	21.2
22	16.3	27.1	13.7	19.0
23	14.1	22.6	12.4	15.9
24	12.4	18.2	11.6	13.3
25-29	6.8	8.8	6.6	6.9

SOURCE: Spanish Ministry of Education and Science

2.2.2 Student profile

After a period of strong growth, student numbers stabilized and even began to decrease as of 1995, particularly in terms of new enrolments. During the academic year 2002-2003 there were 46,330 students in the two universities in the Canary Islands - 24,910 at the University of La Laguna and 21,754 at the

University of Las Palmas de Gran Canaria-, plus a further 7,180 at the National Distance-learning University (UNED).

As the data in Chapter 4 on the place of origin of students at the two universities shows, there is a marked tendency to study at whichever of the two universities is nearer. This is largely explained by the difficulties involved in travelling between islands. Thus, each university has a substantial captive market of students, with little competition between them to attract numbers.

Table 2.5
Student distribution per University by course type (%)
Academic year 2002-2003

		% Females
UNIVERSITY OF LAS PALMAS DE G.C.		
Diploma	21.8	70.6
Technical engineering & surveying	22.8	28.1
Short cycle total	**44.6**	
Degree	41.8	59.8
Engineering & architecture	13.7	30.7
Long cycle total	**55.5**	
UNIVERSITY OF LA LAGUNA		
Diploma	22.3	69.7
Technical engineering & surveying	15.7	30.0
Short cycle total	**38.0**	
Degree	58.2	64.4
Engineering & architecture	3.7	30.5
Long cycle total	**61.9**	
UNIVERSIDAD NACIONAL DE EDUCATION A DISTANCIA. CANARIES		
Diploma	7.2	
Technical engineering & surveying	8.5	
Short cycle	**15.7**	
Degree	83.3	
Engineering & architecture	1.0	
Long cycle total	**84.3**	

SOURCE: Spanish Ministry of Education and Science.UNED: Own statistics

The distribution of students according to short (three years) or long (five years) programmes is shown in Table 2.5, which highlights the greater numbers of students enrolled on the longer programmes, degrees for the most part. This also shows the less important role played by technically-oriented programmes, both short and long, a feature which is particularly evident among female students.

As for the distribution of students by subject area (Table 2.6), almost half (47.5 %) are enrolled on programmes in Social Sciences and Legal Studies.[19] The low numbers of females in the technical subjects is worthy of note, as are the high percentages of females in the other areas.

[19] It should be remembered that the distribution is not entirely based on student preference, since in certain programmes (particularly in Health Sciences) new intake is subject to considerable restrictions.

Table 2.6
Student distribution by subject area (%)
Academic year 2002-2003

	Universities in Canary Islands	% females	UNED Canary Islands
Experimental Sciences	5.8	57.6	11.3
Health Sciences	8.5	71.5	0
Social Sciences & Legal Studies	47.5	64.9	29.6
Humanities	10.8	63.4	49.6
Technical	27.4	29.5	9.5

SOURCE: Spanish Ministry of Education and Science.UNED: Own statistics

2.2.3 Academic staff profile

The Canarian universities employ a total de 3,373 academic staff in their institutions.[20] Of these, 84.2% at ULL and 76.7% at ULPGC are full time (a very significant proportion, higher than the Spanish average of 72.3 %). Furthermore, over half of these are tenured. (The percentage is higher at the University of La Laguna due to the fact that it is older.) In both universities, there are more males than females amongst the academic staff. Academic staff numbers have risen in line with the increase in student admissions in recent decades, and student-staff ratios now stand at 14.5 at ULL and 16.2 at ULPGC (Table 2.7), compared to a Spanish average of 15.7.[21]

The student-staff ratio (full-time equivalent, FTE) is 14.5 at ULL and 16.2 at ULPGC

Although the majority of students are female, amongst academic staff the percentage of females is lower than that of males in both universities.

Table 2.7
Academic staff and students enrolled University institutions
Academic year 2002-2003

	Academic staff			Students		Student-Staff ratio (FTE)
	Total (FTE)	% tenured	% females	Total	% females	
ULL	1,693	71.2	36.8	24,576	51.8	14.5
ULPGC	1,378	61.9	33.8	22,331	55.4	16.2
SPAIN	74,185	65.6	33.9	1,167,523	53.9	15.7
UNED Canary Islands				7,180		

Note: UNED academic year = 2003-04

Note: Source for non-distance-learning universities was CRUE, which enables calculations based on FTE (full time equivalent) teachers

[20] In addition to 40 academic staff at their affiliated institutions.
[21] In the case of UNED, analysing the profile of academic staff and student-staff ratios is meaningless since the academic staff is largely hourly paid and, in many cases, individuals are also employees of the main universities.

Note: Spain refers to state-funded universities (excl. UNED)
SOURCE: CRUE Observatory 2004

2.2.4 Educational performance

Table 2.8 shows the significant levels of non-completion (a rough calculation based on the non-completion rate in relation to total student numbers), which are particularly high at the University of La Laguna (nearly 13 %). Humanities and Experimental Sciences (where student enrolments account for 12% and 6.4% respectively of the total for ULL) have the worst completion rates, whilst in Social Sciences and Legal Studies, the subject area attracting most students and accounting for approximately 50% of the University total, the rate is above 12 %. As a result, the ULL has a non-completion rate which is almost five points above the Spanish average, while that of the ULPGC is slightly lower than the average.

Table 2.8
Non-completion rates by student enrolments
Academic year 2002-2003

	ULL	ULPGC	NDL UNIVERSITIES TOTAL CANARIES	NDL UNIVERSITIES TOTAL SPAIN
Humanities	18.2	6.8	13.3	11.6
Soc Sci & Legal Studies	12.4	8.0	10.4	9.0
Experimental Sciences	19.2	8.1	16.5	7.8
Health Sciences	6.8	2.2	4.9	4.0
Technical	11.3	7.9	9.3	6.1
LONG CYCLE TOTAL	15.0	6.7	11.2	8.2
SHORT CYCLE TOTAL	9.6	8.5	9.0	7.6
TOTAL	12.9	7.5	10.3	8.0

Note: Students enrolled on "second cycle only" programmes are included in the long cycle total
NDL = non-distance-learning
SOURCE: CRUE Observatory 2004

The combined number of graduates for both universities in the academic year 2002-2003 was 5,435, of which 46.5 % were on short cycle programmes and 53.4 % on long cycle ones, a distribution which is similar to that seen in the student body as a whole (Table 2.9).

Table 2.9
Graduate numbers
Academic year 2002-2003

UNIVERSITY OF LAS PALMAS DE G.C.	
Short cycle	1,476
Long cycle	1,343
Total	2,819
UNIVERSITY OF LA LAGUNA	
Short cycle	1,053
Long cycle	1,563
Total	2,616
TOTAL UNIVERSITIES CANARIES (excl. UNED)	
Short cycle	2,529
Long cycle	2,906
Total	5,435

SOURCE: Spanish Ministry of Education and Science

One way in which Universities have undoubtedly made a significant contribution to socioeconomic development in the Canary Islands has been to produce a sector of the workforce equipped with intermediate and higher level skills. This capacity-building could not have been easily undertaken outside of the university context, and it has helped to bring about a dramatic transformation of the economic base of the Canary Islands. The significant increase in human capital has been particularly important in a region which has in the past suffered as a result of the low level of educational achievement among the population.

Currently, as is the case in Spain as a whole, University graduates in the Canary Islands are finding it increasingly difficult to find suitable employment, although the situation varies greatly according to the qualification held.

2.3 Regional dimension of higher education

The regional dimension of HE can be demonstrated, by the fact that universities help produce a graduate workforce to meet the needs of the local economy and contribute in more general terms to expanding knowledge of culture, science and technology, while also helping transfer the benefits of these innovations to society as a whole. However, the specifically regional commitment of this work is rarely clearly expressed in university statutes and mission statements.

The Universities' Law in Spain makes no reference to the need for regional engagement. Rather, the purpose of HE is couched in general terms relating to the creation, enhancement and critical transfer of scientific, technical and cultural knowledge; preparation for participation in professional life and the dissemination of knowledge and culture. Nor does this regional dimension figure in any of the nationally-agreed performance guidelines (including criteria for research-related discretionary increments or academic staff promotion, or the quality assessment of undergraduate or postgraduate programmes). Rather, the emphasis is placed on participation in international forums, with the regional dimension being afforded little or no importance.

However brief reference is made in the statutes of both Canarian universities to the regional dimension of their institutional goals. The statutes of the University of La Laguna speak of its mission in the following terms: "to create, enhance and critically transfer scientific, technical and cultural knowledge; to provide the preparation required to apply this knowledge and expertise to a professional context, and to support the social, cultural and economic development of the community". Another section refers to the aims of the University in the following terms: "To inspire technological advances aimed at improving the quality of life of the community" and "to support the overall development of the Canary Islands".

In the case of the University of Las Palmas de Gran Canaria, more frequent and more explicit references are made to the social, cultural and economic aspects of its community engagement. The University's mission statement states that it is committed to "directing the University's resources and the professional and personal expertise of its staff towards the regional community with the aim of satisfying its demands, working in partnership to help solve its problems and fulfil its needs". Elsewhere, it states that "the University will prioritise issues having a general impact on the present and the future of the Canary Islands, on the enhancement of all aspects of the quality of life of the region's citizens and on the achievement of sustainable development for Gran Canaria". Reference is made in the general aims of the University Statutes to "a curriculum intended both to further knowledge as well as to satisfy the needs of the local economy" and to the fact that "research should also serve as a means of advancement by critical enquiry leading to solutions required by society for social, cultural and economic problems". Additionally it refers to the aim of "expanding its activities throughout the Canary Islands to all areas where there is sufficient demand for these".

Regional objectives feature prominently also in the strategic plans for both universities.

The Strategic Plan for the University of Las Palmas de G.C. 2002-2006 focuses on four key themes. Issues from the first three sections of the Plan (namely, I: Teaching, II: Research and III: Management and Serving the University Community) are revisited in the concluding section, IV: "Community engagement and serving society". The four goals highlighted in this section are framed within a distinctive regional perspective, linking the University to the region via its community-oriented provision and contribution to the economic and social advancement of the Canary Islands.

For its part, the University of La Laguna's Strategic Plan is still at the discussion and approval stage. However, several parts of the current version of the text mention its mission to encourage technological innovation and sustainable development in the Canary Islands, and to deliver community-focused educational provision intended to produce well-qualified graduates for the local economy.

One of the main examples of community engagement by the Universities are their extra-mural courses [22] which take place in various locations throughout the islands. The University of La Laguna has run courses of this nature in several parts of Tenerife, Lanzarote and La Palma, and more recently on La Gomera and El Hierro. Courses delivered by the University of Las Palmas de G.C., take place not only in different parts of Gran Canaria itself but also on Lanzarote, La Gomera and Fuerteventura. It should be noted, however, that a significant number of students on these courses are already enrolled in university programmes and the courses count as credits towards their programme of study.

Another kind of outreach initiative is a programme of Lifelong Learning aimed at older people which has been developed by both universities. The main aim of this initiative is to deliver HE provision to a section of the population which has traditionally not participated in HE, thus responding to a community need which is likely to increase in the near future. In the case of the University of Las Palmas de G.C., these courses are available on Fuerteventura and Lanzarote, as well as on Gran Canaria.

The *Conference on the Canarian Economy* is a good example of a well-established regional initiative. The two Universities take it in turns to organise this event and staff from all the Economics and Business departments (as well as other related areas) at both ULL and ULPGC participate. The conferences focus on analysis of the contemporary socioeconomic reality of the Canary Islands. Five of these events have been held, the most recent one featuring approximately 41 presentations.

As for incorporating a regional dimension within teaching, regional issues are increasingly found in subject options, practical classes, and in specific aspects of the curriculum. Students themselves have requested that the theoretical content be linked to a more concrete regional perspective.

Notwithstanding the perception in society that universities do not engage fully with the regional community and the continued calls for such engagement, outreach activities have become more important than ever and continue to grow. However it is true that this kind of explicitly community-focused engagement is still fairly new in the HE sector, and while it is possible to identify some specific activities and initiatives, these university-led activities are not firmly embedded within the immediate community or the wider region by means of well-developed mechanisms or networks (only the extra-mural programmes have been firmly established). Furthermore, there are no incentives to encourage or reward such regional engagement: quality assurance guidelines fail to recognise the value of this kind of initiative by universities. (It is mentioned under just one of the headings on the ACECAU appraisal checklist for academic staff and its inclusion was keenly debated within the academic community as it was considered too parochial in focus). Moreover universities often lack the means to communicate effectively with their local community.

In this respect, it is worth noting that agents from outside the academic community make either no input or a negligible contribution to the curricular design of HE programmes.

[22] Extra-mural activities are aimed at the general public and include courses, seminars, workshops or conferences which are community-focused or oriented towards professional development. Most of these activities take part off campus and are held throughout the region.

The local community and the business sector want universities to play a greater role in economic and community development, a role which responds to new challenges and demands and helps anticipate those which may arise in the future. In its submission to the present study, the Tenerife branch of the Spanish Employers' Confederation highlighted the need to promote within the business community and other organizations a positive attitude towards working in partnership with the University to increase the competitiveness of the business sector, and also to improve management within organizations and enhance the well-being of citizens, this opinion is shared by the Canarian Employers Confederation. The officer in the ULL with responsibility for research recently underlined the business community's reticence in approaching the University for assistance in solving problems, when this relationship should be actively encouraged by both industry and the universities themselves.

This need for greater community engagement was made clear in a study which examined 'The socioeconomic impact of Universities: Vol. III: University of La Laguna'[23] in which 100 % of those surveyed (among businesses, community and professional organizations) indicated that they strongly agreed (on a five-point scale from Disagree to Strongly Agree) with the statement that greater efforts were needed to forge relationships between universities and business, society and local community groups.

Such links are more visible in the University of Las Palmas de G.C., which has already begun to foster ties, reflecting the major role which the local community played in bringing about the establishment of the university itself. Initiatives taken in this area are mentioned in the institutional audit report produced by the European Universities Association (2004), which highlights ULPGC's track record of community engagement in recent years.

It must be said that the regional dimension of the Canarian universities is complicated by the geography of this island territory. Despite this, both are developing their presence throughout the islands, and the University of Las Palmas de G.C. is delivering full programmes on Lanzarote, as well as offering three programmes via a Virtual Learning Environment, which helps to overcome geographical barriers.

2.3.1 Knowledge, opinions and expectations with respect to Universities

Information concerning HEIs' engagement with their regions can be found in the study *Los españoles y la Universidad* ('Spaniards and HEI') (ANECA, co-ordinated by F.J. Llera & A. Retortillo), which was the first national survey to examine the public image of HE in Spain. Some 311 Canarian residents were interviewed as part of the study, which was carried out in 2004. Since the survey offers a breakdown of data by regions, relevant aspects of the report can be usefully incorporated into this present study.

Awareness of and interest in HE issues:

Canarian HE institutions are well-known amongst the region's residents: 70.4% have heard of ULL and 63.5% of ULPGC. These figures were the highest recorded for all universities. When asked about their levels of interest in university-issues, 24.9 % said it was "high" and 36.9% "quite high", indicating that 61.8% overall take an interest in HE issues.

Importance attached to universities and university-related issues (Table 2.10).

Higher Education appears to be of considerable importance, with 88.6% of Canarians surveyed stating that universities were "very" or "quite important". However, only 48.8% rated them as being "very important", which was the lowest percentage in this category amongst all the regions, the Spanish national average being 56.4%.

[23] The University of Las Palmas de G.C. did not take part in the study carried out in 2000 by the Network of Social Observatories of Spanish Universities, which focused on families, businesses and community organisations.

Regarding the need for quality HE provision, 95.4 % of those surveyed thought that this was "very" or "fairly necessary", although again the percentage of those describing it as "very necessary" was the lowest in Spain (61.4 in the Canary Islands, 66.4 national average).

Table 2.10

a) IMPORTANCE OF UNIVERSITIES
Distribution of responses (%)

Very Important	Quite important	Of some Importance	Of little importance	Of no Importance	DK/ NC
48.8	39.8	7.3	3.2	0.5	0.5

b) NEED FOR QUALITY H.E. PROVISION
Distribution of responses (%)

Very Necessary	Fairly necessary	Neither necessary or unnecessary	Fairly Unnecessary	Very Unnecessary	DK/ NC
61.4	34	4.1	0.2	0.4	0

DK/NC = Don't know/No comment

SOURCE: *Los españoles y la Universidad*. ANECA 2004.
Sample from the Canary Islands

University Performance (Table 2.11)

Respondents were asked to rate the performance of universities in the Canary Islands against that of other Spanish universities, using a scale of one to five, in which one = much worse and five = much better. Canarian Universities scored 2.89 (compared to the Spanish average of 3.18). The average score for ULL was 3.6 and 3.5 for ULPGC: scores for universities in the various regions range from 4.4 to 3.1. Although the quality of Canarian universities was not highly rated, 74 % of those surveyed thought that there had been some improvement in their performance over the last 10 years (of these, 19.5% thought that their quality had improved greatly, while 54.4% agreed that there had been some improvement).

Table 2.11
Performance of Canarian universities
compared to other Spanish universities

Distribution of responses (%)

Much Better	**Better**	**Similar**	**Worse**	**Much worse**	**DK/NC**
1.8	4.5	62.9	15.2	1.4	14.2

SOURCE: *Los españoles y la Universidad*. ANECA 2004.Sample from the Canary Islands

Importance of university activities and assessment of their contribution to specific goals

As shown in Table 2.12, respondents expect HE to fulfil all of the listed aims (labelled A-I), to a greater or lesser extent, with those relating to business (H) and the job market (I) scoring lowest.

The second part of Table 2.12 reflects opinion on the extent to which HE activity succeeds in fulfilling these aims.

It seems that HE falls short of these expectations as a whole, and is judged to perform particularly badly in terms of links with business (H) and employability (E, I).

Table 2.12
Importance of university activities and assessment of their contribution to specific goals

a) EXPECTATIONS ABOUT THE PURPOSE OF HE
(Percentage of respondents agreeing with each of the aims)

A	B	C	D	E	F	G	H	I
88.3	92.2	93.5	91.5	96.4	94.1	91.2	80.5	88.6

b) ASSESSMENT OF PERFORMANCE AGAINST THESE OBJECTIVES
(Percentage of respondents agreeing that universities fulfil this aim)

A	B	C	D	E	F	G	H	I
59.6	63.8	54.4	58.6	42	52.1	50.8	46.3	49.5

A- To produce mature individuals
B- To produce a more cultured society
C- To enhance social cohesion
D- To advance knowledge and research
E- To help students gain employment
F- To support equal opportunities
G- To improve the quality of life through scientific innovation
H- To enhance the competitiveness of industry
I.- To provide courses relevant to the job market

SOURCE: *Los españoles y la Universidad.* ANECA 2004. Sample from the Canary Islands

Overall, Canarian universities are well-known, they generate significant levels of interest and the expectations people have of them are high (although below the national average in every case). Their performance is judged to be average, although it is believed they have improved. Although expectations about the role of HE are high, these remain largely unfulfilled and HE is considered to perform particularly badly in areas relating to the economy and employment.

2.3.2 University Councils

Every University has a *Consejo Social* or University Council, which is the body charged with forging links between the University and the wider community. Under Spain's Universities' Law, the following functions are assigned to the Councils:

a) To oversee the University's economic activity, performance of its services and management.
b) To encourage contributions by the community to University finances, and promote the institution's involvement in the cultural, professional and economic life of its community, in order to enhancing the quality of its activities.
c) To approve the University budget and long-term planning, as proposed by the University's Governing Council.

Since 2003, the University Councils of both Canarian universities have been regulated by regional legislation, which requires that they comprise not only University employees but also a representative sample drawn from Canarian society. In this way the wider community is involved more actively in university life[24] and the University's activities are subject to scrutiny. More importantly, it provides an

[24] University Councils consist of 26 members: six from the University community (the Vice Chancellor, the Registrar, a Senior Manager, a member of academic staff, a student, a representative from the University administration/services) plus twenty members representing community interests. These include professional practitioners, individuals from the Arts and industry and the local community (one member to be chosen by the Canarian Minister for Education, three members to be elected by the Canarian Parliament, a representative from each of the seven Island Councils, two members proposed by the trade unions, two members from business associations, one representative from a professional organization, a representative of companies that

opportunity for community representatives who can be of real assistance in enhancing the development and growth of the University sector to see at first hand the problems it faces. It facilitates their active involvement in a partnership to create a meaningful interface between the worlds of academia and research, and the educational, social, scientific, economic and professional needs of the Canarian community

The Chairperson of the University Council is proposed by the regional Minister for Education, Culture and Sport and appointed by the Canarian Government.

In line with state legislation, the Canarian regulatory framework sets out three major roles for University Councils:

a) Planning, scheduling and enhancing the efficiency of the services provided by the University.
b) Overseeing the University's economic activity and the performance of its services and its management.
c) Interfacing with community, economic and producer groups.

Many of its powers are described in terms of "promoting", "proposing", "strengthening" or "overseeing", which means that the framework for its role as an intermediary, working in partnership with the regional government and the university itself, is a loosely defined one.

The involvement of University Councils is compulsory in financial matters[25] but since budgetary and funding issues are already tightly controlled by external audit, this effectively weakens their powers. Moreover, they lack the necessary infrastructure to pursue their role with due rigour, since in practice their only real powers are those which the University may decide to grant them. These remain fairly limited, since University Councils are viewed as externally imposed bodies which regulate and scrutinise HE institutions rather than working in partnership with them. In reality their role is a largely symbolic one. The fact that they play only a limited role was confirmed during interviews carried out for this study with the Chairs of the ULL and ULPGC University Councils.

For this reason, the Tenerife branch of the Spanish Employers' Confederation has highlighted the need to encourage the presence of employers' organizations on the University Council of the University of La Laguna as the only means of facilitating effective two-way communication between the University and the wider community. It also recognises that business representatives do not play a full role in the University Council due to a lack of dialogue between the University and the business world.

