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Researchers' Report 2013

Country Profile: Portugal

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1. Key data

National R&D intensity target

"Portugal has set a national R&D intensity target for 2020 of 3%, where public sector R&D intensity would reach 1% and business R&D intensity 2%. From 2005 and up to the crisis, Portugal made a very significant progress towards the R&D intensity target. However, from 2009 onwards, the trend is negative and in 2011, Portuguese R&D intensity had fallen back to 1.50%, with a public sector R&D intensity of 0.69% and a business R&D intensity of 0.69%.

The main challenge for Portuguese R&D, therefore, is to increase the share of business R&D investment in total national R&D investment and to attract foreign business R&D investment. R&D investment has slightly decreased, affected by the economic crisis. Business R&D investment reached its highest level in 2009 in absolute terms and in relative terms after some years of notable growth. The difficult national business environment and the contraction of domestic demand places enterprises in the position of having to find external markets while facing challenges in terms of efficiency (productivity and competitiveness) and financing. The efforts of investing in innovation and research, increasing productivity and competitiveness, point in the good direction. Public funding of R&D has been sustained, despite the pressures created by public expenditure reduction.

Private and public R&D investment also receives support by co-funding from the European budget, in particular through the Structural Funds and from successful applications to the Seventh Framework Programme for research. For the FEDER programming period 2007-2013, Portugal benefits from funding of EUR 5 729 million (26.8% of the total allocated to Portugal) for research, innovation and entrepreneurship in the Portuguese regions. In 2010, Portugal had already absorbed 62.5% of these EU funds (the average in the EU was a 46.6% commitment rate). Portugal also has scope to increase its funding of R&D from the 7th Framework Programme. The success rate of Portuguese applicants is 19.1%, lower than the EU average success rate of 21.6%. By early 2012, slightly over 1 300 Portuguese participants had been partners in an FP7 project, with a total EC financial contribution nearing EUR 283 million. Two Portuguese SMEs are among the top twenty SMEs having the highest numbers of FP7 signed grant agreements for the period 2007-2010".[1]

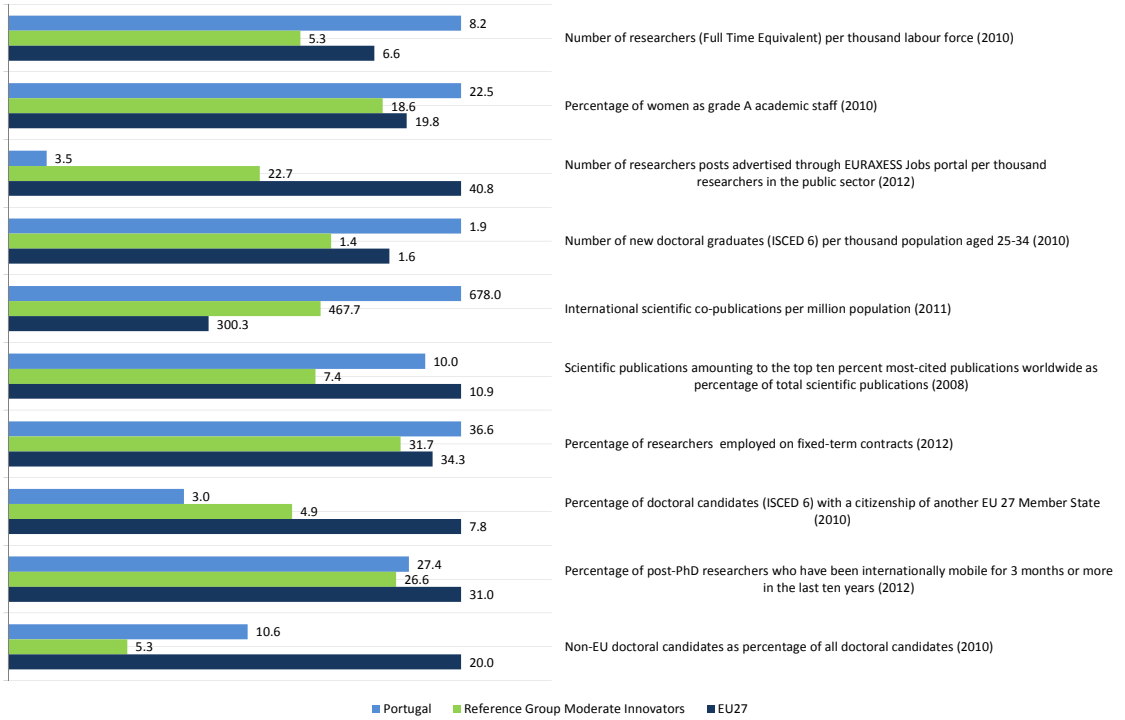
Key indicators measuring the country's research performance

The figure below presents key indicators measuring Portugal's performance on aspects of an open labour market for researchers against a reference group and the EU-27 average[2].

