

# The Researchers Report 2012

## Country Profile: Portugal



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# 1. Key data

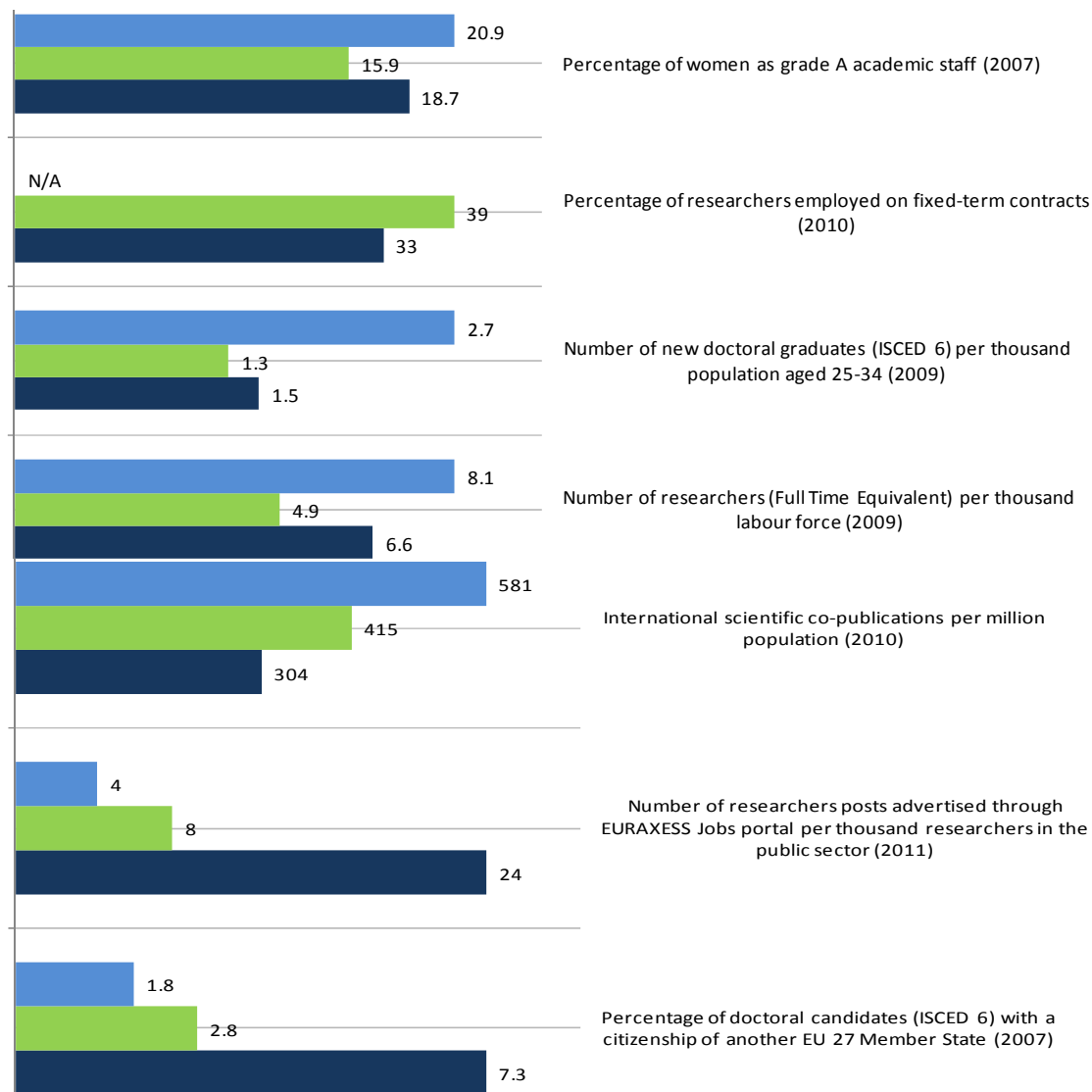
## National R&D intensity target

“The figure for Portugal on R&D intensity (GERD/GDP) is 1.66% in 2009 (0.71% public + 0.96% private). This compares to 0.73% in 2000, having had a very high average growth rate of 10.2% for the period 2000-09. The main feature for this period is the strong growth of private expenditure (0.28% of GDP in 2000) becoming higher than public expenditure from 2006 onwards. Despite the crisis, government spending on R&D increased in 2009 to EUR 205 million. In order to increase its economic competitiveness by raising its productivity and changing the structure of exporting enterprises, Portugal will have to maintain its efforts in increasing its investments in Research and Innovation. Portuguese authorities have recognised this and have set an ambitious, albeit realistic set of R&D targets for 2020: R&D intensity should account for 2.7% - 3.3%, of which 1.0% - 1.2% in the public sector and 1.7% - 2.1% in the private sector.”<sup>1</sup>

## Key indicators measuring the country's research performance

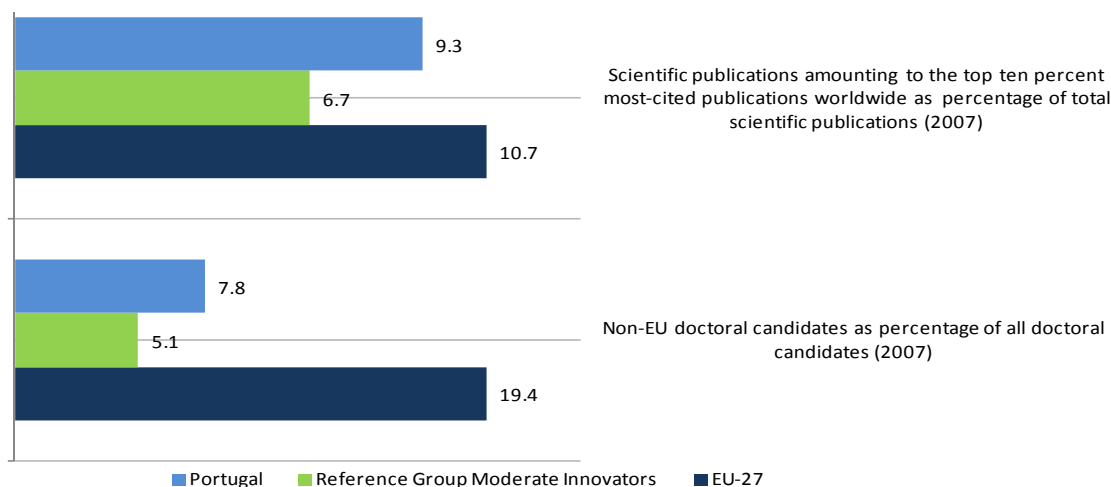
The figure below presents key indicators measuring Portugal's research performance against a reference group and the EU-27 average<sup>2</sup>.

Figure 1: Key indicators – Portugal



<sup>1</sup> European Commission (2011), “Innovation Union Competitiveness Report 2011”.

<sup>2</sup> The values refer to 2011 or the latest year available.



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, Science Metrix/Scopus (Elsevier), Innovation Union Scoreboard 2010

Notes: Based on their average innovation performance across 24 indicators the Czech Republic, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovakia and Spain show a performance below that of the EU27. These countries are the Moderate innovators<sup>3</sup>.

## Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

**Table 1: Human resources – Stock of researchers**

| Indicator                                       | Portugal | EU Average |
|-------------------------------------------------|----------|------------|
| Head Count per 1 000 active labour force (2008) | 13.25    | 9.45       |
| Head Count (2008)                               | 75 073   | -          |
| FTE per 1 000 active labour force (2009)        | 8.15     | 6.63       |
| Full time equivalent (FTE) (2009)               | 45 909   | -          |

Source: Deloitte

Data: Eurostat

## 2. National strategies

The Government of Portugal has adopted a package of measures aimed at training enough researchers to meet its R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Portugal's R&D targets, to promote attractive working conditions, and to address gender and dual career aspects.