The Report on the follow-up visit by the European Universities Association (EUA) in April 2004, which examined external quality assurances processes at the University of Las Palmas de Gran Canaria, noted that the external membership of the University Council was increasingly being drawn from political parties rather than community-based organisations, and called for a more prominent role for the University Council within the institution.

2.4 Regional higher education and governance

In Spain, Universities are subject to powers exercised by (a) the Spanish State, (b) the region and (c) the University itself.

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provide financial backing for the University, a representative of foundations or companies which have contracts or agreements with the University, preferably research-related, a prestigious individual from the field of science, culture, the Arts or technology, and a representative of the Canarian Confederation of Parents' Associations).

[25] The remit of the University Council in financial matters is:
- To approve the University's long-term financial planning and any contract programmes drawn up.
- To approve the University's annual budget (although it does not take part in any subsequent monitoring).
- To approve the granting of additional or top-up funding and scheduling of debt.
- To approve the annual accounts of the University and of University-related bodies.
- To approve the setting up by the University of companies, foundations or other legal entities.
- To approve economic feasibility studies of academic programmes.

2.4.1 Education powers

The Spanish Constitution (1978) recognises the independence of the Universities, guaranteeing them academic freedom to pursue teaching and research and also allowing them to manage and administer their own resources. (These aspects have been further elaborated in subsequent legislation: the University Reform Law of 1983 and the Universities Law of 2001). The devolution process set in motion by the Constitution granted Spain's regions broad powers with respect to HE, including establishing most of the criteria relating to how the sector is run and the mechanisms for financing universities.

The transfer of powers to the Canary Islands began in 1986 and the region was one of the first in the country to assume responsibility for its own HE sector.

In practice, there is still something of a grey area as regards the respective powers of the HE institutions and the regional authorities and this frequently leads to disputes regarding the extent to which Universities can exercise their academic freedom. Their autonomy is effectively restricted in various domains, including staff numbers and the introduction of new programmes of study. Spending is also tightly controlled via negotiated arrangements with the regional government.

The emergence of the European Higher Education Area may lead to the development of a further set of criteria governing the length and structure of HE programmes and this is likely to impact on other aspects of the structure and workings of the sector.

One of the distinctive features of the decision-making process in HE is the vast number of different bodies, representing various sectors and levels of the institution. These bodies have limited powers and the function of their senior representatives is not clear, which is detrimental to the efficient management of HE.

2.4.2 Quality assurance in the universities

Formal Quality Assurance (QA) processes have been introduced fairly recently within the Spanish HE system but have undergone rapid development. In addition to each university's internal QA processes, institutional audits are carried out by the National Quality Assurance and Accreditation Agency (ANECA), which operates under the Spanish Ministry of Education and Science. Its regional counterpart, the Canarian HE Quality Assurance and Accreditation Agency (ACECAU), operates under the Canarian Ministry of Education, Culture and Sport.

National Quality Assurance and Accreditation Agency (ANECA)

ANECA was set up in 2002 and its remit as established in its statutes is as follows: to contribute to assessing the performance levels of HE, via assessment reports and reports on certification and accreditation, in order to enhance and assure the quality of Spanish Universities and facilitate their incorporation into the European Higher Education Area.

The work carried out by ANECA has the following objectives:

a) Assessment and accreditation of programmes of study which lead to the award of national qualifications which are officially recognised in Spain, together with the assessment and accreditation of programmes of study leading to other diplomas and qualifications awarded by Universities.
b) Assessment of the teaching, research and administration of HE academic staff and of proposals for salary increments.
c) Assessment of educational institutions delivering foreign programmes in Spain.
d) Assessment of the work, programmes, services and management of HE institutions.

Although ANECA has only been in operation for a short time, it has had a major impact on the work of universities. Its assessment of research by academic staff has had significant repercussions for individuals, who have received discretionary increments and promotion. On an institutional level, it has accredited undergraduate and postgraduate programmes for official recognition throughout Spain.

Canarian HE Quality Assurance and Accreditation Agency (ACECAU)

Established in 2002 by the Canarian Government, ACECAU's stated objective is the reliable, systematic and independent assessment of the core components of HE (its institutions, programmes, teaching, research, academic staff, management, etc.) and of policies implemented by the Universities and the Canarian Authorities with a view to constantly enhancing the quality of the services offered.

The remit of ACECAU covers:

a) Functions relating to the assessment and accreditation of programmes of study, qualifications, services and HE institutions.
b) Functions relating to the assessment of academic and research staff; assessment required for recruitment of academic staff and for the award of discretionary increments for academic staff at publicly-funded universities in the Canary Islands.
c) Functions relating to the future planning of the HE sector in the Canary Islands through studies and recommendations to the regional authorities to encourage quality teaching and research and appropriate planning to achieve this; assessment of the impact in the Canary Islands of reforms to universities and the structure, scope and results of any general innovations introduced. Lastly, to design systems using performance indicators or similar tools, appropriately adapted to local conditions, which can be used to measure the efficiency of the sector in the Canary Islands.

Although ANECA and ACECAU have a similar remit, in fact they complement each other, each focusing on different aspects of assessment in relation to both human and institutional resources.

It should also be noted that, within universities, assessment procedures are applied to individuals, departments and research teams when allocating funding, determining suitability for research-related duties including thesis supervision, or establishing priorities in research funding.

It is clear that QA processes have had a major impact in recent years in the HE sector in both Spain and the Canary Islands, and there has been much discussion of this within institutions, particularly the criteria and mechanisms used, the significance of the results produced and what these may be used for.

The University of Las Palmas de G.C. has also been the subject of an external institutional audit carried out by the European University Association (EUA). The first assessment took place in 1997 and a follow-up report was produced in 2004.

Both Universities have also taken on responsibility for the strategic planning of their current and future activities which involves mechanisms for permanent tracking and assessment of progress in relation to general goals and a previously agreed action plan. (The University of Las Palmas de G.C. has drawn up and approved its Strategic Plan 2002-2006 and produces an annual progress report. The University of La Laguna's Plan is at the consultation and approval stage).

2.4.3 University funding

The structure of university funding, together with some key indicators, is shown in Table 2.13, which highlights some of the distinctive features of Canarian HE.

Canarian universities receive most of their income from public funds, with the regional government providing the bulk of core funding. The extent of their reliance on public money is reflected in the proportion that this represents of their total income; 84.9 % for the University of La Laguna and 83.7 % for the University of Las Palmas de G.C. This compares to the Spanish average of 72.6 %. Following

devolution and the transfer of central government powers to the regions, the vast majority of core funding now comes from the Canarian authorities. The region contributes 99% of the public finding received by ULL and 96 % of that of ULPGC.

In the case of the Canary Islands, public expenditure on universities amounts to 0.71% of GDP, a figure which is higher than the average for the other Spanish regions.

In recent times, the funding process has been largely conducted via long-term contract programmes between the universities and the Canarian government. This means that funding is linked to the achievement of a series of previously agreed objectives (a target-driven funding regime). The first contract, for the period 1996-1998, required some general commitments from the universities regarding staffing structures and more specific commitments relating to quality assurance and the achievement of agreed performance targets. The second contract (2001-2004) set a series of goals to be achieved: some of these were general, while others were of a strategic or financial nature, meaning that funding was more closely linked to the achievement of targets and results in terms of quality and efficiency. The negotiation and implementation of the contract programmes triggers considerable debate on academic freedom, the availability of funding for HE from the regional authorities, the structure of this funding and the respective allocation for each university.

In practice, the contribution from the regional government is decided on the basis of criteria, targets and goals which it itself draws up, and universities have very little discretion as regards the use to which this public money is put. Consequently, their financial autonomy is restricted. They are free only to use their own (limited) resources - derived mainly from tuition fees, sales of goods and services, and endowment income - to fund plans and projects they consider appropriate.

Another striking feature is the expenditure on staff costs as a percentage of total operating costs - 85.3 % at ULL and 81.4 % at ULPGC. This figure is substantially higher than the average for other Spanish universities (76.22 %).

The financial indicators show that core public funding per student is higher in ULL, although both Canarian universities are above the Spanish average. Own resources are low and both universities are thus heavily reliant on the external funding received, mainly from central and regional government.

Expenditure per student is greater at ULL and, in both cases, is higher than the average for Spain's universities overall. This is due to the greater staff costs per student, given that the general overhead costs per student are not very high.

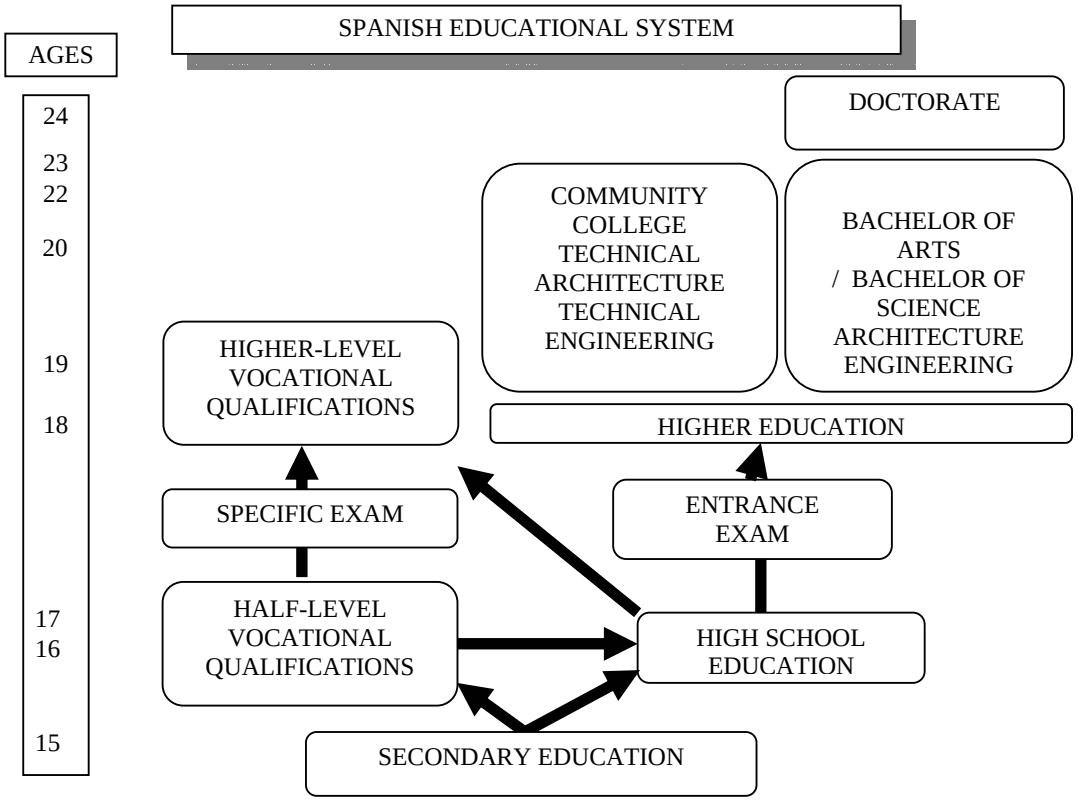
In conclusion, the most striking features of Canarian universities are a heavy reliance on the contribution from the regional government and the fact that public funding (as a percentage of GDP) and funding per student are both higher than the Spanish average. Lastly, the relatively high level of its expenditure on staff deserves mention.

Table 2.13
Key budgetary & financial indicators based on financial statements
2002

INCOME		**ULL**	**ULPGC**	**AVERAGE STATE-FUNDED UNIVERSITIES SPAIN**
FEES, SERVICES TO PUBLIC AND OTHER INCOME		15,334,161	12,677,498	
CORE FUNDING		100,204,979	87,123,543	
	From state	373,830	364,790	
	From region	99,332,625	84,008,923	
CAPITAL TRANSFERS		10,057,341	6,916,230	
TOTAL INCOME		**132,279,459**	**109,586,726**	
EXPENDITURE				
STAFF COSTS		93,164,586	74,459,045	
OPERATING COSTS		12,718,615	12,427,721	
CAPITAL INVESTMENT COSTS		17,186,618	12,599,615	
TOTAL EXPENDITURE		**128,738,216**	**105,709,320**	
KEY INDICATORS				
Core funding/total income %		84.9	83.7	72.6
Staff costs/total costs %		85.3	81.4	76.22
Contribution per student		4,042	3,762	3,141
Own funding per student		681	594	1,031
Core funding per student		4,487	4,211	4,094
Operating costs per student		4,447	4,094	3,975
Staff costs per student		3,791	3,334	3,055
Overhead costs per student		518	557	732
PUBLIC FUNDING/GDP		**Canary Islands 0.71**		**0.65**

SOURCE: CRUE 2004

APPENDIX I



APPENDIX II

MAIN EDUCATION POWERS OF THE STATE, REGION AND UNIVERSITIES

a) Powers of the Spanish State

As in the Spanish Constitution (1978) and more recent legislation (Universities' Law of 2001), the State is responsible for:

a.1.- The legal framework and pay scales, guidelines, requirements and mechanisms for the promotion of tenured academic staff.

a.2.- Compiling the portfolio of nationally recognised qualifications, general curriculum guidelines, general criteria for the convalidation of studies.

a.3.- The official process of admission to HEIs from lower educational institutions.

a.4.- Via the National Quality Assurance and Accreditation Agency (ANECA), assessing the teaching of each university and the quality of research output of academic staff, as well as their administrative capability,

b) Regional powers

Among others, the region has powers with respect to:

b.1.- The creation, modification and closure of institutions, and the introduction and withdrawal of officially recognised study programmes.

b.2.- Liaison between the Canarian universities.

b.3.- The setting of fees (within the limits agreed by the state body charged with University liaison) and establishing a policy for awarding bursaries.

b.4.- Determining the level of university funding and funding mechanisms to be used.

b.5.- Regulatory aspects concerning teaching and research staff in universities and the establishment of a system of discretionary merit-based increments. It also sets the pay scales for administrative and services staff at universities.

b.6.- The creation of the Canarian HE Quality Assurance and Accreditation Agency (ACECAU) for the purposes of quality assessment in universities.

c) **University powers**

c.1.- Preparation of the university statutes; choosing the persons and bodies to represent it and the various groups within the institution

c.2.- Preparation of study and research programmes

c.3.- Recruitment and management of academic, research and administration/services staff

c.4.- Preparation and management of the university budget

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CHAPTER 3. CONTRIBUTION OF RESEARCH TO REGIONAL INNOVATION

3.1 Introduction

As noted in Chapter 1, the economy of the Canary Islands changed from agriculture to services, particularly tourism, without passing through an industrial development stage. This evolution of the economy explains the current needs in terms of the qualified labour and knowledge required for innovation. Another important characteristic to be taken into account is the division of the territory into seven islands and a number of smaller islets, which has major consequences for the productive process and market continuity, as well as for the generation and dissemination of knowledge.

R+D expenditure as a proportion of regional GDP increased from 0.53 % in 2003 to 0.61 % in 2004, (by way of comparison, in Spain overall it increased from 1.05 % in 2003 to 1.07 % in 2004). By sectors, R+D expenditure in the Canary Islands is accounted for mostly by the Universities (54.02 %) and by public research bodies (24.51 %), the two together comprising 78.53 %, while the business sector share of R+D spending is a mere 21.47 %. The weight of the public sector in research, measured in terms of domestic R+D spending, is significantly higher in the Canary Islands than in the rest of Spain, where universities account for 29.53 % and the public administrations a further 15.96, giving a total of 45.46 %, with industry accounting for the remaining 54.51 %. If measured by the number of full-time equivalent researchers the difference is even more pronounced. In both cases, however, there is a tendency for the business sector to increase its share of R+D spending.

Table 3.1
Scientific research and technological development: total expenditure and staff, 2003 and 2004
(Thousands of Dollars)

	Spain				Canary Islands		
	2003	2004	% 2004		2003	2004	% 2004
Industry							
Total internal spending	4,443,438.0	4,864,930.2	54.51		27,328	42,792	21,47
FTE staff in R+D	65,032	71,436.0	44.11		307.2	366.8	9,37
FTE researchers	27,581	32,227.3	31.91		111.4	123.2	0,39
Public Administration							
Total internal spending	1,261,762.8	1427503.6	15.96		42.321	48,845	24.51
FTE staff in R+D	25,760	27,165.5	16.78		809.8	897.4	22.93
FTE researchers	15,48	17,151.2	16.98		482.0	591.4	18.83
Higher Education							
Total internal spending	2,491,958.8	2641653.2	29.53		98,800	107,648	54.02
FTE staff in R+D	60,307	63,331.1	39.11		2491.9	2650.3	67.70
FTE researchers	49,196	51,615.9	51.11		2267.7	2426.1	77.25
TOTAL							
Total internal spending	8,213,035.6	8,945,760.7	100		168,449.0	199,285	100
FTE staff in R+D	151,487	161,932.6	100		3608.5	3914.5	100
FTE researchers	92,523	100,994.4	100		2861.1	3140.7	100

FTE : Full-time Equivalent
SOURCE: National Statistics Institute (INE), Statistics on Scientific Research and Technological Development Activities

The Canarian public R+D system includes the Universities of La Laguna (ULL) and Las Palmas de Gran Canaria (ULPGC) -(the Distance University branch in the Canary Islands does not engage in research)-

along with University Research Institutes, research bodies affiliated to the Canarian government, other centres dependent on the respective governing corporations of each island (Cabildos) and the Canarian Astrophysics Institute, which is a public consortium comprising the State administration, the regional government, the University of La Laguna and Spain's Science Research Council (Table 3.2).

Table 3.2
Public research, development and innovation (R+D+I system in the Canaries)

CANARIES	REGIONAL ADMINISTRATION	Ministry of Education, Culture and Sport	University of Las Palmas de Gran Canaria	Univ. Institute for Applied Microelectronics
				Univ. Institute for Intelligent Systems and Numerical Applications in Engineering
				Univ. Institute for Animal Health and Food Safety
				Univ. Institute for Cybernetic Sciences and Technologies
				Research Promotion Unit
			University of La Laguna	"Antonio Gonzalez" Univ. Institute for Bio-organics
				University-Business Institute
				Univ. Institute for Tropical Diseases
				Univ. Institute for Regional Development
				Univ. Institute for Political and Social Sciences
				OTRI (research results transfer office)
			Canarian Astrophysics Institute (IAC)	OTRI
				Canarian Large Telescope (GRANTECAN)
			Directorate General for Universities and Research	Canarian Institute for Marine Sciences (ICCM)
		Ministry for Industry, Trade and New Technologies	D.G. for Econ. Development, Industry and Technological Innovation	
				Canarian Technological Institute (ITC)
		Ministry of Health	Canarian Health Service	Dr Negrín / Children's / La Candelaria Hospitals
				Canarian Foundation for Health Research (FUNCIS)
		Ministry of Agriculture, Livestock, Fisheries and Food		Canarian Institute for Agricultural Research (ICIA)
			Fisheries Dept.	
		Ministry of Economy and Finance	D.G. for Economic Promotion	
				Canarian External Promotion Company (PROEXCA)
				Canarian Economic Development Company (SODECAN)
		Ministry of the Environment and Regional Planning		Canarian Cartography (GRAFCAN)
	ISLAND	Gran Canaria Cabildo	Experimental Farm	
			"Viera y Clavijo" Botanical Gardens	
		Tenerife Cabildo		Renewable Energies Technology Institute (ITER)

				Tenerife In -Vitro Crops (CULTESA)
	ADMINISTRATION	Lanzarote Cabildo	Experimental Farm	
			'Casa de los Volcanes'	
			Seismological Station (CSIC)	
		La Palma Cabildo	Agrobiological Laboratory (CSIC)	
			Breña Baja Geochemical Station (ITER)	
SPAIN	Ministry of Science and Technology		Higher Science Research Council (CSIC)	Institute for Natural Products and Agrobiology
	Ministry of Defence		National Aerospace Institute	Space Monitoring Station, Canary Islands (Maspalomas)
	Ministry of Agriculture, Fisheries and Food		Oceanographic Centre, Canary Islands	
	Ministry for Economic Development		National Geographical Institute	Canary Islands' Geophysical Centre

SOURCE: OCTI (2005)

As can be seen, virtually all the research centres are located on the two main islands, with the exception of three located in Lanzarote and two in La Palma.

3.2 Responding to regional needs and demands

Attention has been drawn in recent years to how innovation is the outcome of a process involving different stakeholders. The innovation systems approach (Lundvall, 1992; Edquist, 1997; OECD, 1999; Braczyk, Cook and Heidenreich, 1998) highlights the participation of different interrelated actors and institutions: public administrations, universities and public research bodies, companies, financial institutions and the macroeconomic and competitive environment. Another approach, largely coinciding with this and called the 'triple helix' (Etzkowitz and Leydesdorff, 2000), underlines the interrelationship between government, universities and business.

This approach has been used to analyse the Canarian innovation system (CDTI, 1998; Álvarez, Díaz Pérez and Álvarez González, 2001); in this section it will be followed to examine the role of the different agents involved in the innovation process in the Canary Islands and how these agents interrelate.

3.2.1 The regional component of research policy at ULL and ULPGC

Like their Spanish counterparts, the universities in the Canary Islands list research and teaching as their fundamental objectives. Of the 3,345 academic staff at the two, 2,426 are full time equivalent researchers, which mean the universities - as seen above in Table 3.1 – account for 77.25 % the total number of researchers in the Canary Islands.

In order to meet their research objective, the two publicly-funded universities in the Canary Islands have their own research project funding policy, which is based on annual procedures for the awarding of grants. In September 2004 the ULL, under articles 91 and 92 of its Statutes, approved its financial aid programme for university research projects for 2005. The provision includes study grants for congresses in Spain and abroad, attendance at courses and seminars, and -in particular- assistance with the creation and consolidation of new research teams (100,000 euros), support for existing teams (150,000 euros) and spending on research support services (78,000 euros). The ULPGC also has a policy for supporting research projects (pre-competitive) of one or two years, with grants of 3000 to 6000 euros. The decision on research funding which was adopted in April 2004 covered grants to 51 projects for a total of 142,700 euros (average of 2798 euros per project).

