

## B 1.20 PORTUGAL

### 1. Introduction

Portugal's overall innovation performance, based on the SII, is below the average for both the EU-25 and EU-15, ranking in 23rd place out of 33 countries and in 18th place out of 25 EU member states. Based on its innovation performance, its peer countries include Estonia, Greece, Latvia and Poland. Portugal's performance is generally below average on all categories with the exception of innovation & entrepreneurship, where it ranks 7th out of 23 countries, due to above average results for five of the six indicators in this category. Portugal's worst performance is in innovation drivers, due to well-below average performance on the four education indicators, although the trends for all of them are consistently positive.

With three exceptions, Portugal's trend performance is above the EU average and positions it clearly in a "catching up" trend. Of greatest concern is the decline in public R&D expenditures. In contrast to a fall in venture capital in almost all EU countries, the supply of venture capital in Portugal increased in absolute terms between the late 1990s and 2003.

The Portuguese government considers innovation as one of the constituent elements of its Reform Programme. In this context the guidelines derive from three major challenges: increase the number of researchers, give a new impulse to innovation, supporting market success of innovative products and services, raising technological based foreign investment as means of technology dissemination and promote an effective use of ICTs and an inclusive information society.

### 2. Major challenges and policies

Judged by the EIS indicators and the governance system, three major challenges need to be addressed:

#### Population with tertiary education, and life-long learning

Portugal is performing weakly in the human capital indicators. In particular in the case of "population with tertiary education" and in "life-long learning" urgent action is needed. In the former it demonstrates only 57% of the EU average, which leads it to the 28th position, while in the latter it scores 48% of the EU average ranking 25th.

In the tertiary sector, the overall trend demonstrates a gradual, even if slow, catching up tendency. In policy

terms in the tertiary level most efforts were concentrated in the implementation of Bologna orientations.

Life-long learning is more of a persistent problem. In spite of the efforts undertaken so far, including the definition of a national strategy, the Social Concertation Council Agreement on Employment, Labour Market, Education and Training (signed in 2001) and the creation of a General Directorate on Vocational Training, the situation with regard to life-long learning did not improve. On the contrary, Portugal's performance slipped from 41% of the EU-15 average in 1999, to 38% in 2003. To make up for the persistent weakness, enhancing the level of skills of the Portuguese population, including the encouragement of life-long learning is one of the four priority axes of the new Technology Plan of the country and it is included in the Guidelines (17-24) of the Reform Programme responding to the Lisbon strategy.

#### BERD and the creation of innovative capabilities in firms

BERD in Portugal is only 21% of the EU average and the country ranks 24th among the countries studied. After a catching up tendency in the late '90s, it is now slightly falling behind again. However, one should stress that generous support measures were offered in the past to mobilise the private sector:

IDEIA Applied Research and Development in Companies aimed at supporting cooperative R&D projects involving companies and S&T organisations.

The Credit Enhancement Securitization Fund (FGTC), operating in the context of the so-called Financial Innovation Actions of POE (PT 24 and PT 25), is a fund for providing guarantees in connection with operations concerning the transaction of securitised credits on SMEs debt (PT 32).

The Company Modernisation Incentive System (SIME) supports modern and competitive company strategies, and stimulates strategic competitiveness factors, namely in the areas of internationalisation, innovation, quality, environment, energy and upgrading of human resources skills (PT 16).

The Small Company Initiatives System (SIPIE) is aimed at promoting small company initiatives, supporting investments aimed at launching or developing micro or small enterprises, by strengthening its technological capabilities and modernising their productive, marketing and organisational structures (PT 15).

Evaluations considered that the approach followed was too much led by demand, providing insufficient attention to innovation and intangible factors. There-



fore, it was not effective enough in promoting a gradual upgrading of companies in-house technological capabilities. This criticism is particularly relevant for SIME, since it was not able to mobilise companies towards more innovative behaviours and projects. It would be expected, however, that the more recently launched NITEC (PT 36) and SIME Inovação (PT 40) may be more effective in inducing companies to espouse more innovative approaches and to increase their commitment to R&D activities. Evidence so far, however, is not very positive.