**Table 2: National strategies**

| Measure                                                                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Commitment to Science initiative (Compromisso com a Ciência) (2006)</b>                     | The Commitment to Science initiative was launched by the Government. The initiative set ambitious targets for 2009 from investing, amongst others, in scientific knowledge and scientific and technical competence as well as in Human Resources and R&D institutions. The activities developed by the Commitment to Science initiative included implementation of 1 000 PhD programme contracts by 2009, the creation of four new Associated Laboratories in the fields of nanotechnology, energy and transport, the reform of the State Laboratory and the setting up of an S&T network of international partnerships. |
| <b>Legislation on research career (Scientific Research Career Remuneration Statute) (1999)</b> | The legislation targets researchers in the public sector, e.g. the Portuguese universities and the national laboratories. This law created a researchers' statute by covering rights and obligations related to researchers' remuneration, career prospects, social security coverage, etc.                                                                                                                                                                                                                                                                                                                              |

<sup>3</sup> European Commission (2011), "Innovation Union Scoreboard 2010".

| Measure                                                                                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Programme on Scientific Employment (Ciência Programme 2007 &amp; 2008)</b>                   | This programme was designed to increase the number of employment contracts for post-doctorates over a period of five years. Calls were launched in 2007 and 2008. By 2009, 1 200 work contracts had been agreed between the beneficiaries and Portuguese universities or research centres. The budget for 2009 was EUR 60 million, and support will end in 2013.                                                                                                                                                                                                                                                                                                       |
| <b>The Fundação para a Ciência e a Tecnologia (FCT) (ongoing)</b>                               | The FCT was established in 1997 in order to promote the advancement of scientific and technological knowledge in Portugal and abroad. Its mission is mainly accomplished through funding opportunities to institutions, research teams or individuals (via public open calls), and also through cooperation agreements and other forms of support in partnership with universities and other public or private institutions, in Portugal and abroad.                                                                                                                                                                                                                   |
| <b>The National Agency for Scientific and Technological Culture - Ciência Viva (since 1996)</b> | Ciência Viva was established by the Ministry for Science, Technology and Higher Education to promote a science and technology culture among the Portuguese population. Ciência Viva was conceived as an open programme, promoting alliances and fostering autonomous actions through its three actions: <ol style="list-style-type: none"> <li>1. A support programme for promoting scientific education in schools;</li> <li>2. A National Network of Ciência Viva Centres, for creating awareness and initiating interaction among stakeholders;</li> <li>3. National scientific awareness campaigns, for fostering the creation of science associations.</li> </ol> |
| <b>The National Evaluation and Assessment Agency (A3ES) (ongoing)</b>                           | The Agency was created in 2007 by the State to promote and ensure the quality of higher education. A3ES is independent in making decisions and it mainly focuses on the accreditation and evaluation activities of the doctoral programmes of the Portuguese Universities.                                                                                                                                                                                                                                                                                                                                                                                             |

Source: Deloitte

### 3. Women in the research profession

#### Measures supporting women researchers in top-level positions

In 2007, the percentage of women grade A academic staff was 20.9% in Portugal compared with 15.9% among the Innovation Union reference group and an EU average of 18.7%<sup>4</sup>.

#### Quotas to ensure a representative gender balance

Quotas or national targets and/or other measures to ensure a representative gender balance for researchers are not promoted by the Portuguese Government since the share of female scientists is relatively high in international terms and is on an upward trend.

#### Maternity leave

Fellowship beneficiaries are entitled to maternity leave. In the event of employment contracts with the host institution, the social security covers researchers throughout the period of the maternity leave and the fellowship is suspended. If the researcher has signed a project contract and goes on maternity leave, the contract cannot be extended.

In 2009, the notion of “maternity” leave has been replaced in Portuguese legislation by the more general concept of the “parental” leave.

### 4. Open, transparent and merit-based recruitment

#### Recruitment system

In Portugal, procedures for recruiting researchers are generally open and transparent. However, the existing legislative framework sometimes discourages the effectiveness of the system. Portuguese institutions do not always publish job vacancies online and English is not always used.