In both universities evaluation of research projects is carried out by the Spanish Ministry of Education's Evaluation Agency (ANEP), which although guaranteeing a degree of impartiality in funding allocations mainly takes into account project coherency and academic merit, not the needs of the regional environment. In short, the Canarian universities allocate few resources to research and very few (or nothing at all) to technology research, with no specific focus on regional needs.

3.2.2 Public Administrations

Background

Another active participant in the Canarian innovation process is the regional government. Given the Islands' status as an Objective one region which is poorly-developed technologically, access to the RITTS programme has been possible: 'in 1995 the Canarian Department of Trade and Industry, through the Directorate General for Industrial Development and Promotion, submitted a proposal for a Strategic Plan for Innovation in the Canary Islands (PEINCA), which was approved by the European Commission . . ."

The Islands later joined the RIS+ programme which, like PEINCA, is managed by the regional government. The Canarian Technological Institute (ITC) has led four of the five RIS+ actions, including a pilot project for the creation of new innovative technology firms.

Lastly, mention should also be made of the Canarian Development Plan for 2000-2006 (PDCAN) which sets out the regional government's innovation policy actions.

Public Administration innovation policies

Three innovation policies converge in the Canary Islands: the European Union, the Spanish government and the Canarian government.

Powers with respect to innovation policy have been modified to a certain extent both at central and regional government level. At central government level, the Ministry of Science and Technology was created in 2000 to take charge of innovation but it was done away with in 2004 and its powers were shared out among the Ministry of Science and Technology and the Ministry of Industry, Trade and Tourism. In the Canary Islands, powers concerning innovation policy have rested with different bodies, which are continually changing. At present three bodies are tasked with policy: the Directorate General for Universities and Research (DGUI), the Directorate General for Industrial Development and Technological Innovation (DGFIIT) and the Office for Science, Technology and Innovation.

To support innovation policies, the Canarian Technological Institute (ITC) -a publicly-funded company- was created in 1992. The Institute acts in three directions: provision of services to businesses; support for external promotion of technology available in the Canary Islands; and research project development via its research centres. For technology dissemination the ITC participates in the Southern Europe Information Relay (SEIRC) which was set up to create a technology market in southern Europe. The ITC also has a 'business incubator' -with centres in Tenerife, Gran Canaria, La Palma y El Hierro- to stimulate the creation of innovative firms.

Lastly, the Office for Science, Technology and Innovation, which is formally attached to the Presidency of the Canarian government and was set up by Decree 7/2004, 3 February (Official Journal of the Canary Islands, No. 27, 10.02.2004), has among its functions the "promotion of inter-relationships and synergies between public and private research and development bodies and enterprise . . .". Since it has been in operation for a very short time, it has not yet been able to exercise its functions fully.

Within the innovation policies we can differentiate between those aimed at research and those aimed at business.

a) Research promotion policies

These are designed primarily to fund research projects. Canarian research centres can participate in the Spain's National R+D+I Plans and also in the Integrated R+D+I Plan put in place by the Canary Islands.

In order to strengthen research centres, the Spanish government created the 'Ramón y Cajal' Programme, which provides help to public and non-profit private bodies to recruit holders of Ph.Ds for a period of five years. The Ministry covers 100% of the contract costs for the first year, reducing the figure by 10% for each subsequent year. During the period 2001-2004, 24 doctorate holders were recruited in the Canary Islands out of an overall total for Spain of 2244 (1.1 %) (See Annex AI.6).

Participation by Canarian research centres in the National R+D+I Plan reflects the region's research capacity, given that they compete for funding with other centres in Spain. As shown in Table 3.3, during the four-year period from 2000-2003, centres in the region participated with 320 projects, 2.11 % of the total number of research projects approved in Spain (2.21 % of the funding given).

Table 3.3
Regional distribution of projects and funding approved under National R+D+I Plan 2000-2003
(Thousands of euros)

	Aid to public sector		Aid to private sector		TOTAL	
	No.	Amount	No.	Amount	No.	Amount
Andalusia	2137	140377.23	462	17330.63	2599	157707.86
Aragon	486	34188.92	293	7991.52	779	42180.44
Asturias	378	25547.78	191	4712.10	565	30259.88
Balearics	211	11387.68	31	904.38	242	12292.06
Basque Country	519	33234.16	1124	65605.14	1643	98839.30
Canary Islands	320	24520.87	79	2641.67	399	27162.54
Cantabria	182	17462.89	94	2374.19	276	19837.06
Cast-La Man	194	16904.90	175	12551.28	369	29456.18
Cast-Leon	725	48288.89	376	4113.41	1101	52402.3
Catalonia	3299	246008.97	2189	74780.28	5488	320789.25
Valencia	1458	113320.99	605	14812.69	2063	128133.68
Extremadura	158	9135.55	28	1584.27	186	10719.82
Galicia	712	46754,17	189	6599.27	901	53353.44
La Rioja	58	2760.83	130	3317.58	186	6078.41
Madrid	3734	299356.75	2108	85434.12	5842	384790.87
Murcia	355	23422.87	140	4338.09	495	27760.98
Navarre	245	14646.58	453	7870.27	698	22516.85
Not regionalised	14	1288.74	5	318.32	19	1607.06
TOTAL	15187	1108348.83	8672	317279.19	23859	

SOURCE: Ministry of Education and Science (2005), National Plan for Scientific Research, Development and Technological Innovation 2000-2003 in figures.

An analysis of the participation of the main Canarian research centres reveals that the University of La Laguna heads the table, followed some distance behind by the Astrophysics Institute and ULPGC (see Table 3.4).

Table 3.4
Participation of Canarian research bodies in D.G. Research funding awards, National R+D+I Plan, 2000-2003.
(Grants in thousands of euros)

	2000		2001		2002		2003		2000-2003	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
University of La Laguna	**21**	**851.5**	**26**	**1926.5**	**40**	**2269.0**	**31**	**2007.7**	**118**	**7054.7**
University of Las Palmas de Gran Canaria	**12**	**522.7**	**17**	**1160.3**	**15**	**1187.1**	**25**	**1349.4**	**69**	**4219.5**
Science Research Council (CSIC)	**2**	**93.7**	**1**	**72.6**	**3**	**236.7**	**1**	**73.6**	**7**	**476.6**
Canarian Astrophysics Institute	**2**	**87.5**	**11**	**1309.4**	**7**	**2229.1**	**4**	**3245.8**	**24**	**6872.8**
Meteorological Institute (Min. Environment)	**1**	**75.8**	**0**	**0**					**1**	**75.8**
University Hospital of the Canary Islands – Tenerife Health Consortium			**1**	**76.0**	**1**	**60.2**			**2**	**136.2**
Spanish Oceanographic Institute (IEO)			**1**	**36.6**					**1**	**36.6**
Candelaria University Hospital - Canarian government					**1**	**25.3**			**1**	**25.3**
Canarian Institute for Marine Sciences -Canarian government							**1**	**117.3**	**1**	**117.3**
Rafael Clavijo Foundation for Biomedical Research							**1**	**69.0**	**1**	**69.0**
ITER Canarian Foundation							**1**	**69.0**	**1**	**69.0**
Viera y Clavijo Botanical Gardens -Gran Canaria Cabildo							**1**	**75.8**	**1**	**75.8**
TOTAL	**38**	**1631.2**	**57**	**4581.5**	**67**	**6007.4**	**65**	**7007.6**	**227**	**19227.7**

SOURCE: Ministry of Education and Science (2005), National Plan for Scientific Research, Development and Technological Innovation, 2000-2003 in figures.

Through its Directorate General for Universities and Research (DGUI), the Canarian government offers financial assistance for courses, seminars, and events, consolidated research teams, infrastructure, research projects and publications. In recent years the DGUI has offered annual grants (usually 75% co-financed by the ERDF) for support to consolidated research teams, scientific and technological equipment and infrastructure in the two Canarian universities and their scientific research centres or institutes, together with grants for research projects in specific areas of science and technology.

In 2003 the regional government adopted the Integrated Plan for R+D+I 2003-2006 (PIC), which establishes three priority areas: scientific and technological training designed to increase current and future capacity in the Canarian Science and Technology System; scientific and technological thematic areas, associated with specific sectorial policies or scientific/technological domains and designed to promote the social and economic development of the Canary Islands by harnessing the region's special characteristics; and, lastly, fields of cultural promotion suitable for scientific research, technological innovation and dissemination of results.

The approval of the Plan has led to a review of the procedures for DGUI funding to adapt to the Plan's guidelines and objectives. To that end, a Decree (30/2004, 23 March) was passed to regulate the system of grants, financial assistance and scholarships for university studies, research, technological development and innovation. The target areas of the previous funding system were also modified to conform to the priority areas established by the Plan, which means that funding is now allocated mainly to projects corresponding to these areas.

b) Actions aimed at business

Innovation policy actions are aimed at business also. As Table 3.3 shows, during the period 2000-2003 Canarian businesses benefited from just 79 grants under the National R+D+I Plan, i.e. a mere 0.91 % of the number awarded and only 0.83 % of the total funding given under this category.

A further means of encouraging innovation in business are fiscal incentives for R+D+I . These incentives are established at national level and are set out in the country's Company Tax Law (Law 43/1995, 27 December, which has subsequently been amended to include specific details of the activities entitled to tax allowances).

Technological innovation policies geared specifically to business in the Canary Islands are mainly implemented by the Directorate General for Industrial Development and Technological Innovation. Measures taken that are most clearly related to innovation policy include grants to support actions for information and communications technologies in SMEs; grants for innovation and technological development in industrial and technology-based firms, and grants for recruitment of Ph.D holders and technologists in firms, intermediate bodies, research and development centres, and OTRIs (offices for the transfer of research results).

Other specific policies for research and development exist also. The regional Ministry for Finance, through its Directorate General for Economic Promotion, provides funding under the SME Competitiveness and Consolidation Plan, a European programme co-funded by the European Union, central government and the Canarian government. The Directorate General also provides grants to entrepreneurs.

Research in the health field is channelled via the Canarian Foundation for Health Research (FUNCIS), which is affiliated to the regional Ministry of Health. For agriculture, there is a Canarian Institute for Agricultural Research (ICIA), which is affiliated to the regional Ministry of Agriculture, Livestock, Fisheries and Food.

In sum, the regional government has shared out the powers concerning research, development and innovation policies, a decision which causes occasional conflicts between the different government departments and renders evaluation difficult. One might say that the Canarian government policy is split into special measures aimed at promoting research and provision of knowledge (DGUI) and other demand-side measures (DGFIIT), essentially the creation of new technology based firms and grants for the purchase of more modern equipment. However, few measures are taken to connect up knowledge provision and demand. According to the OCTI, total expenditure by the Canarian Government on R+D+I in 2004 was 41,775,463 euros, i.e. 0.89 % of the regional budget (see annex AI.7).

Businesses

Businesses play a central role in the innovation process, since they are ultimately where such innovation is implemented. The business structure in the Canary Islands is characterised by a predominance of very small firms and services companies. The characteristics of non-agricultural businesses, as seen in Tables 3.5 and 3.6, are as follows. In 2004 47.18 % of companies had no employees, whereas 46.55 % had between one and nine employees. In other words, 93.73 % of firms had less than ten employees. The figure is very similar for 2005, a year which has seen a 6.46 % increase in the number of businesses.

Table 3.5
Number of firms according to the number of employees

Total		No. employees		1 – 9		10-49		50-499		500 and above	
2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
120,249	128,020	56,739	62,495	55,873	57,663	2,390	6,637	2,390	1,176	46	49
100.00	100.00	47.18	48.82	46.55	45.04	1.99	5.18	0.79	0.92	0.04	0.04

SOURCE: National Statistics Institute, Directory of Businesses (2005)

The other crucial characteristic of Canarian businesses is that only 5.18 % are from the industrial sector, 11.71 % belong to the construction sector and 83.06 % to the services sector (not including agricultural businesses). As Table 3.6 indicates, 19.29 % of firms in 2005 engaged in commercial activities, while 11.85 % were classified as hostelry businesses, and 7.04 % as road transport companies, etc.

Table 3.6
Number of firms by sector

	2004		2005	
Quarrying	53	0.05	51	0.04
Industry	6,227	5.18	6,311	4.93
Construction	14,001	11.71	15,291	11.94
Services	99,923	83.06	106,367	83.09
• Trade			24,701	
• Hostelry			15,619	
• Road transport			9,018	
• Real estate			6,460	
• Others			16,779	
TOTAL	120,204	100	128,020	

SOURCE: National Statistics Institute, Directory of Businesses (2005)

Businesses in the Canary Islands are, therefore, very small and mainly services-geared (particularly tourism or tourism-related). This situation impacts decisively on the innovation process, both in terms of the knowledge required and firms' research capacity.

Financing innovation

The availability of adequate financial resources is another prerequisite for innovation. Firms in the Canary Islands have three mechanisms available for financing innovation: grants under innovation policy, the regional risk capital market, and participation in the Spanish risk capital market.

No specific risk capital market exists in the Canary Islands for innovative businesses. There is only the Canarian Development Company (SODECAN), which was created in 1977 as a public risk capital company. Also available is the Canarian Economic Promotion Company (PROEXCA) - a regional public body established by the Canarian Ministry of Finance for the purpose of supporting, among other things, professionals and businesses with innovative ideas- and SOGAPYME, a company which was set up to provide collateral for SMEs.

In terms of the participation of Canarian firms in Spain's risk capital market, the investment portfolio represents the very low figure of approximately 1 % of the national total (see Table AI.1 of the annex I).

A further mechanism at national level is the National Innovation Enterprise (ENISA), which provides long-term loans with an interest-only period of three-eight years and very low or profits-based interest. No Canarian firm has obtained financing from ENISA in the last ten years.

Financing therefore depends almost exclusively on grants from innovation programmes aimed at businesses.

Canarian participation in European programmes

Researchers and companies in the Canary Islands participate actively in EU innovation programmes and in National Plans for R+D+I. Participation in EU Framework Programmes is significant, particularly in the case of some research centres (see annex AI.8).

Table 3.7
Participation of Spanish regions in 5th and 6th Framework Programmes

Region	**5th FP (1999-2002)**	**6th FP (2003-2004)**
Catalonia	30.16	20.40
Madrid	27.25	40.10
Valencia	9.82	8.89
Andalusia	7.79	4.40
Aragón	3.32	2.40
Galicia	3.21	1.19
Castilla-León	3.02	2.10
Navarre	2.51	2.40
Cantabria	2.34	0.59
Murcia	2.14	0.79
Basque Country	2.09	13.40
Asturias	1.97	0.80
Castilla-La Mancha	1.63	0.40
Balearics	1.45	0.50
Canary Islands	1.14	1.50
TOTAL	100	

SOURCE: Centre for Industrial and Technological Development (CDTI)

3.2.3 Summary

The analysis carried out thus far illustrates the characteristics of the Canarian innovation system. A certain relationship can be said to exist between the policies of the Canarian government and universities and businesses, albeit a highly specialised relationship: the DGUI awards grants for research projects involving researchers from universities and research centres, while the DGPIIT awards grants to firms. However, there are very few ties between the universities/research centres and businesses, apart from research contracts established between research teams and individual firms.

Business organisations acknowledge that there is, generally-speaking, a lack of ties with universities and a mutual lack of knowledge. They have pointed out that, albeit on a small scale, there may even be unfair competition on the part of university researchers when it comes to consultancy work. In their opinion, existing bodies (University Councils and OTRIs) fail in their role of connecting universities and the business world. The relationship is stronger at the ULPGC, where the different institutions there appear to

be better at linking up the university with industry. Another reason which accounts for the limited interrelationship is the nature of the businesses themselves, which are very small and mainly services oriented. In the case of industrial firms, one has to add also the short transformation process and small size of the market, which limits their capacity for innovation. Moreover, some of the larger firms are subsidiaries of national or multinational companies whose innovation strategies are decided outside the Islands. Lastly, another factor deserving mention is the lack of innovation and cooperation culture between businesses and the universities.

The paucity of ties between universities and business is explained also by the type of innovation which predominates in the Canary Islands. As identified in a recent work by Solvers Consultores Canarios (2004), in the majority of firms that have acquired technology (83.33 %), the technology incorporated came in the form of equipment purchased, followed by the recruitment of specialised personnel (45.83 %) and the use of consultancy services (33.33 %). Over 80% of firms state they have not taken part in public initiatives aimed at promoting innovation.

To these reasons one must add also the fact that the Canarian government's innovation policies are relatively recent and have suffered thus far from a lack of continuity, which is an obstacle to medium-term expectations and generates uncertainty.

3.2.4 Knowledge transfer

The network of Research Results Transfer Offices (OTRI Network) was created in Spain at the end of 1988 by the Inter-ministerial Committee on Science and Technology (CICYT) "as a mechanism to transfer knowledge between research centres and industry". On 16 February 1996 the Ministry of Education and Science approved an Order regulating such Offices (Official State Journal, 23 February 1996).

There are seven Canarian OTRIs registered in the Spanish network.

Table 3.8

OTRI Offices in the Canary Islands
- Canarian Astrophysics Institute (IAC) - Canarian Marine Sciences Institute (ICCM) - University of La Laguna (ULL) - University of Las Palmas de Gran Canaria ((ULPGC) - University-Business Foundation, La Laguna - University Foundation, Las Palmas - Canarian Technological Institute Foundation

SOURCE: Ministry of Education and Science: List of Technology Research Results Transfer Offices.

The links between the two Canarian universities and business vary depending on the university. As illustrated below, the institutional provision for facilitating technology transfer are different in each case.

Table 3.9

UNIVERSITY OF LA LAGUNA Research Office	UNIVERSITY OF LAS PALMAS DE GRAN CANARIA Research Office
OTRI, ULL University-Business Foundation (1987) which includes: - Research, Development and Innovation Promotion Service(SPIDI)	Canarian University Foundation of Las Palmas, which includes: - Innovation Promotion Unit - University-Business Service - Others

The University Foundation of the ULPGC is a private body created in 1983. It has six specialised sections, including the Innovation Promotion Unit, which plays a key role. In coordination with the other two OTRIs (in the University itself and in the Foundation) it facilitates transfer of technology, with special emphasis on relations with business. A Science and Technology Park was formally created in 2000 and commenced its activities in 2002. It is designed to facilitate the generation of spin offs, particularly from research projects carried out by University research teams.

The University of La Laguna also has an OTRI, although until recently it was poorly staffed (mainly scholarship-holders) and suffered from constant changes in management. The university also has a University-Business Foundation which has grown in importance of late, particularly in terms of channelling contracts and training. In 2003 the SPIDI was created to facilitate the transfer of research results to business, although the Service is still at the start-up stage as yet.

In addition to the four offices linked to the universities, there are a further three OTRIs: one attached to the Canarian Astrophysics Institute, another to the Canarian Marine Sciences Institute (ICCM), and a third at the Canarian Technological Institute Foundation, which has transferred most knowledge and information regarding applications for grants and funding etc.

The OTRIs and University-Business Foundations in the Canary Islands are part of the Spanish University Network of OTRIs, which comprises approximately 130 offices, and the Spanish Network of University-Business Foundations, which has 28 Foundations in 16 regions.

Although the Directorate General for Universities and Research set itself the goal some time ago of ensuring coordination among the different OTRIs, a Canarian network of such Offices has not emerged as yet. However, the region's Innovation Portal does include the aforementioned OTRIs, along with a further two: one at the Technological Institute for Renewable Energies (ITER) and the other at the Canarian Institute for Agricultural Research (ICIA). Also deserving of mention is the Technology Transfer Office at the Institute for Natural Products and Agrobiology (IPNA-CSIC).

3.2.5 Specific actions for SMEs and large companies

Specific actions exist for SMEs both at European Union level and at national and regional government level. Of the Spanish programmes the most important is the Small Business Consolidation and Competitiveness Plan.

In 2003, an initiative by the FULP, the University of Las Palmas de Gran Canaria and the Canarian government led to the setting up of workshops to stimulate Innovation in Business. The project is funded by the regional government and the European Social Fund and provides grants to recent graduates or students near completion of their degrees to enable them to spend a month of special training at university and then four months placement in a company, particularly an SME, in order to identify innovation opportunities and possible ways of financing innovation projects. To date two workshops have taken place in the ULPGC, one in 2003 attended by 18 participating firms and one -with participation by the ICCM- in 2004 which saw 40 firms involved. The practice has been extended this year to the University of La Laguna and is managed by the university's OTRI. The strategy aims also to detect the real needs of companies and make their knowledge demands more visible to research groups.

Regarding large firms, it should be noted that there are only 36 companies employing 500 people or more in the Canary Islands. Of these, 10 are construction companies, 7 engage in other business activities, five are hotels, three are retailers, etc. No specific policy has been put in place for these firms either by the regional government or by the universities.

3.2.6 Reward and recognition

Two reward and recognition mechanisms can be said to exist for university research: financial reward and academic/professional recognition. At State level, increments for every six years of service (a form of

academic recognition carrying a modest increment of just over 100 euros per month) are awarded mainly on the basis of basic or applied peer-reviewed research published in Spanish or international journals. In 2003, the percentage of six-year awards in the Canarian universities was below the national average for the University of La Laguna (42.17 % compared to 48.74 %, see annex AI.5) and well below the average in the case of the University of Las Palmas de Gran Canaria (26.64 %)

Academic recognition and promotion are not tied therefore to the regional application of knowledge. For its part, financial reward for participation in research contracts is regulated by article 83 of Spain's Universities Act, as well as by article 152 of the Statues of the ULPGC and 105 of the Statutes of the ULL.

The regional government's Directorate General for Universities and Research has established a wage bonus system for both universities. Of the three types of bonus available, one is for research and is designed to at least provide some form of acknowledgement for consultancy and applied research activities in the regional environment.

3.3 Framework conditions for promoting research and innovation

Over the last twenty years a legal framework has been put in place at state and regional level to encourage research and innovation. The framework remains incomplete in the case of some regions, the Canary Islands among them.

Spain's legislative framework

Current legislation in Spain governing relations between university researchers and businesses comprises four basic laws: the Law for the Promotion and General Coordination of Scientific and Technical Research (Law 13 / 1986, 14 April, BOE 18 April), the Universities Law (LOU, Law 6/2001, 21 December), Law 11 / 1986, 20 March on patents for useful models and inventions (BOE 26-3-1986, no. 73) - subsequently amended in later legislation which does not affect the university aspect – and, to a lesser degree, Law 53 / 1984 on Incompatibilities of Public Servants.

