

**CHEPS - Higher Education Monitor**

**Higher Education in Portugal**  
**Country Report**

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### **The CHEPS Higher Education Monitor**

The CHEPS Higher Education Monitor is an ongoing research project, commissioned by the Dutch Ministry of Education, Culture and Science. The project aims at providing higher education policy makers with relevant and up-to-date information on national education systems and changes in policies regarding these systems. This information is presented in in-depth country reports, comparative thematic reports, comparative trend-reports and a statistical database. The core countries for which this information is collected are Austria, Australia, Denmark, Finland, Flanders, France, Germany, Portugal, the Netherlands, Sweden and the United Kingdom.

### **Country Reports**

Increasingly, governments take international trends into account when developing national higher education policies. Continuing European integration, the increasing mobility of people within the European Union, as well as the supra-national initiatives deployed at the European level with respect to higher education (e.g. the Bologna and the Lisbon process) necessitate such an orientation. Policy makers therefore need to have access to adequate information with respect to structure, trends and issues in higher education in other European countries as well as other relevant countries. New technologies have opened access for everyone to vast amounts of facts and figures on higher education in almost every country. Although these data are indispensable for higher education policy makers and analysts, they do not provide information that policy makers may use as such. What is lacking is a frame of reference that may be used to interpret the data.

Such a framework is offered by the CHEPS Higher Education Monitor country reports. These reports have a clear structure, describing the higher education infrastructure and the research infrastructure. In addition to an in-depth description of the institutional fabric of the higher education system, the reports address issues regarding finance, governance and quality in higher education. The country reports provide the frame of reference for the interpretation of policy initiatives, trend-analyses and cross-country comparisons.

International databases, such as those set up by the EC (for example the Eurydice database), OECD, and UNESCO are important sources of information. The data from these sources are extended, updated and refined by using national statistics, (inter) national journals and magazines, national policy documents, and research papers.

The country reports will be updated every three years. Information on important recent developments can be found in the annual update reports.

## 1. Introduction

Located in Southwestern Europe, covering the Western portion of the Iberian Peninsula, the Republic of Portugal is composed of 18 districts (*distritos*, singular - *distrito*) and 2 autonomous regions\* (*regiões autônomas*, singular - *região autónoma*); Aveiro, Açores (Azores)\*, Beja, Braga, Bragança, Castelo Branco, Coimbra, Évora, Faro, Guarda, Leiria, Lisboa, Madeira\*, Portalegre, Porto, Santarém, Setúbal, Viana do Castelo, Vila Real, Viseu. At its turn each region is divided into local authorities (*autarquias locais*), created around municipalities and parish churches (*freguesia*). The Açores and Madeira Islands, as autonomous regions have governments and parliaments that enjoy considerable power and autonomy.

The population of Portugal was estimated in 2003 at 10.3 million. Portuguese is the predominant language in the country, including the autonomous regions, Madeira and the Azores. In 1999 another language, Mirandês, was recognized as an official language spoken in the Northeastern area of Portugal, Miranda do Douro. However, Mirandês is just a local curiosity and is spoken at most by some seven thousand people located in an area of 500 sqKm. The number of Portuguese speaking people worldwide is estimated between 170 and 210 million people.

In 1974 a Democratic Revolution was the starting point for successive reforms that helped Portugal to become in 1986 a member of the European Economic Community (EEC), now the European Union (EU).

The State is responsible for the democratization of education, but it cannot take upon itself the right to plan education and culture according to any philosophical, aesthetic, political, or religious guidelines. State education is not denominational and the right to set up private or co-operative schools is safeguarded in the 1976 Constitution of the Portuguese Republic (Eurybase, 2005).

### 1.1 Educational System - Diagrammatic Representation<sup>1</sup>

The diagrammatic representation of the educational system in Portugal presented in Figure 1 includes the following components:

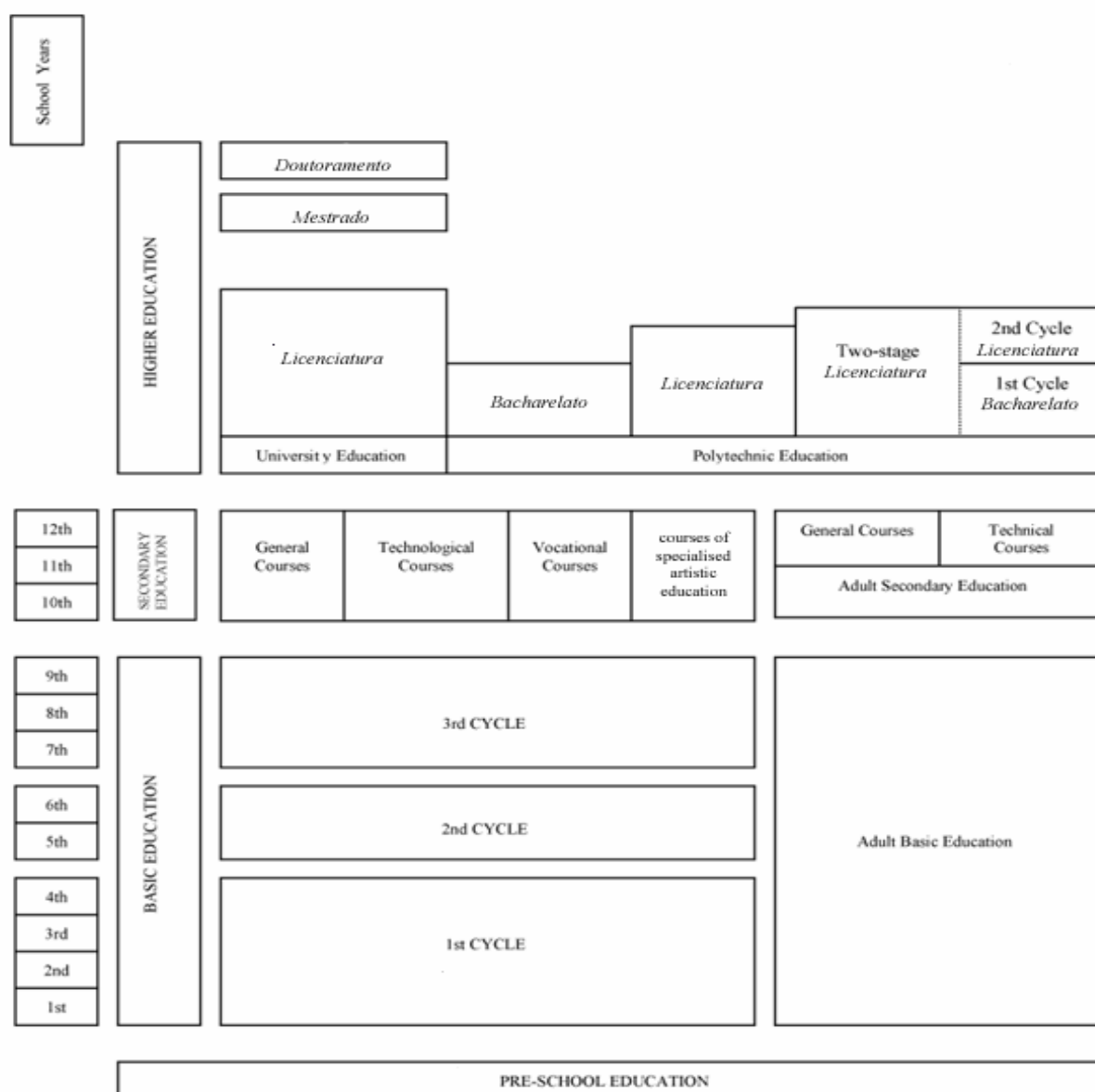
- Pre-school education ([educação pré-escolar](#)) complements and/or supplements the role the family plays in early learning for children aged 3 to 6. Attendance is optional.
- Basic Education ([ensino básico](#)) lasts 9 years and begins when the child is about 6 years old. The education programme at this level aims to provide all individuals with a general and common education, enabling them to continue to higher levels of education or to join programmes geared to working life. Basic education involves three successive cycles with duration between 2 and 4 years: 1<sup>st</sup> cycle-4 years, 2<sup>nd</sup> cycle 2 years, 3<sup>rd</sup> cycle-3 years. There is also Basic Education for Adults ([ensino básico recorrente](#)) that provides a second opportunity to those who failed to complete their education at the usual age, or who dropped out of school early, or to those seeking cultural or professional improvement.

In Portugal the term Secondary Education corresponds to what in Europe is currently called Upper Secondary Education.

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<sup>1</sup> Information presented in the description of the diagrammatic representation is based on ESTIA (2003) and Eurydice (2005) descriptions of the educational system in Portugal.

Figure 1 The System of Education Programmes in Portugal



Source: Estia, 2003, <http://www.des.min-edu.pt/estia/edu/diagindex.html>

Similar to basic education, there is also Secondary Education for Adults. This is a special kind of school education that is designed primarily as a second opportunity to those who failed to complete their education at the usual age or who dropped out of school early. There are a General Course and Technical Courses for Adults ([curso geral e cursos técnicos do ensino recorrente](#)).

Secondary education is structured in different ways to provide General Courses ([cursos gerais](#)) aimed at those wanting to continue on to higher education and Technological Courses ([cursos tecnológicos](#)) aimed at those seeking to enter the labor market. Students may change from one course to another. Each of these courses lasts three years, corresponding to the 10th, 11th and 12th of schooling.

Higher education comprises University and Polytechnic Education, public and private, both with different aims, programmes and characteristics.

## 2. Educational Infrastructure

Schools in the infrastructure of the public network of the Ministry of Education (<http://www.min-edu.pt/>) are appointed according to the level of education or the predominate teaching level provided in them, and they can cover several levels and cycles in the following combinations of school types (Eurybase, 2005):

- 1<sup>st</sup> cycle of basic school (escola básica) with jardim de infância - 3 to 10 years of age
- 1<sup>st</sup> cycle of basic school (escola básica) - 6 to 10 years
- 2<sup>nd</sup> and 3<sup>rd</sup> cycles basic school (escola básica)- 10 to 15 years
- escola básica integrada (1<sup>st</sup>., 2<sup>nd</sup>., and 3<sup>rd</sup> cycles) - 6 to 15 years
- escola básica integrada with jardim de infância - 3 to 15 years
- secondary school with 3<sup>rd</sup> cycle - 12 to 18 years.

<i>Ensino básico</i> (basic education)	1st cycle - 4 years 2nd cycle - 2 years 3rd cycle - 3 years	6-10 years of age 10-12 years of age 12-15 years of age
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Source: Eurydice, 2005:1

Special modes of education or educação extra-escolar such as ensino recorrente or vocational education courses may also be available in these schools.

Although predominant guidelines for developing the school network are as described above, schools with only one cycle, or where ensino básico and ensino secundário are associated, may continue to function whenever a better use of installed resources justifies this (Eurybase, 2005).

### 2.1 Pre-school Education

Pre-school or pre-primary education is optional. Children with ages of 3 to 5 can participate both in state-run and private nursery schools called Jardins de infância, according to the parent's option. State-run nursery provision is free of charge; fees are paid in private nursery schools. More than 90% of the 5 years children attend pre-primary education (see Table 1).

Table 1. Participation rates in pre-primary education

Pre-primary education	Age 3	Age 4	Age 5
2000/2001	60.0%	76,8%	88,6%
2002/2003	60.6%	80.7%	91.3%

Source: Eurybase, 2003 and 2005

The Ministry of Employment and Social Security offers day care services for infants less than 3 years of age specifically for parents who can't give these children the attention that they require either due to social or economic reasons.



## 2.2 Compulsory Education

Basic school is compulsory for children between 6 to 15 years of age. There is no official delimitation between primary and lower secondary education. Compulsory education called *Ensino básico* is provided in *Escolas básicas* (See Figure 2).

In Portugal, since 1986, when the Education Act came into force (Law no. 46/86, dated 14 October) compulsory education (*ensino básico* covers *ensino primário* and part of *ensino secundário*) is organized in three cycles. It lasts for 9 years, and is taught in three consecutive cycles: 1<sup>st</sup> cycle (4 years), 2<sup>nd</sup> cycle (2 years) and 3<sup>rd</sup> cycle (3 years) (Eurybase, 2004):

The first cycle lasts four years, from 6 to 10 years of age. Schools that are public or private provide this first cycle (see Table 2).

Table 2. Number of pupils, teachers and educational establishments, in the first cycle - year 2000/2001

	Public	Private	Total
Pupils	429732	47276	477088
Teachers	28828	2367	31195
Establishments	8710	544	9254

Source: Eurybase 2003

The second cycle is from 10 to 12 years of age. The *escolas básicas* that provide the second cycle are either run publicly or privately (see Table 3). In less accessible regions the state has provided facilities for distance schools of basic education.

Table 3. Number of pupils, teachers and educational establishments, in the second cycle – year 2000/2001

	Public	Private	Total
Pupils	220594	27491	248085
Teachers	28030	2683	30713
Establishments	989	263	1252

Source: Eurybase 2003

The third cycle from 12 to 15 years of age comprises the last 3 years of compulsory education (see Table 4). This can be completed either in the *escolas básicas* offering the 2<sup>nd</sup> and 3<sup>rd</sup> cycles of basic school or in *escolas básica integradas* offering 1<sup>st</sup>., 2<sup>nd</sup> and 3<sup>rd</sup> cycles. Also there are secondary schools (*escolas secundárias*) with 3<sup>rd</sup> cycle from 12 to 18 years (Eurybase, 2005).

Table 4. Number of pupils, teachers and educational establishments, in the third cycle - year 2000/2001

	Public	Private	Total
Pupils	321235	38288	359523
Teachers	35569	3728	39297
Establishments	1131	211	1351

Source: Eurybase 2003

In 2003, approximately 81% of pupils attended state funded education, and 19% attended private institutions (Eurydice, 2005).

There are some changes in terminology for *Escolas Básicas* (EB ou de ciclo) and *Escola Secundárias*. For example, a *Escola* designed as EB 2.3 means a basic school that provides 2<sup>nd</sup> and 3<sup>rd</sup> ciclos. Also, there are *Escolas Secundárias* teaching the 10, 11 and 12 years pupils of secondary education. But there are also different combinations; for instance a C+S or B+S is a school teaching both the *Ensino Básico* (C from Cycle or B from Basico) and *Ensino Secundário* (S). For instance, a school B2.3+S teaches the 2 and 3 cycles of basic education and secondary education (CIPES, 2004).

### **2.2.1 Class Size**

The class size set at primary level is 24. The minimum class size for the second and third cycle is 24, the maximum being 28. Students are generally grouped by age. The same teacher for all subjects teaches students in the first cycle. The 2nd and 3rd cycles of *ensino básico* work on a multi-teacher scheme, and are organized into study areas that are multidisciplinary. Therefore, they are taught by subject specialist teachers for each curricular area (Eurydice, 2005).

### **2.2.2. Curricular Control**

The Ministry of Education determines the curriculum; schools can adapt its organization to local circumstances. Teaching methods are outlined in the Ministry of Education guidelines and defined at school level by a subject delegate, of whom there is one for each curricular area. The Ministry of Education is involved in the publication of compulsory course materials; other textbooks are produced commercially.

Core subjects in the first cycle include studies relating to, Portuguese language, mathematics, environment issues, expressions artistic and physical-motor or religious education (optional). In the second cycle, there are multidisciplinary areas, which include languages and social studies, science, mathematics, artistic and technological education, physical education, and religious education, an open curricular area determined by the school and extra-curricular activities. Core subjects in the third cycle include Portuguese, two foreign languages, religious education, natural science, physical, visual education, technological education, history, geography, mathematics and physical education, as well as one option, in the area of artistic education. In the three cycles of basic education three new, non-disciplinary, curricular areas are emphasized – the project area, monitored study and civic education. Enhancement curricular activities (Sports, School visits, Moral and religious education (*opcional*)) constitute the Personal and Social Training Area (Eurydice, 2005).

### **2.2.3. Administrative Control**

The Ministry of Education sets the broad education policies. A department within the Ministry is responsible for the planning and coordination of management and administration for each level of education. Five regional bodies (on the mainland) implement ministerial policies and provide guidelines, coordination and support to all non-higher education establishments. Municipal-level education centers also have a role in coordinating and assisting non-higher education. Recently, more autonomy has been devolved to management bodies in each school or groups of schools (Eurydice, 2005).

In the autonomous regions of Madeira and the Azores, education administration is the responsibility of regional governments through secretariats of education.

Inspection is the responsibility of the General Inspectorate of Education, which has regional delegations supervising all aspects of non higher education (Eurydice, 2005).

### **2.2.4. Assessment and Qualifications**

Assessment is regulated nationally and uses formative and summative methods. Formative assessment is based on data collected by the teacher and is used to assess student needs and inform parents. In the first cycle, summative assessment should not be carried out before the second year of schooling. Thereafter testing on a scale of 1 to 5 is carried out at the end of each term and cycle. At the end of the third cycle (last year of compulsory schooling), pupils must take national exams in the subjects of Portuguese and Mathematics. Teachers determine progression during the first cycle and from the first to second cycles. In accordance with the

curricular revision of 2001, the assessment of the 2nd and 3rd cycles of *ensino básico* is done by the teachers in class council and is not determined by the minimum and specific number of disciplines, but by the exclusive pedagogical competition of the class council. The class council determines whether the student obtains the essential competencies. During and between the second and third cycles, progression is determined by pupil performance and decided by the class council. At the end of the third cycle, all those who have satisfactorily attended and passed the examinations are awarded a basic education certificate (*Diploma de Ensino Básico*); those who have attended but failed the final assessment can self-propose to take the exam (Eurydice, 2005).

### 2.2.5 Financial Management

The Financial Management Bureau - *Gabinete de Gestão Financeira (GGF)* - is responsible for the programming and financial management of the Ministry of Education. More precisely, the *GGF* is responsible for preparing, programming and supervising the financing budgets of the central and regional services of the Ministry of Education. *GGF* prepares also the budgets of education and teaching establishments pertaining to the public network of the Ministry of Education through the Central Administration and Development Plan (PIDDAC) (Eurybase, 2005).

Private and cooperative schools also have the right to public funding as long as they provide an education that meets the objectives established by the Ministry of Education.

## 2.3 Upper Secondary Education

After completing the basic school, students may choose to continue through different educational pathways. There are secondary school, vocational school, and artistic education. Secondary school is part of the regular educational system.

Table 5. Types of upper secondary education

Regular Secondary Education - General Courses/ Scientific and Humanistic Courses (from 2004/05 onwards) - Technological courses Specialized Artistic Education - Specialized Artistic Courses Vocational education - Vocational courses	15-17 years of age (10 <sup>th</sup> , 11 <sup>th</sup> , 12 <sup>th</sup> grades)
Adult Secondary Education Adult Education Courses	Over 18 years of age (10 <sup>th</sup> , 11 <sup>th</sup> , 12 <sup>th</sup> grades)

Source: Eurydice, 2005 [http://www.eurydice.org/Documents/struct2/frameset\\_EN.html](http://www.eurydice.org/Documents/struct2/frameset_EN.html)

General courses (*Cursos gerais do ensino secundário*) are taught at secondary schools and aim to add to knowledge acquired in *ensino básico* and to prepare adolescents for further study at a higher level (Eurybase, 2005).

*Cursos tecnológicos do ensino secundário* are taught at secondary schools from to the state network and in private and co-operative schools. The specific training component covers a number of compulsory subjects common to the "cursos gerais and cursos tecnológicos" and the transfer between both types of course is guaranteed. Pupils attending *cursos tecnológicos* may also go on to further studies at higher education level (Eurybase, 2005).

### 2.3.1 Admission Criteria

To enter upper secondary education (see Figure 3), students must have successfully completed the nine years of compulsory education. The number of students per class varies between 15 and 26. All students must be 14 - 15 years of age and under 18 years. Pupil over 18 years of age, students must enroll in adult education. State-run secondary schools are free of charge (Eurydice, 2005).

In 2001/2002 a number of 270,945 pupils were enrolled in the upper-secondary education in 1,129 public establishments and 223 private establishments (see Table 6).

Table 6. Numbers of Pupils in Upper Secondary Education (Cursos gerais do ensino secundário and Cursos tecnológicos do ensino secundário) – year 2000/2001

Pupils	Public	Private	Total
Cursos gerais do ensino secundário (General courses)	192,742	20,623	213,365
Cursos tecnológicos do ensino secundário (Technological courses)	52,199	5,381	57,580
Total	244,941	26,004	270,945

Source: Eurybase, 2005.

### 2.3.2 Curricular Control and Content

The national curriculum is organized into three educational components: general, specific and technical (technological or artistic) component. The core subjects in the general component are Portuguese, Introduction to Philosophy, Foreign Language I or II, Physical Education, Personal and Social Development or Moral and Religious Education. Mainstream regular education is organized into four study areas, namely: Science; Arts; Economics and Social Sciences; Humanities. Each study area is divided into two branches: the general courses and the technological courses (Eurydice, 2005).

In 2004, a curricular reform of upper secondary education was approved (Decree-Law no. 74/2004, dated 26 March) and was implemented in the current school year (2004/05). It includes some adaptations in the study plans, which were made more flexible and adequate to the needs of the country. The new curriculum comprises 5 scientific and humanistic courses; 10 technological courses; specialized artistic courses organized in 3 main areas and adult education courses (Eurydice, 2005).

### 2.3.3 Assessment, Progression and Qualifications

Formative assessment is carried out by teachers and is essentially descriptive and qualitative. Summative assessment is the responsibility of both teachers and the Ministry of Education to ensure national homogeneity at the end of school evaluation procedures. Summative assessment, expressed in a scale of 0-20 points, is performed at school level and at a national level; at the end of each year, it comprises information based on various instruments and determines progression. National final examinations are taken at the end of the 12th grade of regular education. Students who successfully complete this cycle of education are awarded a secondary education diploma (Diploma de Ensino Secundário) that is one of the conditions for access to higher education. Students who successfully complete a technological course receive both a level 3 vocational qualification certificate and a secondary education diploma. In vocational schools, students are awarded a diploma certifying that they have attained a level 3 vocational qualification; this diploma is also recognized as equivalent to the secondary education diploma (Eurydice, 2005).

## **2.4 Vocational Education and Training**

Vocational courses are the most common alternative to secondary school whereas artistic education includes the art options in secondary school, vocational school as well as art specialization courses for music, dance, and virtual arts studies (Eurydice, 2005).

Although Eurydice (Eurybase, 2005) indicate Cursos do 10 ano profissionalizante are taught in state, private or co-operative ensino secundário and in professional schools (escolas profissionais), as the only courses leading to a vocational qualification, OECD (1999) mentions that vocational education and training are also offered through, apprenticeship, and vocational training centres offering initial qualifications.