**3.1 Innovation governance (in particular the lack of flexibility and the need to reduce bureaucratic and “audit type” controls)**

The Portuguese innovation governance system has been characterised by a ‘divide’ between science policy, on the one hand, and industrial and enterprise policies on the other. Such a ‘divide’ has been translated into separate operational programmes for each area indicated above. In addition, there is a weak co-ordination and an insufficient perception of the systemic nature of innovation. These three elements together call for urgent action to assure the re-organisation of innovation policy with modern tools, the active involvement of stakeholders and most importantly effective and responsible co-ordination.

**3. Policy learning**

**3.1 Governance**

In recent years, there is an increased awareness of the relevance of innovation, the experience of public organisations in designing operational programmes and the international knowledge and relationships of a host of policy makers. But the improvement of the system faces serious threats, associated with the difficulties in promoting a ‘vision’ of the future and mobilising the actors around that ‘vision’, as well as an insufficient consistency and a political zigzagging. Budgetary constraints and the power of vested interest act as additional barriers to change.

A new opportunity for a ‘fresh start’ and a systemic approach to innovation governance may emerge now: synergies are expected from the new political commitment to technology and innovation (expressed in the Technological Plan), the new round for EU funds for 2007-2013 and the re-launch of the Lisbon Strategy. The former is reflected in the launch of a new programme (POCI 2010 and POS\_C), as a result of the mid term review of the Third CSF OPs. These new programmes will provide the main frame for science and information society policies up to the end of 2006. Besides, an increasing emphasis on modern governance tools can be perceived.

But as yet important governance challenges remain because of the absence of a formal innovation policy with a systemic focus, the lack of innovation policy co-ordination, following a long historical tradition, inconsistencies between enterprise and science policies, under-resources key organisations, insufficient involvement and pressure from key stakeholders for strengthening innovation and last but not least low governance capabilities at regional level, due to administrative centralisation. Despite progress a lot more pre-emptive policy making and persistence are needed.

**3.2 Recent policy trends**

The changes resulting from the mid term review have resulted in the launch of three new measures, all in the context of POS\_C, addressing information and communication technologies (ICT):

- Centres of Excellence (PT 49), on the development of competence centres and clustering in the ICT field;
- OTICs (PT 50), on the creation of technology and knowledge transfer offices in Universities and Polytechnic Institutes; and
- the NEOTEC Initiative (PT 51), on the promotion of NTBF creation.

Another measure, in the context of PRIME to support the involvement of SMEs in the digital economy, is about to be launched.

There is also the Technological Plan, which will provide the framework for new innovation measures in the near future. The first measure to be launched is INOV\_JOVEM (PT 53), a brand new programme, which was used as an electoral ‘flag’ by the new Prime Minister. It is aimed at placing 1000 young graduates in SMEs in management, engineering, science and technology positions and in other key areas for innovation and company development. This is expected to contribute to better in-house capabilities for SMEs and, therefore, to more innovative performance and competitiveness.

#### **4. Possible orientation for future actions**

*Portugal's innovation objectives have been expressed in many documents during the last five years. Although there is a convergence about the need to foster innovation, its translation into specific objectives has changed too often.*

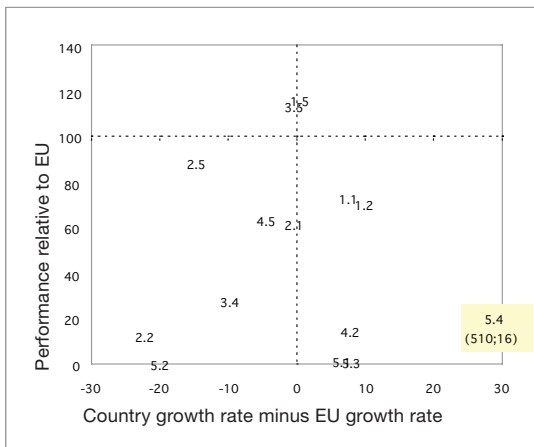
*An overall assessment of the progress undertaken since the launch of the Lisbon Strategy indicates that Portugal is catching up. This is evident, for instance, in the share of science and engineering graduates or in patenting. The general picture, however, is bleak. Improvement has been limited, and in some areas Portugal has lost ground.*