The so-called Science Law (13 / 1986, 14 April) established the bases for the National Scientific Research and Technological Development Plan, which is the main instrument of Spain's scientific and technological policy.

The Universities Law (article 83) sets out the conditions for contracting university staff or employees of public or private scientific bodies for the purpose of conducting scientific work. The Law leaves it up to each university's Statutes to define the procedures and authorisations and distribution of remuneration between the university and its researchers.

The Law on research patents and useful models (1986) regulates aspects of the intellectual property of research carried out in universities and the rights of participation in the exploitation or transfer of rights over inventions (art. 15). Art. 15.2 states that "universities shall own any inventions which are made by teachers in the course of their research at the university and which can be considered as falling within their teaching and research functions. . .". Art. 15.4 states that "teachers shall be entitled to participate in the benefits obtained by the university in respect of the exploitation or transfer of the rights over inventions mentioned in paragraph two above. The University Statutes shall determine the modalities and amounts of said exploitation".

Meanwhile, the Law on Incompatibilities of Public Servants (Law 53/1984) makes it difficult for university teachers to participate in the equity or serve on the governing bodies of spin-off companies (art. 12.1.b)

Canarian legislative framework

Law 5/2001 (9 July) on the promotion and development of scientific research and innovation was adopted by the Canary Islands in 2001, with the aim of establishing "systematic regulation of the actions of the Canarian authorities and the mechanisms required to address existing endemic problems" (Preamble).

As mentioned earlier, a specific outcome of the Law has been the adoption by the Canarian government of the region's Integral Plan for R+D+I (PIC) 2003-2006.

University Statutes

Chapter II of the Statutes of the University of La Laguna (Decree 89/2004, 6 July, Official Journal of the Canary Islands No. 143, 26 July 2004) is devoted to research. Article 110.c states that "teachers or staff associated with research programmes or contracts involving the University are entitled to share in the benefits obtained by the university from the exploitation or transfer of its rights over the inventions mentioned above. Exploitation benefits shall be allocated in equal parts to the University, the University Research Institute or Department concerned and to the person(s) who performed the research".

The Statutes of the University of Las Palmas de Gran Canaria (Decree 30/2003, 10 March, BOE 22 April 2003) states -art.158.3- that "the University, as the owner of the patent, shall meet the costs of the patent application, which will include specific reference to the inventors"; art.158.4 adds that "benefits obtained from the exploitation of a patent shall be distributed as follows: 50% to the researcher(s), 25% to the centre or department and 25 % to the University".

This legislative framework, which is very recent in the case of the Canary Islands, stands in a context of very limited ties between universities and industry. A catalogue of technology available in Canarian research centres was compiled only very recently. The Surtec Project by the region's Canarian Technological Institute includes a data base of the specific technology demands of 270 firms. However, as was noted above, given the small size and largely services orientation of Canarian companies it is very likely that there is no matching up of demand and supply.

Obstacles to interaction

The obstacles and problems impeding ties between universities and business have been the focus of extensive study (van Dierdonck and Debeckere, 1988) and can be divided up into cultural, institutional and operational barriers. All three exist to some extent in the area of technology transfer in Canarian universities. The cultural barrier is manifest in the fact that the University of La Laguna has a long humanist tradition and introduced technical degrees quite recently. It lacks an institutional and organisational framework clearly geared to technology transfer and to small firms. The University of Las Palmas de Gran Canaria, which formally came into being in 1989, is different in that it offers a wider range of technical degrees, some of which have been in existence since before 1989. The University is more clearly geared to technology transfer.

A survey by Solvers Consultores Canarios (2004) found that businesses did not have a common view of the factors that prevent their relations with universities and publicly-funded research bodies. 12.54 % identified companies' lack of resources and a lack of interest on the part of research centres as the most important factors. In third place came the cultural barriers between universities/research centres and businesses. Around 40% did not identify any single factor as being significant.

The weak ties between the stakeholders in the Canarian innovation process are not very different to the situation that exists in the Spanish innovation system (COTEC, 2004). Attempts have been made to redress the weakness through policies to stimulate research between public research centres/universities and businesses, and also to promote the mobility of qualified research personnel (Ph.D holders) to firms.

Of the various programmes established by central government for the country as a whole, the following deserve mention: the Neotec initiative, which is managed through the CDTI and seeks to support the creation and consolidation of new technology-based firms, and the Programme to Stimulate Research

Results Transfer (PETRI). Canarian participation in such programmes has been negligible: in 2002 of 31 Neotec projects approved, the Canary Islands took part in just one, with a CDTI credit volume of 250,200 euros. Of the 35 projects approved in 2003 the region was involved again in just one. Of 61 PETRI projects in 2002 the region contributed one, which received a grant of 73,100 euros, and another project in 2003, which received 27,000 euros (Ministry of Science and Technology, 2004).

Spain's research coordination policy is managed via the Centre for Technological Development Industry (CDTI) and consists largely of funding for precompetitive research projects. Participation by the Canary Islands in this area has been minimal: in 2002 of 568 projects undertaken in Spain only three (0.67 %) took place in the region. In 2003, of 572 projects the Canary Islands has again participated in just three (CDTI Annual Reports).

Regional innovation policies have not yet developed appropriate mechanisms to promote research cooperation between business and universities and public research bodies.

3.4 Interfaces facilitating knowledge exploitation and transfer

Results of the research effort

The results of the research effort undertaken by Canarian institutions can be seen in the production of scientific and technological knowledge and in consultancy and advisory services, etc.

A commonly used indicator of scientific knowledge production is the publication of articles in prestigious journals. Although there is no entirely satisfactory bibliometric indicator, the Science Citation Index is commonly used. As shown in Table 3.10, the number of ULL publications cited in the SCI exceeds 300 for each of the last five years. Behind the university are the Astrophysics Institute (approximately 150), the ULPGC (approximately 100), and two hospitals.

Table 3.10
Scientific publications
(Science Citation Index)

Year	ULL	ULPGC	Canarian Astrophysics Institute	University Hospital of the Canary Islands	Dr Negrin Hospital
2001	335	90	168	34	11
2002	370	104	146	46	10
2003	380	113	163	55	20
2004	391	105	176	66	21
2005 (*)	381	101	141	53	17
Total					

SOURCE: Science Citation Index
(*) Figures in November 2005

Obviously, within each of these major institution there are considerable differences between some disciplines areas and others, with different impacts (see annex AI.4).

The most important indicator of scientific knowledge production are patent applications. As Table 3.11 shows, the number of patent applications by Canarian research centres to the Spanish Patent Office is extremely low. Of the 1316 patents registered by residents in the Canary Islands, universities account for a mere 23.

Table 3.11
Patent applications to the Spanish Patent Office by Canarian research centres

Year	ULL	ULPGC	ITC	IAC	ICCM		SCTe	LPGC	Canarias
1994	1	1							
1995	2	0							
1996	4	0							
1997	1	0							
1998	0	1	1						
1999	2(2)	0	1	2(2)					
2000	0	0	0	0					
2001	0	0	0	1					
2002	2(1)	1(1)	3	1					
2003	0	2	0	0					
2004	0	1	0	0					
2005(*)	1	3	4	0	1				
Total	13	10	9	4	1		471	845	1316

SOURCE: Spanish Patent Office (www.oepm.es)
(LPGC: Las Palmas de Gran Canaria, SCTe: Santa Cruz de Tenerife)
(*) Applications by November 2005
(1). One joint application by ULL and ULPGC
(2) One joint application by ULL and Univ. de Antioquia (Colciencias) and another jointly with IAC (Astrophysics Institute).

Knowledge transfer

Connections between the Canarian universities and the region's business sector are very weak and knowledge transfer to companies is a recent phenomenon. Three mechanisms for knowledge transfer from universities and public research centres to the sector can be identified: patents and licences; the creation of science parks, incubators and spin-offs; and research and consultancy contracts established with firms.

As seen above, the patent and patent licensing mechanism is non-existent. The second transfer mechanism is the creation of a favourable environment for the emergence of spin-offs. The ULL has no incubator or science/technology park, and hence such an environment has not been created. The situation at ULPGC is somewhat different: a Science and Technology Park was created in 2000 and includes a group of ICT firms in Las Palmas. 23 new businesses have been created since 2001, although strictly speaking only four of these are spin-offs of research projects by the University, the other 19 having been created by graduates or students. The time-frame for evaluating the success or failure of a Science and Technology Park is 15-20 years. However, this Park already appears to afford an excellent opportunity to renew and diversify Canarian business.

Most knowledge transfer by staff at the Canarian universities takes the form of technical advice or consultancy contracts, etc. As stated in art. 83 of the Universities' Law, research groups may enter into contracts for research projects, R+D projects, technical advice and assistance, etc. The contracts are arranged via the university OTRIs and University-Business Foundations. The lack of uniformity with respect to the criteria used to record the contracts by categories or even the amount of funding involved means that comparison is difficult. The information published by the OTRI at the University of La Laguna and by the University-Business Foundation is short on detail. In 2003 the Foundation arranged 224 contracts and agreements of various types, although no details are available as to exactly which type (Annual Report of the Foundation, 2004).

The other institution that arranges contracts for researchers at ULL is the OTRI. According to the information provided, in recent years the following research contracts were managed.

Years	Number of contracts	Amount in euros
2001	20	480,636
2002	26	706,012
2003	17	409,422
2004	23	518,842

SOURCE: OTRI (ULL)

The University of Las Palmas de Gran Canaria also engages in a considerable amount of research, advisory and consultancy activities, as well as training. Detailed examination of the university's income generation shows that in 2000 and 2001 around half of self-generated income was obtained from contracts with businesses, followed -a long way behind- by those with the regional government. During the next two years (2002 and 2003) income from business fell (21 and 28 %), followed by revenue from contracts with the Canarian government and private individuals.

Table 3.12
Contracts involving ulpgc academic staff (by type of activity)

	2000		2001		2002		2003	
Applied research	22	1418561	32	1506000	63	5327811	30	1316288
Scientific-Technical Reports and Advice	71	2825908	80	3192721	44	2043219	53	2645733
Training	49	1460312	52	1325280	41	1147368	50	1730412
Framework Cooperation Agreements	11		9		10		17	
TOTAL	153	5704783	173	6024002	158	8518399	150	5692433

SOURCE: ULPGC in Figures

The table gives the distribution by contract types and illustrates the importance of scientific and technical reports and training. The number of applied research contracts is relatively low.

Teaching /training and employment mobility

Both universities offer training courses outside the formal teaching framework; the ULL offers extra-mural teaching while ULPGC provides continuous training courses.

State action

Policies to facilitate the mobility of Ph.D holders to companies have existed for some time. The IDE (Incorporation of Doctors in Enterprise) action "commenced in 1996, in the context of the national programme to promote the science-technology-industry system (PACTI) of the III National R+D Plan (1996-1999). In 1997 a tender was organised to recruit Ph.D holders in business. The programme was co-financed by the European Social Fund. The main objective of IDE was to promote innovation in businesses by helping them recruit holders of doctorates…"

Between 1997 and 2001 some 600 grants of this type were awarded in Spain. Participation by the Canary Islands in IDE Actions has been very minimal, as shown in Table 3.7. During the period, only seven firms applied for funding and four were successful in their applications.

Table 3.13
IDE programme actions in the canaries, 1997-2001

	Number of applicants	% of total for Spain	No. of posts funded	% of total for Spain
Applicant firms	7	1.6 %	4	1.1
Ph.D holders applying for IDE	13	1.7 %	8	1.3
Applicants contracted by ULL	6	0.8	4	0.7
Applicants contracted by ULPGC	5	0.7	4	0.7

SOURCE: Data from Sanz Menéndez *et al* (2004)

At the end of 2001 the IDE Action was replaced by the Torres Quevedo Programme, which aims to "facilitate the recruitment by private sector companies of doctors, researchers, and technologists through financial aid and grants". 532 applications were submitted during the first three years of the Programme, leading to 357 contracts, 274 of them with SMEs. No applications were submitted from the Canary Islands during the first year. In the second, SMEs in the region recruited three technologists and one doctor, while in the third year three doctors and a technologist were funded. In total, the region accounted for eight of the 357 contracts in Spain.

Actions by the Canarian regional government

To encourage such actions in the Canary Islands, the Directorate General for Industrial Promotion and Technological Innovation passed an Order on 7 August 2003 which sets out the rules for 2003-2006 with respect to grants for the recruitment of doctors and technologists in firms, intermediary bodies, research and development centres, technology centres and OTRIs. For 2004 42 applications received funding, four of them for Ph.D holders and 33 for technologists, with total funding of 856,334.52 euros. A detailed examination of the figures reveals that only nine technologists were recruited by firms to develop research projects, two were employed by the Canarian Industry Association (ASINCA), five by island councils (Cabildos) and the remaining technologists and all the Ph.D holders were recruited by universities and research centres.

Information dissemination policies

The two HEIs and the Canarian government have information dissemination policies. The university web sites include links to research groups, available technology, OTRIs and Foundations, as well as information on annual research grant applications.

The Canarian government also offers up-to-date information on grants. The regional Ministry for Industry and New Technologies web site includes a Canarian Business Information System (SIECAN) which provides relevant information to firms. For its part, the web site of the Directorate General for Universities and Research offers information on research funding opportunities.

An attempt has been made to centralise the different information sources via the Canarian Innovation Portal (www.pic.itccanarias.org), which was developed with support from the PROFIT programme. The portal features connections to the universities, OTRIs, Canarian Technological Institute, along with details of available technology, risk capital, research funding applications etc.

2005 has also seen a new portal opened in Cordis (www.cordis.lu/canary-islands) which provides general information and details of the most important scientific infrastructure and research centres in the Canary Islands.

Other means of information dissemination include *Seminars on measures to stimulate technological innovation in business*, and *Business Initiative Weeks*. To date, four Seminars and five Weeks have been organised.

However, interviews with business sector representatives have highlighted a certain degree of ignorance as regards the grants available from the Ministry of Industry, and an almost total lack of awareness of the other aspects of the Canarian government's innovation policy.

3.5 Conclusions

The data examined here reveal that the universities in the Canary Islands engage essentially in scientific research but with little attention paid to the possible economic relevance of the research conducted, as is clear from a comparison between the production of scientific articles and the number of patent applications.

Two issues need to be borne in mind, however. Firstly, the University of Las Palmas de Gran Canaria is somewhat different in that it has a more clearly defined knowledge transfer strategy compared to the University of la Laguna, where such a strategy has not yet been established.

Secondly, as mentioned earlier, the fragmented nature of the Canary Islands needs to be taken into account. The two universities are located on the two biggest islands, Tenerife and Gran Canaria, as are the public research centres. The few transfer ties with business are on these islands also, with the smaller islands much more isolated in this respect.

Moreover, the usual innovation indicators relate to industrial technology innovation rather than services, especially tourism services. A rigorous study of innovation capacity in the Canary Islands would need to consider technology innovations with other types of innovation for new tourism services or products, new forms of organisation, access to new markets, etc.

3.5.1 Contribution to research and regional innovation: collaboration between regional stakeholders

Scientific research collaboration between staff at the two universities and between the universities and other regional research centres is very limited, as can be seen in the articles of the Science Citation Index, if co-authorship is taken as an indicator of collaboration. Of 1918 documents recorded in recent years by researchers at ULL only 33 (1.7 %) were written jointly with colleagues from ULPGC. The same is true of patents: of the 13 registered by ULL (10 by ULPGC) only one was submitted jointly by both universities. There is no institutional framework agreement between the two universities for knowledge creation and dissemination.

As seen, each university has its own technology transfer facilitation mechanisms. Grants are available from national technology transfer policies for the setting up and development of OTRIs. Similarly, there exists also a national policy to promote and develop science and technology parks, although the repercussions in the Canary Islands have been very limited.

Non-university HEIs in the Canary Islands are of minor importance and are of no relevance to knowledge generation or knowledge transfer.

Collaboration between the universities and other regional stakeholders (private enterprise, local government, research laboratories and institutions) is at the embryonic stage only. In truth, one might say that the creation of mechanisms for technology transfer has involved mainly the universities and the national and regional governments through their respective actions and policies, which have helped identify a technology offer in the region. However, the entrepreneurs who constitute the demand itself have, generally speaking, played very little part in the transfer mechanisms.

Collaboration with research centres outside the Canary Islands is also extremely limited. Participation in European programmes is very low. Participation in national research programmes is extensive, although not those designed to create new technology-base firms (Neotec), to promote knowledge transfer to

business (PETRI) or to promote the recruitment of Ph.D holders and technologists by companies (Torres Quevedo).

Different SWOTs exist for the Spanish innovation system (annex AII.3) and also for its Canarian equivalent (annex AII.2). Here we propose a tentative SWOT, by way of summary to this chapter.

Strengths, weaknesses, opportunities and threats in the Canarian innovation system

Strengths	**Weaknesses**
- Existence of two universities with approximately 50,000 students and over 3,400 teachers. - Significant number of public research centres - Considerable number of researchers: over 2000 FTE - Relatively broad and diverse technology offer - Some degree of competitive capacity among research groups - Significant scientific production	- Business structure made up of very small firms - Predominance of services businesses, particularly tourism-related - Most bigger firms are extra-regional in nature - No relationship between firms and public research centres and universities - Lack of funding - Possible lack of matching between regional firms' knowledge needs and universities' knowledge offer - Lack of patenting - Fragmented nature of region
Opportunities	**Threats**
- Creation of a dynamic entrepreneur sector in knowledge-intensive activities - Diversification of entrepreneurs	- Widening of gap with the most innovative economies - Loss of researchers

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ANNEX II

Table AII.1
Risk capital investment portfolio

	2002		2003		2004	
	M €	%	M €	%	M €	%
Madrid	1442.5	36.5	1751.4	36.2	2442.2	39.3
Catalonia	1023.6	25.9	1303.7	26.9	1749.2	28.2
Andalusia	85,5	2,2	173,5	3,6	184,5	3,0
Basque Country	310.3	7.9	274.1	5.7	319.3	5.1
Galicia	78.8	2.0	102.5	2.1	216.5	3.5
Castilla-León	95.4	2.4	123.2	2.5	172.7	2.8
Castilla-La Mancha	36.0	0.9	62.8	1.3	87.8	1.4
Aragón	57.0	1.4	57.6	1.2	64.6	1.0
Extremadura	87.0	2.2	95.6	2.0	90.5	1.5
Canary Islands	**36.5**	**0.9**	**51.7**	**1.1**	51.7	**0.8**
Navarre	62.3	1.6	118.2	2.4	40.9	0.7
Asturias	52.2	1.3	80.7	1.7	85.9	1.4
Valencia	273.8	6.9	287.3	5.9	327.6	5.3
Balearics	10.5	0.3	10.4	0.2	10.4	0.2
Murcia	112.7	2.9	162.6	3.4	164.4	2.6
Cantabria	57.6	1.5	60.9	1.3	71.0	1.1
La Rioja	124.6	3.2	124.4	2.6	126.6	2.0
Ceuta/Melilla	1.3	0.0	1.3	0.0	1.3	0,0
TOTAL	3947.5	100	4841.9	100	6307.2	100

SOURCE: ASCRI (2005, p.39)

Table AII.2
SWOT for Canarian Innovation System

Strengths	**Weaknesses**
• The existence of two medium-sized universities and various research centres dependent on the Canarian government and on the State facilitates the creation of the human capital required for the knowledge society • The gaps separating the Canary Islands from the Spanish and European averages with respect to human resources in the science and technology system are smaller than in the economic system • High proportion of researchers in terms of overall R+D personnel, meaning that there is room for growth in implementation of R+D activities	• The Canary Islands are well below European and Spanish averages in GDP share allocated to R+D+I and growth rates for R+D+I effort have been considerably lower than in Spain and Europe. • Public sector R+D has excessive weight in the system overall, even when compared to the Spanish science and technology system, which is also largely public-led compared to the European averages. • Canarian production is excessively driven by tourism activities and construction, with little value added and excessive dependency on external factors; R+D and innovation by businesses are rendered difficult, as are ties between the archipelago's production sector and research centres.
Opportunities	**Threats**
• The Canary Islands has good centres for training researchers in areas of interest to the knowledge society; growth of science and technology system is viable to reach the critical mass needed to shape a knowledge-based industrial sector • The information society facilitates the presence in the Canary Islands of networks to offset the Islands' geographical location as an outermost part of the European Union.	• The technology gap is widening in the Canary Islands: recent years have not seen a reduction in the gap with Spain and Europe • The negligible role of business R+D, both in terms of expenditure and human resources, risks excluding the Canary Islands from the global knowledge society • The brain drain, resulting from the lack of employment opportunities in the Canarian economy's knowledge society, worsens the situation: investment in education and training of researchers does not stay in the Islands, which suffer from a 'decapitalisation' of knowledge even though knowledge is the main factor in the creation of value.

SOURCE: OCTI (2005)

Table AII.3
SWOT overview of Spanish Innovation governance system

Strengths	**Weaknesses**
• Increasing public funds for R+D and innovation • Efficiency of knowledge transfer interface structures • Promotion of a Spanish culture of quality and design • Competitive technological capacity of the Spanish economy on the world scale • Researcher awareness as regards responding to market demands for innovation • Importance of innovation promotion in Spanish government policies	• Insufficient involvement of business in funding and implementing R+D and innovative activities • Limited corporate investment of finance and human resources in innovation • Universities and research centre R+D not sufficiently geared to companies • Limited collaboration between companies and between research centres • Insufficient coordination of actions promoted by the different authorities • Difficulties in the application of fiscal aids to innovation • Excessive bureaucracy in the application process for public funds for the development of technological projects
Opportunities	**Threats**
• Creation of a technological infrastructure for collective use • Being more competitive at European level • Creating contacts between groups (scientific and technological centres, industrialist, public authorities, etc.) to work together and exchange information • Competitive entrepreneurship	• The numerous regional innovation organisations are not coordinated and managed by the NIS, thus causing confusion among end users • SMEs look for innovation in other countries where there are more facilities • Qualified Spanish researchers leaving Spain to work abroad • Stakeholder involvement often contributes to preservation of existing measures and may hinder the emergence of new measures • Changes in government result in existing measures being slowed down

SOURCE: EC (2005, p. 16). EUROPEAN COMMISSION (EC) (2005): "Annual innovation policy trends and appraisal report. Spain 2004-2005".