### **2.4.1 Professional Schools**

Cursos profissionais created in 1989 (Decree-Law 26/89) and subject to a new regime for introducing, organizing and operating the system since 1998 (Decree-Law 4/98), provide a special type of school (escolas profissionais) intended as an alternative to the regular ensino secundário (Eurybase, 2005).

Students willing to enter vocational schools (*escolas profissionais*) should have completed compulsory education or obtained an equivalent qualification.

Escolas profissionais come under the authority of the Ministry of Education in scientific, teaching and operating matters, developing their cultural, scientific, technological and teaching activities autonomously (Eurybase, 2005).

Private escolas profissionais may be set up by individual or corporate entities, individually or in association. Other states, or international organizations, may also create escolas profissionais providing they are approved in agreements, treaties or reciprocity agreements for such organizations (Eurybase, 2005).

The vocational courses are covering 17 different training areas. The modular curricula for vocational school courses correspond to a duration ranging from a minimum of 2900 to a maximum of 3600 hours of teaching. Specialized artistic education offers courses in three main areas: Visual Arts, Dance and Music (Eurydice, 2005).

Pupils who complete cursos profissionais are awarded a secondary studies diploma and a vocational qualification diploma. The vocational qualification diplomas Diploma de Formação Profissional de Nível III or Diploma de Estudos Profissionais are awarded when the curricular plan and the exam designed in connection to the future work requirements - PAP (prova de aptidão profissional) - have been completed (Eurybase, 2005).

### **2.4.2 Apprenticeships**

Apprenticeships have been in place in Portugal since only 1985, and at this point they involve only a relatively small proportion of young people. In 1997 there were about 15,000 apprentices in training in Portugal, which was equivalent to about 4 percent of the number of young people enrolled in secondary education. The apprenticeship system, which is managed by the Ministry of Labour and Solidarity in collaboration with the Ministry of Education, is aimed mainly at 15 - 25 year-olds. Representatives of employers and trade unions are also involved in the development of the apprenticeship system (OECD, 1999).

The apprenticeship courses last between one and three years depending on the occupational field and the young person's background, and involve a combination of study in a professional training centre and practical training in a workplace. As the course progresses, apprentices spend

more time in the workplace. The workplace component involves the young person in a contract with the employer, but overall responsibility for their progress rests with the Institute of Employment and Professional Training (IEFP). Apprentices are not paid a wage, but receive a small allowance to assist with travel and other expenses. The structure of the economy, dominated as it is by small- and medium-sized businesses and having a labour force with low levels of formal qualifications, is a major obstacle to the further development of the apprenticeship system in Portugal. The Training Centres provide the facilities and staff for the theoretical component of apprenticeship training (OECD, 1999).

### **2.4.3 Initial Qualifications Through Vocational Training Centres**

There are two types of Vocational Training Centres that operate within the scope of the Institute of Employment and Professional Training (IEFP) of the Labour Ministry. Those directly managed by the Institute were established in the 1960s, whereas those with a more participatory management structure involving industry or regional organisations were piloted in 1980 and given legislative status in 1985 (OECD, 1999).

The Centres were originally intended to provide an initial vocational qualification for those with only six years of basic education. The essential purpose was to provide accelerated vocational training that could help meeting the growing need for semi-skilled workers in construction and manufacturing. However, with the general rise in educational participation over the past 15 years, and the gradual lift in qualifications of the Portuguese labour force, most of the trainees have now completed at least nine years of schooling and, some programmes require 11 years of school background. The training programmes have also been progressively redesigned to increase their technical components and to reflect demands in new occupational areas. The Training Centres therefore provide an alternative route into the labour force for those who do not wish to continue in secondary school or for whom the professional schools are not suitable or available. However, compared to the technological courses in secondary schools at least, the Training Centres seem to offer young people the chance to learn using better equipped facilities and with instructors who have closer links to industry. The Training Centres also provide the facilities and staff for the theoretical component of continuing training for those who are already employed, and courses to train the trainers in a 15 variety of private and public enterprises. Most of the Centres' programmes aimed at young people are fully publicly funded (with substantial input from the European Union), while fees are charged for those geared more directly to enterprise needs (OECD, 1999).

## **2.5 Special Education**

The aim of special education is the socio-educational rehabilitation and integration of individuals with specific educational needs, due to physical or mental handicaps. It consists of adapting the learning and teaching environment and system for students attending basic or secondary education; in cases where the extent of the student's handicap requires, he or she may be taught at a special institution (Boal, 1999).

These special schools, whether private or co-operative, which may function as semi-boardings schools, boarding schools or have residences attached, are for children or adolescents of compulsory school age who have special learning needs resulting from:

- serious communication difficulties that impair access to the normal school curriculum, and that affect physical, language, sight and hearing areas;
- serious difficulties in understanding the normal curriculum;
- serious emotional and behavioural problems (Eurybase, 2005).

Special education is generally offered in regular schools, with local support structures. In 2002/03, it was estimated that a total of 61 552 pupils (in mainland Portugal) attended special education. The total number of pupils benefiting from educational support (62.4 % of a long

term nature) represents 5% of the school population, at basic and secondary levels. Most pupils requiring special educational support attend the 1st cycle (50.1%) and the 2nd and 3rd cycles (34.6 %). From the total number of pupils requiring long-term special educational support, the great majority has problems of a cognitive nature (23.8 %), at emotional level (12.1 %) or at language, communication and speech levels (9.1 %). In the school year 2002/03, the number of teachers involved in special education was 7,211, which represents a 9/1 teacher/pupil ratio (Eurydice, 2005).

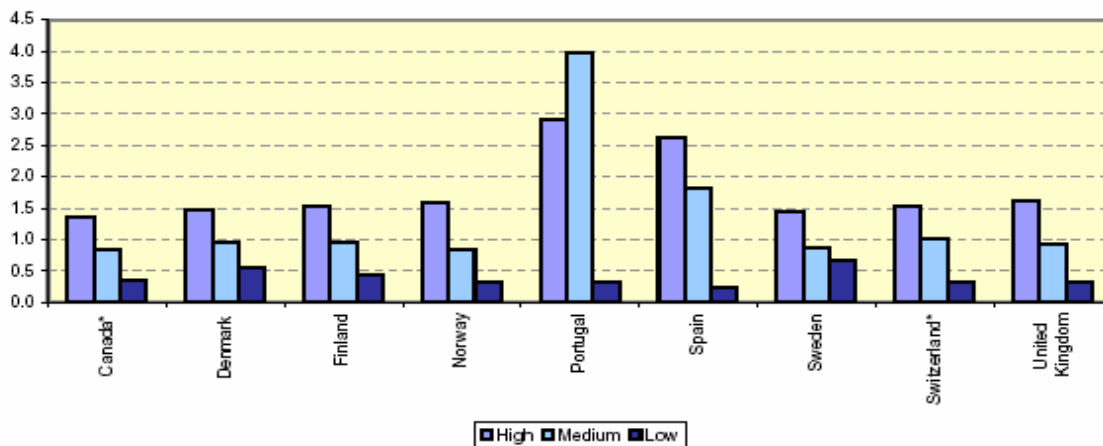
## 2.6 Adult Education

The concept of adult learning adopted by OECD encompasses all education and training activities undertaken by adults for professional or personal reasons. It includes general, vocational and enterprise based training within a lifelong learning perspective. Throughout the nine countries (see Figure 2) participating in the 2002 OECD study there is a broad range of possibilities provided by the public and the private sector, education institutions, firms, commercial organisations, NGOs and other community organisations.

**Figure 2 Ratios of Participation Rates in Adult Learning by Educational Attainment**

**Adult learning by educational attainment**

Ratio of participation rates at each educational level to the total participation rates for population 25-64 years old, 2000



Note: Period of reference is four weeks except for Canada and Switzerland, where it is one year.  
Source: Eurostat, European Union Labour Force Survey data except for Canada (1997 AETS data).

Source: OECD, 2002

As indicated in Figure 2, in the Nordic countries, the United Kingdom, Switzerland and Canada, at least one out of every three adults participates in some training activity throughout the year. Similarly, in most of the Nordic countries and the United Kingdom at least one in five adults participated more than a one-month period. Spain and Portugal have lower participation rates for adults with a low educational level. In Portugal, adult education offers two branches: general and technical courses covering various areas.

Adult education is provided in Portugal at different levels of the educational system, through the following training schools and institutions (Eurybase, 2005):

- Escolas Básicas that offer special modes of education or educação extra-escolar such as ensino recorrente or vocational education courses;
- Secondary schools or higher education institutions, vocational schools and other institutions accepting trainees or scholarship holders;
- Business and vocational associations and trade unions;
- Non-profit-making institutions working in the areas of social economy or giving support to less privileged social groups at risk of social exclusion, providing the training falls within the purpose of the social mission;
- Public institutions, providing training if related to their purposes;



- Companies or corporate associations, providing they can offer training for the job market and their training centers have been certified;
  - The Open University – distance training for teachers of ensino básico and ensino secundário.
- Other organizations with competencies in the area of adult education are:

- public and private bodies which at inter-district level promote Centres for the Recognition, Validation and Certification of Skills -*Centros de Reconhecimento, Validação e Certificação de Competências (RVCC)*;
- public and private bodies promoting Adult Education Courses providing they are approved by the Institute for Innovation in Training -*Instituto para a Inovação na Formação (INOFOR)*.

On 28<sup>th</sup> September 1999 a governmental Decree was issued in order to create the National Agency for Adult Learning (ANEFA) as a public institute under the dual supervision of the Portuguese Departments for Education and for Labor and Solidarity.

In October 2002, after the new Organic Law of the Ministry of Education was passed (Decree-Law n° 208/02), the Directorate General for Vocational Training took on the skills attributed to the National Agency for Adult Education and training, with its work based on accomplishing the following three objectives:

- Initial qualification of young people with the necessary vocational skills to move into a working life;
- Continued need to complete compulsory schooling and encouragement of the same, as well as general approaches towards universal school education, rather than the early insertion of young people in working life;
- Strategic development of learning acquisitions for adults with a view to life-long learning (Eurybase, 2005).

## 2.7 HIGHER EDUCATION

### 2.7.1 Introduction

Portugal has a binary system of higher education that provides both university education and polytechnic education, through the infrastructure of public and private higher education institutions. The Portuguese Catholic University was instituted by the decree *Nobilissima Gens* of the Holy See and is recognized by the State.

The current system comprises in its public sector 14 universities plus the Catholic University, all represented in the Portuguese Rectors' Conference (CRUP), and a non-integrated public University Institute (institutions awarding university degrees but not having the necessary conditions to be universities); 15 public polytechnic institutes, represented in the Council of Portuguese Polytechnic Institutes (CCISP), some non-integrated Polytechnic Schools (institutions awarding polytechnic degrees but not having the necessary conditions to be polytechnic institutes); and some public Higher Education Schools, depending both on the Ministry for Science and Higher Education and another Ministry (Military Schools, Police Academy the Navy School, the Air Force School and Health Schools) (Soares and Trindade, 2004). With the exception of the Nursing schools in Lisbon, Porto, and Coimbra, all other nursing schools were integrated into already existing public universities and polytechnics. The Nursing schools in Lisbon, Porto and Coimbra were merged into a single institution in each town and will be later integrated into an already existing local university or polytechnic.

The private sector<sup>2</sup> is represented by 14 universities (some of them with various campuses, in different geographical areas), some university institutes and more than one hundred Polytechnic Schools (Soares and Trindade, 2004). A breakdown of Portuguese higher education institutions is presented in Table 7.

The Portuguese Catholic University was created with a unique status under article XX of the Concordata between Portugal and the Holy See of May 1940, officially recognized in 1971. The Catholic University is free to create faculties, institutes, departments, research centers and other organizational units, notifying the Ministry of Science and Higher Education of such developments.

Table 7. Breakdown of the Portuguese Higher Education Institutions in 2003

Institutional Code	Type of Higher Education Institution	Number of Higher Education Institutions
110	Public Universities	15*
121	Public Polytechnics**	36
121	Non-integrated nursing schools***	3
123	Other Public Polytechnics	2
131	Public Military and Police Universities	4
132	Public Military and Police Polytechnics	3
210	Private and Cooperative Universities	14
220	Other Private and Cooperative HEIs	105
300	Catholic University	1

Source: OCES, 2004

\* including a non-integrated university institute

\*\* the universities of Algarve and Aveiro also include a polytechnic sector

\*\*\*all nursing schools except those at Lisbon, Coimbra and Porto have been integrated in universities or polytechnics

<sup>2</sup> The private sector comprises private and cooperative universities. Whenever was used the wording 'private sector' in this report, it was meant to cover both private and cooperative higher education institutions.

The two systems of higher education (university and polytechnic) are linked and it is possible to transfer from one system to the other. The law allows the transfer from a public institution to a private one and vice-versa (Boal, 1999).

### 2.7.2 History of Reforms

From the creation of the first Portuguese University in the 13<sup>th</sup> century to the present day, three main periods of time should be considered: the classical phase, the modern period and the contemporary phase. The first period includes the long time span from the 13<sup>th</sup> century to the first half of the 20<sup>th</sup> century, at the end of which four universities already existed: two in Lisbon, one in Coimbra, one in Porto. The second period, mostly concentrated around the 1970's, saw the foundation of a network of seven new public university institutions, in the main cities of the country, and a confessional one. The third phase, covering the two last decades of the century, produced four new public universities, a large network of public polytechnic institutes and a very significant number of private higher education institutions, from universities to polytechnic institutes and independent polytechnic schools (Soares and Trindade, 2004:349).

In the beginning of 1970's, with the exception of artistic education, higher education in Portugal had four public universities – Coimbra University, the University of Lisbon, the Technical University of Lisbon and the University of Porto. Along with these were commercial and industrial institutes that today are the Institutes of Accounting and Engineering and integrated into the Polytechnic Institutes of Coimbra, Porto and Lisbon. The Catholic University represented the non-public sector. From 1970 to April of 1974, corresponding to the period known as "The Reforma Veiga Simão," new universities, university institutes and polytechnic institutes were created through the Decree- Law 402/73 (Machado and Taylor, 2004:9).

In 1973, a new legal framework for the higher education system was established at the same time as a decision was taken to create new public universities and polytechnics. These changes were questioned after the revolution from 1974 and suffered various transformations during the first years of the new regime. (Teixeira, Amaral and Rosa, 2003).

Political instability in the years after the revolution was rampant. From 15 of May 1974 to 22 July 1976 there were six provisional governments and from 3 of August 1976 to 21 September 1981 there were eight constitutional governments (Teixeira, Amaral and Rosa, 2003:184).

Until the 1974 revolution the Portuguese higher education system was an elitist system with very low enrolment rates. The right to Education, at any level, was not guaranteed by the old 1933 Portuguese Constitution. In contrast, the new 1976 Constitution has recognized the right of all Portuguese to education, as well as the freedom to teach and to learn (articles 43 and 47). It also guarantees the right to establish private and co-operative institutions (article 43) but determines that the State will provide for the needs of the whole population (article 75) and will recognize and supervise private and co-operative education (article 74) (Amaral and Teixeira, 2000:249).

The reasons behind the first attempt to create a polytechnic system remained valid after the Revolution of April 1974. Furthermore, the demand for higher education, due to longer schooling of the population, people's higher expectations and unemployment, had brought more pressure to increase the capacity of the higher education system. In fact, in 1976, the *numeri clausi* were introduced in medicine and veterinary medicine and, in 1977, extended to all higher education system (Eurydice, 2000).

Preparation starting in 1976, the network of polytechnic institutions took shape in 1979 and 1980. The creation of this subsystem of higher education, initially termed short-cycle higher education, was not created without opposition. It was perceived by some sectors as re-enacting

of existing medium level education, which was viewed as a socially devalued form of education (Eurydice, 2000).

The Law 61/78 introduced changes that eliminated some “intermediary” higher education characteristics of Polytechnics, by formally considering their grades as “high education level” graduates. And to the Polytechnics’ vocational orientation in training was also added the capacity of implementing research (scientific and technological research, meaning probably more applied research-Law 61/78).

The structure of the system as it is today, was mainly established between 1977 and 1980, the creation of most polytechnic institutions dating from 1979 and 1980 (Decree-Law 513-T/79, 26 December and Decree Law 303/80, 1 August). This binary organization of the higher education system was confirmed by the Education Framework Act of 1986 (Law 46/86, 14 October) referred also as The Comprehensive Law of the Education System.

The 1986 Comprehensive Law of the Education System (Law 46/86-CLES) demarcated the roles of the universities and polytechnics. Although this demarcation is considered not clear and the present academic drift tendency is seen as originated from the lack of a clear legal definition of the roles of universities and polytechnics, the law stipulates that:

“University education is designed to ensure a sound scientific and cultural background and to provide technical education equipping people for administering professional and cultural activities and furthering the development of comprehension, innovation and critical analysis” (article no.11.3)

“Polytechnic education is designed to provide a sound higher education level of cultural and technical education, develop a capacity for innovation and critical analysis and inculcate theoretical and practical scientific knowledge and its application to the exercise of professional activities” (article no.11.4).

The 1980s were a period of stabilization within the political and economic environment, allowing some consolidation of the higher education system. The network of public universities expanded in number and size, and the polytechnic sub-sector was emerging. However, the restrictions imposed by the *numerus clausus* and the growing number of secondary education graduates created, by the mid-1980s, an increasing gap between the number of candidates and the number of vacancies in higher education (Teixeira, Amaral and Rosa, 2003:192).

In the mid-1980s, the idea of significantly increasing the role of the private sector gained political support as its expansion enabled an increase in the enrolment rate with a minor cost to public finances. Moreover, the private sector was seen as capable of promoting a supply that was better balanced (from a geographical and disciplinary perspective) and more suitable for labour market needs.

Private higher education was able to get strong political support from its very beginning. Roberto Carneiro, former Minister of Education (1987-1991) was the promoter of the private sector in higher education. Carneiro assumed the private sector as an important ideological instrument for strengthening Portuguese democracy, and as a tool for social and economic development (Correia, Amaral and Magalhães, 2002).

The private institutions increased their number of students as the years passed. In 1983-84, they had approximately 10% of the country’s overall enrollment. By 1989-90, they had 22% of the overall student enrollment (Teixeira, Amaral and Rosa, 2003:203). Data presented in Table 8 indicate that the share of the private sector (with Catholic University considered) reached a maximum of 36.3% in 1996 and then started to decrease due to a decrease in the number of candidates.

Table 8. Evolution of Enrolments (total and by sub-sector)

	1971		1981		1991		1996		2003	
Public University	43,191	87.3%	64,659	76.8%	103,999	55.7%	147,340	44.1%	171,014	43.6%
Public Polytechnic	2,981	6.0%	12,195	14.5%	31,351	16.8%	65,377	19.6%	109,624	27.9%
Private	3,289	6.7%	7,319	8.7%	51,430	27.5%	121,399	36.3%	111,653	28.5%
Total	49,461	100.0%	84,173	100.0%	186,780	100.0%	344,868	100.0%	392,291	100.0%
Gross Enrolment rate (% 20-24 yrs)	7.9%		11.0%		24.4%		44.3%		49.6% (census 2001)	

Barreto, 1996; Simão et al, 2002, OCES, 2004

An important change for both public and private sectors of Portuguese higher education is the modification of the legal framework. The legal framework was changed through the Law no 1/2003, passed in January 2003, which determines (chapter II, article 13) the general principles that regulate the establishment of new higher education institutions (HEIs), and defines (article 14) the general requirements for the establishment and operation of HEIs.

## **2.7.3 ACCESS AND SELECTIVITY**

### **2.7.3.1 History of Admissions**

Before April 1974, access to higher education was reserved to a privileged few. After the revolution, the expectations of the population with respect to this roused and the pressure on the system increased dramatically. This increase in demand and the limitations of available facilities and academic staff brought the Government to impose *numeri clausi* in 1977 as a way of preventing a loss of quality in education provision. Despite the increase in the capacity of the higher education system through the creation of polytechnics and new universities, the public system was unable to provide the number of places required to meet demand (Eurydice, 2000).

Since the early 1980s, governmental policies were directed at expanding higher education and the participation rate increased considerably. Portugal's difficult economic situation after the 1974 revolution has led to the emergence of a private sector of higher education (Rosa, Veiga and Amaral, 2003). This fact induced an increase in the number of private providers of higher education, especially from the second half of the 1980s onwards.

In 1996, for the first time, the number of higher education applicants clearly surpassed by the number of places offered by public and private higher education considered together (Eurydice, 2000).

In 1988 the Minister Roberto Carneiro increased the demand by loosening the requirements for access to higher education (entrance examinations were to be used only for ranking students in the national tender for vacancies, without any minimum required levels). This resulted in almost doubling the number of candidates that represented a premise for very favorable market conditions for an explosive development of the private sector (Amaral and Teixeira, 2000).

Since 1998 the government became more concerned with quality than with quantity, and more demanding conditions for access to higher education were again introduced. These conditions, associated with a sustained decrease in birth rates produced a sharp decrease of the number of candidates to higher education, shrinking the market for private institutions (Rosa, Veiga and Amaral, 2004).

In 2003 a law was accepted that denies access to numerous clauses programs for those secondary school leavers that have a mark below 10. In that law it was stipulated however that this threshold was not to be implemented until the academic year 2005/06. Many polytechnics fear that they will lose many new entrants, since a part of their current clientele does not meet that criterion.

### 2.7.3.2 Admissions Regulation

There is a history of admissions in terms of changing in entrance requirements. As Minister Roberto Carneiro (1987-1991) decided to lower the requirements for access to higher education to almost zero in entrance examinations, thus offering an opportunity to many students that until 1989 could not enter in the higher education system, his successor, Marçal Grilo, implemented legislation passed in 1993 by Minister Cuto dos Santos, imposing again national examinations at the end of secondary education as a condition for entry in the higher education system.

In Portugal, the Ministry of Science and Higher Education, following a consultation with the higher education institutions responsible for the study programmes, annually establishes the value of the *numerus clausus* for each programme. New students must compete for a vacancy on a national tender, each student applying for a maximum of six study programme/institution combinations, ranked in his or her order of preference. Students are then placed according to their preferences and their relative marks in the national competition. These conditions apply also to the private higher education institutions (Teixeira, Rosa and Amaral, 2004).

Although there are no legal restrictions to the freedom of choosing a provider, there are important economic restrictions. First, students enrolled in public institutions pay only very modest tuition fees (around € 300 per year), while students enrolled in private institutions pay full cost fees (Teixeira, Rosa, and Amaral, 2004).