[1] European Commission (2013), "Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level 2013"

[2] The values refer to 2012 or the latest year available

Figure 1: Key indicators – Portugal



Source: Deloitte
Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2013, MORE2
Notes: Based on their average innovation performance across 25 indicators, Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Portugal, Slovakia and Spain show a performance below that of the EU-27. These countries are the Moderate innovators[3].

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/Total
Head Count per 1 000 active labour force (2010)	17.08	10.17
Head Count (2010)	96 234	2 435 487
FTE per 1 000 active labour force (2010)	8.21	6.64
Full time equivalent (FTE) (2010)	46 256	1 589 140

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
Commitment to Science initiative (Compromisso com	The government's Commitment to Science initiative set ambitious targets for 2009 from investing, amongst others, in scientific knowledge and scientific and technical

[3] European Commission (2013), "Innovation Union Scoreboard 2013"

Measure	Description
a Ciência) (2006)	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.
IF – Investigator FCT Programme (2012)	The *Fundação para a Ciência e a Tecnologia* (FCT) launched the IF – Investigator FCT programme IP in 2012. This aims to facilitate the recruitment of highly qualified researchers by Portuguese research institutions, (envisaging that contracts will be signed with the FCT rather than directly with the host institutions as at present). A total of 253 positions were foreseen and 158 positions granted from 1 175 submissions. The total budget foreseen for the 253 positions was EUR 72 million. The duration of the grant is approximately 5 years (2013-2017). Women made up 42% of the candidates. Further calls will be launched in the coming years, with the first foreseen for July 2013.
Legislation on research career (Scientific Research Career Remuneration Statute) (1999)	This legislation targets researchers in the public sector, e.g. Portuguese universities and the national laboratories. The law created a researchers' statute by covering rights and obligations related to researchers' remuneration, career prospects, social security coverage, etc.
Programme on Scientific Employment (Ciência Programme 2007 & 2008)	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. Of these, 42.8% went to women researchers. The budget for 2009 was EUR 60 million. Support will end in 2013.
The Fundação para a Ciência e a Tecnologia (FCT) (since 1997)	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.
The National Agency for Scientific and Technological Culture - Ciência Viva (since 1996)	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: 1. A support programme for promoting scientific education in schools; 2. A National Network of Ciência Viva Centres, for creating awareness and initiating interaction among stakeholders; 3. National scientific awareness campaigns, for fostering the creation of science associations.
The National Evaluation and Assessment Agency (A3ES) (ongoing)	The Agency was created in 2007 by the Government 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.
WELCOME II Programme 2012	The FCT is implementing the Marie Curie co-funded programme WELCOME II – *Promoting the return of researchers to the European Research Area*. The programme aims to integrate into the Portuguese institutions European PhD holders residing in third countries for a period of three years. The programme started in 2010 and final contracts were signed in 2011. A total of 54 fellowships were foreseen and 40 fellowships were granted (34 of which are still extant). The total budget is EUR 12.5 million of which approximately EUR 8.5 million is under execution.

Source: Deloitte

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2010, the percentage of women grade A academic staff was 22.5% in Portugal compared with 18.6% among the Innovation Union reference group and the EU average of 19.8%[4].

[4] See Figure 1 "Key indicators – Portugal"

Measures 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 was replaced in Portuguese legislation by the more generic 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 makes the system less effective than it might be. Portuguese institutions do not always publish job vacancies online and English is not always used.

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
– **publish job vacancies on relevant national online platforms**	Not always	Institutions nearly always publish job vacancies on relevant national online platforms.
– **publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)**	Not always	Institutions nearly always publish their vacancies on the national portal ERACareers (not yet but soon to be substituted by EURAXESS Portugal), and less frequently on the EURAXESS portal of the EC.
– **publish job vacancies in English**	Not always	On the ERACareers portal, it is not mandatory to publish Job vacancies in English (on the EURAXESS portal, publication in English is mandatory).
– **systematically establish selection panels**	Yes	Institutions systematically establish selection panels.
– **establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)**	Yes	Institutions establish clear rules for the composition of selection panels.
– **publish the composition of a selection panel (obliging the recruiting institution)**	Yes	The Fundação para a Ciência e a Tecnologia (FCT) publishes the composition of its selection panels.
– **publish the selection criteria together with job advert**	Yes	All public institutions are obliged to publish vacancies together with selection criteria in one of the existing public media.
– **regulate a minimum time period between vacancy publication and the deadline for applying**	Yes	Institutions regulate a minimum time period between vacancy publication and the deadline for applying.
– **place the burden of proof on the employer to prove that the recruitment procedure was open and transparent**	Yes	Institutions carry the burden of proof to prove that the recruitment procedure was open and transparent.
– **offer applicants the right to receive adequate feedback**	Yes	Institutions offer applicants the right to receive adequate feedback.
– **offer applicants the right to appeal**	Yes	Institutions offer applicants the right to appeal.