Table AII.4
Most frequently cited research field

Research field	Papers	Citations	Citations per paper
University of La Laguna			
Chemistry	646	4469	6,92
All fields	3235	18103	5,60
University of Las Palmas de Gran Canaria			
Plant and animal science	314	1361	4,33
All fields	1046	4312	4,12
Canarian Astrophysics Institute			
Space sciences	1512	18073	11,95
All fields	1537	18165	11,82

SOURCE: Science Citation Index

Table AII. 5
Recognition of six-year increments to researchers
(Year 2003)

	Full Professors			Senior academic staff			Total university teachers		
	Total	With six-yr	%	Total	With six-yr	%	Total	With six-yr	%
Spain	8234	6254	75.95	26115	15587	59.69	47923	23360	48.74
Five universities with highest totals									
Autónoma de Madrid	325	286	88.00	838	593	70.76	1259	899	71.41
Carlos III	85	67	78.82	225	150	66.67	310	217	70.00
Pompeu Fabra	71	59	83.10	127	81	63.78	224	151	67.41
Autónoma de Barcelona	331	294	88.82	937	588	62.75	1419	924	65.12
Santiago de Compostela	308	258	83.77	875	550	62.86	1362	836	61.38
Five universities with lowest totals									
Burgos	21	14	66.67	88	57	64.77	318	77	24.21
Rey Juan Carlos	46	25	54.35	115	34	29.57	252	61	24.21
Politécnica de Cartagena	24	12	50.00	79	34	43.04	211	54	25.59
Politécnica de Valencia	273	131	47.99	405	178	43.95	1534	403	26.27
ULPGC	99	46	46.46	364	152	41.76	852	227	26.64
ULL	216	134	62.04	717	341	47.56	1162	490	42.17
ULPGC	99	46	46.46	364	152	41.76	852	227	26.64

SOURCE : Ministry of Education and Science (www.mec.es/educa/jsp/plantillajsp2area)

Table AII.6
***Ramón y Cajal* Programme. Distribution of actions by region**

	2001	2002	2003	2004	TOTAL	
						% 2001-2004
Andalusia	77	63	77	30	246	11.0
Aragón	28	9	21	12	69	3.1
Asturias	16	10	8	4	38	1.7
Balearics	6	2	10	6	24	1.1
Basque Country	17	3	8	3	30	1.3
Canary Islands	8	5	7	4	24	1.1
Cantabria	11	4	12	7	34	1.5
Cast-La Man	4	2	4	7	17	0.8
Cast-León	35	20	26	9	90	4.0
Catalonia	199	147	177	68	588	26.2
Valencia	88	33	83	27	229	10.2
Extremadura	1	1	4	1	6	0.3
Galicia	21	14	26	14	75	3.3
La Rioja	0	0	3	2	5	0.2
Madrid	238	154	223	97	705	31.4
Murcia	16	8	11	5	40	1.8
Navarre	9	5	6	4	24	1.1
TOTAL	774	480	706	300	2244	100

SOURCE: (Castro and Sanz, 2004, p. 14). Completed for 2004.

Table AII.7
Canarian government R+D+I expenditure, 2004

Progr.	Programme name	2004
422E	Promotion and Support for Research and Development (R+D)	12,763,529.00 €
542B	Agricultural Research and Technological Development	14,483,845.00 €
723D	Sectorial Planning and Technological Development	11,812,812.00 €
542C	Health research	2,538,048.00 €
714E	Fisheries Development	175,225.00 €
TOTAL		**41,775,463.00 €**

SOURCE: OCTI (2005)

Table AII.8
Canarian participation in 6th Framework Programme in 2004

Entity/ Department	Project title	Type	Partic. %	Subtotal in euros
Alevines y Doradas S.A.	Collective research on aquaculture biofouling	Co.	3.70	43915
Cabildo Insular de Gran Canaria	European native seed conservation network	Public	3.10	49212
Coop Agric S. Nicolas de Torentin	Highly selective and environmentally friendly fruit extraction using supercritical	Co.	4.70	9310
ICCM	Marine environment and security for the European Area	C.I.	0.40	90426
ICCM	Combined genetic and functional genomic approaches for stress and disease resistance market assistance	C.I.	3.00	179195
Gobierno de Canarias	Secure-Justice: secure communic. and collaboration framework for the judicial co-operation environment	Public	1.30	71028
GRANTECAN S.A.	Technology development programme towards a European extremely large telescope	Co.	0.40	28068
GRANTECAN	Optical-Infrared Co-ordination network for Astronomy	Co.	0.90	36427
IAC	Optical-Infrared Co-ordination network for Astronomy	C.I.	7.80	3694855
IAC	Technology development programme towards a European extremely large telescope	C.I.	5.50	539336
ITC, S.A.	Southern Europe Innovation Relay Centre	Co.	3.70	22790
ITC, S.A.	Coordination action for autonomous desalination units based on renewable energy systems	Co.	16.70	232764
ITER, S.A.	Technology development programme towards a European extremely large telescope	Co.	0.70	53531
Lyngagua S.L.	Dramatically reducing spreading of invasive, non-native exotic species in new ecosystems through	Co.	5.90	2616
ULL	Human integration into the life cycle of aviation systems	Univ	1.40	405799
ULL	European marine protected areas as tools for fisheries management conservation	Univ	6.70	208600
ULPGC	European network of excellence for ocean ecosystems analysis	Univ	1.40	140000
ULPGC	Marine carbon sources and sinks assessment	Univ	0.90	182324
ULPGC	Thresholds of environmental sustainability	Univ	3.20	122872
ULPGC	Fluid image analysis and description	Univ	19.30	223375
ULPGC	Generalisation of research on accounts and cost estimation	Univ	3.90	119100
ULPGC	Development of an autonomous low-temperature solar ranking cycle system for reverse osmosis	Univ	24.70	287018
ULPGC	Developing harmonised European approaches for transport costing and Project assessment	Univ	1.00	12618
ULPGC	The European transport policy and research observatory: scientific forum on forecast validation	Univ	3.10	28089
ULPGC	The European research taskforce creating human-machine Inter. Similar to human-human communication	Univ	3.80	249278
	Total participation by Canarian entities in 6th FP			**7032544**

SOURCE: OCTI (2005)

CHAPTER 4. THE CONTRIBUTION OF TEACHING AND LEARNING TO LABOUR MARKET AND SKILLS

4.1 Localising the learning process: the extent to which higher education is adapted to the particular characteristics of the Canary Islands

4.1.1 Does the region have strategic goals?

It is not altogether certain that the Canary Islands government has defined well and agreed upon its priorities and strategic objectives, even though the regional legislature approved two successive Regional Development Plans for the periods 1994-1999 and 2000-2006. According to a finding of the islands' Economic and Social Council, the 1994-1999 plan was not drawn up in consultation with the stakeholders who would have to put it into practice; the Council considered it simply a list of capital expenditures drawn up according to the preferences of the government at the time. The current plan was drawn up with much broader participation and is really a "plan of plans" that lays out regional strategies for development. Its list of strategic goals is quite ambitious and affects all economic sectors and many aspects of social policy. Priorities can only be read "between the lines," based on the resources assigned to each strategic goal. One of these goals is precisely that of this chapter ("To improve the quality of education and training and encourage its adaptation to the needs of the system of production").

It would be hard to evaluate the degree to which the design and function of the Canary higher education fits goals which are so little shared by the key community players. Indeed, some of the experts consulted[26] suggested that it is unclear whether the plans really serve as guidance for the island's leaders or are mere rhetoric, and even that the most tangible strategic goal is the maintenance of the status quo of EU subsidies. A consensual definition of specific long-term strategic objectives would require more political and social cohesion than currently exists.

As for the institutional strategic vision of the Canary universities themselves, one of them, La Universidad de Las Palmas de Gran Canaria (ULPGC) has been developing its vision intensively, with three concurrent strategic plans: the overall Institutional Strategic Plan 2002-2006; the Plan for Systems and Technologies of Communication; and the Plan for Services and Administration Quality. The Institutional Plan includes as an essential element in the university mission statement "to aid in the economic progress and social welfare of the Canary Islands" (p23), and among its values "to contribute to the economic, social and cultural development of the Canary Islands" and "an active presence in social and cultural arenas" (p25). La Universidad de La Laguna (ULL) is in the process of drawing up its own institutional strategic plan.

The region needs entrepreneurs, people who can detect needs, emerging markets or possibilities for business and take the initiative to create jobs, rather than occupy jobs created by others. Yet the system of higher education turns out almost exclusively employees, in spite of institutional efforts to produce entrepreneurs. Between 1989, the year it was founded, and 1996, only 11% of ULPGC graduates were self-employed. Similarly, in 1998 only 17% of ULL graduates were self-employed, independent professionals, or worked in a business they had founded. Recently both universities have started programs to help recent graduates found new businesses, which have resulted in new and innovative enterprises.

To sum up, we have not identified particular aspects of education in the Canary Islands, as opposed to the other Spanish autonomous regions, that are the result of a conscious and specific effort to identify differential strategies in order to achieve the strategic goals of the archipelago.

[26] We held a three-hour meeting of experts and administrators from universities, business, public administrations, units relating university and business, and other areas related to this project in the offices of the Economic and Social Council of Canarias. Those invited had been sent an agenda based on the outline of this chapter, and the discussion provided information and points of view that are presented here.

4.1.2 Flexibility and adaptation of degree programs to regional needs

It is important here to distinguish between the first and second cycle, one the one hand, and postgraduate and continuing education, on the other. The study plans for the first and second cycle essentially follow specifications at the national level. The offer of degrees is quite homogeneous in the entire country, although universities are free to initiate their own specific ones. The University of Las Palmas made it a priority to offer those degrees in the national catalogue that were most closely related to the economy and geography of the islands: Marine Sciences (created in 1982 by the Universidad Politécnica de Canarias which later became ULPGC) and the Diploma in Tourism (1996) are two examples.

The only first or second cycle degree specific to a Canary Island university is a Diploma as Specialist in Protocol and Institutional Relations, at the ULPGC[27] .

Rules at the national level leave a certain leeway in the design of curricular programs for first and second cycle degrees as to what are required and what optional courses. This leeway has been used in some degree programs to introduce content of a regional nature. Curriculum change is slow and complex in Spain, and in this the Canary Islands are no exception. As a rule, degrees are created, but then are not removed even though the market makes clear that there is an excess of degree-holders of a given specialty and a dearth of others. The system is slow to identify the need for new degrees and slow to offer them when it does. In this respect, the Strategic Plan of the ULPGC (p46) recognizes as a weakness the "imbalance between the number of students enrolled and graduated in the different degree programs and the level of demand and placement in the labour market." The number of those enrolled in technical degrees, in high demand in the labour market, has declined, while for in law there are many students but few jobs. The first strategic goal (p53) is precisely, for the ULPGC, "to adjust the offer and demand of university studies to the social-economic needs of the geopolitical zone."

This situation is in contrast to the University Report 2000, which in the context of adapting universities to economic globalization, recommends a greater societal participation in university activities in general and in the elaboration of curricular programs in particular. It notes that:

Changes in the labour market merit special attention. In particular, European students do not prepare themselves just for their respective national labour markets, but also for a continental market, subject to constant change that requires a continuous adaptation to the new reality. Cooperation between universities fosters the updating of the training received and makes possible the recognition of degrees in wider geographical areas. An alliance with businesses and social organizations stimulates a better adaptation of study plans to the training needs of enterprises, especially small and medium sized ones, and of organizations concerned with social issues. (p467)

The situation with postgraduate courses, continuing education and education not regulated by law is quite different. Organized with greater freedom, they have special features that are discussed below.

4.1.3 Guiding and informing students, and student training in businesses

This section includes counseling in the choice of fields of study, as well as extracurricular activities, support services, lodging, transportation, scholarships, etc.

Both Canary universities have a Vicerectorate for Students to provide information and counseling. At the ULPGC the Student Information Service provides information on applications, rules and study and scholarship opportunities in the ULPGC and other universities. Similar help is offered at the ULL by the Student Information and Counseling Service.

The universities supervise trainee jobs in businesses for upper level students. Some faculties have created their own units to provide job advice and placement to their students and coordinate student training jobs.

[27] www.ulpgc.es/index.php?pagina=titulospropiosgradoANDver=inicio

There are also University Foundations, autonomous organizations that work closely with the universities. These institutions coordinate training placement in enterprises for students in their final years and job placement for recent graduates, and generally serve as an interface between graduates and the business world. In 1998 the ULPGC created the Office of Educational Cooperation and Employment "to coordinate and channel collaboration between the University, businesses, and private and public entities for the purpose of educational cooperation and job placement." At the ULL the same functions are performed by the Enterprise-University Foundation. In addition to coordinating and administering programs for student training work, these foundations promote entrepreneurship and self-employment, as well as market the ULPGC, the ULL and their graduates.

Table 4.1
Student training in businesses and other organizations

Students participating	ULPGC 2003	ULL 2003	
In Spain	1.379 (8%)	252 (1.3%)	
In other countries	69 (0.4%)		
Receiving entities	441	62	
The percentages are of all students except those in their first year.			

SOURCES: for ULPGC, Memoria 2003; for ULL web page of University Foundation: http://www.feu.ull.es/ and Memorias de Gestión de la Fundación Canaria Empresa Universidad

Free electives, a lost opportunity

In Spain, all students are required to take about 10% of their courses in subjects called "libre configuración". The idea is to provide students with a rounded education, allowing them a certain freedom in their choices. In practice, the range of activities that can be counted as free electives in the Canary Islands follows no specific plan or criterion, but instead depends on the spontaneous, unremunerated courses offered by some teachers within each area of concentration. The ULPGC Strategic Plan itself (p43) admits that the offer of relatively unattractive free electives is one of the weaknesses of the curriculum. Free elective credit is also given for a number of varied activities, such as attending meetings and lectures, student training in businesses, or being a student representative. The faculties do not give students enough counselling, and some students must delay their graduation because they have left uncompleted their free elective credits.

Free electives could be, but have not been, used to set up a system of academic incentives aligned with the strategic needs of the region. They could for example, be used to reward the knowledge of languages the extremely high dependence on tourism and external commercial relations requires more from Canarians than from most other Spaniards. Although they make language classes available at reasonable prices, the universities have not found a way to stimulate students to acquire an adequate level of foreign languages, and there are no long-term plans in place to make up this deficit.

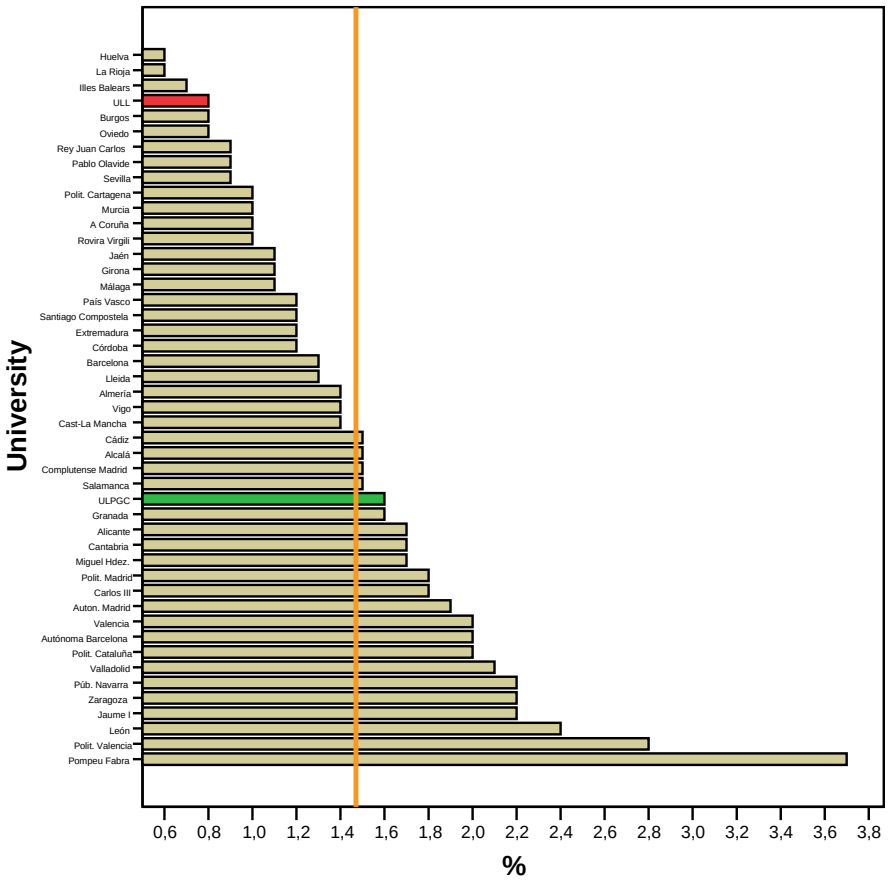
The international mobility of students

Erasmus students in the academic year 2004-2005 comprised 0.72% of the university student population of the 18 European Union countries[28]. The growth rate of the program, at 2.7%, has been virtually constant since the program's start. Similarly, participation of Spanish students has increased steadily from 1987-1988, when the program began with 240 students, to 2004-2005, the last year for which we have statistics, when 20,819 participated.[29]

[28] http://www.socrates-leonardo.fr/upl/documents/synthese-mobilites04-05.pdf. This rate was 28.8% in the new member countries and the candidate countries
[29] http://www.mec.es/files/datos0506.pdf;

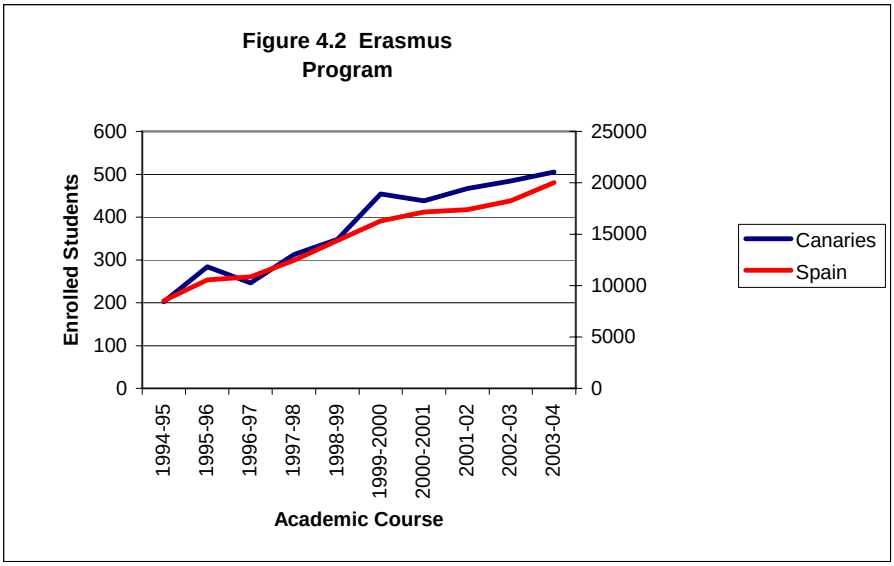
The two universities in the Canary Islands have participated in the Erasmus program, especially and actively that of Las Palmas, in which 1.6 of every 100 first through third cycle students left the islands and Spain on the exchange program in the 2004-2005 academic year. For the University of La Laguna the rate was lower, 0.8 students per 100. The equivalent average for all public Spanish universities was 1.47 (Figure 4.1). In absolute numbers, 295 and 370 ULPGC students went abroad on an exchange program in the academic years 2003-2004 and 2004-2005, respectively. For the ULL the equivalent figures were slightly lower, 239 and 202.[30]

Figure 4.1.
Erasmus students as proportion of the student population
Spanish public universities. 2004-2005



In comparison with Spain as a whole, there was a special effort on the part of the Canary universities to promote the circulation of their students in the Erasmus program beginning in the academic year 1999-2000 (Figure 4.2).

[30] ULPGC en cifras 2004, page 295



SOURCE: Compiled from Ministry of Education, Culture, and Sports (http://www.mec.es/educa/ccuniv/erasmus/imagenes/estadisticas/evolucion_SM.pdf)

Graduate study

There are two kinds of graduate study: the doctoral program (with an academic orientation); and programs of expertise/Masters (with a more professional orientation).

There is already a relatively long tradition of Masters programs, which in recent years have multiplied exponentially, above all in the ULPGC. This university uses new means of communication to increase the supply of online continuing education programs. Masters and expertise programs are designed for the professional needs of the region, and in contrast to the second cycle degree programs, they are flexible and can more easily be put together or closed down in response to market demand. The ULPGC offered in the 2005-2006 academic year 35 Master and expertise programs requiring at least some degree of attendance[31] and 30 virtual online programs[32]. This represents a substantial increase; at the end of 2003 there were only 30 ULPGC Masters and expertise programs in all with a total of 924 students enrolled[33], in addition to the doctoral programs, with 874 students.

The ULL offers 23 specific graduate degrees,34 some of them with a long tradition, like the University Masters in Business Administration (in 2003 in its 13th year) or Lecture Translation (in 2003 in its 14th year).

Doctoral programs can be described not only in terms of the number of students enrolled, but also the quality of the programs. Five doctoral programs at the ULPGC, and four at the ULL received in the 2005-2005 a special quality rating from Spain's Ministry of Education and Science[35].

The ULL is proud of its doctoral studies. It offers an average of 31 programs in which an average of 544 new students enroll each year. In this respect it occupies the 15th rank among the 48 Spanish public universities. Its strength can also be gauged by the fact that 54% of those beginning doctoral programs

[31] http://www.ulpgc.es/index.php?pagina=estudios_postgrado&ver=masters
[32] http://www.ulpgc.es/index.php?pagina=estudios_postgrado&ver=masteronline
[33] La ULGPC en cifras 2003, p114.
[34] http://www.ull.es/docencia/ofertadocente/titulospropios.htm#TÍTULOS%20DE%20EXPERTO%20UNIVERSITARIO
[35] http://www.mec.es/univ/html/convocatorias/mencion_calidad_doctorado/impresos/2005/ProgramasMencion0506_171105.pdf

receive the Diploma of Advanced Studies, granted prior to beginning the thesis (twice the national average), and 20% eventually present theses (again, twice the national average)[36].