As there is a generalized *numerus clausus* system for every study programme (public or private) it may well happen that a student cannot find a place in a particular study programme in a public institution at reasonable distance from home. In this case, he or she may prefer to enrol in a similar study programme at a local private institution, instead of enrolling in a distant public institution. This also means that enrolments in private institutions are almost exclusively local, as students will not be likely to add the payment of higher fees to the costs of moving away from their parents' residence (Teixeira, Rosa, and Amaral, 2003). The introduction of a provision in the law stating that the access conditions should be the same regardless the type of higher education institution was mentioned in the Decree-law 26/2003 (Soares and Trindade, 2004).

The state annually defines the requirements for access and entry in higher education. For the year 2004/05 the requirements for access to higher education (national competition) were as follows: to have successfully completed the 12th year of schooling or equivalent (national examination); to have sat for the national specific examinations in accordance with the higher education course the student wishes to attend; to have fulfilled the prerequisites for the higher education course the student wishes to attend, if required (Eurydice, 2005).

Besides the national competition there are special requisites for candidates in specific situations fixed by law (Eurydice, 2005). For example, there are special arrangements for candidates from the families of diplomats in Portugal, Portuguese emigrants, the handicapped, the Timorese (from East Timor) and candidates from Portuguese-speaking African countries. These special arrangements were introduced in 1993. Candidates aged 25 years old or over, not holding a secondary education certificate, may sit a special education access exam (Eurydice, 2003).

### 2.7.3.3 Evolution of New Entrants Number

The number of new entrants in Portuguese higher education followed slightly different trends in universities and polytechnics. Over the period 1997 until 2000, the number of new entrants increased in public universities from 27,137 to 30,411, while in the private universities 2000 represented the beginning of a decrease in new entrants' number, already manifested in 1999 and continued until 2003. The difference between 8,288 new entrants in 1998, and 5, 435 new entrants in 2003 illustrates this decrease (see Table 9).

The situation is different for the polytechnics, because public polytechnics registered an increase from 18,162 new entrants in 1997 to 20,626 new entrants in 2003, while private polytechnics evolution of new entrants remained almost constant from 12,838 new entrants in 1997 to 12,616 new entrants in 2003 (see Table 9).

Table 9. Number of New Entrants in Portuguese Higher Education (1997-2003)

Institutional Type	New entrants as of 31 December of						
	1997	1998	1999	2000	2001	2002	2003
Public Universities	27,137	29,412	28,170	30,414	28,846	30,574	28,911
Military and Police Public Universities	209	211	260	270	252	230	303
Military and Police Public Polytechnics	90	73	82	51	99	123	92
Public Polytechnics	17,966	19,526	20,287	21,785	20,929	21,526	20,239
Other Public Polytechnics	106	162	177	263	278	267	295
Total Public Polytechnics	18,162	19,761	20,546	22,099	21,306	21,916	20,626
Total Public Higher Education Institutions	45,508	48,384	48,976	52,783	50,404	52,720	49,840
Private and Cooperative Universities	6,935	8,288	7,586	7,449	7,278	6,902	5,435
Other Private and Cooperative Higher Education Institutions	12,838	12,531	12,139	12,559	12,305	13,183	12,616
Total Private Higher Education Institutions	19,773	20,819	19,725	20,008	19,583	20,085	18,051
Catholic University	1,841	1,960	1,924	1,929	1,793	1,737	1,715
Total New Entrants	67,122	72,163	70,634	74,720	71,780	74,542	69,606

Source: OCES <http://www.oces.mcies.pt/docs/ficheiros/AlunosInscritos1vez19972003.pdf>

At the overall sectors level, there is a clear difference in the evolution of new entrants in the public and private sectors of Portuguese higher education. Over the period 1997 until 2003 the number of new entrants increased in the public sector from 45, 508 to 49, 840, while for the same period the number of new entrants in the private sector decreased from 19,773 to 18,051, with a maximum of 20,819 in 1998 (see Table 9).

#### 2.7.4 UNIVERSITY EDUCATION

The current public system of universities counts 14 public universities all represented in the Portuguese Rectors' Conference (CRUP), and a non-integrated public University Institute (institutions awarding university degrees but not having the necessary conditions to be universities) (Soares and Trindade, 2004).

The Portuguese Catholic University is no longer considered as being part of the public sector. The Catholic University was created with its own statutes under article XX of the May 1940 Concordata between Portugal and the Holy See, was officially recognized in 1971. It is subject to the provisions of Decree-Law no. 128/90 of 17 April. The Catholic University is free to create faculties, higher education institutes, departments, research centers and other organizational units, notifying the Ministry of Education of all such developments (Boal, 1999).

Portuguese higher education developed a particular path in the European context. An example of this was the rapid development of the private sector that came to represent almost one third of total enrolments in higher education.



#### 2.7.4.1 Type of Programmes and Degrees

Universities offer a wide range of programmes that allow their students to be awarded higher education degrees at undergraduate and postgraduate levels.

The Bachelor/Master degree structure is not yet implemented in Portuguese higher education. However, it is expected that the new government, after the spring elections of 2005 will implement the Bachelor/Master structure for most programs (except Medicine, vet. Sciences, Law and Architecture). It is also expected that a decision will be made regarding sub degree programs. These short (two-years) post secondary programs are now provided on a limited scale by secondary schools and some higher education institutions. They are not higher education diplomas. There has been some discussion whether these programs should be part of the higher education offering (and become higher education diplomas offered by higher education institutions) or whether they should stay post-secondary diplomas. Polytechnics are very much interested in the first option, since they would be the preferred providers of these programs.

#### Programmes

In Portugal the programmes may be organised in credits since 1980 but it has not been compulsory until now and many institutions have not used this possibility so far. On the one hand, the assignment of a given number of credits to a course is based on a purely bureaucratic way of counting the number of classroom hours of teaching, without any consideration for the student's actual workload. On the other hand, a year-by-year syllabus of courses is more often than not established rigidly for each HE programme, so that students are not allowed to stray away from this fixed curriculum. The number of optional credits is very small and closely related to the programme main theme and their choice may take place just in the last year of the programme (Soares and Trindade, 2004).

#### Degrees

Portuguese universities ([ensino superior universitário](#)) award the following academic degrees: Bacharel, Licenciado, Mestre, and Doutor (see Table 10).

The above-mentioned academic degrees are awarded only after the completion of the related study programmes: bacharelato, licenciatura, mestrado, doutoramento. (see Table 10).

The two types of public higher education institutions, universities and polytechnics, award degrees of *bacharel* and *licenciado*. The *licenciaturas* are awarded after 4 to 6 years of studies. The degree Bacharel is awarded, in both cases after 3 years of studies.

Postgraduate degrees (Mestre and Doutor) are awarded exclusively by universities.

Carta Magistral is the document passed by the University certifying that the student has completed the Master. Carta doutoral is the similar document for the PhD.

Higher education institutions may offer courses that do not lead to an academic degree but do lead to a diploma when successfully completed.

Table 10: Study Programmes in Portuguese Higher Education

Bacharelato	Degree awarded by university and polytechnic higher education institutions at the end of a specific course (usually 3 years) attesting to a scientific, academic or cultural education sufficient for the exercise of certain professional activities. It is awarded on the basis of the student's participation and semester and annual examination results in all subjects. The form of the certificate varies from one institution to the other but always indicates the subject area and the qualification or classification awarded. It confers the title <a href="#">Bacharel</a> and gives access to employment or to further study leading to the <a href="#">Licenciatura</a> degree.
Licenciatura	Degree awarded by university and polytechnic higher education institutions at the end of a specific course (usually of 4 to 6 years' duration) attesting to a sound scientific, academic or cultural education providing in-depth knowledge aimed at specialisation in a given field or sufficient for entry to a profession. It is awarded on the basis of the student's participation and semester and annual examination results in all subjects. The form of the certificate varies from one institution to the other but always indicates the subject area and the qualification or classification awarded. It confers the title <a href="#">Licenciado</a> . Students may generally proceed to undertake further study for the <a href="#">Mestre</a> (see <a href="#">Carta Magistral</a> ) degree or the <a href="#">Doutor</a> (see <a href="#">Carta Doutoral</a> ) degree if they obtain respectively at least 14 ( <i>Bom</i> ) or 16 ( <i>Muito Bom</i> ) out of 20 in the final classification.
Diploma de Conclusão da Parte Curricular do Mestrado	Diploma awarded by universities to students who successfully complete the taught curricular part of specialised study for the <a href="#">Mestre</a> (see <a href="#">Carta Magistral</a> ) degree. Assessment covers both the written work presented and oral and written examinations and these are marked on a scale from 0 to 20.
Mestrado	Degree awarded by universities to students who have participated in and passed the taught curriculum making up the specialised courses (The Law states that total duration is 4 semesters, including the thesis) for the <a href="#">Diploma de Conclusão da Parte Curricular do Mestrado</a> and prepared, been examined in and had approved an original dissertation ( <i>dissertação de mestrado</i> ), testifying to advanced knowledge in a particular field and ability to carry out research. The examining board consists of one internal and one external professor in the special subject area and the director of study for the dissertation. It may also include another two academic members of staff of the university awarding the degree. The form of the certificate varies from one institution to the other but always indicates the subject area, the grade awarded and the qualification obtained. It confers the title <a href="#">Mestre</a> . It gives access to further study leading to the <a href="#">Doutor</a> (see <a href="#">Carta Doutoral</a> ) degree.
Doutoramento	Degree awarded by universities to students who have passed the <a href="#">Prova de doutoramento</a> examination. The programme consists of carrying out an individual investigation chosen by the student and directed and supervised by a professor or doctoral researcher. The duration of the project can vary from 3 to 6 years. The form of the certificate varies from one institution to the other but always indicates the field of study and the qualification awarded. It confers the title <a href="#">Doutor</a> .

Eurydice Database of the European Glossary on Education: [28.11.2003]  
[http://www.eurydice.org/Doc\\_intermediaires/term\\_tools/en/frameset\\_term\\_tools.html](http://www.eurydice.org/Doc_intermediaires/term_tools/en/frameset_term_tools.html)

## 2.7.4.2 Enrolments in Universities

Public universities never faced a serious competition from the private sector and the same is almost true for the public polytechnics. What happened was that the public sector had a moderate growth rate, as it was felt necessary to build new facilities and to qualify new academic staff. This allowed the private sector to develop quite fast (from 36,541 students in 1993 to 50,022 students in 1998) because its institutions did not have similar concerns about quality. At present and due to a declining demand, there is an increasing competition for students and the private sector institutions are the main losers as they can not compete on equal terms with the public sector: private tuition is much higher than public tuition and the private sector has lower quality. For this reason the evolution of enrollments in public universities is presented comparatively with the evolution of enrolments in private universities (see Table 11 and Table 12). The row number of students enrolled in public universities<sup>3</sup> increased from 126,009 in 1993 to 169,481 in 2003, but in terms of percentages from the total number of students in Portuguese higher education, the ratio of students enrolled in the public universities decreased from 46.7% in 1993 to 43.6% in 2003, while the number of students enrolled in private universities decreased from 13.5% in 1993 to 9.3% in 2003 (see Table 11).

The Catholic University registered an increase in student enrollments from 8,813 students enrolled in 1993 to 10,641 students enrolled in 2003 (see Table 11).

Table 11 Enrolments in Public and Private Universities as a Percentage of Total Enrolment

Year	Public Universities		Catholic University		Private Universities		Total number of students in Portuguese HEIs
1993	126009	46.7%	8813	3.3%	36541	13.5%	269989
1994	131309	45.2%	9473	3.3%	41369	14.2%	290348
1995	138286	44.1%	9574	3.1%	43623	13.9%	313435
1996	146499	43.8%	10491	3.1%	48528	14.5%	334125
1997	150493	43.6%	10327	3.0%	46207	13.4%	344868
1998	155563	43.9%	10528	3.0%	50022	14.1%	354350
1999	160970	43.4%	10267	2.8%	48560	13.1%	370790
2000	167435	43.6%	10560	2.7%	43949	11.4%	384322
2001	171014	43.6%	10136	2.6%	41331	10.5%	392291
2002	171667	43.4%	10412	2.6%	38789	9.8%	395478
2003	169481	43.6%	10641	2.7%	36071	9.3%	388724

Table 12. Enrolments in Public and Private Universities as a Percentage of University Enrolment

Year	Public Universities		Catholic University		Private Universities		Total number of students in Universities
1993	126009	73.53%	8813	5.14%	36541	21.32%	171363
1994	131309	72.09%	9473	5.20%	41369	22.71%	182151
1995	138286	72.22%	9574	5.00%	43623	22.78%	191483
1996	146499	71.28%	10491	5.10%	48528	23.61%	205518
1997	150493	72.69%	10327	4.99%	46207	22.32%	207027
1998	155563	71.98%	10528	4.87%	50022	23.15%	216113
1999	160970	73.24%	10267	4.67%	48560	22.09%	219797
2000	167435	75.44%	10560	4.76%	43949	19.80%	221944
2001	171014	76.87%	10136	4.56%	41331	18.58%	222481
2002	171667	77.72%	10412	4.71%	38789	17.56%	220868
2003	169481	78.39%	10641	4.92%	36071	16.68%	216193

<sup>3</sup> In the public sector there is a very clear separation between university and polytechnic study programmes. The universities of Aveiro and Algarve, which offer both kinds of degree, teach polytechnic degrees at separate polytechnic schools. This is not the case of private institutions as the so-called “other” or “independent” institutions offer sometimes both types of degrees as is the case of Institute Piaget or ISMAI (Instituto Superior da Maia).

**Figure 3. Public and Private Universities Enrolment**

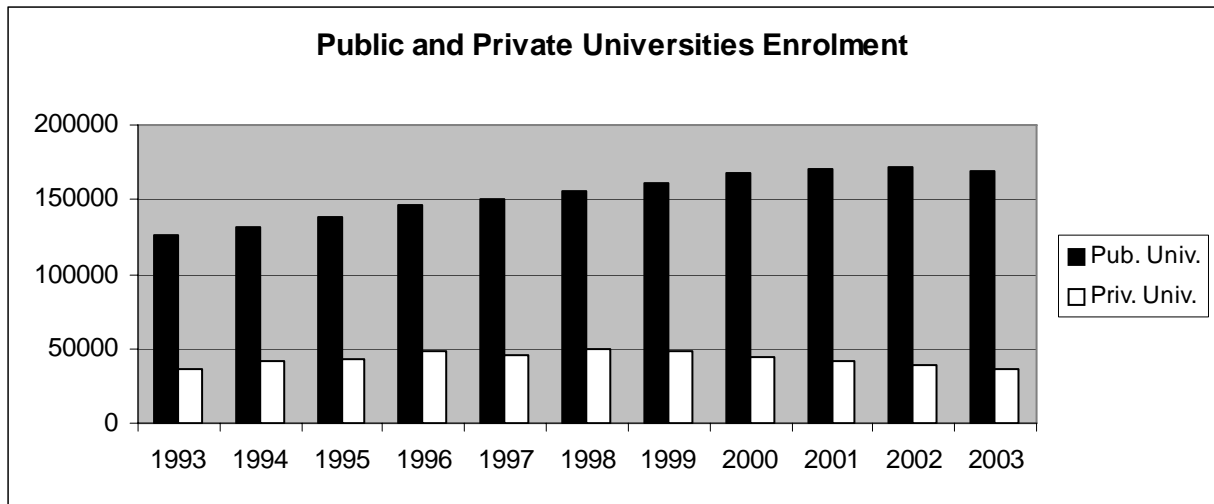


Fig. 3 shows there is a significant decline in enrolments in private universities. However this is less evident in the case of the public universities where data for only one year –2003 – cannot be considered as an already clear decline. The total number of students enrolled in Portuguese higher education institutions decreased from 395,478 students enrolled in 2002 to 388,724 in 2003. This trend is influenced by demographic factors and competition between public and private higher education institutions on the one hand, and universities and polytechnics, on the other hand. As emphasized by Amaral and Texeira (2000:259), based on statistics of the Portuguese population, the number of youngsters in the age range 20-24 years is indicated to decrease from 841,350 in 1995 to 641,690 in 2005 (and 556,607 in 2010).

### 2.7.4.3 Evolution of the Number of Graduates in Universities

The evolution of the number of graduates from public and private universities differs between the two sectors, without being inconsistent if the percentages are calculated based on the total number of graduates from all universities or on the total number of graduates from all higher education institutions. The number of graduates from public universities has almost doubled between 1993 and 2002. In terms of percentages it has increased by almost 2% from 76.3% in 1993 to 78.2% in 2002 if the total number of graduates from all universities is taken into consideration (see Table 13).

Table 13. Evolution of Number of Graduates in Public and Private Portuguese Universities

Year	Public Universities	%	Private Universities	%	Catholic University	%	Total Graduates from Universities
1993	13579	76.3%	3111	17.5%	1100	6.2%	17,790
1994	14606	74.7%	3928	20.1%	1021	5.2%	19,555
1995	15734	73.0%	4477	20.8%	1337	6.2%	21,548
1996	16639	73.2%	4557	20.0%	1547	6.8%	22,743
1997	17272	70.5%	5397	22.0%	1833	7.5%	24,502
1998	17317	69.1%	6018	24.0%	1737	6.9%	25,072
1999	17465	70.4%	5682	22.9%	1668	6.7%	24,815
2000	18728	71.0%	5889	22.3%	1709	6.5%	26,362
2001	21096	75.6%	5182	18.6%	1632	5.8%	27,910
2002	23459	78.2%	4825	16.1%	1728	5.8%	30,012

Table 14. Evolution of Number of Graduates in Public and Private Universities as a Percentage of Total Graduates

Year	Public Universities	%	Private Universities	%	Catholic University	%	Total Graduates from all HEIs
1993	13579	41.7%	3111	9.5%	1100	3.4%	32598
1994	14606	40.7%	3928	10.9%	1021	2.8%	35927
1995	15734	40.1%	4477	11.4%	1337	3.4%	39211
1996	16639	39.1%	4557	10.7%	1547	3.6%	42564
1997	17272	37.5%	5397	11.7%	1833	4.0%	46103
1998	17317	34.0%	6018	11.8%	1737	3.4%	50957
1999	17465	32.5%	5682	10.6%	1668	3.1%	53704
2000	18728	30.9%	5889	9.7%	1709	2.8%	60555
2001	21096	33.3%	5182	8.2%	1632	2.6%	63433
2002	23459	34.7%	4825	7.1%	1728	2.6%	67673

Comparing to the constant evolution of the public sector graduates, the private sector universities graduates' numbers indicate some fluctuations. After an increasing trend between 1993 and 1998 from 3,111 to 6,018 graduates from the private sector universities, the private graduates numbers registered a decrease reaching 4,825 in 2002. The same tendency is indicated by the evolution of percentages calculated on the basis of the total number of graduates from all higher education institutions (see Table 14).

### 2.7.4.5 Evolution of the Number of Postgraduates in Universities

Public and private higher education institutions registered a remarkable increase in enrolments at Master level. The number of Master students enrolled in public universities increased more than three times from 3,015 to 9,388 over the period 1990-2003. In private universities, this increase was more significant (almost seven times) from 88 Master students in 1993 to 615 Master students in 2003. But the most significant increase was registered by the Catholic University from 71 Master students in 1990 to 900 Master students in 2003 (more than twelve times) (see Table 15).

Table 15. Evolution of Enrolments at Master Level in Portuguese Higher Education (1990-2003)

Master Students (Mestrados)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Public universities	3015	3906	4485	4550	5088	5231	5607	6173	6590	7448	7315	7380	9226	9388
Private universities	88	97	66	68	178	319	405	527	510	578	520	440	490	615
Private other HEIs	63	42	13	150	236	205	184	260	268	265	261	125	158	203
Catholic University	71	267	533	519	423	384	470	488	473	434	596	600	650	900
Total	3237	4312	5097	5287	5925	6139	6666	7448	7841	8725	8692	8545	10524	11106

Source DSEI-OCES (2004)

Table 16. Evolution of the Number of Graduates at Master Level

Graduates at Master Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Public universities	833	1355	1530	1655	1841	1677	1645	1876	1987	2543
Private universities		11	53	82	53	88	95	122	141	117
Private other HEIs	12	24	51	53	34	57	57	70	62	84
Catholic University	26	17	70	94	189	157	156	139	136	141
Total	871	1407	1704	1884	2117	1979	1953	2207	2326	2885

Source DSEI-OCES (2004)

There is a huge difference in the number of Master graduates in 1994 between public and private universities. There were 1,355 Master graduates from public universities and only 11 Master graduates from private universities in 1994. Although the number of private Master graduates increased almost ten times over this decade, the difference remained very significant from 117 Master graduates from private universities to 2,543 Master graduates from public universities in 2002 (see Table 16).

The number of Doctor degrees awarded in Portuguese universities over the period 1990 until 2003 increased almost three times, from 337 degrees awarded in 1990 to 1002 degrees awarded in 2003. In terms of gender balance there is a slight advantage for men. The percentage of women that were awarded the Doctor degree constantly increased from 38% in 1990 to 46% in 2003 (see Table 17).

Table 17. Evolution of Doctor Degrees Awarded<sup>4</sup> in Portugal (1990-2003)

Doctor Degrees	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	337	319	351	493	452	569	608	586	716	771	852	903	972	1002
% Women	38%	35%	34%	35%	41%	37%	38%	42%	42%	41%	45%	45%	46%	46%

Source DSEI-OCES (2004)

<sup>4</sup> Data in Table 16 include also doctorates concluded abroad and recognized in Portugal

## 2.7.5 POLYTECHNIC HIGHER EDUCATION

The public polytechnic education system, managed by the Ministry of Innovation, Science and Higher Education (MCIES), comprises 15 polytechnic institutes and 2 other polytechnic schools and (see Table 7), represented in the Coordinating Council of Portuguese Polytechnic Institutes (CCISP) and some non-integrated Polytechnic Schools (Soares and Trindade, 2004). There is also a network of polytechnic institutes that are run jointly by the MCIES and other ministries, including a number of nursing and health technology colleges and some higher education colleges offering training in conservation and restoration, hotel and catering and nautical studies

The private polytechnic education system with around one hundred institutions offers courses in a variety of areas. Most of these courses are in education, the arts, engineering, health and accountancy and administration (Boal, 1999).

### 2.7.5.1 Type of Programmes and Degrees

#### Programmes

The programmes are professionally oriented. They are offered at special schools in the areas aiming at e.g. business, engineering, tourism, nursing, the paramedical field, teacher training. Courses are often related to the professional needs of the region in which they are located.

Since the creation of the polytechnic system, other training institutions, not dependent on the Ministry of Education and not included in the formal education system, have been integrated into polytechnic higher education, e.g. nursing colleges in 1988 (Eurydice, 2000).

Polytechnics are not free to create and organize their study programmes. The minister of education must approve the creation of the programs. In most cases they are organized in semesters, the typical student workload (contact hours) being between 25 and 30 hours a week (Soares, 2001).