*The main innovation challenges identified in the past, from the lack of co-ordination to human resources and BERD weaknesses, were not addressed in spite of a few initiatives in that regard. It is interesting to note that POE/PRIME and POCTI evaluation exercises, although mentioning some achievements, recognised that performance falls short expectations. In particular in the case of POE/PRIME, the main conclusion in the innovation field was that the impact and performance of the Programme were generally lower than its potential 'promises'.*

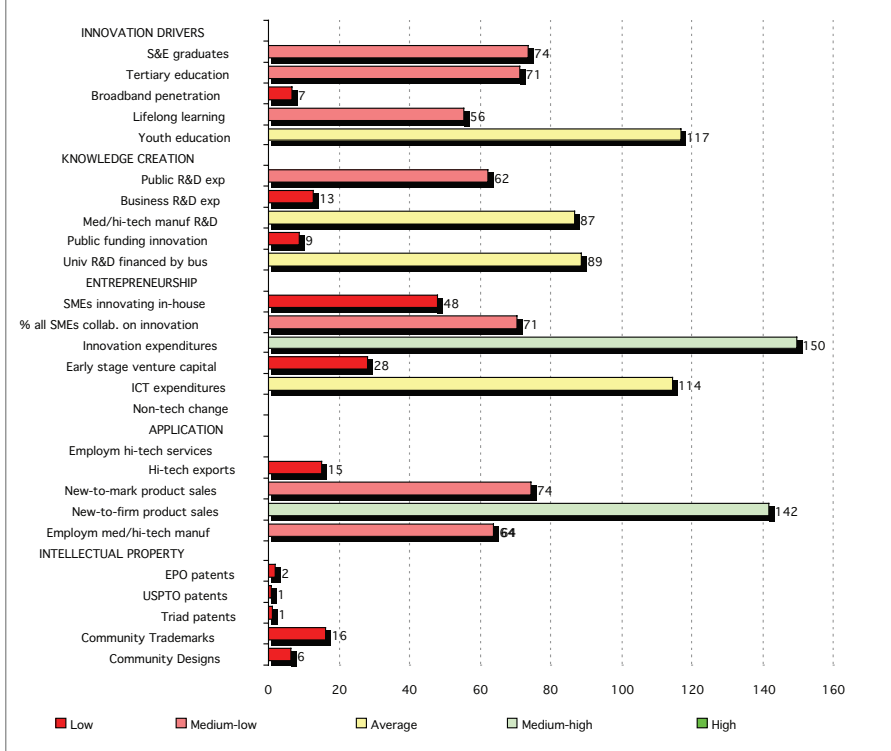
*In recent years the main challenges were identified, and several measures were launched to respond to them. It must be recognised that the impact of some measures was positive and has contributed to the identified catching up effect. Some of them contribute to the medium or long-term sustainability and competitiveness. However, an overall perspective of policy actions suggests that there are too many disparate measures and policy co-ordination and consistency have still ample room for improvement.*



PORTUGAL - EIS 2005 results



ESI 2005 Innovation performance (relative to EU average) - POLAND



**Indicator quality concerns:**

The indicators for the share of sales from innovative products (4.3 and 4.4) are probably measuring innovation diffusion rather than creative innovation (as in Finland) or product differentiation and engineering improvements (as in Italy). This is expected at this stage in Portugal's economic development. Innovation expenditures (3.3) are comparatively high in Por-

tugal compared to very low levels of business R&D and below average rates of capital investment. CIS Light results for Portugal have not been used as the Portuguese results also include enterprises with 5-9 employees. The relative to EU data are thus based on CIS 3 data.