4.2 Student recruitment and regional employment

4.2.1 How students are selected

Student selection is quite constrained by national legislation, which requires a region-wide university entrance exam and entrance by degree program according to the exam score combined with secondary school grades.

In theory the mechanisms for recruitment, then, are regional.

In practice the selection mechanisms consist in passing an exam that more than 90% of those who take it pass, and having a combined score that is higher than that required for entrance a given degree program, if one is required at all. For example, for medicine a score of eight out of 10 is required, for physiotherapy 7.5, and for engineering and most of the other degree programs a five is high enough[37].

A significant percentage of the economic and social elite of the Canary Islands send their children to universities outside the islands. According to a study of the Ministry of Education, almost 9% of Canary Island university students attend school outside the region, more than half of them in Madrid. The ULPGC has a program that attempts to attract to the university those secondary school students with the highest grades.

But the vast majority of students in the two most populated islands study on their island of residence. Those of the lesser islands attend either university, but tend to choose the one in their province (from Fuerteventura and Lanzarote split between ULPGC and ULL, from La Palma, Gomera and Hierro overwhelmingly to ULL). At the ULL only 10.9% of the first and second cycle students are from the province of Las Palmas(Gran Canaria, Lanzarote and Fuerteventura), and at the ULPGC only 5.6% are from the province of Santa Cruz de Tenerife (Tenerife, La Palma, La Gomera and El Hierro). Additional information about this issue is provided in table 4.3.

Most degrees are offered in both universities, and the students tend to make their choice according to place of residence. Some degrees are given in only one university, but even for these degrees there are proportionally few students from other islands.

Table 4.3
Distribution of first and second cycle students by place of origin
Academic year 2003-2004

Destination Origin	Tenerife (ULL)		Gran Canaria (ULPGC)	
	Number	Percentage	Number	Percentage
Tenerife	19198	78.5	1016	4.5
La Palma	1569	6.4	192	0.8
La Gomera	435	1.8	38	0.2
El Hierro	155	0.6	27	0.1
Gran Canaria	1403	5.7	19167	84.8
Lanzarote	848	3.5	680	3.0
Fuerteventura	425	1.7	508	2.2
Rest of Spain	344	1.4	510	2.3
Non-Spain	70	0.3	461	2.0
TOTAL	24447	100.0	22599	100.0

[36]Information from the ULL Vicerectorate of Research and Technological Development.
[37]http://www.educa.rcanaria.es/dgui/webDGU/Docs/NotasCorte.pdf

SOURCE: Compiled from data from the Universidad de Las Palmas de Gran Canaria and the Universidad de La Laguna

The ULPGC attracts somewhat more of first and second cycle students from foreign countries (2%) and the rest of Spain (2.3%) than the ULL, where only 0.3% are foreigners and 1.4% from the rest of Spain. In both universities, in any case, there is a low level of internationalization in predoctoral programs.

Among graduate students, 10.5% of those at the ULPGC are foreigners, above all from Latin America, while at the ULL the percentage is lower, 3.2%. This international segment of students in the Canary Island graduate programs is much smaller than in other Spanish universities. As a rule, as European Community reports have noted, European universities have less appeal than those in the United States for foreign students, because they offer "less attractive" surroundings or due to the comparative "rigidity of the labour market" or the "lack of entrepreneurial spirit"[38].

The chain of education is not continuous; there are breaks and missed connections between secondary and university education. "Open House" days seek to attract and provide guidance for students in their last year of secondary school, prior to entering university. There are also remedial courses for adaptation to the university, known as "zero courses", which attempt to repair the broken chain of education, filling in knowledge missed earlier.

Instead of a Canary regional university system, with certain degrees offered in only one place for students from the entire region, the islands have settled on a provincial model that offers the same degrees in the two provinces. As a result, the two universities compete for funds (their common source is the Canary Islands government) rather than collaborate.

4.2.2 From higher education to employment

Business leaders generally complain about the lack of practical training in higher education. They appear to find the efforts of universities to offer student training in businesses and scholarships for initial employment insufficient. The transition from higher education to employment is difficult for many university graduates, as we will argue and illustrate in this section.

In the Canary Islands there is no longitudinal survey of employment that follows the careers of university graduates, although there is a General Employment Survey run by the Labour Department. In order to analyze the fit between supply and demand, detect gaps and errors in training that will help adjust curricula and the degree offering, the two Canary universities in collaboration with the General Employment Survey have made studies of their respective graduates. The ULL study followed the cohort of 1998 graduates up to 2002. The ULPGC is not available to the public. Since both studies are recent, they have not yet affected concrete university policies.

The connection university and business (education and employment) is made by a) orientation of students as to professional opportunities; b) facilitation of student training in businesses; and c) job placement for recent graduates. Furthermore, there is a program (Innova) that provides grants for young scholars for research relating to the Canary Islands. The research grants come from the regional government, the universities themselves and Canary enterprises, who finance specific projects through the University Foundations.

Career counseling and student training/scholarships are organized through a number of institutions: the universities, professional associations, the Office for Research Applications, University Foundations, Chambers of Commerce, and Business Associations. The net result, however, has little impact, since the most effective way to gain employment is through personal and family networks (JA Gil Jurado 1999). There is no coordination or collaboration between the various job placement offices, which duplicate listings without taking advantage of synergies.

[38]Commission or European Communities (2003) "The role of universities in the Europe of knowledge"

The universities' own job placement services for graduates are run by the University Foundation at the ULPGC and the Office for Research Applications at the ULL. In 2003 the Foundation of the ULPGC contacted 364 businesses, sending them a total of 1667 curricula, apparently resulting in only 72 hirings, just 2.7% of ULGPC graduates. This placement service is in decline. In the year 2000, 452 businesses were contacted, 1356 CVs sent, and 185 graduates hired. The hiring of recent graduates is being substituted by professional insertion grants, more poorly paid, which in theory result in professional training for recent graduates, but which in fact serves as a means for the exploitation of well-trained human capital. The number of these ULPGC graduate grantees rose from 71 in 2000 to 280 in 2003.

The ULL Office for Research Applications (OTRI), under the Vicerectorate for Research, offers job placement. In June 2004 486 graduates were listed, but we do not know what was the hiring rate.

The main mission of the OTRIs of both universities, as in the rest of the country, is to link university and businesses, making it easier for enterprises to invest in research and development and for universities to do research related to business (See Chapter 3 of this report).

One of the products offered by the Canary universities is applied research on demand. The University Foundations and the OTRI channel contracts and research agreements, acting as intermediaries between enterprises and public and private agencies asking for research, on the one hand, and university research teams, on the other. The importance of these exchanges increased over the 1990s, but stabilized by the year 2000. In 2003 the ULPGC agreed to 83 such projects through the University Foundation for a total of about four million Euros (3.7% of the university's budget). More than half of this amount was contracted with businesses. Similarly, the ULL signed 249 contracts for a total of 3.3 million Euros (2.3 million through the OTRI, one million through the University Foundation)39. The role that this kind of contract plays in financing the universities, is, as can be seen, quite limited.

A significant proportion of graduates of Canary Island universities go on to further study on the Spanish mainland or in foreign universities. The problem is that many of them do not come back. The region does not make full use of their great potential in human capital in part because of a lack of effort to retrieve them. There is no regional program to stem the brain drain. One such initiative at the national level is the Ramón y Cajal Program which was established to recuperate young PhDs. This program however has been barely used by young Canarians. In the year 2002[40] three researchers were hired by Canary universities and two by the Instituto Astrofísico de Canarias through Ramón y Cajal Program grants, but we do not know whether or not they were Canary islanders; the figures for 2004 are similar, according to the Ministry of Education and Science. Local opportunities for jobs, in terms of payment and quality, are relatively unattractive for those youths who are highly educated.

Indeed, overeducation of Canary island graduates seems to be a general problem, affecting 53% of them in their first job.

4.3 Promoting lifelong learning, continuing professional development and training

4.3.1 A brief description of continuing education in the Canary Islands

Both universities have strategies for keeping the loyalty of alumni and seek to maintain their continued association and ties after graduation. This long-term relation is also one of learning, through offers of continuing professional development.

In addition to the Masters and expertise programs already described, there are specific programs for professional development throughout the life cycle. The "Peritia et Doctrina" program at the ULPGC provides access to the university for older people who could not attend university in their formative years.

[39]Information from the Vicerectorate of the ULL.

[40]http://wwwn.mec.es/ciencia/jsp/plantilla.jsp?area=cajal&id=63

This program seeks to make up for the discrimination that deprived many Canary islanders of higher education in former times. There is a similar program at the ULL, "The University Program for Older Persons", in which 34 teachers from 15 departments teach about 100 students each year.

Another form of compensatory education is offered to persons over 25 who did not attend university, who can attend if they pass an entrance exam. The university also coordinates with the regional government part of the professional development of its civil servants. Similarly, some private companies request special training courses for their personnel, although these are more the result of ad-hoc needs than the result of ongoing, long-term planning.

The universities may refer these extracurricular classes to the University Foundations. Language classes are also a mixed administrative service intended to raise the linguistic skills for the university community and the population at large. In 2003 there were about 800 persons enrolled in ULPGC language classes and 957 in the ULL.

The School for Health and Social Services of the Canary Islands is an autonomous Unit of the Canary island government that offers continuing professional development, in particular in the area of health and welfare services.

4.3.2 The institutional coordination of continuing education

Some Masters and expertise programs at the Canary universities are the result of joint projects with the regional government, with other public sector agencies, with professional associations or other institutions that recognized a need and pay for these courses to train their workforce.

Similarly there are cases of programs organized in conjunction with foreign universities for foreign students, like the Masters in Accounting and Environmental Management in Agadir (Morocco), in collaboration with the Ibn Sor University of Agadir and the University of Pau, which is taught online[41]. Some of these programs center on economic activities fundamental for the islands, and in them there has accumulated knowledge that could be exported[42].

Collaboration with other Spanish and foreign universities in joint projects for continuing education at the maters and expert level is increasing, and at the ULPGC takes advantage of the university's proprietary Classroom Virtual Interface, one of Spain's most advanced online learning systems[43].

Many institutions and agencies (labour unions, business organizations, private companies...) are competing for the substantial funds for job training available, principally from the European Union. Their curricula rarely respond to a comprehensive plan to deal with deficit in training. The thousands of hours of classes are not evaluated as they ought to be.

Continuing education and discrimination

In Spain as a whole, not just in the Canary Islands, Masters programs are expensive, and there are hardly any scholarships. Data analyses have demonstrated that rather than reduce the inequalities of the previous educational stages, they increase this inequality. Persons who can show they have professional training in addition to a second cycle degree have a better bargaining position in the job market. The hierarchy of

[41] http://www.ulpgc.es/index.php?pagina=noticia&ver=agadir251104

[42] For example, a Tourism course in collaboration with the Institute of Tourism Studies and six Latin American Universities, and another in collaboration with the University of Granada and the Universidad Mayor de San Simón in Bolivia http://idestur.cicei.ulpgc.es/ .

[43] "The Classroom Virtual Interface is a system for teletraining by internet produced by the Center for Innovation in Information Technologies at the ULPGC. It has been functioning since 1997. The entire infrastructure of the system belongs to the ULPGC, and it provides services to various governmental organization in Spain and elsewhere, particularly Latin America." See http://estudios.universia.es/uni-virtual/

inequality is as follows: those who can afford it leave the islands for a prestigious Masters in a mainland or foreign university; those who cannot leave but can afford postpone getting a job take a Master program in the islands; those who cannot afford either option, and cannot get a scholarship, look for a job under comparatively unfavorable conditions.

Special access to the university for those over 25 is a second opportunity for those who missed on their first one. In 2003-2004 177 such persons entered the ULPGC and 115 the ULL. These are low numbers, but important enough to maintain the hope and desire for improvement for many persons who did not enter the university at the normal age.

Both Canary universities have programs for persons with disabilities to facilitate their integration, through needed infrastructural adaptations, guidance for students and teachers, and collaboration with specialized agencies and institutions. Nevertheless many persons with disabilities cannot attend university because they have not completed the previous stages of their education. The statistics for Spain as a whole indicate that among youths from 16 to 29, only 3% of those with disabilities have obtained higher education degrees, as opposed to 13% of the population as a whole.

4.4 Changing forms of education

4.4.1 Flexible education

It is easy to detect a tendency to extend opportunities of higher education to the islands with less population, as can be seen in Table 4.4. In addition to "satellite" centers where classes are held (Nursing and Tourism on Lanzarote) the National University of Education at a Distance (UNED) has increased its offerings in the Canary Islands, and the number of its students. The UNED is a national university for education by correspondence with centers on all the islands. It is designed to facilitate access to conventional degrees in higher education to a population that cannot attend classes in person, whether because they work or for other reasons. In 2003-2004 there were more than seven thousand persons on the islands enrolled in the UNED. For every ten students in the Canary universities attending classes, there was one student in the UNED. In the Canarias, along with scholarships, the UNED serves to help make up for the burden of isolation. The UNED has experienced a sharp increase in the number of students enrolled, 46% since 1996/1997, while the total in the two island universities has remained unchanged.

Table 4.4
Number of students enrolled in ULPGC Centers on Lanzarote and in UNED Centers on all seven islands

	2000/01	2003/04
ULPGC (Lanzarote)		
Diploma Program in Nursing		127
Diploma Program in Tourism		268
UNED[44]		
Fuerteventura Center	253	382
La Palma Center (Sta. Cruz de La Palma)	168	281
Lanzarote Center	445	507
Las Palmas de Gran Canaria Center (for 2003/4 incl. extension centers in Telde, Sta. María de Guía y Agüimes)	2.611	3.981
Tenerife Center (La Laguna) 2000/01 incl. students from the Arona Center (NA in 2003/4)	1.676	2.673
La Gomera Center	21	NA
El Hierro Center	1	NA
Figures from UNED y ULPGC		

The ULPGC also has made a strategic effort to provide education at a distance. At present it offers three conventional undergraduate degrees online: a second-cycle degree in Psychopedagogy, and Diplomas in Tourism and Elementary School Teaching. It also offers online three doctoral programs (in 2005-2006), sixty different free elective courses, twenty-two university extension courses, its own specific diploma program in Protocol and nine courses of continuing education, in addition to six preparatory courses, such as that for university access for those over 25. The ULL efforts to offer online learning are just getting underway.

Comprehensive learning, generally more humanistic than technical-scientific, is reinforced by summer schools. As in the rest of Spain, in the Canary Islands these schools have proliferated (summer universities in Adeje, Maspalomas, Agaete, La Gomera and Lanzarote, and a branch of one well-known nationally, the Menéndez y Pelayo International University, in Santa Cruz de Tenerife). Local bodies like municipalities, individual island governments, other public institutions and private enterprises, in addition to the universities, participate in these schools with financial support and supply participants, infrastructure and resources. What they contribute to strategic regional development varies. Without a doubt, though, they help promote the islands to outsiders.

4.4.2 Educational innovation

In the last few years there has been an emphasis on and investment in educational innovation, with courses for teachers, help in publishing manuals, and above all economic incentives and public recognition for professors, rewarding innovative teaching methods (didactic material, the use of online teaching aids, etc.) and teachers who stand out in student surveys.

The development of information and communications technologies in Canary Island universities

The ULPGC has made a considerable and effective effort to improve communication technologies in response to strategic objectives in the Plan for Information and Communications Systems and Technologies 2003-2006. Computer rooms are open to all students, who are all provided with an

[44]Information from the UNED office in Las Palmas de Gran Canaria.

institutional email address[45] used in teaching (online tutorials), as well as access in a growing number of subjects to web-based teaching resources. In the 2004-2005 year, 22,000 ULPGC students participated in courses with an online component in the virtual campus[46]. The virtual campus is a kind of preliminary phase of what will eventually be the future European Space for Higher Education. Armed with this virtual teaching platform, the ULPGC now offers non-attendance learning for the three degrees in the first and second cycles mentioned above.

Gradually WiFi access is being added to the ULPGC public spaces, as well as internet access in the classrooms. Most of the students are at ease with PCs.

In spite of these advances, the vast majority of courses are not yet offered on a non-attendance basis.

4.5 Enhancing the regional learning system: Is there a regional system for higher education?

4.5.1 Is there a comprehensive idea of a regional university educational system?

Is there a single educational system for the Canary Islands? Officially, the Canary Islands government is responsible for university planning and organisation, while respecting the autonomy of the universities recognized by law. But in fact above and beyond the universities there is no comprehensive vision for the purposes of authoritative and effective planning for decisions from a regional perspective. The program contracts signed between the universities and the government for financial support for the 2001-2004 specify objectives and budgets and in this sense are concrete planning documents. But in practice the two universities compete for funds and power. Although there is spontaneous collaboration at the level of research groups, there is no effort on the part of the government or the universities themselves to create regional groups or projects. There is, for example, not one single joint degree program, nor are curricula coordinated in such a way as to facilitate inter-university mobility, nor do there exist well-established programs for interuniversity collaboration.

There is no specific system for the revalidation of credits between the two universities to facilitate the movement of students, nor is there any encouragement for the students or teachers of one university to meet with their colleagues on the next island, apart from very occasional events.

There is no regional component in the educational policies of the regional government. Student surveys, for example, have been standardized for both universities, but only in order to have an indicator for use in the payment of teaching incentives, not because there is any tradition of coherence and standardization of practices. In contrast one may cite, for example, the case of Andalusia, where there is a true regional system and the General Office for Universities and Research effectively plans, guides, and propagates research and development on a regional basis.

4.5.2 The analysis of regional supply and demand for educational "products"

Unfortunately there are no studies that establish the supply and demand of higher educational products at the regional level. Occasional studies have been made in a given university referring to a particular area. Enrollment limits in degree programs respond more to the inertia of past practice in each university, than to the actual demand for graduates in a particular island or the region as a whole.

[45] The ULL has begun in the 2005-2006 academic year to assign email accounts to its students.
[46] http://www.teleformacion.ulpgc.es/moodle/

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CHAPTER 5. CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT

5.1 Social Development (provision of health, well-being and cultural services and support for indigenous and religious groups)

The two Canarian universities provide the community with a range of services linked to health, well-being and support for social groups, as follows[47]:

5.1.1 Health

Both universities have Faculties of Medicine and offer Diploma qualifications in Nursing and Physiotherapy. Degrees are delivered as part of agreements with the Canarian Health Service[48] governing the joint use of hospitals and other health centres for teaching purposes. Under these agreements, faculty staff and researchers work also in hospitals, which are used for training undergraduates and postgraduates.

Teachers at the universities form part of the medical staff in hospitals and other centres, and combine their teaching, research and patient care in the same working day.

5.1.2 Contribution to culture

Both universities offer humanities courses in fields such as modern philology (Spanish, Latin American, English and French), the classics (Greek and Latin), geography, fine arts (painting, sculpture, design), journalism, history, philosophy, pedagogy, psychology and anthropology.

The contributions of university researchers to knowledge in the Canary Islands have been crucial throughout the more than two centuries of university activity in the region.

Over and above the qualifications offered and the contribution of research to the furtherance of knowledge, both universities provide outreach in scientific and humanist disciplines through their respective Extra-Mural Departments and numerous cultural groups and associations.

Extra-mural activities. Contributions of ULPGC.

It is important to mention the extra-mural activities at the University of Las Palmas de Gran Canaria, which the university defines as "a service to the university community and society generally, reflecting the University's commitment to the latter. These extra-curricular activities are of scientific quality and community interest and are designed to meet the following objectives: *to complement students' curricular education; update the training of professionals; disseminate scientific advances among university members and the wider community; reflect, discuss and promote the cultural, social and economic development of the Canary Islands.*"[49]

Extra-mural activities at the ULPGC take place from October to June and are open to members of the university community and non-members alike. They take the format of courses, seminars, symposiums, workshops etc, and participants earn credits which may be convalidated for postgraduate courses leading to doctorates or as electives, depending on the case.

They activities cover a broad range of subject areas including informatics, administration, internet, health, psychology, intolerance, sexuality, environment, training in technology (refrigeration systems, ventilation equipment, etc), languages, public speaking and others.[50] The courses contribute to social development in

[47] Culture-related services are covered in the next section.
[48] Health is one of the powers that has been devolved to the regional government.
[49] Taken from the ULPGC website
[50] Subjects selected from the Programme for academic years 2003/4 and 2004/5.

that they provide training in fields of personal interest and also enhance individuals' labour market prospects.

By nature, extra-mural activities are decentralised. Although the main premises are in Las Palmas, courses are held in other towns also, for example, the Maspalomas Summer University and the courses in Agaete, Arucas and Galdar, and even on other islands such as Fuerteventura, La Gomera, La Palma and Lanzarote.

Extra-mural activities. Contributions of the ULL

During the 2004-05 academic year the University of La Laguna organised 129 extra-mural courses, attended by a total of 4,065 students. The courses were held mostly on the islands in the province of Tenerife: 57 on Tenerife itself, including the Adeje Summer University, Tegueste Autumn Courses, Spring Courses in Acentejo and El Rosario, Winter Courses in the North-Western District of the island, and a variety of interdisciplinary university courses. Other islands that hosted extra-mural activities were Lanzarote (31 courses, with over 230 students); La Gomera (four seminars, 191 students) and La Palma (four courses, 388 students).

Seminars were also organised in cooperation with a range of bodies, such as the La Laguna University-Business Foundation, the Tenerife *Cabildo* (Island Council) and the Department of Painting and Sculpture at the Faculty of Fine Arts. Similarly, activities were conducted jointly with the Canarian Federation of Municipalities (FECAM), the Canary Island Institute for Business Training, Employment and Development (FIFEDE) and the regional government.

The Adeje Summer University programme covers a wide range of issues of topical interest. The programme includes a course on immigration policies, with the emphasis on policies impacting on employment. Another seminar will focus on the environment and conservation areas. Also included is a course on new family models and the legal implications of marriage and adoption by single-sex couples or civil partnerships.