#### Degrees

Most of the licenciaturas awarded by polytechnics are organized into two cycles, the first of which corresponding to a *bacharel* degree. The *Bacharel* degree (ISCED 97 Level 5B) (See Table 10) is awarded after a study programme of usually three years' duration. The polytechnics may also award the *Licenciatura* (See Table 10). This two-stage *licenciatura* is an attractive factor in polytechnic education as the attainment of a more vocational education is associated to the continuation of studies.

### 2.7.5.2 Enrolments in Polytechnic Higher Education

With a significant proportion of students enrolled in the polytechnic sector at the beginning of 1990s, representing 36% of the total number of students enrolled in 1993 in Portuguese higher education, the establishment of a polytechnic network was regarded as a step towards more responsive higher education. It was viewed as more interactive with its environment, and more fulfilling of the economic and social needs of the citizenry (Teixeira, Amaral and Rosa, 2003:191).

In 1993 the number of students enrolled in public polytechnics was almost equal to the number of students enrolled in private polytechnics (48,262 comparing to 48,426 students enrolled in non-university private higher education represented mainly by the private polytechnics). But after 1997 the difference between the two sectors changed significantly. For example, in 1999, the number of students enrolled in the public polytechnics was 89,101 comparing to 59,711 students enrolled in private polytechnics or non-university private higher education institutions. In 2003 the number of students enrolled in public polytechnics was almost double comparing to the number of students enrolled in non-university private sector (see Table 18).

Table 18. Enrolments in Public and Private Polytechnics as a Percentage of Total Enrolment

Year	Public Polytechnics	%	Other Private HEI (mainly Private Polytechnics)	%	Total number of students in Portuguese HEIs
1993	48262	17.9%	48426	17.9%	269989
1994	53032	18.3%	53220	18.3%	290348
1995	58482	18.7%	61444	19.6%	313435
1996	64187	19.2%	62380	18.7%	334125
1997	71458	20.7%	64243	18.6%	344868
1998	78889	22.3%	57313	16.2%	354350
1999	89101	24.0%	59711	16.1%	370790
2000	100481	26.1%	59501	15.5%	384322
2001	106889	27.2%	60186	15.3%	392291
2002	110761	28.0%	60915	15.4%	395478
2003	109641	28.2%	59797	15.4%	388724

Table 19. Enrolments in Public and Private Polytechnics as a Percentage of Total Enrolment in Polytechnics

Year	Public Polytechnics	%	Other Private HEI (mainly Private Polytechnics)	%	Total number of students in Polytechnics
1993	48262	49.92%	48426	50.08%	96688
1994	53032	49.91%	53220	50.09%	106252
1995	58482	48.77%	61444	51.23%	119926
1996	64187	50.71%	62380	49.29%	126567
1997	71458	52.66%	64243	47.34%	135701
1998	78889	57.92%	57313	42.08%	136202
1999	89101	59.87%	59711	40.13%	148812
2000	100481	62.81%	59501	37.19%	159982
2001	106889	63.98%	60186	36.02%	167075
2002	110761	64.52%	60915	35.48%	171676
2003	109641	64.71%	59797	35.29%	169438

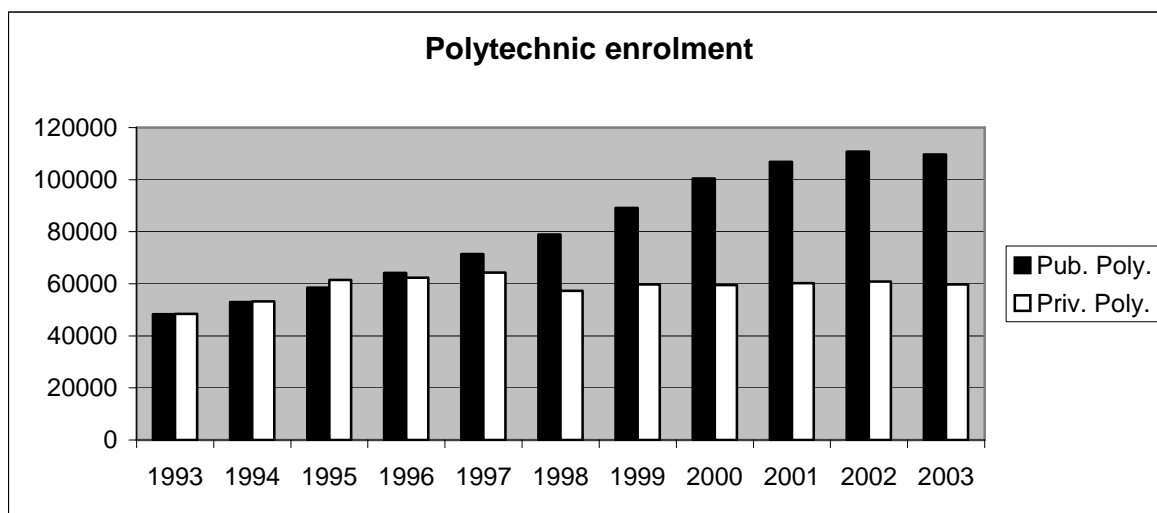
Evolution of enrolments in public and private polytechnics presented in Table 18 and Table 19 indicate that there is consistency in data for both cases when the percentages are calculated from the total number of students enrolled in higher education or from the total number of students enrolled in polytechnics. Polytechnics, (especially public) have increased their participation in



higher education enrolment. From 1996 until 2003 public polytechnics maintained a higher rate of enrolment comparing to the private polytechnics with 28.2% of total enrolment in the public sector comparing to 15.4% enrolment in the private sector in 2003 (Table 18) or 64,7% comparing to 35,3% in 2003 (Table 19) if only the polytechnic students are taken into consideration.

In rough numbers, Table 18 and Table 19 show that enrolment has more than doubled in public polytechnics, while enrolment in private polytechnics has remained stable since 1998.

**Figure 4 Evolution of Student Enrolment in Portuguese Polytechnics**



The significant difference in enrolments between public and other private higher education institutions (mainly private polytechnics) became clearly visible after 1997, as indicated in figure 5.

### 2.7.5.3 Evolution of the Number of Graduates in Polytechnics

The evolution of the number of graduates in the public and private higher education sectors is presented over the decade from 1993 until 2003. Unfortunately, there are no data available on the dropout rates in the public and private sectors of Portuguese higher education.

Because no separate data were provided specifically for private polytechnics, for a compatible comparison, the evolution of number of graduates from public polytechnics and other private non-university higher education institutions was analyzed comparatively with the evolution of graduates from public polytechnics and other public non-university higher education institutions (see Tables 20 and 21).

Table 20. Evolution of Number of Graduates in Public and Private Polytechnics

Year	Public Polytechnics and Other Public Non-university HEIs		Private Polytechnics and Other Private Non-university HEI		Total Number of Polytechnics Graduates
	Number	Percentage	Number	Percentage	
1993	7,231	48.8%	7577	51.2%	14,808
1994	7,926	48.5%	8446	51.7%	16,327
1995	8,919	50.5%	8744	49.5%	17,663
1996	9,706	49.0%	10115	51.0%	19,821
1997	10,263	47.5%	11338	52.5%	21,601
1998	12,426	48.0%	13459	52.0%	25,885
1999	14,391	49.8%	14498	50.2%	28,889
2000	19,313	56.4%	14916	43.6%	34,229
2001	20,450	57.6%	15073	42.4%	35,523
2002	22,218	59.0%	15443	41.0%	37,661

Table 21. Evolution of Number of Graduates in Public and Private Polytechnics as a Percentage of Total Graduates

Year	Public Polytechnics and Other Public Non-university HEI		Private Polytechnics and Other Private Non-university HEI		Total Number of HEIs Graduates
	Number	Percentage	Number	Percentage	
1993	7,231	22.2%	7577	23.2%	32,598
1994	7,926	22.1%	8446	23.5%	35,927
1995	8,919	22.7%	8744	22.3%	39,211
1996	9,706	22.8%	10115	23.8%	42,564
1997	10,263	22.3%	11338	24.6%	46,103
1998	12,426	24.4%	13459	26.4%	50,957
1999	14,391	26.8%	14498	27.0%	53,704
2000	19,313	31.9%	14916	24.6%	60,555
2001	20,450	32.2%	15073	23.8%	63,433
2002	22,218	32.8%	15443	22.8%	67,673

In the case of the public polytechnics and other public non-university institutions there was a three times increase from 7,231 graduates representing 22.2% of the total number of Portuguese graduates in 1993 to 22,218 graduates representing 32.8% of the total number of Portuguese graduates in 2002 (see Table21).

## **2.7.6 PRIVATE HIGHER EDUCATION**

In Portugal, the private sector of higher education was connected with a particular type of developments in governance and public finance, which stimulated the emergence of a different context for public intervention (Amaral and Teixeira, 2000:246). The rapid development of the private sector in the Portuguese higher education represents a unique feature in the context of other West European countries, thus providing a strong basis for its presentation in a separate section of this report.

### **2.7.6.1 History of the Private Sector**

In the aftermath of the 1974 revolution a sizeable number of professors had been expelled from public universities because of alleged loyalty to the former authoritarian regime, student unrest was rampant and more time was being spent in general assemblies of professors, students and workers than in the main tasks of the university: teaching and research (Amaral and Teixeira, 2000).

In January 1979 the Minister of Education authorized the first private higher education institution by granting the “Free University (Universidade Livre) Cooperative for Education” a temporary permit to initiate operations. Many associates of the Cooperative were former university professors expelled from public institutions due to their closed connections to the deposed regime. The Decree-Law 426/80 of 30<sup>th</sup> September, formally recognized the Universidade Livre, and The Decree 59/83 of 11<sup>th</sup> July allowed the institution to offer study programmes in the two main cities, Lisbon and Porto. However, the existence of the Universidade Livre was short. Internal strife between its members, and fights between the Cooperative – the owner of the university and the University itself created a tension situation that forced the Government to take drastic measures. On 21<sup>st</sup> June 1986, the Minister of Education recognized two new private institutions, one in Lisbon (Universidade Autónoma Luis de Camões) and the other in Porto (Universidade Portucalense), owned by a new cooperative (University Higher Education Cooperative) set up by dissidents from the Universidade Livre. On 16<sup>th</sup> September 1986 the Minister made public that the Universidade Livre was no longer officially recognized (Amaral and Magalhães, 2003).

Minister Roberto Carneiro (1987-1991) created the conditions for the explosive development of the private sector. Not only did he approve a large number of new institutions but he also decided to lower the requirements for access to higher education. Many students that until 1989 were unable to become students in higher education were offered a unique opportunity. Students could now enter higher education –and many did– even with a zero in the access examinations provided that there were available vacancies (Amaral and Magalhães, 2003).

The growth in the number of private institutions motivated the publication of a decree-law, establishing a specific legal basis for private higher education in 1989 (Decree-Law 271/89, 19 August). In 1994, it was reviewed and a new decree law was published (Decree-Law 16/94, 22 January, amended by Law 37/94, 11 November) (Eurydice, 2000).

In 1996/97 as the number of vacancies exceeded the number of candidates, the Government changed its policy from uncontrolled expansion to increased quality. The Minister of Education Marçal Grilo, implemented legislation passed in 1993 by Minister Couto dos Santos, imposing again national examinations at the end of secondary education. Marçal Grilo reversed the access rules established by Roberto Carneiro by allowing higher education institutions to set minimum marks in the access examinations for higher education, thus putting an end to the strange situation that allowed students to enter higher education with zero marks in the access examinations (Amaral and Magalhães, 2003).

### **2.7.6.2 Legal Requirements for the Establishment of Private Higher Education Institutions**

Private higher education institutions, according to the law on private higher education are established on the initiative of firms, cooperatives or foundations created specifically for the development of higher education and, to award national degrees, must be officially recognized. This recognition is based on a proposal that is analyzed under several headings, such as internal organization, academic staff, buildings and equipment and an economic viability study. The dossier submitted is analyzed by the General Directorate of Higher Education, the economic viability study is analyzed by a consultancy firm and then there is a final analysis of the whole project by a specialist commission. Recognition of individual courses follows a similar procedure, based on the curriculum and general course regulations, academic staff, physical facilities and equipment and the number of students proposed (Eurydice, 2000).

### **2.7.6.3 Enrolments in Private Higher Education**

The private sector was seen as capable of offering a supply that was better balanced (from a geographical and disciplinary perspective) and more suitable to the labour market needs. It was hoped that this capacity for exploring new market opportunities would result from its higher administrative flexibility and financial motivation.

The first component of the new 1998 enrolment's policy was the establishment of very favourable market conditions for an explosive development of the private sector by artificially increasing the demand. In 1988 the rules of access were changed by loosening the requirements for entering higher education - national entrance examinations were to be used only for ranking students in the national tender for vacancies, without any minimum required levels. This resulted in almost doubling the number of candidates overnight. Since it was obvious that the public institutions could not meet this increase in demand, many candidates had to find a place in private institutions.

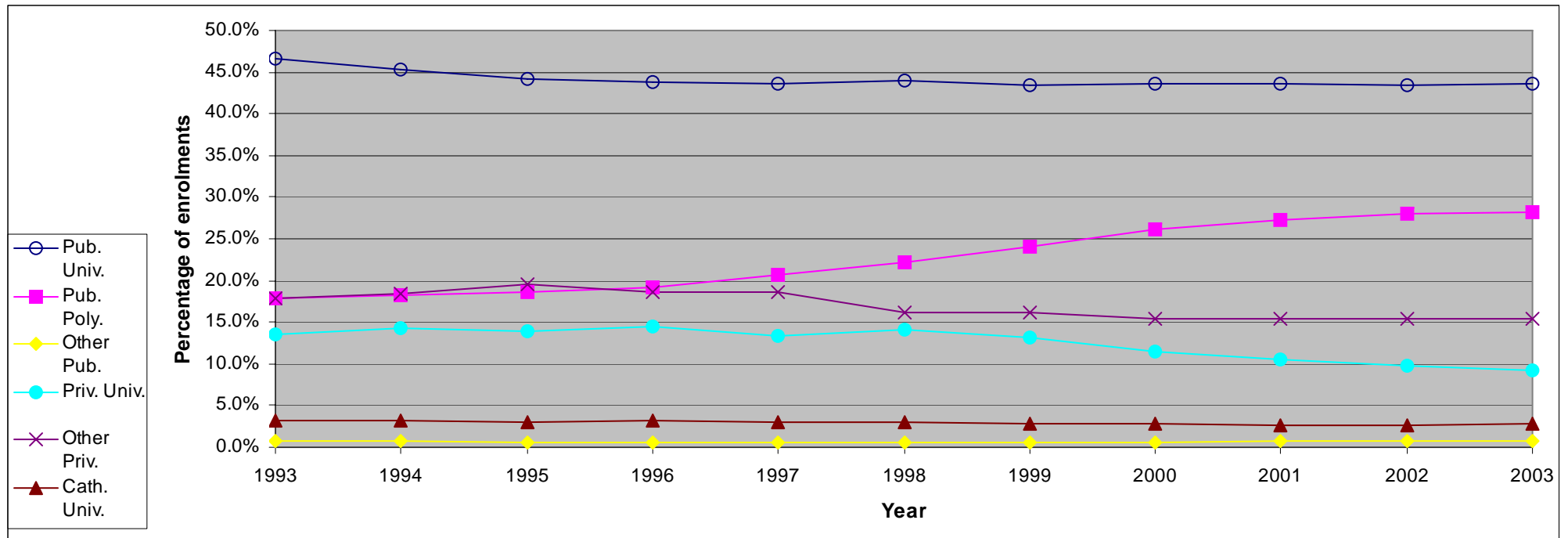
Accordingly, the context for an expansion of the private sector was set. There was a fast response from private providers who promoted an increase in the number of students from about 20,000 in 1987 to almost 100,000 in 1995 (see also Table 20). Notwithstanding this quantitative success, the rise of the private sector has become a major problem for the public authorities. Its geographical and disciplinary distribution, the balance between teaching and research, the quality of the degrees provided, were quite different from public expectations, thus creating several tensions within the system. Furthermore they did not prove to be more responsive to economic needs than the public sector (Amaral and Teixeira, 2000).

Private sector enrolments as presented in Table 22 comprises student enrolments in private universities and enrolments in other private higher education institutions including mainly private polytechnics and other private non-university establishments.

Table 22 Public and Private Enrolments in Portuguese Higher Education Institutions

Year	Public Universities		Public Polytechnics		Other Public HEI		Public HEI Sub-Total		Private Universities		Other Private HEI		Private HEI Sub-Total		Catholic University		Total
	Enrolments	%	Enrolments	%	Enrolments	%	Enrolments	%	Enrolments	%	Enrolments	%	Enrolments	%	Enrolments	%	
1993	126009	46.7%	48262	17.9%	1938	0.7%	176209	65.3%	36541	13.5%	48426	17.9%	84967	31.5%	8813	3.3%	269989
1994	131309	45.2%	53032	18.3%	1945	0.7%	186286	64.2%	41369	14.2%	53220	18.3%	94589	32.6%	9473	3.3%	290348
1995	138286	44.1%	58482	18.7%	2026	0.6%	198794	63.4%	43623	13.9%	61444	19.6%	105067	33.5%	9574	3.1%	313435
1996	146499	43.8%	64187	19.2%	2040	0.6%	212726	63.7%	48528	14.5%	62380	18.7%	110908	33.2%	10491	3.1%	334125
1997	150493	43.6%	71458	20.7%	2140	0.6%	224091	65.0%	46207	13.4%	64243	18.6%	110450	32.0%	10327	3.0%	344868
1998	155563	43.9%	78889	22.3%	2035	0.6%	236487	66.7%	50022	14.1%	57313	16.2%	107335	30.3%	10528	3.0%	354350
1999	160970	43.4%	89101	24.0%	2181	0.6%	252252	68.0%	48560	13.1%	59711	16.1%	108271	29.2%	10267	2.8%	370790
2000	167435	43.6%	100481	26.1%	2396	0.6%	270312	70.3%	43949	11.4%	59501	15.5%	103450	26.9%	10560	2.7%	384322
2001	171014	43.6%	106889	27.2%	2735	0.7%	280638	71.5%	41331	10.5%	60186	15.3%	101517	25.9%	10136	2.6%	392291
2002	171667	43.4%	110761	28.0%	2934	0.7%	285362	72.2%	38789	9.8%	60915	15.4%	99704	25.2%	10412	2.6%	395478
2003	169481	43.6%	109641	28.2%	3093	0.8%	282215	72.6%	36071	9.3%	59797	15.4%	95868	24.7%	10641	2.7%	388724

Figure 5. Proportion of Enrolments in Public and Private Portuguese Higher Education Institutions



The number of students enrolled in private universities registered first an increase from 36,541 in 1993 to 50,022 students in 1998. After 1998, the number of students enrolled in the private universities followed a decreasing trend from 48,560 students enrolled in 1999 to 36,071 students enrolled in 2003. Other private higher education institutions, particularly private polytechnics, have followed the same trend. The overall private sector enrolments registered and increase from 84,967 students enrolled in 1993 to 110,908 students enrolled in private higher education institutions in 1996. The proportion of students enrolled in the private higher education sector increased from 31.5% in 1993 to 33,2% of the total number of students in 1996 (see Table 22). In 2003 the number of students enrolled in the private sector was 95, 868 representing 24.7% of the total number of students enrolled in the Portuguese higher education system.

### **2.7.7 PERSONNEL**

There are two different careers in public higher education institutions: one for university teachers and another for polytechnic teachers. There is no intercommunication between the two (Soares, 2001). There are two laws that specify the careers of academic staff in public higher education, one for universities and another for polytechnics.

The present regulation of university staff careers dates from 1979/80 (Decree-Law 448/79, 1 November, amended by Law 19/80, 16 July), and underwent some changes in 1987. The career structure introduced in 1979/80 emphasized staff's scientific work, with the objective of developing scientific research at universities. In 1987, the concept of exclusive dedication was introduced. Members of the academic staff adhering to this regime receive a pay rise, as a career incentive (Eurydice, 2000).

#### **Grading Structure in Universities and Polytechnics**

The grading structure for academic staff of polytechnics dates from 1981 (Decree Law 185/81, 1 July), the regime of exclusive dedication being applied also to careers in these institutions in 1987 (Eurydice, 2000).

The categories of university staff are, from lower to higher qualifications:

1. Assistente estagiário (requiring the degree of *licenciado*);
2. Assistente (requiring the degree of *mestre*);
3. Professor auxiliar (requiring the degree of *doutor*);
4. Professor associado (requiring the degree of *doutor* followed by a competitive exam);
5. Professor catedrático (after the public examination of *agregação* and a competitive exam).

At the polytechnics, the categories of staff are:

1. Assistente do 1<sup>o</sup> triénio (requiring a degree of higher education);
2. Assistente do 2<sup>o</sup> triénio (the same as the previous one, after three years of teaching);
3. Professor adjunto (after a public competitive exam, simplified for the holders of the degree of *mestre*);
4. Professor coordenador (after a public competitive exam, simplified for the holders of the degree of *doutor*).

The number of teaching staff increased slightly but constantly over the decade 1993 – 2002 in the public sector from 15,484 in 1993 to 22,888 in 2002 (see Table 23). The pace of increase was higher in public polytechnics that increased the number of their teaching staff by 5,150 teachers from 3,405 in 1993 to 8,555 in 2002, comparing to the public universities, where the increase was only by 2,254 teachers, from 12,079 in 1993 to 14,333 in 2002.

Table 23. Number of Teaching Staff in Public Higher Education (1993-2002)

Teaching Staff in Public Higher Education										
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Public Universities	12,079	12,108	12,153	12,384	12,852	13,368	13,707	13,613	14,112	14,333
Public Polytechnics	3,405	3,564	3,930	4,293	4,934	5,472	6,098	7,356	8,181	8,555
Total	15,484	15,672	16,083	16,677	17,786	18,840	19,805	20,969	22,293	22,888

Source: Direcção de Serviços Pedagógicos e de Pessoal da DGES

In terms of student/teaching staff ratio, the proportion has improved since 1993 from 10.4 in public universities and 14.17 in public polytechnics to 11.9 in public universities and 12.9 in public polytechnics in 2002 (see Table 22 and Table 23).

### Professional Status

Teachers who work in public higher education institutions are civil servants. Yet special laws that give them specific rights and duties regulate their careers. Their salaries are higher than the average salary of almost all civil servants. (Soares, 2001)

In terms of salaries, the categories professor associado and professor coordenador are equivalent, as are the first two years of the categories of assistente estagiário and assistente do 1<sup>o</sup> triénio.