Source: Deloitte

The FCT publishes the composition of the selection panel when fellowship programmes are assigned to the beneficiaries. The evaluation panels are composed of experts recognised internationally for their scientific excellence. These FCT fellowships are very important for Portugal and their continuation is a priority for the Government. All calls open under FCT programmes are published on the official website, both in English and Portuguese. The evaluation and submission guidelines as well as the evaluation procedures are also published online in both English and Portuguese.

EURAXESS Services Network

In 2012, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 3.5 in Portugal compared with 22.7 among the Innovation Union reference group and an EU average of 40.8[5].

Information on entry conditions, transfer of social security and pension contributions, accommodation, administrative assistance, etc. is available on the EURAXESS Portugal portal. Job vacancies and grant 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.

In Portugal, Science, Technology, Engineering and Mathematics (STEM) subjects are not promoted by concrete policy measures. However, the number of higher education graduates in Mathematics, Science and Technology (MST) has increased in recent years. The growth rate 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
Fellowship schemes for PhD students and Post-doctorates (since 1997)	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 had 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
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (2010)	1.9	1.5
Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2010)	2.3	1.4
Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2010)	1.4	1.6

Source: Deloitte
Data: Eurostat

[5] See Figure 1 "Key indicators – Portugal"

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 more than EUR 140 million.

In the 2012 call for individual grants (PhD and Post doc), 1 186 fellowships were granted for PhD and 668 for post-doctorates

Measures to increase the quality of doctoral training

All PhD programmes promoted by Portuguese Universities are accredited and evaluated by the National Evaluation and Assessment Agency (A3ES), which guarantees their quality. The Agency also has a 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.

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.

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 collaboration between Portuguese and foreign universities.

6. Working conditions

Measures to improve researchers' funding opportunities

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 by 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.

Table 6: National strategies

Measure	Description
IF – Investigator FCT Programme (2012)	See chapter 2 "National strategies".
Programme on Scientific Employment (Ciência Programme 2007 & 2008)	See chapter 2 "National strategies".
WELCOME II Programme	See chapter 2 "National strategies".

Source: Deloitte

Remuneration

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

Since 2011, as a result of adjustments to national legislation in the light of the economic crisis, researchers' salaries have suffered temporary reductions as well as cuts in the allowances.

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' has 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 with 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.

Shift from core to project-based funding

The shift from core to project-based (short-term) research funding has not affected researchers' working conditions. Researchers integrated in project teams regularly reply to calls for funding in order to ensure continuity of their research activities and to guarantee their funding. In this competitive system, they have to demonstrate their quality in order to obtain funding that provides continuity to their research career.

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 for the host institution to pay the minimum contribution and for the fellowship student to top 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 out 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. FCT funds 50% of the fellowship and the company the remaining 50%. In 2012, some 100 fellowships were funded.

In order to qualify for this type of grant, a work plan 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 programme. The form of articulation between the academic orientation for the doctoral programme 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 fewer than three consecutive months. The grants provided for in this article are governed by a separate set of regulations.

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.

8. Mobility and international attractiveness

In 2010, the percentage of doctoral candidates (ISCED 6) with citizenship of another EU-27 Member State was 3.0% in Portugal compared with 4.9% among the Innovation Union reference group and an EU average of

7.8%[6]. In the same year, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 10.6% in Portugal compared with 5.3% among the Innovation Union reference group and an EU average of 20.0%[7].

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 7: Measures to attract and retain leading researchers

Measure	Description
IF – Investigator FCT Programme (2012)	The programme has contributed to attracting researchers from other European and non-European countries.
Programme on Scientific Employment (Ciência Programme 2007 & 2008)	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.
The Invited Chair Programme (2008), as part of the Ciência Programme 2008	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.
The Welcome II Programme (2010)	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 the FCT and co-funded under the Marie Curie Action COFUND (part of the European Union Seventh Framework Programme for Research and Technological Development).

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 Marie Curie 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 an FP7-Associated Country to FP7, who has lived in any third country for at least the last three years, to join institutions located in Portugal. Third countries are neither Member-States nor Associated Countries with 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 keen to promote 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-doctoral candidates are entitled to funding. PhD candidates must reside in Portugal in order to apply for a grant.

[6] See Figure 1 "Key indicators – Portugal"
[7] Ibid