Regarding health, in addition to extra-mural activities, the University of La Laguna (ULL) provides valuable support to the University Hospital of the Canary Islands, which is situated in Tenerife. Health care is universal in the region, and "*...under the concept of comprehensive health protection which lies at the heart of the system, Hospitals which form part of the public network or work in association with it do not just provide specialist care for increasingly complex problems but also undertake activities for health promotion and disease prevention and perform research and teaching functions, in coordination with the primary health care system and in accordance with the guidelines laid down in the region's Health Plan and the respective Plans drawn up by the various Health Areas.* " [51] [52].
The regional Ministry of Health and the University of La Laguna have concluded a framework agreement covering cooperation in the area of new technologies and telecommunications which will enable joint actions to be undertaken to develop telemedicine. Specific agreements will be also drawn up to cover systems techniques and software operations, broadband, the development of specific applications for the Canarian Health Service (SCS), software and hardware consultancy for the Service, as well as technical assistance, auditing and studies.

5.1.3 Other activities in the two universities

The universities in the Canary Islands also carry out research and action programmes with various social groups (families and children with problems, drug addicts, etc), particularly in relation to its Social Work qualification. The researchers and academic staff who take part in such programmes generally work alongside public institutions and NGOs in the social field. The universities also participate in agreements with public institutions to contribute to solutions to social problems. For example, the ULL and Tenerife

[51] www.hecit.es/informacion/default.html
[52] Ibid.

Cabildo signed an agreement in 2005 to set up a social observatory for the island. The observatory, which has already been created within the Institute for Social Services and Social Health Care (IASS), aims to support the work of the Institute by providing information on social realities. In addition it will draw up indicators and carry out monitoring work, while also compiling up-to-date information on diagnosis and resources for the Island's social health care strategy. As part of its tasks also, the observatory will carry out specific studies in given social fields.

The activities mentioned above cover a broad range of topical issues relating to medicine and well-being, as well as support for various population groups. There are no separate indigenous groups as such in the Canary Islands and hence there is no special provision for such groups. However, valuable research has been carried out on the original inhabitants of the Islands, a subject which is addressed in conferences, courses and congresses.

The Universities organise and deliver the activities described in cooperation with public and private bodies. The participation of small towns (in terms of population) is very important and many extra-mural activities are organised with them. Private businesses also cooperate in the courses. Some of the activities are organised in association with the bigger towns also.

5.2 Cultural and artistic development

The Canarian universities provide cultural services to the wider community, along with others aimed at specific groups. The extra-mural courses mentioned above include subjects related to cultural and artistic development, and are complemented by others which will be described briefly below.

5.2.1 Main ULL cultural and artistic development activities

Every year the University of La Laguna's Language Service, which is run by the University-Business Foundation, organises Cultural Days to raise awareness among students of cultures and traditions from other parts of the world.

The University Symphony Band was founded just over six months ago and since its inaugural event on 22 November 2005 has given a series of concerts, notably at the University's UNICEF Festival 2005, in aid of the 'Forgotten Emergencies' Programme, which the Band itself organised with the participation of the *Camerata Lacunensis*, the University Choir and poet Javier De La Rosa.

The University Film Club, which operates under the Department of Extra-Mural Studies and Institutional Affairs, organises seasons of films. Before each session, short films by renowned international film makers are also shown.

The Department of Extra-Mural Studies and Institutional Affairs is responsible for coordinating the activities organised by the university to mark the 400th anniversary of the publication of the first part of Don Quixote. Collectively entitled *Insula Quixote*, the activities are coordinated among the various cultural sections operating under the Department. Also involved are the towns of Adeje, Arona and La Laguna, which will host some of the events scheduled. These, however, are not the only extra-mural events organised, as will be shown below.

Along with other institutions, particularly town halls, the ULL organises joint programmes -usually during the summer - which include exhibitions, performances by university drama groups, choirs and folk groups, student minstrel bands, as well as films clubs, seminars, lectures and workshops. One important contribution to cultural development and the study of topical issues are the activities organised as part of the ULL's annual Summer University. This year's programme in Adeje featured 18 courses on subjects such as immigration policies, particularly those impacting on employment, the environment, new family models and the legal implications of marriage and adoption by single-sex couples or civil partnerships.

The Faculty of Fine Arts hosts this week a conference on Laughter and Modernity, which is sponsored by the University's Contemporary Artistic Thought section. The multidisciplinary conference seeks to examine knowledge of the comical value of contemporary art, a complex task given that, as the organisers admit, "the semantic field of laughter - what is laughable and the effects it has - is not clearly defined, and a historical evaluation cannot, given its daily life connotations, be approached from one discipline alone".

The University of La Laguna's "Campus Radio" has been on the air since 1992 and is a vital source of information regarding the University. Programmes include interviews on subjects of general interest and also ones more specifically geared to the university community. In collaboration with the Scientific Outreach section of the Department of Extra-Mural Studies, it hosts a programme for public dissemination of aspects of scientific discoveries and technological applications. The radio station also broadcasts music, along with art and cinema discussion programmes.

Culture Chairs are another important vehicle for promoting culture in the community. During the academic year 2004-2005, the University organised lectures, piano recitals, festivals and a tuition course, along with the Rafael Ramos García international Photography Competition. Other activities included exhibitions, musical events, film seasons, and book and journal presentations. In all, 19,623 people attended the 84 events held.

The ULL promotes and supports artistic development through exhibitions, art galleries and art classes. The Centre for Studies in the Performing Arts, which opened in 2005, is intended to be a multidisciplinary forum covering painting, sculpture, Spanish philology, Classical and Arab philology, drawing, design and aesthetics. It aims to provide a vehicle for reflection and debate on these issues in the Canary Islands and to publicise Spanish -and particularly Canarian- drama and performing arts abroad.

Another activity of major importance for fostering cultural development is the University's Senior Citizens Programme, now in its fifth year. The initiative was set up in 1999-2000 and is aimed at persons over the age of 50, thus contributing to the concept of lifelong learning. Teachers on the programme are members of the university's academic staff, although prestigious experts from outside the university also take part. Subjects cover virtually all areas of knowledge, from art and architecture to biology, the environment, social sciences, computers and literature, among others. The level is pitched at general outreach level but increases as each course is successfully completed. The programme also includes complementary activities, such as physical activities, and workshops for drama, creative writing, music and culture and gender.

Activities by the Canarian Institute of Astrophysics (IAC) also contribute to cultural development and include cultural outreach initiatives, Observatory Open Days, activities related to major astronomic events, journals and newsletters, training courses for teachers, radio programmes etc. The Institute's role in the creation and day to day running of the Science and Cosmos Museum, which is owned by the island's Cabildo, has also been very important. It organises annual congresses such as the Winter School (for training young researchers) with support from, among others, the European Commission and Spain's Ministry of Science and Technology.

5.2.2 Main ULPGC cultural and artistic development activities

The ULPGC also has a programme aimed at elderly people. *Peritia et Doctrina* is the result of the commitment acquired jointly by the university and the Directorate General for Social Services of the regional Ministry for Employment and Social Affairs. It was launched in the 1999/2000 academic year as part of a wider social engagement on the part of the university to organise initiatives to provide educational help and facilitate access to a non-traditional sector: elderly people who had suffered the consequences of the civil war and the post-war period, an era during which higher education was reserved for the elite only.

In 2002 the University of Las Palmas de Gran Canaria and the Canarian University Foundation of Las Palmas set up the Centre for Permanent Education at the University to meet the training and professional development needs of individuals, businesses and other bodies.

The University's Music Section promotes and coordinates the musical events organised by the ULPGC's Department of Culture and Sport. One of its primary objectives is to promote singing, which it does through the *Schola Cantorum* and the University Choir, both of which are open to students and other persons with the necessary talent and keen to participate in this form of culture. The section undertakes other activities also as part of its annual programme of courses, concerts, lectures and seminars. All the events are organised in close cooperation with the Las Palmas Conservatory of Music. The main hall at the University is equipped to stage festivals and concerts. The hall has been designated one of the alternative venues for the 21st Annual Canarian Music Festival and will host a concert as part of the programme.

The University's Cinema and Drama section promotes designs and coordinates activities related to the world of cinema.

The 'Diaspora and Cultural Mix' section is a forum for debate on the various cultural trends converging in society as a result of immigration. Activities centre on courses and discussion panels on immigration and related social questions, as well as on aspects of research and debate. A panel on Immigration has already been held, along with a course on Islam, the Koran and the West, and a film season on Diaspora and Cultural Mix.

The 'Manuel Alemán' section provides a space for education, culture and dialogue on Faith and Culture and was set up jointly by the University of Las Palmas de Gran Canaria and the Diocese of the Canary Islands as part of the framework agreement between the two and in response to a request from a group of teachers, centres and departments within the university.

The Sexual Identity section has the following objectives: to encourage non-discrimination with respect to sexuality in the university community as a form of tolerance which should be intrinsic to democracy, in an atmosphere of intellectual maturity and respect for difference. The section also seeks to promote respect for different affective and sexual orientations in the university and in society generally.

Since 2001, the university's Globalisation Study section, which was created at the suggestion of the Canarian Association for Globalisation Study (ACEG), has provided the opportunity for Canarian society to analyse, observe and debate the globalisation process.

The university's Humour section was launched to promote the study and knowledge of humour and sense of humour, and their manifestations in different cultural, social and geographical spaces, etc. This will be carried out through study of different resources and techniques for creating humour and comedy, as well as comparative study of manifestations of humour in a range of cultures and geographical areas.

The Euro-African and Euro-Latinoamerican Comparative Studies Group provides distance learning provision aimed at identifying and promoting community projects for clean and sustainable local development, which is an explicit goal of numerous policies, strategies and funds in institutions. The training provided seeks to produce agents, coordinators and designers for local community projects in Africa, Europe and Latin America, as well as specialists in cooperation this field.

For its part, the University Business Foundation at La Laguna University and the Canarian University Foundation in Las Palmas provide technical support and carry out research for firms and NGOs, and for the public sector. Some of the services provided are aimed at specific social groups and cover aspects such as social and cultural offer, the psychological impact on female victims of domestic violence, employment advice and technical support, etc.

5.3 Sports

The Canarian universities also support sport and offer facilities for a range of sporting disciplines (football, basketball, squash, wrestling, rugby, sailing, table tennis, biodance, gymnastics etc) University championships are held regularly and members of the university community participate in national competitions, in some cases with top results. The facilities also have instructors and medical services.

Other sporting activities organised regularly by the universities include the Vice-Chancellor's Trophy, a competition for teams and individuals open to all members of the university community.

In addition to the senior team which competes at national level, the ULPGC football club has five junior sides. All the teams finished near the top of their respective leagues: the under-14s and under-16B side won their respective championships, while the under-16A team finished third. The under-18B side won its leaue and gained promotion, while the A side finished fourth in the premiership.

The university has also established up a Sports University in Ingenio (Gran Canaria) by virtue of an agreement with the local council, with support from the island council's Department of Sport.

5.4 Sustainable development

5.4.1 ULPGC activities

Various activities undertaken by the ULPGC in relation to sustainable development, and particularly the application of good environmental practices on campus, deserve mention here.

The "Environmental Campus project" organises activities to "*develop the integral management of urban solid waste and toxic and hazardous waste in university buildings and facilities, including preventive control, compliance with legislation, selective collection and, where appropriate, by promoting reuse or recycling.*

To organise, seek external support for and monitor institutional biodiversity management projects on campus and actions for the conservation and recuperation of the architectural heritage, landscape and ethnography of the Tafira Campus.

To promote active participation by the university community in University environmental programmes, through awareness actions and voluntary environmental cooperation programmes."[53].

The Nature section undertakes activities to promote environmental training and education. It organises courses, seminars, talks and educational events in coordination with public and private bodies, associations and institutions working in the field of the environment. It also seeks to provide an interdisciplinary approach to environmental education and create teaching and information materials on environmental education and conservation. Lastly it is involved in the Ecological Reserve at the university's Tafira Campus[54].

Another set of environment-related activities are those undertaken by the 'Jaime O'Shanahan Occupational Workshop', which uses a harmonious combination of productive, recreational and educational activities to make the Tafira Campus an example of sustainable development. Under the project which is promoted by the University of Las Palmas de Gran Canaria with funding from the National Institute of Employment, young people who return to school to complete basic-level education receive training in conservation actions[55].

[53] http://www.ambientalcampus.ulpgc.es/index.php?pagina=presentacion
[54] Ibid.
[55] http://www.universia.es/html_estatico/portada/actualidad/noticia_actualidad/param/noticia/fhaj.html

It is worth noting that the ULPGC Vice-Chancellor chairs the Spanish Conference of University Vice-Chancellors' working group on "Environmental quality and sustainable development". The University also has doctorate-level courses on sustainable development.

5.4.2 ULL activities

Although not having a global best practice programme for environmental management, the University of La Laguna does undertake a variety of actions in this field. A plan has been prepared and is being implemented for the elimination of waste generated by research activity in the university. Research is also being carried out to find ways to reduce environmental problems: examples include ceramic materials and fuel cells, as part of the search for alternative energy sources to eliminate the use of polluting fuels; recycling of oils, reuse of waste water and environmental impact; biodiversity and earth sciences, fisheries, tourism, migration and natural resource management; environmental technologies and management; measurement of pesticides (some of them widely used in Canarian farming and found in samples of water, fruit juices and soils); and applications of chemistry with useful results for reducing the effects of human activities on the environment (e.g. methodologies for measuring pollutants). Also deserving of mention are the university's doctorate programmes related to the environment, such as "Natural resources, regional planning and land", "Inter-university environmental education programme" and "Life sciences and the environment".

The Canarian Institute of Astrophysics also contributes to maintaining the quality of the region's skies for astronomical observation. Its Technical Office for Sky Quality Protection, which was set up in 1992, monitors and evaluates potentially polluting activities that might impair research at the Observatories. These activities also contribute to nature conservation, stimulating the development of native species, and have even given the island of La Palma a unique tourism identity.

5.4.3 Other activities by the two universities

Environmental actions put in place by the Canarian government envisage the participation of the region's two universities.

The government is currently (June 2005) preparing a joint working initiative with social actors on sustainable development: the sustainable development forum and observatory.

The Canarian Forum for Sustainable Development and the Sustainable Development Observatory were created by virtue of the General Planning and Tourism Directives (Law 19/2003, 14 April).

The Forum aims to encourage Canarian society to implement more sustainable forms of economic, social and environmental development. Directive 142.2 also establishes as an essential function of the Forum the monitoring of the General Planning Directives and of the overall situation in the region. The Forum is empowered to propose modifications to or a review of the Directives to the government. It is also tasked with promoting the development of scientific bases and research instruments for the conservation of natural resources and for sustainable development in the Canary Islands.

It is envisaged that the Forum, acting on its own initiative or at the request of the regional government, will publish opinions and make proposals on regional plans and programmes impacting on the environment, quality of life, and sustainability, as well as on the Planning Directives and their implementation, the Canarian Sustainable Development Strategy and any other regulation, programme or plan of special relevance to sustainable development, including Local Agenda 21.

The Forum will be chaired by the President of the Canarian government and will include representatives from five regional ministries, the two universities and all seven island corporations, as well as from four local councils, trade unions, community groups, ecology groups, professional bodies and renowned experts in environmental matters.

The process of selecting the community and ecology groups who will take part in the Forum is currently under way (June 2005).

For its part, the Sustainable Development Observatory will pursue a scientific and technical role, its task primarily being to draw up and approve environmental diagnosis to reflect the situation in the archipelago and the effects of measures applied. It will include prestigious professionals who will oversee the programming and work of the groups of technicians and scientists on specific areas.

Last but not least, it should be noted that the two Canarian universities - in both their extra-mural activities and research - address sustainable issues also and draw up agreements to resolve specific problems (which are not limited to the environment). This activity is an important part of their actions to help resolve the problems faced by society in the Canary Islands. By way of example, under an agreement between the University of La Laguna and the Tenerife Cabildo, the former's Environment Service will support the island's Water Council, a Cabildo body, in carrying out environmental studies on undersea wastewater pipelines in the Adeje-Arona area in south Tenerife and Valle de Guerra in the north. For its part, the University-Business Foundation at La Laguna has signed a cooperation agreement, also in 2005, with the town of Tacoronte to carry out a plant health survey and put forward recommendations for plant control in the parks and gardens of Tacoronte.

5.5 Conclusion

Collaboration between regional agents on social, cultural and environmental development can be summarized as follows:

No significant stable collaboration networks appear to exist at high level between the two universities, although there are joint actions in specific areas, such as the Canarian Economy Congress which is jointly organised by the two respective Economics Faculties.

Regarding collaboration with social agents and the government, many activities can be identified, as described above. In the case of the business sector, these are channelled largely through the University-Business Foundation at La Laguna and the Canarian University Foundation at Las Palmas, both of which participate in agreements to contribute solutions for specific problems. Cooperation also exists with government bodies. University community projects, as mentioned above, work alongside NGOs to improve the living conditions of groups suffering social exclusion, poverty and inequality. In addition, the universities also participate in agreements with public bodies, businesses and NGOs for cultural activities, as also mentioned.

Social, cultural and environmental development in the region: SWOT

Weaknesses

- Weakness of the information conveyed by the universities to society to publicise their contributions to social, cultural and environmental development in the region.
- Few extra-mural and cultural and social promotion activities undertaken with larger towns (in terms of population), meaning that only a limited number of people benefit from the activities of the two HEIs.
- Cultural backwardness of the Canary Islands.

Threats

- Possibility that European policies on universities will lay further emphasis on research and publications in international journals, which bear little relation to regional and local problems.

Strengths

- A considerable share of the region's cultural activities and actions to protect cultural and artistic heritage is carried out by the HEIs and their members.
- HEIs are keen to be involved in the cultural and social development of the Canary Islands.
- HEI have the human resources, libraries (the biggest and most comprehensive in the region) and capacity to develop research that encourages social, cultural and environmental development in the region.

Opportunities

- Extend scope of actions with larger towns.
- Extend social, cultural and environmental development information actions for Canarian society.
- Fostering of closer ties between the universities and their environments.
- An opportunity to be grasped (and gap to be filled) is the need for actions to raise the visibility of, and better exploit, HEI contributions to society. There is a clear lack of knowledge on the part of social actors of the benefits they might obtain through greater mutual cooperation with the universities (for example, entrepreneurs who commission studies outside the Canary Islands at a much higher cost than if these were entrusted to research teams from the region's universities). The benefits would be mutual, both for social actors and the universities.

SOURCES OF INFORMATION FOR THIS CHAPTER

The main sources of information for the present chapter are as follows: interviews with the authorities at the universities of Las Palmas de Gran Canaria and La Laguna; the universities' strategy plans, web sites, academic programmes; information received from both universities after the presentation of the first draft, etc. Of invaluable assistance for the writing of the chapter was an interview with the ULPGC's Culture and Sports Officer and the information she provided to the authors.

CHAPTER 6. THE SEARCH FOR THE CAPABILITY FOR REGIONAL COOPERATION

6.1 Ways to promote the universities' involvement in the region

The Canary Island government's the basic planning tool is the Canary Regional Development Plan. This plan asserts that the role of the universities is fundamental for the development of the region.

As a result, the Canary government finances the universities through program-contracts. These multi-year planning tools specify the regional government's financial obligations with the universities in regard to staff, degrees, infrastructure, salaries, etc. The content of each program-contract is negotiated separately by each university according to its perception of the public's needs. But the regional government does not finance the universities with the explicit object of involving them in regional development.

Public benefit and needs form the explicit basis for many of the universities' decisions. We will consider in this respect three aspects: degrees offered (and by the same token, teaching); research; and the dissemination of science and the humanities.

In regard to the degrees offered

Although there is a complex process set out by law to determine the degrees to be offered, involving the Social Council of the universities, in practice the selection has been made rather uncritically, with the result that both universities offer almost all the degrees in the national catalogue and there is a substantial duplication of degrees offered by both. The statutes of the two universities and their strategic plans assume that the universities' very reason for existence is the satisfaction of public needs. Up until now, budget constraints and internal groups with the universities have decided what new degrees will be offered and the content of their curricula. The Canary universities are now faced with adapting to the new European Higher Education Area first and second cycle degrees, and the European homologation of postgraduate degrees is now under consideration.

In regard to research

Since most of the financing of research is external to the universities, priorities for lines of research are set externally (by the governments of the Canary Islands, Spain and Europe). The universities have neither formal nor informal procedures for identifying regional needs for research, with the exception of those lines of research prioritized by the regional government. On the contrary, the universities finance precompetitive groups that will accumulate experience useful for applying for future grants at a supraregional (Spain or European) level. Grant competitions at the national or European Community level, of course, do not include regional specifications.

In regard to the dissemination of knowledge

The two universities perform a significant service in the dissemination of science and the humanities to the general public through their vicerectorates of extension learning. In addition, university professors give numerous public lectures and courses in the region.

Some decisions of the Canary Islands government do seek to promote the involvement of its universities in regional development:

a) One salary component of teachers is related directly with activities benefiting the region.
b) Through annual grant competitions, the government prioritizes lines of research related to regional development.
c) The government looks to the universities for expert advice through advisory contracts (see Chapter III). For example, it has commissioned a number of studies on the qualifications and skills of the archipelago population, as well as a periodic survey of related indicators. This need for advice is derived from the fact that the regional government is responsible for and

finances research projects, and hence needs to know about the availability of technology and the skills of researchers. It has also requested studies of the infrastructure of research and learning.

Nevertheless, the Canary Islands government does not evaluate the involvement of its universities in regional development in any systematic way, nor does it have mechanisms for identifying effective practice in this respect.

Some limiting factors should be considered. One factor that limits the involvement of universities in the region is that incentives for promotion of its researchers are oriented to the national level, and that local research and local advising count for little in career promotion. Research bonuses are awarded by national panels that judge achievements by international scientific standards, in which involvement in regional development carries little weight. These research bonuses form the basis for the promotion of professors and university researchers.

On the other hand, salary bonuses for professors from the Canary Autonomous Community do take into account the involvement in research, advising, and disseminating knowledge at the regional level, and thus serve as an incentive for that kind of activity.