Teaching activities in universities can also be assigned to “specially contracted personnel”. These should be persons who, due to their special skills, may be invited (*convidado*) to perform those tasks. They are called “invited” teachers, and their positions are *Assistente Convidado*, *Professor Auxiliar Convidado*, *Professor Associado Convidado*, or *Professor Catedrático Convidado*.

Teaching activities in Polytechnics can also be assigned to specially contracted personnel. These should be persons who, due to their skills, may have a contract. According to the contract, they are called *Equiparado a Assistente*, *Equiparado a Professor-adjunto*, and *Equiparado a Professor-coordenador*. Their functions are the same as those of a teacher in the equivalent position in the career.

Foreign professors may also be appointed to teach in Portuguese universities on a temporary basis. They are called Visiting Professors (*Professores Visitantes*). To teach foreign languages the universities can also recruit *Leitor(es)*, who are also included in the “specially contracted personnel” (Soares, 2001).

If a Polytechnic institution feels the need, those who hold an adequate higher education degree may be recruited to supervise and take responsibility for laboratory activities and other work such as fieldwork. They are called *Encarregados de trabalhos* (Soares, 2001).

As far as private and cooperative higher education is concerned, the status for these establishments indicates that staff grades should roughly follow those of public higher education (Eurydice, 2000). Their contracts follow the national work laws for the private sector (Soares, 2001). The higher education institutions in private and co-operative higher education including the Catholic University define the conditions of service, because there is no general contracting instrument (Eurybase, 2005).



### **3. FINANCIAL ASPECTS**

#### **3.1 Sources of funding**

The budget of public institutions, both universities and polytechnics, comes mainly from the national budget. The public funds allocated are split into current expenditure and investment. (Eurydice, 2000)

Until 2003, the education component of the higher education institutions budget was allocated from the Ministry of Education while the research component was allocated from the Ministry for Science and Technology. Since 2003 a single Ministry – Ministry for Science and Higher Education (later Ministry for Science, Innovation and Higher Education and at present Ministry for Science, Technology and Higher Education) – is responsible for both teaching and research activities. This creates the opportunity to try to integrate strategies and define goals more clearly (Rosa, Veiga and Amaral, 2003).

In Portugal public higher education institutions (HEI's) are almost totally financed by the State. Private institutions do not receive any permanent direct support from the State. However, the State may partly finance their activities through student's grants, training of academic staff, incentives to investment, support to research projects, merit scholarship for students and support to loan systems or other types of support included in contracts (as established in article 10, point 1 of Law no 1/2003) (Teixeira P., Rosa M.J. and Amaral A., 2003).

In the late 1970 and early 1980s, investment in higher education, in particular in the new polytechnics, was supported by World Bank loans. Portugal joined the European Community in 1986, benefiting from pre-accession funds and later, structural funds. These funds have been assembled into a special programme for the development of the education system, *Programa de desenvolvimento educativo para Portugal* (PROPED) in 1990 (Eurydice, 2000).

The budget financed through the Ministry of Education is mainly dedicated to educational activities, although it supports the salaries of academic staff, which dedicate part of their time to research. The research activities of higher education institutions also receive funding from the Ministry of Science and Technology. These institutions are also financed by their own income from contract work (Eurydice, 2000).

#### **3.2 Financial management**

Although mainly financed by the State, public higher education institutions are free to create and administrate their resources.

The current expenditure budget is calculated through a formula established in 1994 that takes into consideration the number of students, student to academic and non-academic staff ratios, as well as salaries, which depend on national rules relating to qualifications. The ratio of students to full-time equivalent academic staff varies according to the field of study, as well as the type of institution (university or a polytechnic). It also takes into consideration the fact that the number of teaching hours for academic staff is different according to the institution,

6 to 9 at universities and 6 to 12 at polytechnics (Eurydice, 2000). More recently some quality parameters have been added to the formula (see below).

Public universities and public polytechnics receive an annual block grant that they allocate internally as decided by their governance bodies. The rector of the university has the power to change the allocation of resources among the different lines of the budget whenever necessary.

In the case of universities, as their autonomy is explicitly protected by the Constitution there is a higher degree of autonomy relative to Polytechnics: for instance, universities own their buildings which is not the case of polytechnics, and they have also more freedom to define staff numbers within the limits of the annual budget.

The higher education finance law determines that HEIs must submit periodically their accounts to an external auditor of their choice to certify their accounts – the idea was to increase public accountability). For private and co-operative universities a working party ensures that the institutions meet the requirements established in the respective regulations, making adjustments whenever necessary (Boal, 1999).

The investment budget depends on the planning of construction and facility renewal activities, undertaken at national level, in agreement with the institutions, by the Ministry of Education and following proposals. These activities are included in the budget of each institution, which is responsible for implementation (Eurydice, 2000).

A new financing law (Law 37/2003 of 22<sup>nd</sup> August) was passed by the Parliament. This new legal framework establishes that besides the number of students, other factors must be taken into consideration in the calculation of each HEI's annual budget, namely the quality of each degree programme, the quality of research and the quality of the institution itself, as well as performance indicators related to efficiency (Teixeira P., Rosa M.J, and Amaral A, 2003).

### **3.2.1 Formula Funding**

A financing formula has been implemented through the Law 37/2003 of 22<sup>nd</sup> August. In this funding formula, new criteria have been introduced in addition to the main criterion: student numbers. A controversial criterion was the quality criterion, which was related to the number of research centers at a university (and an assessment of their results). The fact that the number of centers was counted (and not the number of researchers) had some possible perverted affects (favoring the large and old universities). In addition, the minister decided that only 80% of the amount a university would get applying the formula would be actually paid. The rest of the funds universities could find in raising the tuition fees. For that purpose, higher education institutions were allowed to raise their tuition fees.

### **3.3 Tuition Fees and Student Support**

#### **Fees**

In the Portuguese public higher education system, every student enrolled in a public higher education institution has to pay, once, or by installments, an annual fee fixed by each institution between a minimum and maximum amount. For the academic year 2003/2004 the limits were Euro 463.58 (minimum) and Euro 852.00 (maximum) (Vossensteyn, 2004). Fees paid by students enrolled in public institutions do not cover the real costs of higher education, being in fact a very small proportion of it (about 7 to 8% of total costs). (Teixeira P., Rosa M.J, and Amaral A, 2003)

In the early 1990's student social support became entangled with the government's attempts at increasing cost sharing by raising tuition fees. In Portugal the nominal value of tuition fees was frozen since 1941 and in 1990 students enrolled in public HEIs paid only about 6€/year. And the 1976 Portuguese Constitution, characterized by its strong socialist character, determines that higher education must become progressively free of charge. However, with the complicity of the Constitutional Court it became finally accepted that although tuition fees could not be raised, updating their value by taking into account inflation since 1941 was not considered a price increase. Therefore the Parliament passed Law 20/92 of August 14<sup>th</sup> updating tuition fees under strong protests from students. Law 20/92 stated also that tuition fees were a revenue of the institutions to be used mainly for the students' social support and for promoting academic success, trying to pacify student rioting.

In 1995 the socialist party won the general elections after promising that if they became government they would revoke the law on tuition fees. And this they certainly did, only to start a new war with students as they intended to increase again fees but relying on a more elaborate rationale. In 1997 the Parliament passed Law 113/97, of September 16<sup>th</sup>, (Oliveira and Pereira 1999) that reintroduced updated tuition fees but limited its yearly value to the monthly minimum wages, thus protecting students against any sweeping tuition increases. To sell this ticket to students, the law established that institutions should use tuition revenues to promote quality and the state declared its intention to improve 'student social support services', namely by additional investments in new halls of residence and restaurants and by regulating the student loan scheme established by law. The government claimed that loans would allow students more financial independence from their families, by supplementing the value of grants. The law also extended 'progressively' student social support services to students enrolled in private institutions.

In 2002 the socialist party was defeated in early general elections and the new government acted swiftly. The Parliament passed Law 37/2003, of August 22<sup>nd</sup>, revoking Law 113/1997 and establishing new bases for higher education financing (including the public and private sub-sectors). The major innovation is that the new law allows HEIs to set the value of tuition fees between a minimum of 1.3 times the minimum monthly wages and a maximum

determined by updating the value of 1941 to inflation. The rationale behind this innovation is allowing institutions to compete: better quality institutions can set higher tuition fees while lower quality institutions have to keep prices low to attract clientele. However the Law is inconsistent for two reasons. Firstly, the gap between the minimum and maximum limits is too low to make a real difference. Secondly, institutions cannot determine the number of vacancies because of the *numerus clausus* system. Therefore an institution cannot rely on having more students at lower fees because it is the state that has the final word in determining yearly the *numeri clausi*.

In the case of public post-graduate studies, fees paid by master and doctoral students are much closer to the real cost of their study programmes, because in this case public institutions are free to establish the fees they believe are adequate for both their Master and PhD programmes (Teixeira P., Rosa M.J, and Amaral A, 2003).

Apart from tuition, students are normally required to pay a small amount when they register at the University. Furthermore, small amounts may also be paid if the student asks for special pedagogical arrangements, like, for example a second chance to improve marks. This applies also to foreign students. These minor amounts are substantially higher in the case the student is attending a private higher education institution (Vossensteyn, 2004). Private HEIs are free to determine the fees their students will pay and in this specific case, fees effectively represent the real cost of the study programme, as government does not fund these institutions (Teixeira P., Rosa M.J, and Amaral A, 2003).

### **Student Support**

At present, the students' social support system includes direct and indirect support mechanisms, independently of the nature of the enrolling institution (public or private, university or polytechnic). The direct support consists of means tested grants (scholarships) for needy students that demonstrate academic merit. The grants are awarded every year and are meant to contribute to the students' expenses (housing, meals, transportation, tuition fees, etc.). The value of grants depends on the per capita income of the student's family (or their own, in the case of independent students<sup>5</sup>), and its value has a monthly maximum equivalent of the minimum wage and a minimum equal to one-twentieth of that value (Oliveira and Pereira 1999). Because fees are revenue of HEIs the law determines that the grants include the amount necessary to pay for the fees, instead of adopting a fees remission policy (Teixeira, Rosa and Amaral, 2004).

Two institutional bases implement the student support mechanisms. Public higher education institutions, through the student welfare systems existing within each higher education institution in the public sector and the Student Social Action Fund regarding private higher education institutions, award every year student grants to university students if their family annual income per capita is lower than the national minimum salary (Vossensteyn, 2004).

For the academic year 2003/2004, the monthly amount of the study grant varies between a minimum of Euro 34,70 and two types of maximum of Euro 408 (student not dislocated from home) or Euro 513 (student dislocated far away from family home) (Vossensteyn, 2004).

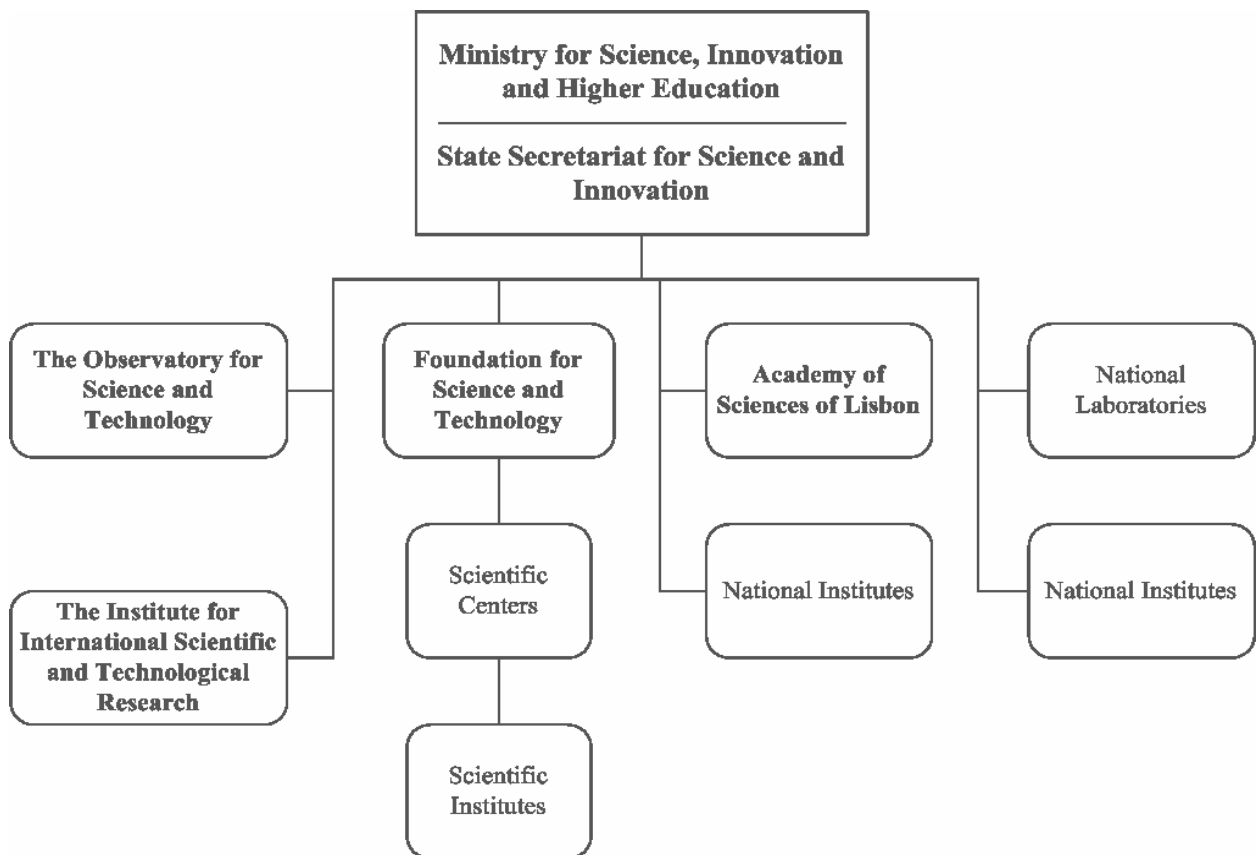
The indirect support consists of housing in halls of residence (with priority being given to displaced students with grants), meals in canteens, and other services related to health, cultural and sportive activities. Both Law 37/2003 and Law 113/97 established that the state will give support to a loan system that so far has not been implemented. On the one hand, this might be explained by a strong negative reaction from the students, afraid that this would open the way to progressively converting the traditional grant system into a loan system. On the other hand the state does not have the financial resources allowing for the initial investment in a loan system (Johnstone, 2004) and the fiscal system does guarantee neither the equity of the system nor its success in terms of loan repayment (Teixeira, Rosa and Amaral, 2004).

## 4. RESEARCH & DEVELOPMENT

### 4.1 Main Research Units

The main research institutions<sup>6</sup> under the Ministry for Science, Innovation and Higher Education<sup>7</sup> (MCIES) — are organised in “Research Units” and “Associated Laboratories” (see Figure 6). Research units (see Annex 1) may have different designations (Centros, Institutos, Unidades, etc.). Associated Laboratories (see Annex 2) are very large units (at the moment there are 15 but others will be created soon) and they integrate several units. There are also 13 National Laboratories not integrated in the MCIES financing structure (listed in Annex 3).

**Figure 6. Schematic Representation of Portuguese Public Research and Development System**



As Magalhães (2001:326) emphasized, there are two characteristics of the Portuguese research system: the crucial position that National Laboratories or State Laboratories (*Laboratórios Estatais*) assume in the whole system and a pluralistic global organization. The first characteristic seems to be common to other countries such as Greece and Spain. The

<sup>6</sup> The Research Units and Associated Laboratories financed by MCIES are listed in Annex 1, Annex 2.

<sup>7</sup> In 2005 it was renamed as the Ministry for Science, Technology and Higher Education (MCTES)

second characteristic, pluralistic organization, appears to be related to the fact that research depends upon a multitude of ministries.

## **4.2 Governance and Management of the R&D Sector**

Within the structure of the Ministry for Science, Innovation and Higher Education created in 2004, the State Secretary for Science and Innovation coordinates the activities of the following authorities that have responsibilities in the area of research and development (see Figure 9):

1. The Foundation for Science and Technology (FCT) is in charge of promoting, financing, following-up and evaluating institutions, programmes and projects, as well as education and human resources training (<http://www.fct.mces.pt/>);
2. The Observatory for Science and Higher Education (OCES) is responsible for collecting, processing and diffusing information on the S&T system and the HE system (<http://www3.oces.mcies.pt/>);
3. The Institute for International Scientific and Technological Co-operation (ICCTI) coordinates the international collaboration activities (<http://www.grices.mces.pt/>);
4. The Academy of Sciences of Lisbon is responsible for the national and international promotion of Portuguese culture, literature and national history (<http://www.acad-ciencias.pt>).

There are no legal dispositions conditioning the type of research to be performed at higher education institutions. In principle each research unit (or any researcher for that matter) has almost complete freedom to specify the research activity to be developed, as long as ethical and moral issues are respected. Nevertheless, in practical terms it is possible to say that this freedom is conditioned by the financing available, and by the priority areas defined by the State (or for that matter by other national and supranational organizations such as EU). This issue of national and supranational research priorities plays a very relevant role in the definition of the priority research areas within an HEI, a research centre or even the research activity of a single academic, as in general researchers try to adapt their projects to the more fashionable areas where funding is more abundant (Teixeira P., Rosa M.J, and Amaral A, 2004: 294:295).

## **4.3 Overview of Policies for Science, Technology, and Industry**

The Lisbon European Council's general recommendations towards a knowledge-based society point out three complementary axes: to stimulate R&D and innovation; to promote access to IT and stimulate their use; to increase efforts on education and training. These three axes have oriented Portuguese policies respecting R&D and Innovation and Information Society. These orientations have been defined in programmatic documents and their accomplishment is currently foreseen through several funding instruments, namely POCTI (Operational Program for Science, Technology and Innovation) (2000-2006) and POSI (Operational Program for Information Society) (2000-2006).

### **4.3.1 Policy Changes and Evaluation of the R&D Sector**

The main guidelines for scientific and technological policies have been reinforced in the government's Major Program Choices (Grandes Opções do Plano) for 2001 and 2002.

Public funding is being used to increase R&D potential by investing in advanced training of human resources, in project funding, in strengthening R&D institutions and their internationalization. With a view to these objectives, the following measures were envisaged (OECD, 2002):

- R&D programs integrate scholarship grants for initial (graduate) and advanced (postgraduate: MA, PhD and Post-doc) training and start of scientific careers; and funding of research projects across all scientific domains on a competitive basis by international quality standards. Similar measures are contemplated for advanced human resource training and research targeted to ICT.
- Project funding is dependent on team and project quality assessment by independent evaluation panels including a majority of international experts. Application for funding is opened yearly by the FCT for all areas of knowledge. Beneficiaries are research teams in public or private institutions with R&D activities, namely and business enterprises in consortia with R&D institutions or engaging in integrated R&D programs. Since the aim is to develop the general science base, there is no thematic prioritization in the general programme, project selection being based on project and team quality assessment.
- Dedicated thematic programmes are also opened on public interest issues (e.g. research on forest fires, marine science, ethnic minorities, protection of natural environments, drug addiction) and for participation in international R&D institutions to which Portugal adhered (EMBL, ESO, ESRF, ESA, CERN, ESO). Evaluation parameters and procedures are similar to those of the general programme. In the context of Information Society policy, new R&D programs were set up under POSI (2000-2006), targeted at ICT and their use in social and economic context, and computational processing in Portuguese language.

The Innovation Agency (AdI) (<http://www.fct.mces.pt/pt/empresas/inovacao/>) created in 1993 was restructured in 2002 and its action was co-coordinated with S&T policy, implementing support for consortia of business and R&D institutions, for innovative research and the promotion of R&D results for economic use.

#### **4.3.2 Evaluation of R&D Institutions**

Following a first assessment of FCT in 1996, the multi-annual funding programme of R&D institutions led to a second evaluation process carried out in 1999 and a third in 2002<sup>8</sup>. Beneficiaries were R&D units in universities and private non-profit R&D institutions. International expert panels rated candidate institutions in a five degrees scale ranking from ‘poor’ to ‘excellent’, and made recommendations for strategic orientation and future investments and activity plans. Quality assessment takes into account research performance by international standards, including publications in international journals and patenting activity, where appropriate. Subsequent evaluations take into account the compliance to the recommendations and the good use of the previous funding, besides R&D performance, publications, etc. (OECD, 2002).

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<sup>8</sup> For a detailed description of the procedure see the report “Evaluation of Portuguese Research Units in 2002”, Science and Technology Foundation (FCT) (2003).

<http://www.fct.mces.pt/pt/apoios/unidades/avaliacaounidades/descricao/en/>



#### 4.4 Reform Measures in the Organization of Scientific Research

After independent evaluation of all scientific institutions, legislation on R&D activities and on S&T/State relations has been revised in 2002. This legislative reform, has produced three new decisive documents:

- Legal Framework for Research Institutions.
- Status of the Scientific Research Career.
- New Framework for Research Scholarships.

A reform program of state laboratories was implemented in 2002, following the recommendations of the international panels that evaluated them back in 1996-1998. Its guidelines were: to reinforce public utility R&D activities; to make better use of existing competencies and assimilate new competencies into the government laboratories, through the incorporation of post-doc and PhD scholarship students, tighter collaboration with university teams, and opening of new research posts for young PhDs. The reform program followed a principle of double funding. This means that a laboratory's funding has two components: 1) a base funding from the Ministry from which it depends; and 2) a contract funding dependent on R&D programs negotiated between each government laboratory and at the time, the Ministry of Science and Technology, on the basis of specific R&D mission projects performed by research teams under a responsible researcher, and subject to regular evaluation.

A network of associate laboratories was built in 2002, namely through contracting with existing R&D institutions of strategic orientations and missions of public utility. The status of associated laboratory is conferred by the Ministry of Science and Technology for a period of up to ten years, through a contract that specifies the amount of public funding of the laboratory and the missions that it is committed. These laboratories are being funded for five years and their status of associate lasts for up to ten years. They are evaluated in the meantime and in the end of the contract period, which can be renewed after positive evaluation. There are 15 associate laboratories involving 31 R&D institutions in five scientific areas: Physics, Chemistry, Health Sciences, Chemical and Biotechnological Engineering and Electrotechnical and Computational Engineering (see Annex 2).