The FCT publishes the composition of the selection panel when fellowship programmes are assigned to the beneficiaries. These FCT fellowships are very important for Portugal and their continuation is a priority for the Government.

<sup>4</sup> See Figure 1 “Key indicators – Portugal”.

## Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

**Table 3: Open recruitment in higher education and public research institutions**

| Do institutions in the country currently have policies to ...?                                                                                               | Yes/No     | Description                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| – <b>publish job vacancies on relevant national online platforms</b>                                                                                         | Yes        | Institutions publish job vacancies on relevant national online platforms.                                                                                                                 |
| – <b>publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)</b>                                                                      | Not always | Institutions nearly always publish their vacancies in the national portal ERACareers (soon to be substituted by EURAXESS Portugal), and less frequently in the EURAXESS portal of the EC. |
| – <b>publish job vacancies in English</b>                                                                                                                    | Not always | In the ERACareers portal, it is not mandatory to publish Job vacancies in English (in the EURAXESS portal, publication in English is mandatory).                                          |
| – <b>systematically establish selection panels</b>                                                                                                           | Yes        | Institutions systematically establish selection panels.                                                                                                                                   |
| – <b>establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)</b> | Yes        | Institutions establish clear rules for the composition of selection panels.                                                                                                               |
| – <b>publish the composition of a selection panel (obliging the recruiting institution)</b>                                                                  | Yes        | The Fundação para a Ciência e a Tecnologia (FCT) publishes the composition of a selection panel.                                                                                          |
| – <b>publish the selection criteria together with job advert</b>                                                                                             | Yes        | All public institutions are obliged to publish vacancies together with selection criteria in one of the existing public media.                                                            |
| – <b>regulate a minimum time period between vacancy publication and the deadline for applying</b>                                                            | Yes        | Institutions regulate a minimum time period between vacancy publication and the deadline for applying.                                                                                    |
| – <b>place the burden of proof on the employer to prove that the recruitment procedure was open and transparent</b>                                          | Yes        | Institutions place the burden of proof to prove that the recruitment procedure was open and transparent.                                                                                  |
| – <b>offer applicants the right to receive adequate feedback</b>                                                                                             | Yes        | Institutions offer applicants the right to receive adequate feedback.                                                                                                                     |
| – <b>offer applicants the right to appeal</b>                                                                                                                | Yes        | Institutions offer applicants the right to appeal.                                                                                                                                        |

Source: Deloitte

## EURAXESS Services Network

In 2011, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was four in Portugal compared with eight among the Innovation Union reference group and an EU average of 24<sup>5</sup>.

Information on entry conditions, transfer of social security and pension contributions, accommodation, administrative assistance, etc is available at EURAXESS Portugal portal. Job vacancies and grants announcements are also published on the EURAXESS portal.

During the period 2004-11, the average number of fellowships published was 2 625 per year while the average number of employment contracts was 551.

## 5. Education and training

### Measures to attract and train people to become researchers

The FCT is implementing a major fellowship programme, including five year contracts for PhD holders and post-doc, and PhD grants in an effort to increase the number of students taking science to a doctoral level. Nevertheless, the Government of Portugal has not adopted any concrete measure to increase the number of female students taking science to an advanced (doctoral) level as the female percentage is already high.

<sup>5</sup> See Figure 1 “Key indicators – Portugal”.

In Portugal, Science, Technology, Engineering and Mathematics (STEM) subjects are not promoted under concrete policy measures. However, the number of higher education graduates in Mathematics, Science and Technology (MST) has increased in recent years. The growth of Portuguese graduates in MST, between 2000 and 2007, was the highest in the EU-27 (Portugal percentage: 14.9% growth per year).

The Government of Portugal has developed fellowship schemes and launched awareness campaigns aimed at increasing young people's interest in (natural) science and technology with the ultimate aim of attracting them to become researchers. The table below summarises key measures implemented to achieve this.