PORTUGAL				(2003)	(2004)	2005	Relative to EU	Trend	Trend EU	
SII	--	--	--	--	0.27	0.27	0.28		1.9	0.0
relative to EU	--	--	--	--	63	64	66			
rank	--	--	--	--	23	23	23			
	1998	1999	2000	2001	2002	2003	2004			
<b>INPUT - Innovation drivers</b>										
1.1 S&E graduates	5.2	6.1	6.3	6.6	7.4	8.2	--	67	14	9
relative to EU	--	65	62	60	65	67	--			
1.2 Population with tertiary education	8.3	8.7	8.8	9.2	9.4	11.0	12.5	57	17	4
relative to EU	--	--	44	46	46	51	57			
1.3 Broadband penetration rate	--	--	--	--	1.5	3.6	6.4	84	58	50
relative to EU	--	--	--	--	--	--	84			
1.4 Participation in life-long learning	3.1	3.4	3.4	3.4	2.9	3.7	<b>4.8</b>	48	--	--
relative to EU	--	--	43	43	36	<b>40</b>	<b>48</b>			
1.5 Youth education attainment level	39.3	40.1	42.8	43.5	44.2	47.7	49.0	64	6	0
relative to EU	--	54	56	57	58	62	64			
<b>INPUT - Knowledge creation</b>										
2.1 Public R&D expenditures	--	0.56	--	0.58	0.54	0.52	--	75	-4	2
relative to EU	--	86	--	87	79	75	--			
2.2 Business R&D expenditures	--	0.16	--	0.27	0.26	0.26	--	21	10	1
relative to EU	--	13	--	22	21	21	--			
2.3 Share of med-high/high-tech R&D	--	72.8	80.4	68.2	--	--	--	76	--	--
relative to EU	--	82	90	76	--	--	--			
2.4 Enterprises receiving public funding			13.7					165	--	--
2.5 Business financed university R&D	1.5	1.2	1.0	0.8	1.2	1.5	--	18	23	1
relative to EU	23	19	15	12	18	--	--			
<b>INPUT - Innovation &amp; entrepre-</b>										
3.1 SMEs innovating in-house			36.2		25.0			139	--	--
3.2 Innovative SMEs co-operating with others			7.0		14.2			76	--	--
3.3 Innovation expenditures			2.62		0.78			144	--	--
3.4 Early-stage venture capital	0.013	0.011	0.018	0.020	0.011	0.026	--	102	26	-28
relative to EU	--	36	31	33	28	102	--			
3.5 ICT expenditures	--	--	6.6	6.7	7.2	7.1	7.1	113	2	7
relative to EU	--	--	102	106	109	111	113			
3.6 SMEs using non-technological change			51.0					120	--	--
<b>OUTPUT - Application</b>										
4.1 Employment in high-tech services	1.38	1.21	1.18	1.43	1.47	1.45	--	45	7	0
relative to EU	--	--	38	43	45	45	--			
4.2 Exports of high technology products	4.0	4.3	5.5	6.8	6.2	7.4	--	42	16	-6
relative to EU	--	22	27	33	34	42	--			
4.3 Sales new-to-market products			10.8		1.7			180	--	--
4.4 Sales new-to-firm not new-to-market products			15.1		1.1			125	--	--
4.5 Med-hi/high-tech manufacturing employment	3.56	3.57	3.61	3.55	3.28	3.17	--	48	-6	-3
relative to EU	--	--	52	51	48	48	--			
<b>OUTPUT - Intellectual property</b>										
5.1 New EPO patents	2.4	4.7	4.0	6.5	4.3	--	--	3	8	5
relative to EU	2	4	3	5	3	--	--			
5.2 New USPTO patents	0.9	0.7	1.2	1.2	1.3	--	--	2	19	6
relative to EU	1	1	2	2	2	--	--			
5.3 New Triad patents	0.8	0.5	0.8	--	--	--	--	4	20	1
relative to EU	3	2	4	--	--	--	--			
5.4 New community trademarks	--	--	--	--	36.7	49.8	47.8	55	14	16
relative to EU	--	--	--	--	56	59	55			
5.5 New community designs	--	--	--	--	--	16.1	26.3	31	--	--
relative to EU	--	--	--	--	--	24	31			

Bold: break in series / 2000 data for CIS indicators refers to CIS 3 survey / 2002 data refer to estimates based on CIS Light data