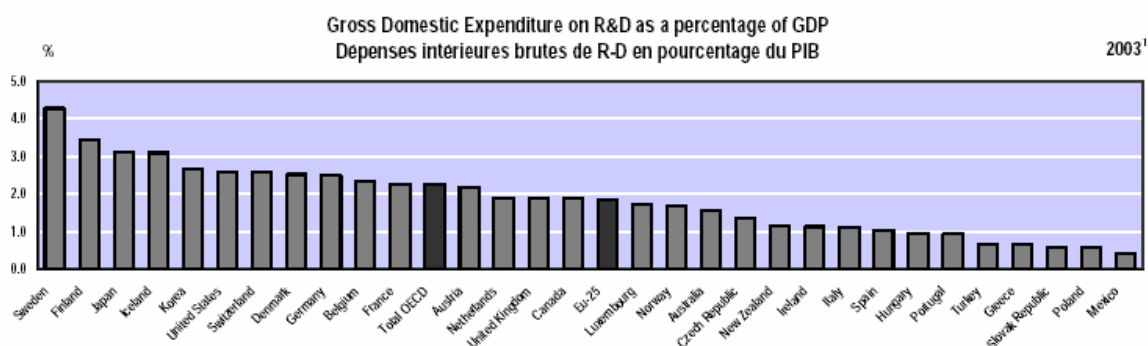
An important infrastructure investment in the networking of R&D institutions has been the creation of a network (**RCTS**), linking universities and research centers, libraries and elementary and secondary schools by broadband. All linked institutions were provided sub-domains, e-mail accounts and space for web pages. The R&D network was developed under POSI 2000-2006. One of its developments is the creation of a Network Science and Technology Library connecting all adherent institutions to common library resources online and to international databases. The first step towards the creation of this Science and Technology Library has already been taken through an agreement with the Institute for Scientific Information, making ISIs' databases available online to all Portuguese research institutions.

Another important infrastructure investment refers to the National Program for Scientific Re-equipment that was launched in 2001, with applications by R&D institutions currently under evaluation.

#### 4.5 R&D Resources

In the past decade, the Portuguese expenditures with the R&D System have experienced remarkable growth. In 1999 the weight of R&D expenditure in the GDP reached 0.80%, from 0.43% in 1988 (OECD, 2002). In 2003, the gross domestic expenditure on R&D as percentage of GDP reached 1% (OECD, 2004) (see Figure 7).

**Figure 7. Gross Domestic Expenditure on R&D as Percentage of GDP**



The proportion of researchers in the active population was 3.1% (FTE) in 1999, while in 1988 it was only 1.4%. Relevant also is the 10% annual growth in the number of new PhDs in Portugal and the rise in Portuguese scientific publication in refereed journals and citations, which has doubled in the last five years, almost half of which in collaboration with teams from other countries (16% annual growth rate from 1995 to 1999). At the end of 2001 there were registered 14,500 Portuguese researchers and 5,900 doctoral students working in the 339 research units (FCT, 2004: <http://www.fct.mces.pt/unidades/info/index.html>).

#### 4.6 Research Funding

Research and Development programmes integrate scholarship grants for initial (graduate) and advanced (postgraduate: MA, PhD and Post-doc) training and start of scientific careers (OECD, 2002).

Funds for research activities at universities are mostly provided by the science budget rather than the educational one, and they cover three main areas: research grants and postgraduate studies, research grants for individual research projects, and multi-annual funding to recognized research centres - the most significant area in terms of resources being the second one. Research projects are selected on a competitive basis, using recommendations from international panels of experts. Funds are transferred through the Foundation for Science and Technology (FCT) directly to the research units integrated in HEI's (as organic units) or to research projects that have been submitted to the FCT (Teixeira P., Rosa M.J, and Amaral A, 2004:296).

#### **4.6.1 Basic Funding<sup>9</sup>**

The FCT evaluators classify the absolute level of each research unit in a scale of 5 levels (Excellent, Very Good, Good, Fair, and Poor), which will be used to define the level of Basic Funding per Ph.D. Funding of units rated Poor will be discontinued.

#### **4.6.2 Special Programmatic Funding**

In addition, the FCT evaluators are supposed to assess the adequacy of additional *Special Programmatic Funding* for a restricted number of units, as a result of specific needs detected by the evaluators. The adequacy of this funding is to be considered independently of the research unit size, research area or form of organization. The main criteria to be used in selecting units to be proposed by the evaluators for this funding are:

- clear needs of operation, maintenance or small equipment funds for carrying out high quality research activity,
- potential for increased high quality research results and internationalization
- opportunities for increased research performance that could be enhanced by hiring researchers or technicians.

In evaluating eligibility for such funding, it is essential to observe that the *additional funding must correspond to increases in performance that could not be attained with the funds that the unit has had available in the past or is likely to have in the future*. It is not appropriate to consider *Special Programmatic Funding* to replace or shift financial allocations faced by the unit in the past or likely to be faced in the future without this funding.

#### **4.6.3 Non-governmental Sources and Tax Incentives**

Governmental sources are not the only financial support for the Portuguese research and development sector. R&D institutions receive also funds from private firms and non-profit organizations.

Public funding to consortia projects by firms with R&D institutions varies according to the nature of R&D (industrial or pre-competitive). In both cases the funding rate may be increased depending on firm dimension (SME) and region. A new contest has been opened in 2001, following assessment of the previous contests' results.

Private non-profit organizations, such as the Fundação Calouste Gulbenkian, the Fundação Luso-Americana para o Desenvolvimento, the Comissão Cultural Luso-Americana, the Fundação Aga Khan, the Fundação Bernard Van Leer and the Fundação Oriente (in the case of educational issues relating to Macao) also have relevant funding policies, giving priority amongst other things to scholarships, support for research project, exchanges between foreign universities and higher education institutions in Portugal. The work of Fundação Calouste Gulbenkian is of particular relevance in the field of research funding (Boal, 1999).

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<sup>9</sup> Information presented in sections 4.6.2 and 4.6.3 is based on the report "Evaluation of Portuguese Research Units in 2002", Science and Technology Foundation (FCT). For a detailed description see <http://www.fct.mces.pt/pt/apoios/unidades/avaliacaounidades/descricao/en/>

A tax incentive system is at work since 1997 for enterprises' R&D expenditure, (whether in-house or outsourcing), managed by a board presided by the Foundation for Science and Technology (FCT) and including the Innovation Agency (AdI) and the Observatory for Science and Technology (OCT). It allowed for the deduction from taxable income of 8% of eligible R&D expenditure (net of direct state funding), plus a 30% tax deduction on incremental expenditure above the average of the previous two years, up to PTE 50 million.

## **5. QUALITY ASSURANCE**

### **5.1 Introduction**

Quality of education and research has been one of the main concerns both for politicians and academics. The law of evaluation (Law 37/94, published in November 11<sup>th</sup> 1994) was induced by the Rectors' Conference and is applicable to all the different sub-sectors of the Higher Education system and has been widely applied to all of them since 2001. The evaluation of the study programmes started in 1994 in all public universities and was extended to the whole system of Higher Education through legislation published in 1998 (Decree-law 205/98, published in July 11<sup>th</sup>) (Soares, Trindade, 2003). The new Law 1/2003 establishes a system of 'academic accreditation' to be implemented by the same agencies responsible for the quality evaluation system (Teixeira P., Rosa M.J and Amaral A, 2003).

The Law 1/2003, passed in January 2003, determines:

- the establishment of new higher education institution needs prior accreditation – based on criteria of the expected quality of teaching, social relevance and financial viability – by the Ministry after consulting the recently established Higher Education Council;
- the creation of new departments or faculties in already existing higher education institutions follow similar procedures;
- that the pedagogical autonomy of public universities be lowered to a level close to the level of autonomy of polytechnics and the private sector;
- that a system of 'academic accreditation' be implemented by the same agencies responsible for the quality evaluation system;
- that the Ministry may use the results of accreditation to close down institutions and study programmes;
- that the Ministry may close down study programmes with low enrolments;
- that under specific circumstances, the Ministry may establish the basic curricula of the different study programmes offered at national level.

The Law 1/2003 forbids franchising activities, namely the establishment of education institutions operating under franchising (Rosa, Veiga, Amaral, 2003).

### **5.2 Academic Evaluation and Accreditation**

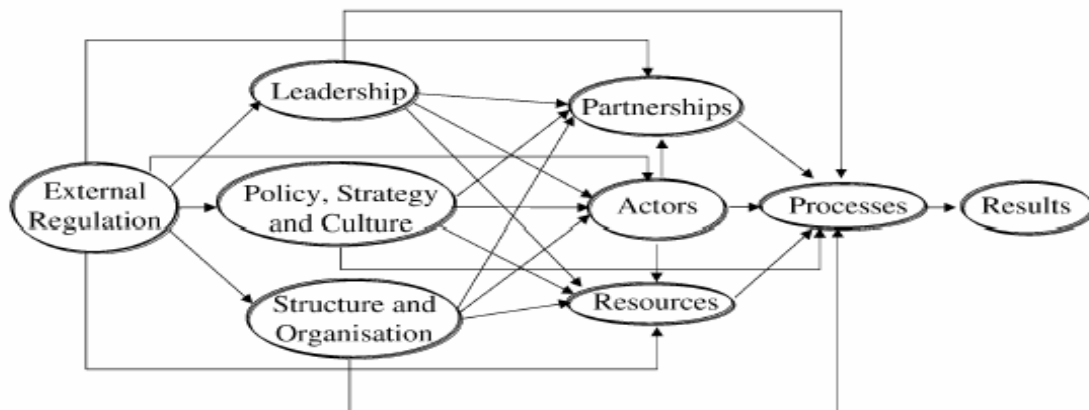
The National Council for the Evaluation of Higher Education Institutions (*CNAVES*) was created in 1998 with the objective of establishing the main guidelines for the evaluation procedures. Now, public and private universities (and non-integrated university schools) have a common set of guidelines and public and private polytechnics (and non-integrated polytechnic schools) have also their set of common guidelines. The study programmes are evaluated every five years and the process is based on a self-evaluation assessment (where students' opinions are included) followed by an external assessment performed by peers (national and foreign academics and external experts) (Soares, Trindade, 2004).

An evaluation always includes both an internal and an external phase. Based on a questionnaire, the institution being evaluated prepares its own **internal evaluation** and analyses its strengths, weaknesses and future prospects. The **external evaluation** phase consists of a peer review that includes a site visit and results in a report that is only made public after a contradictory hearing of the assessed institution (Furtado, 2001).

The above-described process, led by *Fundação das Universidades Portuguesas* (Foundation of Portuguese Universities) (FUP), is known as the 1<sup>st</sup> Cycle of Evaluation, and has only taken into consideration the courses of *Licenciatura* taught in the public university sector. In 2000, the 2<sup>nd</sup> Cycle of evaluation has started under the responsibility of CNAVES. Now all the higher education courses, public or private, university or polytechnic are under scrutiny (Furtado, 2001).

The Portuguese higher education system undergoes periodic assessments of its quality, namely regarding teaching (CNAVES, 2000) and research (MCT, 2000) activities. Nevertheless, in most cases there is no overall institutional assessment mechanism leading to careful analysis of each institution as an organizational entity. Considering necessary such an analysis of an institution as a whole, Rosa, M., Saraiva, P., and Diz, H (2003) developed an excellence model for the Portuguese higher education institutions, based upon nine criteria (see Fig.9). A written survey was conducted covering all of the Portuguese higher education institutions, leading to a total of 129 valid answers (approximately a 30% response rate) (Rosa, M., Saraiva, P., and Diz, H, 2003).

**Figure 8. Path Diagram for Relationship Between the Excellence Criteria**



The main assumption within the excellence model was that efforts made by each institution to assess-periodically and systematically- each one of the nine criteria will lead to its continual and sustained improvement towards excellence (Rosa, M., Saraiva, P., and Diz, H, 2003).

For the first time the term academic “accreditation” was introduced in the Portuguese legislation in the new Law 1/2003. So far the programmes and the institutions were not “accredited”: they were either recognized or licensed. Special regulations to this law are expected and in the meantime discussions about the concept of accreditation and how it is going to be applied will indeed take place. (Soares, Trindade, 2004).

Private institutions are subject to strong control by the Ministry: they must ask for permission before starting or modifying any study program, and they must apply for State recognition of all their degrees and diplomas (Teixeira P., Rosa M.J, and Amaral A, 2003).

In November 2002, the National Evaluation Council made a statement containing several recommendations, such as:

- increasing public awareness about transnational education;
- revising the national regulation framework in order to define the basic requirements for recognition of higher education institutions;
- including transnational education under the framework of the national evaluation agencies;
- promoting the internationalisation of evaluation teams and defining a “code of good practices” at national level;
- implementing the diploma supplement as an auto-regulation initiative;
- defining the national position along the concerns expressed.

On the other hand, it is not at all obvious what will be the relationship of this new system of accreditation established by Law 1/2003 with the parallel activities of professional associations. It is possible that in the future professional associations will be divested of their present powers of accreditation. Another possibility will be for the NQEA and the Professional Associations to reach an agreement that will allow for a harmonisation of both systems. The third possibility is obviously to run the two systems in parallel, running the risk of producing incompatible decisions on the same study programme and creating an excessive burden for the institutions. However, it is too early to have clues about future developments (Amaral, A., Rosa, M.J, 2004: 395-420).

### **5.3 Professional Accreditation**

Several professional associations (for instance engineering, architecture and pharmacy) have initiated accreditation systems that may further decrease the institutional freedom of product definition. It is possible that accreditation exercises will induce some increase of the homogeneity of the study programmes. (Teixeira P., Rosa M.J, and Amaral A, 2003)

Medical doctors, dentists, lawyers, architects, veterinary doctors, and engineers with a degree do not have the right to exercise their profession. The certification to exercise was delegated by the state to a professional association, known as an *Ordem*. Thus, an *Ordem* can say to a higher education institution that a program does not entitle the students to exercise the profession they intend to follow (Soares, 2001).

## **6. GOVERNANCE STRUCTURES**

### **6.1 Introduction**

There are two separate ministries for education: Ministry of Education (ME) and Ministry for Science, Innovation and Higher Education (MCIES)<sup>10</sup> within the structure of the Portuguese government.

The Ministry of Education determines policy at the basic and secondary levels of the Portuguese educational system. The structure and managerial responsibilities of the Ministry of Education were described mainly in sections 2.2, 2.3, 2.4 and 2.5. In the autonomous regions of Madeira and the Azores, education administration is the responsibility of regional governments through secretaries of education.

The Ministry for Science, Innovation and Higher Education (MCIES) determines higher education and science policy in general. A ministerial department plans and coordinates management and administration for each level of education. Five regional bodies (on the mainland) implement ministerial policies and provide guidelines, coordination and support to all non-higher education establishments. The organic law underlying the XV Constitutional Government, in office since 2002, led to the creation of the Ministry of Science, Innovation and Higher Education, with the central aim of reinforcing synergies between teaching and research. Higher education institutions are autonomous (Teixeira, Amaral and Rosa, 2002).

Inspection is the responsibility of the General Inspectorate of Education, which has regional delegations supervising all aspects of non higher education. The Ministry for Science, Innovation and Higher Education comprise a General Inspectorate of Science and Higher Education that supervise all aspects of higher education.

### **6.2 Legislative Bodies**

The Parliament and the Government represent the state in all matters regarding higher education policies. The Parliament usually approves framework laws either by taking the initiative or by approving proposals or by changing the decree laws of the government.

The Government has the main role in higher education issues. It approves or proposes to Parliament legislation regarding budget, financial and human resources, management, careers and employment conditions, pedagogical matters, and any others that are not assigned to the institutions. It also oversees the functioning of the public institutions, mainly as far as management is concerned, gives them authorization for large investments, fixes the number of places of academic and nonacademic staff, and determines the number of students to be admitted to higher education institutions every year (Soares, 2001).

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<sup>10</sup> In 2005 it was renamed as the Ministry for Science, Technology and Higher Education (MCTES)



### **6.3 Intermediary Organisations**

The Rector's Conference (CRUP) and Polytechnics Presidents' Coordinating Council (CCISP) are legal partners in all discussions concerning higher education policies. Their role can go beyond what is prescribed in law, and CRUP has been proactive in proposing specific legislation (e.g., funding formula, legislation regarding flexibility in the management of universities, the evaluation law of study programs) (Soares, 2001).

The Portuguese Association of Private Higher Education (APESP) represents private institutions and is considered as a partner of the Ministry of Education in matters of interest to its associates or in matters related to higher education policies involving these institutions. Another partner is the Rector's Conference of the Private Universities (CRUPP), which was created recently (Soares, 2001).

### **6.4. Institutional Governance**

In Portugal, some universities, mainly the old ones, have adopted more participative and collegial governance structures, and have been characterized by their traditional internal division into faculties, while younger institutions were able to adopt more flexible governance systems supported by a more horizontal organizational structure. (Teixeira, Amaral and Rosa, 2003:196).

Each university is free to establish its own Statutes (within general limits set by law) and to organise its internal structure. There are universities organised by departments (without faculties), there are universities organised by faculties, without departments, and there are also universities organised by faculties and at least some of the faculties organised by departments. There are also universities integrating polytechnic schools (Aveiro and Algarve). So there is not really a rigid pattern of organisation.

Portuguese legislation allows for the participation of external stakeholders in the governing bodies of public universities, but this participation is mandatory for public polytechnics, while there are no legal rules concerning their participation in private institutions. The University Autonomy Act (Law 108/88) allows for the presence of representatives of external interests in the Senate (up to 15% of the total membership), and for the establishment of advisory boards (Amaral and Magalhães, 2002:16).

#### **6.4.1 Strategic Planning**

Institutional strategic planning is one managerial tool that public and private higher education institutions are beginning to embrace in Portugal (Machado and Taylor, 2004).

Table 23 below shows a breakdown of institutional types that were engaged in some form of planning. Out of 61 higher institutions (HEIs) surveyed, 51 showed evidence of some efforts to maintain a planning function. It is further revealed that 42 of 61 HEIs had a formal process in place (see Table 24). As will be shown later, much fewer were legitimately involved in a *strategic* planning process (Machado and Taylor, 2004).

Table 24. Institutions Engaged in Some Form of Planning by Institutional Type

Educational Category	Number of Answering HEIs	HEIs with Formal Planning		HEIs with Partial and/or Unit Planning		Total HEIs with Some Form of Plan	
		n	%	n	%	n	%
Public Universities	13	11	84.6	2	15.4	13	100
Public Polytechnic	14	12	85.7	2	14.3	14	100
Private Universities	8	4	50.0	1	12.5	5	62.5
Other Establishments	26	15	57.7	4	15.4	19	73.1
Total	61	42	68.8	9	14.8	51	83.6

Source: Machado and Taylor, 2004:15

The most important factors associated with the planning process are presented in Table 25. In terms of comparison between the public and private sector strategic planning, the findings indicate that public HEIs more often identified vision and action plans as important components to their planning process. The private sector more strongly identified with the use of an evaluation process. This seems consistent with the fact the rectors of the private HEIs do not make decisions about the institutions, but instead the owners do so (Machado and Taylor, 2004).

Table 25. Key Components Used for the Planning Process

Key Components of the Process of Strategic Planning	All Institutions	Public Institutions	Private Institutions
" Mission"	49	25	24
" Internal Analysis"	48	26	24
" External Analysis "	45	23	22
" Vision "	50	27	23
" Goals"	50	26	24
" Strategies"	47	25	22
"Action plans "	45	27	18
" Evaluation"	32	12	20

Source: Machado and Taylor, 2004:17

One of the overall conclusions of the above mentioned study was that the process of planning is still in an incipient phase within Portuguese higher education institutions, however, the first evaluation of planning experience was positively embraced at the institutional level.

## **6.5 Advisory International Organizations: World Bank, OECD and EU**

In the unstable political context after the 1974 Revolution, the national government established contact with the World Bank, leading to its subsequent engagement in Portuguese educational policy, first as a consulting force and then financially supporting some significant changes in the system. The reason for this contact was not only financial but also the need to ensure some continuity of education policies in a very unstable political situation, as it was felt that signing a contract with the World Bank would ensure that it had to be carried out despite the political turmoil. From 1978 to 1984 the Bank sent 19 Missions of Supervision, which provided important technical assistance and made a significant impact on the educational debates (Teixeira, Amaral and Rosa, 2003).

In the turn to the eighties the political situation seemed fairly consolidated and the social and economic turmoil had largely passed. Despite some scattered activities of co-operation between the OECD and the Portuguese authorities, the first systematic analysis of the educational system was only produced in 1982. The part of the OECD report dedicated to higher education is not very impressive, probably due to insufficient information. The main conclusion was that the supply of places in higher education was insufficient, both in terms of quantity and quality of alternatives. Hence, the report enhanced the importance of diversifying higher education supply, namely by promoting post-secondary vocational education and training (Teixeira, Amaral and Rosa, 2003).

Until the country joined the EU (1986), the OECD and the World Bank were the main agencies playing this role. Henceforth, those institutions lost some influence, and the European dimension gained increasing prominence (Teixeira, Amaral and Rosa, 2003).

## **7. INTERNATIONALIZATION OF PORTUGUESE HIGHER EDUCATION<sup>11</sup>**

Following the Portuguese membership of the (then) EEC in 1986, one can identify national objectives associated with European education: free circulation of people and the role of higher education within the European context and its challenges – social cohesion and economic development in an enlarged European Union, and development of research and technology in competition with USA and Japan (Rosa, Veiga, Amaral, 2004).

### **7.1 Current Policies on Internationalization in Portuguese Higher Education**

In April 2003, the Ministry of Science and Higher Education published a policy paper entitled *A Quality Higher Education*. This document is part of the public debate on the main aspects of the higher education system, such as its structure, access of students, institutional governance, funding, autonomy and regulation, and research. The policy paper assumes life long learning as the new paradigm for defining a degree structure that would promote mobility of students (national and international), comparability of qualifications and employability of graduates, bearing in mind the quality of teaching. Thus, the policy areas directly connected with the internationalisation of Portuguese HE are:

- quality evaluation and accreditation allowing for definition of criteria of transparency and comparability with the other European countries' higher education systems
- a strategy that would make more flexible the mobility (vertical and horizontal) of students
- a research policy (which should include a closer relationship with the private sector) that would increase the participation of Portuguese research centers and universities in international projects
- reinforcement of cooperation with PALOP countries and East Timor.

The Law 1/2003, approved on 6<sup>th</sup> January, deals extensively with quality of higher education, and creates an accreditation system, but does not make explicit reference to internationalization of Portuguese higher education (Rosa, Veiga, Amaral, 2004).

### **7.2 Implementation of the Bologna Process**

As in many other European countries, the Bologna process has been the opportunity for heated debates and for the emergence of diverse proposals aiming at adapting the Portuguese higher education system to the new degree structure and criteria of transparency and comparability that result from the Bologna declaration.

At present the Portuguese higher education system is a binary system of universities and polytechnics. Polytechnics award a two tier degree: bacharel (3 years) + 1 or 2 additional years (equivalent to licenciatura) and universities award the licenciado (4-6 years) and all post-graduation degrees (mestre and doutor) (Rosa, Veiga, Amaral, 2004).