**Table 4: Human Resources - Key programmes and initiatives**

| Measure                                                                     | Description                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fellowship schemes for PhD students and Post-doctorates (since 1997)</b> | The FCT implements both research projects and fellowships. As of 2010, 3 143 research projects were active, In terms of fellowships, 1 000 PhD contracts had been signed by 2008 and the number of PhD and post-doc grant holders reached 8 000. |

Source: Deloitte

### Doctoral graduates by gender

The table below shows doctoral graduates in Portugal by gender as a ratio of the total cohort population.

**Table 5: Doctoral graduates by gender**

| Indicator                                                                              | Portugal | EU average |
|----------------------------------------------------------------------------------------|----------|------------|
| <b>New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2009)</b> | 2.7      | 1.5        |
| <b>Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)</b> | 3.4      | 1.4        |
| <b>Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)</b>     | 2.0      | 1.6        |

Source: Deloitte

Data: Eurostat

### Funding of doctoral candidates

In Portugal, the two funding mechanisms for researchers are fellowships and employment contracts. The FCT funded 8 446 PhD fellowships and 1 186 employment contracts for post-doctorates under the Ciência 2007 and 2008 programmes.

By the end of 2009, 7 000 fellowships had been promoted (compared to 4 500 in 2005) with an overall expenditure of above EUR 140 million.

### Measures to increase the quality of doctoral training

All PhD programs promoted by Portuguese Universities are accredited and evaluated by the National Evaluation and Assessment Agency (A3ES) which guarantees their quality. The Agency also has the mandate to provide the Portuguese State with expertise in matters of higher education quality assurance, participate in the European quality assurance system (EQAR), and coordinate assessment and accreditation activities in Portugal with international institutions.

### Skills agenda for researchers

In Portugal, there are several funding programmes that offer training and skills development for young researchers. FCT supports several doctoral programmes implemented by Portuguese universities, as well as international doctoral programmes that involve collaborations of Portuguese and foreign universities.

## 6. Working conditions

The current R&D Units and Associate Laboratories Evaluation System was established in 1996 and there were only small changes up to its current version of 2007. The system evaluates the researcher working conditions offered by Portuguese Institutions. The evaluation procedure includes periodic assessments on behalf of international experts, as well as reports and activity plans. The evaluation exercise results in the award of a qualitative grade, which determines the volume of funding to be received by the institution up to the next evaluation.

### Remuneration

In Portugal, researchers' remuneration is based on their academic degrees and career stage.

### Researchers' Statute

A specific research career has been introduced in Portuguese legislation and applies to all researchers employed in the public sector (see chapter 2 "National strategies").

### 'European Charter for Researchers' & 'Code of Conduct for the Recruitment of Researchers'

The 'Charter & Code' have not yet been implemented in Portugal. The FCT, the Rectors' Council and the Council of Associate Laboratories have established working groups to analyse the possible implementation of the 'Charter & Code'.

### Autonomy of institutions

Portuguese Institutions enjoy full autonomy in their recruitment policy. Nevertheless, Universities have the right to hire both researchers and teachers of different profiles, while national laboratories can only take on researchers and no other academic staff. Public universities are not autonomous in setting researcher pay scales.

### Career development

Portuguese institutions can provide career prospects to researchers based on the budget they have available. Some institutions and University departments have adopted measures very similar to the tenure track system.

The FCT has three evaluation criteria when selecting researchers to be funded; the merit of the candidate, the merit of the project and the quality conditions of the host Institution, including career provisions.

### Social security benefits (sickness, unemployment, old-age)

Researchers are eligible to receive sickness benefits only if they have signed employment contracts with the host institution. They are not entitled to unemployment benefits in any circumstances. Fellowship beneficiaries subscribe to old-age (pension) benefits on a voluntary basis. The common practice is that the host institution pays the minimum contribution and the fellowship student tops this up at their own expense.

## 7. Collaboration between academia and industry

Specific programmes promote a close collaboration between academia and the business sector.