There was a general consensus that there should be a greater and more systematic involvement of universities in regional development. The key institutions in this respect are the Social Councils of the universities, the University Foundations and the Offices of Technology Transfer (Chapters II, III, IV, V).

6.2 Promoting interregional dialogue and joint marketing

The institutions that can best promote dialogue between the universities and the general public are the Social Councils, which were created for this purpose. Representatives of the business community, labour unions, the individual island governments and the university community meet in the Social Councils to deliberate on regional matters. These Councils directly affect the internal functions of the universities, as they vote on the creation or suppression of academic degree programs, University budgets, tuition charges and other important university policies.

The university staff also has a certain presence in financial and cultural institutions and is represented on the boards of the semi-public savings banks. University professors add prestige to prize juries and museum boards.

6.3 Measuring the regional impact of the Canary Island universities

The university system in the Canary Islands has little tradition of evaluation in general, and much less in relation to the effect of its activities on the region. Until now this impact has been taken for granted.

The strategic plan of the ULPGC contemplates studies on relations with and impact upon the region. The ULL is still in the process of finalizing its plan, which is taking into account these matters. It is too early to evaluate the effects of the strategic plans as stimuli for the region, as these effects are noticeable only in the long term.

There are no direct and explicit mechanisms to increase awareness of the role of the universities in the region, although the university public relations offices serve to publicize university activity. The general public is little aware of the universities' impact on the region.

6.4 Improving the institutional capability for regional involvement

Both strategic plans, under various headings, have as a goal the involvement of the university in the region.

The Social Councils and the University Foundations are the key Units for communication between university and society, and the presidents of the Social Councils and administrators of the University Foundations are the key players for this purpose.

The ULPGC has taken up the challenge of new technologies with gusto and with notable success (see above). The ULL has taken steps in this direction, in accord with its strategic plan.

6.5 The management of human and financial resources

Most resources come from outside the university are preassigned, and the university acts as a mere transmitting agent and supervisor of expenses. Within universities, there is a low level of financial decentralization. The university departments and centers receive a small percentage of the total institutional budget, although for these limited amounts they have broad discretion on spending, as long as it falls within the categories specified in the budget.

The lines of prioritized research financed by the regional government for local development bring funds to the university, and so, although to a lesser extent, do some businesses and institutions, who channel the money through the University Foundations (Innova scholarships).

Funding from the European Union, which financed much of the infrastructure and research in the past, is drying up. The ULPGC has recently begun receiving funds for infrastructure from regional tax rebates to businesses.

The two universities administer their resources in accord with standard accounting practices and submit them to formal audits. They also have internal systems of legal control.

6.6 Creating a new organizational culture

There are serious cultural obstacles to the involvement of universities in the region. Individual island loyalty interferes with a regional perspective. Most researchers-- whether out of cultural preference or tradition or because they feel pressured by the system of incentives-- place more value on basic or general research as opposed to research on regional problems or topics. While there are exceptions, like a joint conference of both universities on the Canary economy, they are quite rare.

According to the universities' statutes and strategic plans, involvement in the region is an important part of their mission. The universities have courses, some required, some optional, whose entire content is dedicated to the archipelago, especially in humanities and social sciences. Regional content in the curriculum is greater now than it was in earlier decades.

CHAPTER 7. CONCLUSIONS

7.1 Lessons drawn from the self-evaluation process

The economy of the Canary Islands has enjoyed considerable growth over the last half-century and its per capita GDP now exceeds 75% of the EU average. Growth has made for an **increasingly complex** situation, arising out of the increased trade in goods and services and the growing diversification of production and consumption. A number of important factors can be said to be responsible for this increasing complexity:

The growth process has taken place in a regional context which is conditioned by two fundamental circumstances: a) Remoteness from the nearest prosperous continental economies (the European Union) and proximity to many of the world's poorest regions (the Canary Islands, which border Africa, and the French overseas territories, which border Africa and the Caribbean, are the European Union's southernmost points). b) The small size of the economy, a problem compounded by the fragmentation of the domestic market into seven islands.The combination of the above two circumstances has led the European Union to include the Canary Islands as one of its outermost regions[56] (art. 299.2 of the Treaty on European Union).

Over the past two decades, Fuerteventura, Lanzarote and towns in southern Gran Canaria and Tenerife have enjoyed very high annual growth. Per capita income in these traditionally poor areas has risen rapidly and now exceeds the average for the Canary Islands as a whole. The seven islands can be grouped on the basis of recent growth: the northern parts and capitals of both Gran Canaria and Tenerife, where economic growth has matured; Lanzarote, Fuerteventura and towns in the south of Tenerife and Gran Canaria, where new growth is being enjoyed at present; and -lastly- La Palma. La Gomera and El Hierro, all of which have low rates of growth.

The Canarian economy is a highly open one. Imports and exports of goods (imported inputs, oil, consumer goods, agricultural exports and exports of tobacco and refined oil products), services (tourism, maritime traffic) and capital and labour combine to produce a complex situation.

Economic growth is fanning the debate on the costs of growth. Consensus exists as to the need for future growth to be made compatible with lower environmental costs. This compatibility adds further complexity to the future process of production and distribution of goods.

Economic growth has been the cause and also the effect of employment growth. Increased demand for labour has spurred growth on the supply side, increasing employment rates among women and immigrants. Job growth has also been aided by public sector employment. Despite this, however, the unemployment rate - which began to rise in the early 1970s - is still a long way from full employment, particularly among women, although it has fallen considerably since 1994. It is important to note that the jobless rate among university graduates is lower than the general rate.

Trades union and employers feel that stable employment needs to be strengthened in Spain overall and in the Canary Islands specifically. The social partners perceive therefore that temporary employment has reached high levels both in the public and private sector.

Private sector R+D spending in the Canary Islands is below the Spanish average; the innovation and growth process takes place informally, through the traditional productive capital distribution avenues (fairs, catalogues, transfer of positive experiences) and/or as a result of in-company decision processes entailing innovation decisions taken at senior management level. The full process -or significant parts thereof- from basic science to the application of technology, is rare in the Canary Islands.

[56] The outermost regions are the Azores, Madeira, Reunion, Guadeloupe, Martinique, French Guyana and the Canary Islands.

As a result of the aforementioned complexity, which in the case of the Canary Islands is compounded by the factors described above, knowledge needs to be incorporated into economic activities, in the precise manner required by our specific circumstances. Generally speaking, formal knowledge is incorporated into society through growth in human capital and in innovation. However, this general statement needs to be qualified in view of the factors which condition and constrain growth in the Canary Islands, as mentioned above. In terms of the incorporation of human capital, ideally the number of university graduates in the working population would continue grow, together with the demand for skilled labour.

On the innovation side, the logistical complexity inherent in open economies, the fact of having three borders (as an archipelago, remoteness from the continental EU and the proximity of sub-Saharan Africa), the region's status as an outermost region, the need to reconcile growth with environmental goals and with the diversification of economic activities, will all make in future for risky investment processes, as regards innovation in goods, services and processes.

These objective needs may be met with demand that is increasingly geared towards the universities present in the Canary Islands. The universities appear particularly well-equipped in terms of size to contribute to the analysis of the aforementioned complexity. With respect to the contribution by the universities, the self-evaluation process has detected the following:
a) The need for cooperation between the higher education institutions (HEIs) and the public and private sectors. This need has been detected by the social partners, who have on occasions complained of the current situation and would like to see more and more rapid cooperation; b) the universities possess a broad range of qualifications, staff and intermediation structures, such as the University Councils, University-Business Foundations, Research Results Transfer Offices (OTRIs), university research institutes, etc; c) paradoxically, however, there is a general perception that the current ties between the universities and the wider community have by no means fulfilled their potential and there is considerable room for improvement. The relative discontent in this regard is accompanied by the hope that universities will contribute more to regional development in future.

We will now examine in greater detail some interesting experiences in the area of teaching, research and outreach.

7.1.1 Teaching

Although the need to increase the number of graduates in the working population has been highlighted, the self-evaluation exercise has revealed that the number of students entering university from secondary education may fall for purely demographic reasons and also due to the competition posed by higher-education vocational training programmes. Nonetheless, recruitment drives thus far indicate clearly that the number of new students can be maintained.

The universities' contribution to continuous education is achieved through Masters and Expert Programmes (which -generally speaking- are in great demand), the *Peritia et Doctrina* programme, while there are specific entrance examinations for mature student access. The relations between the universities and the ICAP (Canarian Public Administration Institute) with a view to offering continuous education for civil servants are an interesting experience, as is the School for Health and Social Services.
Given the Canary Islands' archipelago status, flexible distance learning education may well perform an interesting role in attaining the goal of increasing the number of graduates. The National Distance University (UNED) provides courses for a large number of students.

The demands of industry and the public institutions include swifter adaptation of qualifications to labour processes. Supervised placements in companies for latter-stage students are an effective method, although the number of students and host firms is low.

University employment services, run by various bodies, are another interesting avenue to facilitate the transition to the job market, although they too are of limited impact, probably because formal procedures are not the most widely-used when it comes to filling vacancies.

Both industry and the institutions continue to note certain problems in the area of applied knowledge and the level of learning among students and graduates. This may be due to a) the relative amount of time devoted to learning in the curriculum and b) the desire on the part of recruiters for candidates with experience, in order to avoid the cost of 'learning the job'.

The first reason may be related to the design of the courses offered: these tend to be biased towards theory aspects, reflecting perhaps the interests of the academic staff. The second reason may be related to the size of Canarian businesses and to existing industrial relations, which are characterised by high levels of rotation.

7.1.2 Research

Attention has been drawn to the fact that the diversity of research centres and the relatively high number of researchers represent an opportunity for the region. However, this situation is conditioned by three factors: a) The Spanish and EU research system favours concentration on priority areas, rather than the broader diversity required for regional development, particularly in such a special case as the Canary Islands. b) The academic staff promotion system does not encourage regional research even in applied academic disciplines. Indeed, the opposite is true and regional research might be said to be discouraged because merits achieved in this field are undervalued. c) The salary system, which is based partly on research appraisal, encourages non-regional spheres to be chosen. Only a very minor part of academic staff salaries is linked to the contribution to regional development.

Research is also conditioned on the demand side by certain factors: a) Up to a decade ago, Canarian firms had low self-financing ratios. Traditional business practice was geared towards low-risk investment and results that guaranteed competitiveness on the domestic market. In short, they were geared to 'tried and tested' knowledge. New fixed capital acquired via traditional channels (fairs, suppliers' catalogues, congresses) enabled firms to keep pace with -but not beat- outside competitors and improve their competitive position domestically. The crucial strategy to secure more competitive positions on the domestic market was imitation.Over the last decade, the capacity for financing has risen thanks to laws passed in the 1990s which modified the Canary Islands' economic and fiscal regime and established powerful incentives to businesses to save and invest. However, it was not until some time later that the most important instrument was adopted: the Canarian Investment Reserve[57], which allows companies to invest in R+D projects. The time lapsed may, however, be insufficient to effect a change in strategy. b) Notwithstanding the lack of time that has lapsed for Canarian firms to increase their financing capacity, the most dynamic sector of the regional economy faces other limitations when it comes to endogenous innovation. The activities contributing most to the Islands' GDP (accommodation, trade, construction and transport) are heavily integrated in vertical business structures. Hence, decisions on innovation are taken by the senior levels of the group. In other cases, financing capacity is insufficient in small businesses, which are of crucial importance in the Canary Islands but lack the financial possibilities to engage in research which entails risk. c) A third limitation on endogenous innovation is the small size of the internal market, despite the considerable increase in internal demand of late. Original and successful innovation processes are often informal and based on work experience.

Despite these factors, which act as constraints on the contribution of universities to regional development, some lessons of interest can still be drawn: a) Among the interesting experiences are research programmes funded by universities and aimed at creating pre-competitive groups. Although the goal is not to promote researchers in the early stages of their career and enable them to compete later in more aggregated spheres of research, such programmes are often geared to specific aspects of regional development. b) Another incentive mechanism for contributions to regional development is the annual funding made available by the Canarian government for research projects, with priority given in many

[57] The investment reserve grants up to 90% exemption for company tax on non-distributed profits, provided the company reinvests the savings within three years in the acquisition of new fixed assets, public debt issued be the Canarian government or shares in companies that invest in fixed assets.

cases to areas of interest to regional development. However, there is no explicit fund for financing this type of research. c) Research in humanities has made a decisive contribution to knowledge in the Islands. Doctoral theses and research journals have been crucial to our understanding of Canarian history, geography and art. d) Participation by researchers in Spanish and European programmes in experimental sciences could lead in future to a pull effect on activities in the Canary Islands. Moreover, as end demand sectors, research centres have an impact on regional development and this impact could be widened. This is true, for example, of research institutes and university departments that engage in basic science. e) Demand for consultancy and services to firms and public bodies -in the shape of reports, opinions, plans and projects- has risen since the Canary Islands gained autonomous status. In some cases however, particularly in the social sciences, there are complaints that the products lack realism and are excessively general in their conclusions. The picture is different for consultancy and services provided to firms and public bodies in the fields of engineering, architecture or the health sciences (medicine, nursing, psychology), where satisfaction levels appear higher. f) Programmes enabling university staff to spend periods at other universities and research centres have contributed effectively over the past 25 years to lifting the considerable isolation suffered by the Canarian universities and have helped them integrate into the various research circuits. Programmes of this type are funded by various bodies - the Canarian government, Spain and the European Union g) The social partners frequently express their dissatisfaction at the isolation of the Universities. In turn, university circles frequently complain about the lack of interest and lack of investor commitment shown by private initiative.

7.1.3 Outreach

The universities contribute to cultural outreach through the activities of their respective Extra-Mural Departments. These activities are highly appreciated by the community.

In addition to their own on-site activities, the universities deliver extra-mural activities on the other islands and in other towns/cities. Some interesting cooperation experiences have been developed with local government (‘Cabildos’ and town councils).

University teachers regularly take part in courses and seminars organised jointly with financial bodies, institutions and companies.

University teachers often head or advise community groups reflecting a range of social concerns. Teachers also often serve in government or are members of political parties or trade unions.

Despite the above, the feeling exists that universities could contribute more intensively to the dissemination of culture. This perception is shared by universities and the social partners. However, the lack of resources, viewed in absolute terms, has traditionally been a constraint on the attainment of this objective.

From the above it can be inferred that the need to increase human capital and formal innovation has been stated clearly at university, political and social partner level. There are no doubts as to the importance of these two elements. However, this favourable disposition in theory is not turned into reality satisfactorily. One explanation could be that the incentives for cooperation between the universities, public administration and social partners are insufficient and/or are divergent.
As a result frequent conflict arises between the political and university levels, with respect to university funding or due to corporative demands.

On the business side, it may be that the willingness to engage in closer cooperation depends on the existence of incentives to compensate more effectively the risk entailed in the transition from basic science to innovation (or in the latter stages immediately prior to application). Designing projects with short maturity periods would be one possible strategy to overcome the aversion to risk. Similarly, offering results-based funding consultancy might facilitate cooperation.It should not be forgotten that vertical integration of businesses leads to problems as regards the demand for regional research, as noted above.

Another problem is that business decisions are taken largely on the basis of experience. Given that circumstance, it should be remembered that even with the current level of cooperation between the universities and the social partners, economic activity in the Canary Islands has grown considerably in the last 25 years, bringing profits that have helped encourage investment. Proposing changes in the criteria for future decisions, if this entails exposure to the higher levels of risk involved in endogenous innovation, are an issue that requires very complex processes and change.

7.2. SWOT

Strengths

1. Research and Development

Relatively high concentration of researchers.

Research experience and tradition in some Basic Science departments.

Contribution of human capital to Canarian research institutes.

Increasing experience in consultancy and services to firms and institutions.

Participation in Spanish and European science and technology programmes.

2. Human capital creation

Relatively high number of teachers, which affords the possibility to increase student numbers.

Broad range of degree courses available.

3. Economic and social environment

Existing structures for cooperation between industry and the universities (University-Business Foundations, University Councils, OTRIs).

Several business initiative experiences have emerged from universities.

University projects for the promotion of business initiatives.

System of investment incentives afforded by the Canarian economic and fiscal regime (Investment Reserve, Tax Allowances for Investment, tax exemption on company profits for firms producing corporeal property, Canarian Special Zone, In-Bond Zones).

Canarian firms' growing savings and investment capacity and possible materialisation of this capacity in R+D projects.

Recognition in regional R+D plans of the importance of innovation and valuation of human capital.

Possibilities to increase continuous education thanks to recent transfer of continuous education resources to the region.

Possibilities to increase student placements in firms and institutions.

Considerable penetration in the Islands' cultural media and presence in knowledge dissemination.

Weaknesses

1. Weaknesses of the Canary Islands as regards relational environment

Insufficient correlation between general planning in the Canary Islands (regional development plans) and university planning.

Insufficient cooperation between the two non-distance learning universities.

Insufficient dialogue - despite the existence of numerous institutions that in theory promote dialogue - between political spheres, social partners and universities to adapt university planning.

2. Weakness of the Canarian economy

Small size of the market, which conditions the scale of production and innovation.

Distance to the nearest prosperous economies (continental Europe) and proximity to less-developed economies (North and Sub-Saharan Africa).

Vertical integration of dynamic businesses: few large firms and a broad base of small enterprises; relatively little time has passed since companies increased their self-financing levels. All this leads to limited formal demand for innovation where risk is involved.

Other investment options, posing lower risk and higher return in the short term, represent an alternative to research.

High percentage growth of low-skilled employment..

3. Weaknesses in university-community cooperation.

Little tradition of cooperation between industry and universities.

Few incentives for cooperation between researchers and industry.

Weakness of areas of cooperation to facilitate student transition from university to employment. Few systematic studies have been conducted into this transition.

Unsatisfactory training of students in the application of theoretical knowledge.

Stabilisation of student intake.

Relative development of mature student access to university and of occupational training.

Little private funding of universities compared to overall revenue.

Opportunities

1. Research

Researcher mobility thanks to the European Space for Higher Education.

Promotion of visits by researchers to European and American research centres.

Increasing resources allocated to the Canary Islands under European R+D programmes in the coming years.

Existence of natural conditions to attract researchers to Canary Islands.

Development of ICTs.

Development of new design for Canarian R+D policies.

Increased incentives for research with applications in Canary Islands.

Comparative appraisal of research.

2. Human capital creation

Development of industry placement programmes.

Evaluation of student transition process to employment.

Increased links with African countries through Europe's Wider Neighbourhood programme.

Increased ties with countries of Latin American and the Caribbean.

3. Economic and social environment

Development of the European Space for Higher Education

Development of distance education systems.

Creation of economic activity clusters with researcher participation.

Monitoring of the Canarian Information Society Development Plan.

Possible review of the Regional Development Plan, 2000-2006.

Review of the Strategic Plan for Innovation in the Canary Islands, 2000-2006.

Innovation Programme 2006 and the possible continuation thereof.

Possible review of the Integrated Canarian R+D+I Plan.

Development of the environmental aspects of public and private investment projects.

Canarian Energy Plan, 2006-2015.

Development of venture capital companies as new legal entities.

Cooperation between the two non-distance learning universities in the Canary Islands.

Extension of outreach activities to include larger towns and cities

Improved university infrastructure

Threats

1. Research

Increase in the technology gap separating the Canary Islands from Spain and the European Union.

Fall in private sector R+D spending in GDP terms.

Little valuation of regional applied research.

2. Human capital creation

Migration of skilled capital

Student preference to work for a company as opposed to self-employment.

3. Economic and social environment

Slowing of economic growth, savings and investment.

Vertical integration processes in businesses, as a result of acquisitions and mergers, in line with the concentration process seen in Europe overall.

Increasing under-valuation of the humanities.

Limited public and private financing.

4. Future vision

The future development of the Canary Islands is determined by: a) the possibilities afforded by its geographical location in the Atlantic, between three continents; b) the search for new markets for its most dynamic activities; c) the integration of the seven islands' internal market; d) the provision of preferential goods.

The first of these development opportunities can be envisaged in four directions: a) Ties with African can be strengthened through the new EU Wider Neighbourhood programme, envisaged for the period 2007-2013, which aims to increase relations among border regions. The Canary Islands will receive preferential treatment in the programme. Moreover, the EU is developing an interesting integration programme for the market in West Africa. The early phase of agreements on the creation of a single market in West African countries has concluded and the second phase on trade agreements between the EU and said countries has commenced. These agreements are coordinated with cooperation policies. b) Ties with Latin America have always been close and it is envisaged that trade between Latin America, African and Europe will increase and will involve the Canarian ports. c) Ties with Europe are determined by the fact that the Canary Islands are part of Spain and the European Union, and receive special treatment. Europe accounts for the bulk of demand for goods and services (agricultural exports and tourism) and is the main source of imported goods.

The second opportunity centres on the diversification of the most dynamic activities in the Canarian economy. Tourism, trade, transport and activities geared to the internal market should aim to achieve higher levels of quality, compatible with a higher quality of life.

The third opportunity entails harnessing the growth in the size of the internal market. Larger-scale demand brings opportunities for economic activities and these in turn capitalise on technological innovation, which generates smaller minimum efficient scales.

The fourth development opportunity involves developing the provision of so-called preferential goods (health, education, housing, justice and security, and culture). Harnessing the demand for innovation which is required for these goods, and considering their direct impact on the well-being of the population, points out to the need for special policy attention on the part of the authorities.

The opportunities opened up by the future could bring about a change in the bases of the economic growth. In turn, growth may be strengthened if human capital is incorporated into economic activities, which will become increasingly complex. The options are either to specialise in activities requiring extensive use of natural resources and labour (an option which is constrained by the very configuration of the islands and the archipelago) or to seek opportunities to generate value which require value to be incorporated previously in the form of knowledge.

In this latter option universities have an essential role to play. Breaking down the barriers in the Canary Islands which impede contributions to development by HEIs is a task involving processes which are both internal and external to the universities.

The four main proposals might be summed up as follows: a) Cooperation between the public and private sector, to generate the appropriate incentives. b) Cooperation between the universities. c) Internationalisation through the creation of closer economic ties with the continents. d) Sufficient resources and results evaluation.