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<sup>11</sup> Information presented in this section is based on 'The Portuguese Policy Update and Analysis Report' prepared by Rosa, Veiga and Amaral, 2003 for the HEIGLO Project (published in 2004).

There is no consensus on the duration of the first Bologna type cycle. While the Council of Rectors wants four years to be minimum duration of the first degree (traditionally licenciaturas are 4-6 year degrees programmes) the Council of Polytechnics is strongly in favour of a three year first degree (the traditional length of the bachelor degree programme).

National opinion is also strongly divided on the new degree structure. While some people propose to eliminate the degree of bacharel, others prefer to eliminate the degree of licenciado, and others want to eliminate the degree of mestre. At last, there are proposals for defining two different mestrados: 1 year at universities and polytechnics and 2 years only at universities.

There is also strong disagreement on the duration of the two cycles (from 3 to 6 years for the first cycle and 1 or 2 years for the second short cycle).

At last there is no consensus on the criteria for defining which institutions can confer the degrees. Some propose a clear separation of universities and polytechnics with the latter being limited to the first cycle, and eventually the short mestrado. Others consider that the type of degrees an institution is entitled to confer should not be determined by the designation of the institution (university or polytechnic) but by the institutional capacity, eventually in result of an accreditation system (Rosa, Veiga, Amaral, 2004).

Changing the degree structure is not easy because the present structure was defined in the Fundamental law on the education system, an act of Parliament, and any change will need another Act of Parliament. This explains that so far none of the Portuguese HE institutions has taken steps to change its programmes following the Bologna declaration. (Rosa, Veiga, Amaral, 2004S)

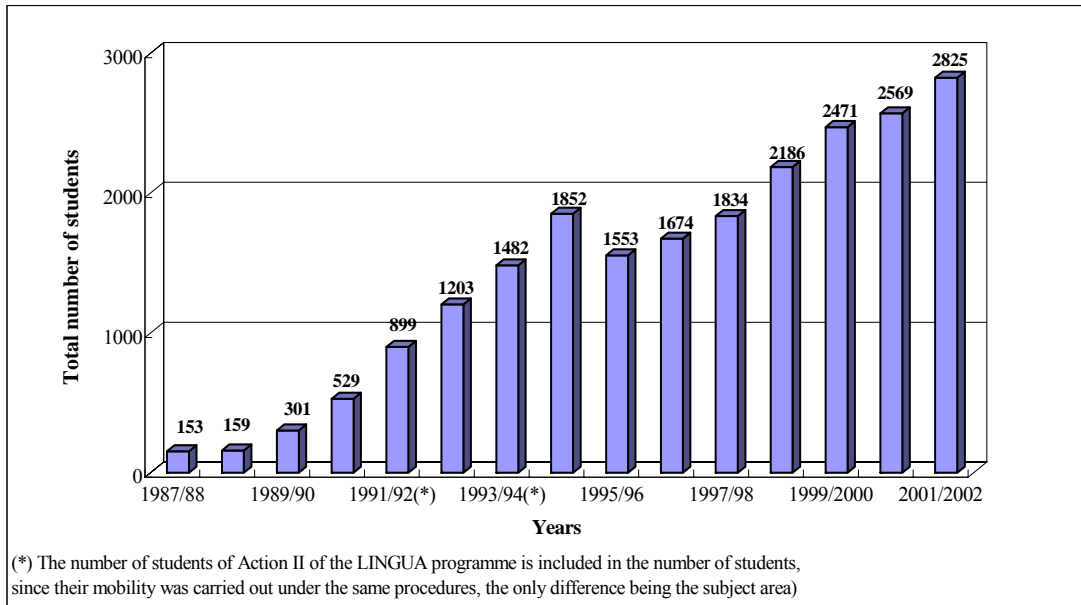
The use of ECTS is not widespread. It has only been extensively used by the Portuguese *Universidade Aberta*, a distance education public university, and apart from that, when institutions wish to be partners in the Erasmus/Socrates programme. (Soares and Trindade, 2004).

### **7.3 Students' mobility**

The data on outgoing Portuguese students within the framework of ERASMUS shows (Figure 12) that their number has consistently increased from 153 in 1987/88 to 2825 in 2001/02 with the exception of 1995/96 when there was a decrease relative to the preceding year. Portuguese students have a stable pattern of preferences with Spain, France, Italy, Germany and the United Kingdom being the major destination countries. This is probably due to both linguistic and cultural aspects as well as economic ones. Spain is the neighbour country, which means low travel costs and absence of a real language barrier. The United Kingdom, France and Germany are Portuguese references in the higher education area and Italian is a Latin language. The preferred disciplines in terms of enrolment are the social sciences, engineering and technology and languages and philological sciences (Rosa, Veiga, Amaral, 2004).

The number of incoming students under the ERASMUS exchange programme has also increased steadily (1382 in 1997/98, 1754 in 1998/99 and 2236 in 1999/00), being more or less equivalent to the number of outgoing students. The main countries of origin of these students were Spain, Italy and France, which can be explained by the geographic and cultural proximity (Rosa, Veiga, Amaral, 2004).

**Figure 9. Number of Portuguese Students in the ERASMUS Programme**



Source: Rosa, Veiga, Amaral, 2004:147

#### 7.4 Teachers' mobility

The SOCRATES programme is the main origin of the mobility of Portuguese higher education teachers, and the total enrolment has been rising since 1997/1998. The majority of the teachers have chosen Spain, France, Germany, the United Kingdom and Italy as preferred countries of destination, which are the same countries chosen by the students. This is not surprising as the choice made by professors certainly influences the choices of the students (Rosa, Veiga, Amaral, 2004).

#### 7.5 Researchers' mobility

The Foundation for Science and Technology (FCT) linked to the Ministry of Science and Higher Education awards grants for postgraduate and post-doctoral studies in Portugal or abroad, being the main source of the mobility of researchers. As this programme is partly financed through the framework programme, Portugal is considered both a host country for incoming students and the country of origin of outgoing Portuguese researchers. The available data comprises the total number of PhD, post-doctoral and other types of grants awarded until 19<sup>th</sup> May 2003 to both outgoing Portuguese researchers and to incoming foreign researchers.

The available data on the Portuguese researchers that leave the country to do their studies abroad, show that a large percentage has until now chosen the United States (21%) and the United Kingdom (37%) as preferred countries for post-graduate studies. More recently Spain is also emerging as a major destination country (Rosa, Veiga, Amaral, 2004).

## **7.6 European Cooperation**

The Framework Programmes have been a very important and relevant means for promoting the internationalization of the Portuguese scientific and technological system. The ICCTI states that they are a “privileged base for accessing international knowledge networks and, on other hand, for connecting national institutions to the technology international market” (ICCTI Activities’ Report, 1998: 5) (Rosa, Veiga, Amaral, 2004).

Under the IV Framework Programme, more than 800 institutions participated in a total of 992 projects (290 were enterprises, in 470 projects). Portuguese institutions were project leaders (ICCTI Activities’ Report, 1998: 5) in 108 of them.

In 2002 (until September 2002, still being updated) Portugal participated with approximately 900 projects signed, divided by the following thematic programmes: 30% in Information Society, 22% in Sustainable Growth, 14% in Quality of Life, 14% in Environment, 9% in Energy, 7% in Human Potential, 3% in International Co-operation and 1% in Innovation. Considering the type of beneficiary, the data indicates that 30% were higher education institutions, 32% were enterprises, 21% were non-profit private institutions, 9% was the State and 8% were other types of beneficiaries (Rosa, Veiga, Amaral, 2004).

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## 9. ANNEXES

**Annex 1.** List of the Research Units financed through the Ministry for Science, Innovation and Higher Education <sup>12</sup>.

BIOLOGIA MOLECULAR - GENÉTICA AMBIENTAL E FARMACOGENÉTICA  
CENTRO ALGORITMI  
CENTRO DAS ZONAS COSTEIRAS E DO MAR - CZCM  
CENTRO DE ÁLGEBRA  
CENTRO DE ANÁLISE E PROCESSAMENTO DE SINAIS  
CENTRO DE ANÁLISE MATEMÁTICA, GEOMETRIA E SISTEMAS DINÂMICOS  
CENTRO DE ANATOMIA PATOLÓGICA  
CENTRO DE ASTROFÍSICA DA UNIVERSIDADE DO PORTO  
CENTRO DE ASTRONOMIA E ASTROFÍSICA  
CENTRO DE AUTOMÁTICA DA UTL  
CENTRO DE BIOLOGIA AMBIENTAL  
CENTRO DE BIOLOGIA CELULAR  
CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR - CEBIP  
CENTRO DE BIOLOGIA VEGETAL  
CENTRO DE BIOTECNOLOGIA E QUÍMICA FINA  
CENTRO DE BOTÂNICA APLICADA À AGRICULTURA  
CENTRO DE CARDIOLOGIA  
CENTRO DE CIÊNCIA E TECNOLOGIA TÊXTIL  
CENTRO DE CIÊNCIA E TECNOLOGIAS AEROESPACIAIS  
CENTRO DE CIÊNCIAS DO AMBIENTE  
CENTRO DE CIÊNCIAS DO MAR DO ALGARVE  
CENTRO DE CIÊNCIAS HISTÓRICAS E SOCIAIS  
CENTRO DE CIÊNCIAS MATEMÁTICAS - CCM  
CENTRO DE CIÊNCIAS MOLECULARES E MATERIAIS  
CENTRO DE DESENVOLVIMENTO DE CIÊNCIAS E TÉCNICAS DE PRODUÇÃO VEGETAL  
CENTRO DE ECOLOGIA APLICADA - CEA  
CENTRO DE ECOLOGIA APLICADA PROF. BAETA NEVES  
CENTRO DE ECOLOGIA E BIOLOGIA VEGETAL  
CENTRO DE ECONOMIA AGRÁRIA E SOCIOLOGIA RURAL  
CENTRO DE ELECTRODINÂMICA  
CENTRO DE ELECTROQUÍMICA E CINÉTICA  
CENTRO DE ELECTROTECNIA TEÓRICA E MEDIDAS ELÉCTRICAS DO IST  
CENTRO DE ENERGIA ELÉCTRICA - CEEL  
CENTRO DE ENGENHARIA BIOLÓGICA  
CENTRO DE ENGENHARIA CIVIL  
CENTRO DE ENGENHARIA MECÂNICA  
CENTRO DE ESPECTROMETRIA DE MASSA  
CENTRO DE ESTATÍSTICA E APLICAÇÕES DA UNIVERSIDADE DE LISBOA  
CENTRO DE ESTATÍSTICA E GESTÃO DE INFORMAÇÃO - CEGI  
CENTRO DE ESTRUTURAS LINEARES E COMBINATÓRIAS  
CENTRO DE ESTUDOS AFRICANOS  
CENTRO DE ESTUDOS AFRICANOS - UP  
CENTRO DE ESTUDOS ANGLÍSTICOS

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<sup>12</sup> The site <http://www.fct.mces.pt/pt/apoios/unidades/bd/> contains the lists of these units organised by scientific area (Consulta por área científica) or by name, district (location) and assessment (Nome, Distrito e Avaliação Global).

CENTRO DE ESTUDOS ANGLO-PORTUGUESES  
CENTRO DE ESTUDOS ARQUEOLÓGICOS DAS UNIVERSIDADES DE COIMBRA E PORTO  
CENTRO DE ESTUDOS CLÁSSICOS  
CENTRO DE ESTUDOS CLÁSSICOS E HUMANÍSTICOS  
CENTRO DE ESTUDOS COMPARATISTAS  
CENTRO DE ESTUDOS DA CRIANÇA  
CENTRO DE ESTUDOS DA MACARONÉSIA - CIÊNCIAS DA VIDA E DA TERRA  
CENTRO DE ESTUDOS DAS MIGRAÇÕES E DAS RELAÇÕES INTERCULTURAIS - CEMRI  
CENTRO DE ESTUDOS DE ANTROPOLOGIA SOCIAL  
CENTRO DE ESTUDOS DE ARQUITECTURA  
CENTRO DE ESTUDOS DE ARQUITECTURA E URBANISMO  
CENTRO DE ESTUDOS DE BIOQUÍMICA E FISILOGIA  
CENTRO DE ESTUDOS DE CIÊNCIA ANIMAL  
CENTRO DE ESTUDOS DE CIÊNCIAS FARMACÊUTICAS  
CENTRO DE ESTUDOS DE COMUNICAÇÃO E LINGUAGENS  
CENTRO DE ESTUDOS DE CULTURAS LUSÓFONAS - CECLU  
CENTRO DE ESTUDOS DE DOENÇAS PULMONARES CNL3  
CENTRO DE ESTUDOS DE ECONOMIA EUROPEIA E INTERNACIONAL - CEDIN  
CENTRO DE ESTUDOS DE ECONOMIA INDUSTRIAL, DO TRABALHO E DA EMPRESA - CETE  
CENTRO DE ESTUDOS DE ECOSISTEMAS MEDITERRÂNICOS  
CENTRO DE ESTUDOS DE ENGENHARIA RURAL  
CENTRO DE ESTUDOS DE FENÓMENOS DE TRANSPORTE  
CENTRO DE ESTUDOS DE FÍSICA, ACÚSTICA E TELECOMUNICAÇÕES - CEFAT  
CENTRO DE ESTUDOS DE GEOGRAFIA E PLANEAMENTO REGIONAL  
CENTRO DE ESTUDOS DE GESTÃO DO IST (CEG-IST)  
CENTRO DE ESTUDOS DE HIDROSISTEMAS - CEHIDRO  
CENTRO DE ESTUDOS DE HISTÓRIA CONTEMPORÂNEA PORTUGUESA  
CENTRO DE ESTUDOS DE LINGUÍSTICA GERAL E APLICADA - CELGA  
CENTRO DE ESTUDOS DE MATERIAIS POR DIFRAÇÃO DE RAIOS X  
CENTRO DE ESTUDOS DE QUÍMICA ORGÂNICA, FITOQUÍMICA E FARMACOLOGIA  
CENTRO DE ESTUDOS DE TEATRO  
CENTRO DE ESTUDOS DO AMBIENTE E DO MAR - CESAM  
CENTRO DE ESTUDOS DO DEPARTAMENTO DE ENGENHARIA CIVIL  
CENTRO DE ESTUDOS EM INOVAÇÃO, TECNOLOGIA E POLÍTICAS DE DESENVOLVIMENTO  
CENTRO DE ESTUDOS FARMACÊUTICOS  
CENTRO DE ESTUDOS FLORESTAIS  
CENTRO DE ESTUDOS GEOGRÁFICOS - COIMBRA  
CENTRO DE ESTUDOS GEOGRÁFICOS - LISBOA  
CENTRO DE ESTUDOS GEOLÓGICOS  
CENTRO DE ESTUDOS HISTÓRICOS  
CENTRO DE ESTUDOS HUMANÍSTICOS  
CENTRO DE ESTUDOS INTERDISCIPLINARES DO SÉCULO XX - CEIS 20  
CENTRO DE ESTUDOS MACROECONÓMICOS E PREVISÃO - CEMPRE  
CENTRO DE ESTUDOS SOBRE ÁFRICA E DO DESENVOLVIMENTO - CESA  
CENTRO DE ESTUDOS SOCIAIS - CES  
CENTRO DE ESTUDOS TERRITORIAIS  
CENTRO DE FARMACOLOGIA E BIOPATOLOGIA QUÍMICA  
CENTRO DE FARMACOLOGIA EXPERIMENTAL E CLÍNICA  
CENTRO DE FILOSOFIA DA UNIVERSIDADE DE LISBOA  
CENTRO DE FÍSICA ATÓMICA  
CENTRO DE FÍSICA COMPUTACIONAL

CENTRO DE FÍSICA DA MATÉRIA CONDENSADA  
CENTRO DE FÍSICA DAS INTERACÇÕES FUNDAMENTAIS  
CENTRO DE FÍSICA DO PORTO  
CENTRO DE FÍSICA DOS PLASMAS  
CENTRO DE FÍSICA E INVESTIGAÇÃO TECNOLÓGICA - CEFITEC  
CENTRO DE FÍSICA MOLECULAR  
CENTRO DE FÍSICA NUCLEAR  
CENTRO DE FÍSICA TEÓRICA DA UNIVERSIDADE DE COIMBRA  
CENTRO DE FUSÃO NUCLEAR - CFN  
CENTRO DE GASTROENTEROLOGIA - COIMBRA  
CENTRO DE GASTROENTEROLOGIA - LISBOA  
CENTRO DE GENÉTICA E BIOLOGIA MOLECULAR  
CENTRO DE GEOCIÊNCIAS  
CENTRO DE GEOFÍSICA - ÉVORA  
CENTRO DE GEOFÍSICA - LISBOA  
CENTRO DE GEOLOGIA - LISBOA  
CENTRO DE GEOLOGIA DA UNIVERSIDADE DO PORTO  
CENTRO DE GEOTECNIA  
CENTRO DE HEMATOLOGIA E IMUNOLOGIA - INSTITUTO DE IMUNOLOGIA - CHIUL  
CENTRO DE HISTOFISIOLOGIA, PATOLOGIA EXPERIMENTAL E BIOLOGIA DO  
DESENVOLVIMENTO  
CENTRO DE HISTÓRIA  
CENTRO DE HISTÓRIA DA ARTE  
CENTRO DE HISTÓRIA DA CULTURA  
CENTRO DE HISTÓRIA DA SOCIEDADE E DA CULTURA  
CENTRO DE HISTÓRIA DE ALÉM-MAR  
CENTRO DE INFORMÁTICA E SISTEMAS  
CENTRO DE INFORMÁTICA E TECNOLOGIAS DA INFORMAÇÃO - CITI CENTRO DE  
INSTRUMENTAÇÃO  
CENTRO DE INTELIGÊNCIA ARTIFICIAL - CENTRIA  
CENTRO DE INVESTIGAÇÃO - DIDÁCTICA E TECNOLOGIA NA FORMAÇÃO DE  
FORMADORES  
CENTRO DE INVESTIGAÇÃO DA UNIVERSIDADE ATLÂNTICA  
CENTRO DE INVESTIGAÇÃO DE DESENVOLVIMENTO E ECONOMIA REGIONAL - CIDER  
CENTRO DE INVESTIGAÇÃO DE ENGENHARIA APLICADA - CIEA  
CENTRO DE INVESTIGAÇÃO DE MATERIAIS - CENIMAT  
CENTRO DE INVESTIGAÇÃO DE OTORRINOLARINGOLOGIA  
CENTRO DE INVESTIGAÇÃO DE PATOBIOLOGIA MOLECULAR  
CENTRO DE INVESTIGAÇÃO DE RECURSOS NATURAIS  
CENTRO DE INVESTIGAÇÃO DE SISTEMAS ELÉCTRICOS - CISE  
CENTRO DE INVESTIGAÇÃO E ESTUDOS DE SOCIOLOGIA  
CENTRO DE INVESTIGAÇÃO E INTERVENÇÃO EDUCATIVAS - CIIE PORTO  
CENTRO DE INVESTIGAÇÃO E INTERVENÇÃO SOCIAL  
CENTRO DE INVESTIGAÇÃO E TECNOLOGIA AGRÁRIA DOS AÇORES - CITA - A  
CENTRO DE INVESTIGAÇÃO EM ANTROPOLOGIA  
CENTRO DE INVESTIGAÇÃO EM CIÊNCIAS GEO-ESPACIAIS  
CENTRO DE INVESTIGAÇÃO EM EDUCAÇÃO  
CENTRO DE INVESTIGAÇÃO EM EDUCAÇÃO  
CENTRO DE INVESTIGAÇÃO EM ENGENHARIA CIVIL  
CENTRO DE INVESTIGAÇÃO EM ENGENHARIA DOS PROCESSOS QUÍMICOS E DOS  
PRODUTOS DA FLORESTA  
CENTRO DE INVESTIGAÇÃO EM GENÉTICA MOLECULAR HUMANA  
CENTRO DE INVESTIGAÇÃO EM HISTÓRIA E FILOSOFIA DA CIÊNCIA E DA

## TECNOLOGIA

CENTRO DE INVESTIGAÇÃO EM MATEMÁTICA E APLICAÇÕES - CIMA  
CENTRO DE INVESTIGAÇÃO EM MATERIAIS CERÂMICOS E COMPÓSITOS - CICECO  
CENTRO DE INVESTIGAÇÃO EM PSICOLOGIA  
CENTRO DE INVESTIGAÇÃO EM QUÍMICA DA UNIVERSIDADE DO PORTO  
CENTRO DE INVESTIGAÇÃO EM SOCIOLOGIA ECONÓMICA E DAS ORGANIZAÇÕES - SOCIUS  
CENTRO DE INVESTIGAÇÃO INTERDISCIPLINAR EM SANIDADE ANIMAL  
CENTRO DE INVESTIGAÇÃO JURÍDICO-ECONÓMICA  
CENTRO DE INVESTIGAÇÃO MARINHA E AMBIENTAL (CIMA)  
CENTRO DE INVESTIGAÇÃO OPERACIONAL  
CENTRO DE INVESTIGAÇÃO SOBRE ECONOMIA FINANCEIRA - CIEF  
CENTRO DE INVESTIGAÇÃO SOBRE ECONOMIA PORTUGUESA - CISEP  
CENTRO DE INVESTIGAÇÕES REGIONAIS E URBANAS - CIRIUS  
CENTRO DE LÍNGUAS E CULTURAS  
CENTRO DE LINGUÍSTICA  
CENTRO DE LINGUÍSTICA DA UNIVERSIDADE DE LISBOA  
CENTRO DE LINGUÍSTICA DA UNIVERSIDADE DO PORTO  
CENTRO DE LITERATURA E CULTURA PORTUGUESA E BRASILEIRA  
CENTRO DE LITERATURAS DE EXPRESSÃO PORTUGUESA - CLEPUL  
CENTRO DE MALÁRIA E OUTRAS DOENÇAS TROPICAIS  
CENTRO DE MATEMÁTICA  
CENTRO DE MATEMÁTICA - CMAT  
CENTRO DE MATEMÁTICA APLICADA - PORTO  
CENTRO DE MATEMÁTICA APLICADA À PREVISÃO E DECISÃO ECONÓMICA - CEMAPRE  
CENTRO DE MATEMÁTICA DA UNIVERSIDADE DE COIMBRA  
CENTRO DE MATEMÁTICA DA UNIVERSIDADE DO PORTO  
CENTRO DE MATEMÁTICA E APLICAÇÕES - CEMAT  
CENTRO DE MATEMÁTICA E APLICAÇÕES - CMA  
CENTRO DE MATEMÁTICA E APLICAÇÕES FUNDAMENTAIS  
CENTRO DE METABOLISMO E ENDOCRINOLOGIA  
CENTRO DE MICOLOGIA  
CENTRO DE MICROBIOLOGIA E INDÚSTRIAS AGRÍCOLAS  
CENTRO DE MICROCIRCULAÇÃO E BIOPATOLOGIA VASCULAR  
CENTRO DE MODELAÇÃO ECOLÓGICA - IMAR  
CENTRO DE MORFOLOGIA EXPERIMENTAL  
CENTRO DE NEUROCIÊNCIAS DE COIMBRA - CNC  
CENTRO DE NEUROCIÊNCIAS DE LISBOA  
CENTRO DE NUTRIÇÃO E METABOLISMO  
CENTRO DE OCEANOGRAFIA  
CENTRO DE PATOGÉNESE MOLECULAR  
CENTRO DE PEDOLOGIA  
CENTRO DE PETROLOGIA E GEOQUÍMICA  
CENTRO DE PNEUMOLOGIA  
CENTRO DE PROCESSOS QUÍMICOS  
CENTRO DE PSICOLOGIA CLÍNICA E EXPERIMENTAL, DESENVOLVIMENTO, COGNIÇÃO E PERSONALIDADE  
CENTRO DE PSICOLOGIA DA UNIVERSIDADE DO PORTO  
CENTRO DE PSICOMETRIA E PSICOLOGIA DA EDUCAÇÃO  
CENTRO DE PSICOPEDAGOGIA  
CENTRO DE QUÍMICA - COIMBRA  
CENTRO DE QUÍMICA - PORTO