Individuals may apply for a doctoral degree grant in a company in Portugal that satisfies the criteria set forth in Article 30 §1 of Decree Law No 74/2006, of 24 March 2006, for the purpose of carrying out doctoral degree work in the business environment on subjects of interest to that enterprise, as long as this work is accepted by the university that confers the respective doctoral degree.

In order to qualify for this type of grant, a plan of work must be submitted detailing the objectives, the support to be provided for the recipient's research activity in the enterprise and the expected interaction between the enterprise and the university where the recipient is enrolled in the doctoral degree program. The form of articulation between the academic orientation for the doctoral program provided by a university professor or researcher and the corresponding company supervision must be set forth in a protocol signed by both entities involved. These grants are, in principle, one year in length, renewable for up to a total of four years, and cannot be awarded for periods of less than three consecutive months. The grants provided for in this article are governed by a separate set of regulations.

## 8. Mobility and international attractiveness

In 2007, the percentage of doctoral candidates (ISCED 6) who were citizens of another EU-27 Member State was 1.8% in Portugal compared with 2.8% among the Innovation Union reference group and an EU average of 7.3%.<sup>6</sup> In the same year, the percentage of non-EU doctoral candidates as a percentage of all doctoral

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<sup>6</sup> See Figure 1 "Key indicators – Portugal".



candidates was 7.8% in Portugal compared with 5.1% among the Innovation Union reference group and an EU average of 19.4%<sup>7</sup>.

### Measures aimed at attracting and retaining 'leading' national, EU and third country researchers

The table below summarises key programmes launched by the FCT aimed at attracting and retaining leading EU and third-country researchers to Portugal.

**Table 6: Measures to attract and retain leading researchers**

| Measure                                                            | Description                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The Ciência Programme (Calls 2007 &amp; 2008)</b>               | The Ciência 2007 & 2008 initiative aimed to recruit post-doctoral researchers into the national science and technology system under a five-year employment contract with a host institution.                                                                                                                 |
| <b>The Invited Chair programme (2008), as part of Ciência 2008</b> | The Invited Chair programme aimed to recruit leading international researchers to come and work in Portuguese Universities and thus support Portuguese institutions in building global partnerships.                                                                                                         |
| <b>The Welcome II Programme (2010)</b>                             | The Welcome II Programme aims to recruit European researchers to join Portuguese research institutions after their work experience in third countries. The programme is administered by FCT and co-funded under the Marie Curie Action COFUND (part of the 7th European Union Research Framework Programme). |

Source: Deloitte

### Inward mobility (funding)

Since 2011, in order for a non-national researcher to enrol for PhD training, a Portuguese residence permit has been a prerequisite. For post-doctorate candidates, there is no such restriction. The FCT has implemented the MC co-funded programme WELCOME II – Promoting the return of researchers to the European Research Area. This Programme promotes the mobility of researchers holding the nationalities of an EU Member State or of an Associated Country to FP7, living in any third country for at least the last 3 years, to join institutions located in Portugal. Third countries are neither Member-States nor Associated Countries to FP7.

### Outbound mobility

The Government of Portugal provides PhD candidates with different types of international doctoral fellowships:

- National fellowships for a stay of up to three months per year abroad;
- International fellowships granting funding for the whole period abroad;
- Mixed fellowships for stays both in the Portugal and abroad, according to the needs of the training programme.

Nevertheless, Portuguese society and higher education institutions are not willing in promoting researchers' mobility. National PhD students have a tendency to maintain a close relationship with universities/institutions from which they have graduated and not go abroad.

### Portability of national grants

All national PhD fellowship schemes are portable to other EU countries as well as to third countries.

### Access to cross-border grants

Both national and foreign post-doc candidates are entitled to funding. PhD candidates must reside in Portugal in order to apply for a grant.

### Measures encouraging inter-sectoral mobility

The Government of Portugal has not put in place concrete measures encouraging researchers to move from the public to the business sector and vice-versa. This choice remains personal and is made on an individual basis.

<sup>7</sup> Ibid.