CENTRO DE QUÍMICA ESTRUTURAL  
CENTRO DE QUÍMICA FINA E BIOTECNOLOGIA  
CENTRO DE QUÍMICA FÍSICA MOLECULAR  
CENTRO DE RECURSOS MICROBIOLÓGICOS - CREM  
CENTRO DE RECURSOS MINERAIS, MINERALOGIA E CRISTALOGRAFIA - CREMINER  
CENTRO DE ROBÓTICA INTELIGENTE  
CENTRO DE SISTEMAS TELEMÁTICOS E COMPUTACIONAIS  
CENTRO DE SISTEMAS URBANOS E REGIONAIS - CESUR  
CENTRO DE TECNOLOGIA MECÂNICA E AUTOMAÇÃO  
CENTRO DE TRADIÇÕES POPULARES PORTUGUESAS  
CENTRO DO IMAR (INSTITUTO DO MAR) DA UNIVERSIDADE DOS AÇORES  
CENTRO INTERDISCIPLINAR DE ESTUDO DA PERFORMANCE HUMANA  
CENTRO INTERDISCIPLINAR DE ESTUDOS EDUCACIONAIS  
CENTRO INTERDISCIPLINAR DE HISTÓRIA, CULTURAS E SOCIEDADES DA  
UNIVERSIDADE DE ÉVORA  
CENTRO INTERDISCIPLINAR EM TECNOLOGIAS DA PRODUÇÃO E ENERGIA  
CENTRO INTERUNIVERSITÁRIO DE ESTUDOS CAMONIANOS  
CENTRO INTERUNIVERSITÁRIO DE ESTUDOS GERMANÍSTICOS  
CENTRO INTERUNIVERSITÁRIO DE HISTÓRIA DA ESPIRITUALIDADE  
CENTRO MULTIDISCIPLINAR DE ASTROFÍSICA - CENTRA  
CENTRO MULTIDISCIPLINAR DE QUÍMICA DO AMBIENTE  
CENTRO PORTUGUÊS DE INVESTIGAÇÃO EM HISTÓRIA E TRABALHO SOCIAL  
CEOS - INSTITUTO DE INVESTIGAÇÕES SOCIOLOGICAS  
CEPESE - CENTRO DE ESTUDOS DA POPULAÇÃO ECONOMIA E SOCIEDADE  
CETO - CENTRO DE CIÊNCIAS E TECNOLOGIAS ÓPTICAS  
CIGA - CENTRO DE INVESTIGAÇÃO EM GEOCIÊNCIAS APLICADAS  
CIIMAR - CENTRO INTERDISCIPLINAR DE INVESTIGAÇÃO MARINHA E AMBIENTAL  
CONSTRUÇÃO DO CONHECIMENTO PEDAGÓGICO NOS SISTEMAS DE FORMAÇÃO  
CVRM - CENTRO DE GEO-SISTEMAS  
DEPARTAMENTO DE ANTROPOLOGIA SOCIAL  
DIABETES, CRESCIMENTO, FACTORES DE CRESCIMENTO E NEFROPATIA DIABÉTICA  
DINÂMIA - CENTRO DE ESTUDOS SOBRE A MUDANÇA SOCIOECONÓMICA  
ESPECTROSCOPIA RMN  
EVOLUÇÃO LITOSFÉRICA E DO MEIO AMBIENTAL DE SUPERFÍCIE - ELMAS  
FÍSICA DE SEMICONDUCTORES EM CAMADAS, OPTOELECTRÓNICA E SISTEMAS  
DESORDENADOS  
GABINETE DE ESTUDOS DE DESENVOLVIMENTO E ORDENAMENTO DO TERRITÓRIO  
GABINETE DE HISTÓRIA ECONÓMICA E SOCIAL  
GENÉTICA E DESENVOLVIMENTO DA TOLERÂNCIA NATURAL  
GRUPO DE BIOGEOQUÍMICA - IMAR  
GRUPO DE DINÂMICA NÃO-LINEAR  
GRUPO DE ESTUDOS DE HISTÓRIA DA VITICULTURA DURIENSE  
GRUPO DE ESTUDOS MONETÁRIOS E FINANCEIROS  
GRUPO DE FÍSICA NUCLEAR DA MATÉRIA CONDENSADA  
GRUPO DE FÍSICA-MATEMÁTICA  
GRUPO DE MATERIAIS METÁLICOS DO INSTITUTO DE MATERIAIS - IMAT - NÚCLEO  
FEUP  
ICEMS - INSTITUTO DE CIÊNCIA E ENGENHARIA DE MATERIAIS E SUPERFÍCIES  
(COIMBRA)  
ICEMS - INSTITUTO DE CIÊNCIA E ENGENHARIA DE MATERIAIS E SUPERFÍCIES  
(LISBOA)  
ICIST - INSTITUTO DE ENGENHARIA DE ESTRUTURAS, TERRITÓRIO E CONSTRUÇÃO  
IMAR - CENTRO INTERDISCIPLINAR DE COIMBRA

INESC - MICROSISTEMAS E NANOTECNOLOGIAS  
INESC ID - INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES:  
INVESTIGAÇÃO E DESENVOLVIMENTO EM LISBOA  
INOVA - ECONOMIA  
INSTITUTO BIOMÉDICO DE INVESTIGAÇÃO DE LUZ E IMAGEM - IBILI  
INSTITUTO DE BIOLOGIA MOLECULAR E CELULAR - IBMC  
INSTITUTO DE BIOTECNOLOGIA E QUÍMICA FINA - MINHO  
INSTITUTO DE BIOTECNOLOGIA E QUÍMICA FINA - PÓLO LISBOA  
INSTITUTO DE CIÊNCIAS AGRÁRIAS MEDITERRÂNICAS - ICAM - PÓLO ÉVORA  
INSTITUTO DE CIÊNCIAS E TECNOLOGIAS AGRÁRIAS E AGRO-ALIMENTARES  
INSTITUTO DE CIÊNCIAS SOCIAIS  
INSTITUTO DE COORDENAÇÃO DA INVESTIGAÇÃO CIENTÍFICA - ICIC  
INSTITUTO DE ENGENHARIA BIOMÉDICA - INEB  
INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES - INESC COIMBRA  
INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES DO PORTO - INESC  
PORTO  
INSTITUTO DE ENGENHARIA ELECTRÓNICA E TELEMÁTICA DE AVEIRO - IEETA  
INSTITUTO DE ENGENHARIA MECÂNICA - IDMEC  
INSTITUTO DE ESTUDOS INGLESES  
INSTITUTO DE ESTUDOS NORTE-AMERICANOS  
INSTITUTO DE ETNOMUSICOLOGIA  
INSTITUTO DE FILOSOFIA  
INSTITUTO DE FILOSOFIA DA LINGUAGEM  
INSTITUTO DE HISTÓRIA CONTEMPORÂNEA  
INSTITUTO DE HISTÓRIA DA ARTE  
INSTITUTO DE HISTÓRIA MODERNA  
INSTITUTO DE LINGUÍSTICA TEÓRICA E COMPUTACIONAL - ILTEC  
INSTITUTO DE LITERATURA COMPARADA  
INSTITUTO DE MATERIAIS - IMAT - MINHO  
INSTITUTO DE PATOLOGIA E IMUNOLOGIA MOLECULAR DA UNIVERSIDADE DO  
PORTO (IPATIMUP)  
INSTITUTO DE PSICOLOGIA COGNITIVA, DESENVOLVIMENTO VOCACIONAL E SOCIAL  
INSTITUTO DE SISTEMAS E ROBÓTICA - ISR - COIMBRA  
INSTITUTO DE SISTEMAS E ROBÓTICA - ISR - LISBOA  
INSTITUTO DE SISTEMAS E ROBÓTICA - ISR - PORTO  
INSTITUTO DE TECNOLOGIA QUÍMICA E BIOLÓGICA  
INSTITUTO DE TECNOLOGIAS DE PRODUÇÃO NA CONSTRUÇÃO - PÓLO COIMBRA  
INSTITUTO DE TELECOMUNICAÇÕES - IT - AVEIRO  
INSTITUTO DE TELECOMUNICAÇÕES - IT - COIMBRA  
INSTITUTO DE TELECOMUNICAÇÕES - IT - LISBOA  
INSTITUTO DO AMBIENTE E VIDA  
INSTITUTO TECNOLOGIA BIOMÉDICA  
LABORATÓRIO DE AERODINÂMICA INDUSTRIAL  
LABORATÓRIO DE CATÁLISE E MATERIAIS  
LABORATÓRIO DE ENGENHARIA DE PROCESSOS, AMBIENTE E ENERGIA - LEPAE  
LABORATÓRIO DE INSTRUMENTAÇÃO E FÍSICA EXPERIMENTAL DE PARTÍCULAS - LIP  
- COIMBRA  
LABORATÓRIO DE INSTRUMENTAÇÃO E FÍSICA EXPERIMENTAL DE PARTÍCULAS - LIP  
- LISBOA  
LABORATÓRIO DE INTELIGÊNCIA ARTIFICIAL E CIÊNCIA DE COMPUTADORES  
LABORATÓRIO DE MODELOS E ARQUITECTURAS COMPUTACIONAIS - LABMAC  
LABORATÓRIO DE PROCESSOS DE SEPARAÇÃO E REACÇÃO - LSRE  
LABORATÓRIO DE QUÍMICA INORGÂNICA PURA E DE APLICAÇÃO INTERDISCIPLINAR



LABORATÓRIO DE SISTEMAS INFORMÁTICOS DE GRANDE-ESCALA  
LABORATÓRIO DE TECTONOFÍSICA E TECTÓNICA EXPERIMENTAL - LATTEX  
LABORATÓRIO MARÍTIMO DA GUIA - IMAR  
LINGUAGEM, INTERPRETAÇÃO E FILOSOFIA - LIF  
MARETEC - CENTRO DE AMBIENTE E TECNOLOGIA MARÍTIMOS  
MATEMÁTICA APLICADA - IISA  
MATEMÁTICA E APLICAÇÕES  
MATERIAIS TÊXTEIS E PAPELEIROS  
MECÂNICA EXPERIMENTAL E NOVOS MATERIAIS  
MINERAIS INDUSTRIAIS E ARGILAS  
NOVAS TECNOLOGIAS E PROCESSOS AVANÇADOS DE PRODUÇÃO  
NÚCLEO DE ESTUDOS DE POPULAÇÃO E SOCIEDADE - NEPS  
NÚCLEO DE ESTUDOS EM CIÊNCIAS EMPRESARIAIS - NECE  
NÚCLEO DE ESTUDOS EM GESTÃO (NEGE)  
NÚCLEO DE INVESTIGAÇÃO EM MICROECONOMIA APLICADA (NIMA)  
NÚCLEO DE INVESTIGAÇÃO EM POLÍTICAS ECONÓMICAS (NIPE)  
NÚCLEO IFIMUP - PÓLO IMAT PORTO  
PROTECÇÃO DAS PLANTAS E DOS PRODUTOS AGRÍCOLAS ARMAZENADOS - IISA  
PSICOLOGIA COGNITIVA DO DESENVOLVIMENTO E DA EDUCAÇÃO  
PSICOLOGIA DA COGNIÇÃO E DA AFECTIVIDADE  
QUÍMICA AMBIENTAL  
QUÍMICA BIOLÓGICA  
QUÍMICA ORGÂNICA E PRODUTOS NATURAIS E AGROALIMENTARES  
QUÍMICA-FÍSICA MOLECULAR  
SECTOR DE PRODUÇÃO AGRÍCOLA E ANIMAL  
SOCINOVA - GABINETE DE INVESTIGAÇÃO EM SOCIOLOGIA APLICADA  
UIED - UNIDADE DE INVESTIGAÇÃO EDUCAÇÃO E DESENVOLVIMENTO  
UNIDADE DE BIOTECNOLOGIA AMBIENTAL  
UNIDADE DE CIÊNCIAS E TECNOLOGIA FARMACÊUTICAS  
UNIDADE DE CONCEPÇÃO E VALIDAÇÃO EXPERIMENTAL  
UNIDADE DE DETECÇÃO REMOTA  
UNIDADE DE ENGENHARIA E TECNOLOGIA NAVAL  
UNIDADE DE ESTUDO E INVESTIGAÇÃO DE CIÊNCIA, TECNOLOGIA E SOCIEDADE  
UNIDADE DE ESTUDO E INVESTIGAÇÃO DE CIÊNCIAS SOCIAIS APLICADAS  
UNIDADE DE ESTUDOS SOBRE A COMPLEXIDADE NA ECONOMIA  
UNIDADE DE FARMACOLOGIA E FARMACOTOXICOLOGIA  
UNIDADE DE FARMACOTERAPIA, NUTRIÇÃO E ESTUDOS BIOFARMACÊUTICOS  
UNIDADE DE FLUIDOS E ENERGIA  
UNIDADE DE GESTÃO E ENGENHARIA INDUSTRIAL  
UNIDADE DE I&D DE CIÊNCIAS DA EDUCAÇÃO  
UNIDADE DE I&D DE FÍSICA E MECÂNICA DOS MATERIAIS  
UNIDADE DE INTEGRAÇÃO DE SISTEMAS E PROCESSOS AUTOMATIZADOS  
UNIDADE DE INVESTIGAÇÃO E DESENVOLVIMENTO CARDIOVASCULAR  
UNIDADE DE INVESTIGAÇÃO EM CIÊNCIAS ECONÓMICAS E EMPRESARIAIS - UNICEE  
UNIDADE DE INVESTIGAÇÃO EM CIÊNCIAS SOCIAIS  
UNIDADE DE INVESTIGAÇÃO EM COMUNICAÇÃO E ARTE  
UNIDADE DE INVESTIGAÇÃO EM DESENVOLVIMENTO EMPRESARIAL - UNIDE  
UNIDADE DE INVESTIGAÇÃO EM ECO-ETOLOGIA  
UNIDADE DE MÉTODOS NUMÉRICOS EM MECÂNICA E ENGENHARIA ESTRUTURAL  
UNIDADE DE PARASITOLOGIA E MICROBIOLOGIA MÉDICAS  
UNIDADE DE PREVENÇÃO CARDIOVASCULAR INTEGRADA - DNT UNIDADE  
MULTIDISCIPLINAR DE INVESTIGAÇÃO BIOMÉDICA - UMIB

## **Annex 2.** The List of Associated Laboratories

Associação para Investigação Biomédica e Inovação em Luz e Imagem (ABILI) - Coimbra  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=1> CENTRO DE NEUROCIÊNCIAS DE COIMBRA (CNC)

Centro de Biologia e Patologia Molecular, Instituto de Medicina Molecular  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=5> CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR (CEBIP), INSTITUTO DE MEDICINA MOLECULAR

Centro de Ciências do Mar do Algarve (CCMAR)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=15> CENTRO DE INVESTIGAÇÃO MARINHA E AMBIENTAL (CIMAR)

Centro de Estudos em Inovação, Tecnologia e Políticas de Desenvolvimento (IN+)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=9> INSTITUTO DE SISTEMAS E ROBÓTICA - LISBOA (ISR-Lisboa)

Centro de Estudos Sociais (CES)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=12> CENTRO DE ESTUDOS SOCIAIS (CES)

Centro de Física de Plasmas (CFP)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=10> CENTRO DE FUSÃO NUCLEAR (CFN)

Centro de Fusão Nuclear (CFN)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=10> CENTRO DE FUSÃO NUCLEAR (CFN)

Centro de Gastrenterologia de Lisboa (CGL)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=5> CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR (CEBIP), INSTITUTO DE MEDICINA MOLECULAR

Centro de Investigação em Materiais Cerâmicos e Compósitos (CICECO)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=11> CENTRO DE INVESTIGAÇÃO EM MATERIAIS CERÂMICOS E COMPÓSITOS (CICECO)

Centro de Investigação Marinha e Ambiental (CIMAR)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=15> CENTRO DE INVESTIGAÇÃO MARINHA E AMBIENTAL (CIMAR)

Centro de Microcirculação e Biopatologia Vascular (CMBV)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=5> CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR (CEBIP), INSTITUTO DE MEDICINA MOLECULAR

Centro de Neurociências de Coimbra (CNC)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=1> CENTRO DE NEUROCIÊNCIAS DE COIMBRA (CNC)

Centro de Neurociências de Lisboa (CNL)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=5> CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR (CEBIP), INSTITUTO DE MEDICINA MOLECULAR

Centro de Nutrição e Metabolismo (CNM)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=5> CENTRO DE BIOLOGIA E PATOLOGIA MOLECULAR (CEBIP), INSTITUTO DE MEDICINA MOLECULAR

Centro de Química da Universidade do Porto (CEQUP)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=6> CENTRO DE QUÍMICA FINA E BIOTECNOLOGIA (CQFB), LABORATÓRIO ASSOCIADO DE QUÍMICA VERDE – TECNOLOGIAS E PROCESSOS LIMPOS

Centro de Química Fina e Biotecnologia, Laboratório Associado de Química Verde - Tecnologias e Processos Limpos  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=6> CENTRO DE QUÍMICA FINA E BIOTECNOLOGIA (CQFB), LABORATÓRIO ASSOCIADO DE QUÍMICA VERDE – TECNOLOGIAS E PROCESSOS LIMPOS

Centro de Recursos Minerais, Mineralogia e Cristalografia (CREMINER)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=9> INSTITUTO DE SISTEMAS E ROBÓTICA - LISBOA (ISR-Lisboa)

Centro do IMAR da Universidade dos Açores (IMAR-Açores)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=9> INSTITUTO DE SISTEMAS E ROBÓTICA - LISBOA (ISR-Lisboa)

Instituto de Biologia Experimental e Tecnologia (IBET) - Oeiras  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=4> INSTITUTO DE TECNOLOGIA QUÍMICA E BIOLÓGICA (ITQB)

Instituto de Biologia Molecular e Celular (IBMC)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=2> INSTITUTO DE BIOLOGIA MOLECULAR E CELULAR (IBMC)

Instituto de Ciências Sociais (ICS)  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=13> INSTITUTO DE CIÊNCIAS SOCIAIS (ICS)

Instituto de Engenharia Biomédica (INEB) - Porto  
<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=2> INSTITUTO

DE BIOLOGIA MOLECULAR E CELULAR (IBMC)

Instituto de Engenharia de Sistemas e Computadores do Porto (INESC-Porto)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=14>

INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES DO PORTO  
(INESC PORTO)

Instituto de Patologia e Imunologia da Universidade do Porto (IPATIMUP)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=3> INSTITUTO  
DE PATOLOGIA E IMUNOLOGIA DA UNIVERSIDADE DO PORTO (IPATIMUP)

Instituto de Sistemas e Robótica (ISR-Lisboa)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=9> INSTITUTO  
DE SISTEMAS E ROBÓTICA - LISBOA (ISR-Lisboa)

Instituto de Tecnologia Química e Biológica (ITQB)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=4> INSTITUTO  
DE TECNOLOGIA QUÍMICA E BIOLÓGICA (ITQB)

Instituto de Telecomunicações - Aveiro (IT-Aveiro)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=8> INSTITUTO  
DE TELECOMUNICAÇÕES (IT)

Instituto de Telecomunicações - Coimbra (IT-Coimbra)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=8> INSTITUTO  
DE TELECOMUNICAÇÕES (IT)

Instituto de Telecomunicações - Lisboa (IT-Lisboa)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=8> INSTITUTO  
DE TELECOMUNICAÇÕES (IT)

Instituto Gulbenkian de Ciência (IGC) - Oeiras - Genética e Desenvolvimento da Tolerância  
Natural

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=4> INSTITUTO  
DE TECNOLOGIA QUÍMICA E BIOLÓGICA (ITQB)

Laboratório de Instrumentação e Física Experimental de Partículas - Coimbra (LIP-Coimbra)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=7>  
LABORATÓRIO DE INSTRUMENTAÇÃO E FÍSICA EXPERIMENTAL DE  
PARTÍCULAS (LIP)

Laboratório de Instrumentação e Física Experimental de Partículas - Lisboa (LIP-Lisboa)

<http://www.fct.mces.pt/labs/associados/index.asp?dados=true&lista=2&valor=7>  
LABORATÓRIO DE INSTRUMENTAÇÃO E FÍSICA EXPERIMENTAL DE  
PARTÍCULAS (LIP)

**Annex 3.** List of Institutes Non-Integrated in the Ministry of Science, Innovation and Higher Education Financing Structure

- Instituto das Pescas e do Mar (IPIMAR)
- Instituto de Investigação Científica Tropical (IICT)
- Instituto Geológico e Mineiro (IGM)
- Instituto Hidrográfico (IH)
- Instituto Nacional de Engenharia e Tecnologia Industrial (INETI)
- Instituto Nacional de Investigação Agrária (INIA)
- Instituto Nacional de Saúde Ricardo Jorge (INSA)
- Instituto Tecnológico e Nuclear (ITN)
- Laboratório Nacional de Engenharia Civil (LNEC)
- Instituto de Genética Médica Jacinto Magalhães (IGMJM)
- Instituto de Meteorologia (IM)
- Laboratório Nacional de Investigação Veterinária (LNIV)
- Direcção Geral de Protecção das Culturas