

## SLOVENIA

**Hot STI issues**

- Implementing the Research and Innovation Strategy (RISS).
- Building a broad consensus on innovation.
- Increasing economic and social benefits of R&D performed in universities and PRIs through continuing reforms.
- Increasing the attractiveness of Slovenia as a location for research.

**General features of the STI system:** In less than two decades after gaining independence Slovenia has become a market-based economy, integrated world markets and joined the EU, the European Monetary Union and the OECD. It leads central and eastern European countries in GDP per capita and on a range of innovation-related indicators. BERD was a high 1.43% in 2010 (Panel 1<sup>(d)</sup>). Overall, business R&D has expanded rapidly in recent years, in spite of the recession and a slow recovery. Much of Slovenia's R&D is performed by a small number of firms: two pharmaceutical firms account for a large share of BERD. The services sector performs relatively little R&D (Panel 2). Yet, the sharp recession of 2009 exposed the economy's structural weaknesses. Productivity is lagging, performance in terms of new firm formation and technology transfer is not very strong, the number of high-technology firms is rather small, and high-technology and service exports are low as a share of total exports. Triadic patent applications and international co-patenting fall short of the OECD median (1<sup>(f)(t)</sup>).

**Recent changes in STI expenditures:** GERD reached 2.11% of GDP in 2010. It expanded by an impressive 9.9% a year between 2005 and 2010, in spite of the drop in GDP during the recession, and publicly financed GERD grew by 8.5% a year. In 2010, industry funded 58% of GERD, government funded 35% and 6%

was funded from abroad. National targets are 1.5% of GDP for public R&D and an ambitious 3.6% for GERD by 2020.

**Overall STI strategy:** The Research and Innovation Strategy of Slovenia 2011-20 (RISS) and the National Higher Education Programme 2011-20 (NHEP) – to which the *OECD Reviews of Innovation Policy: Slovenia* contributed – provide strategic guidance. RISS aims to establish a modern research and innovation system that will improve quality of life. Its main priorities are: fostering scientific excellence, promoting co-operation between universities, research institutions and industry, and promoting international mobility and technology transfer. The Research Infrastructure Roadmap 2011-20 sets priorities for research infrastructure. More attention is given to evaluation of strategies, policies, programmes and institutions.

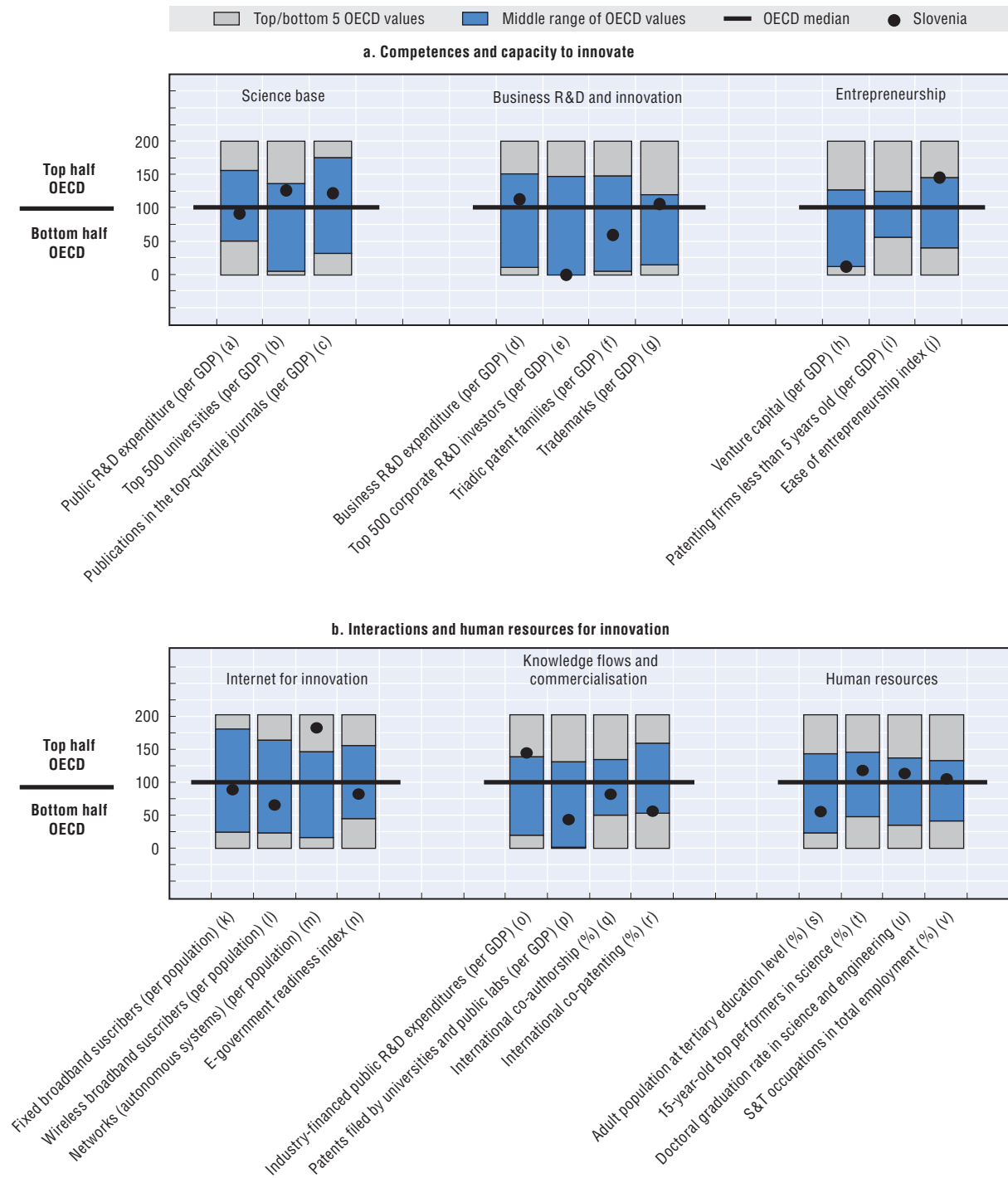
**STI policy governance:** Following general elections in December 2011, competences for STI policy have been reallocated and are now divided between the Ministry of Education, Science, Culture and Sports, the Ministry of Economic Development and Technology, and the Ministry for Infrastructure and Spatial Planning. The Slovenian Quality Assurance Agency for Higher Education was established in 2010 for accreditation, monitoring and evaluation of higher education institutions and study programmes.

**Key figures**

<b>Labour productivity, GDP per hour worked in USD, 2010</b>	<b>34.3</b>	<b>GERD, as % of GDP, 2010</b>	<b>2.11</b>
(annual growth rate, 2005-10)	(+1.4)	(annual growth rate, 2005-10)	(+9.9)
<b>Environmental productivity, GDP per unit of CO<sub>2</sub> emitted in USD, 2009</b>	<b>3.70</b>	<b>GERD publicly financed, as % of GDP, 2010</b>	<b>0.75</b>
(annual growth rate, 2005-09)	(+2.1)	(annual growth rate, 2005-10)	(+8.5)

Figure 10.36. **Science and innovation in Slovenia**

Panel 1. Comparative performance of national science and innovation systems, 2011



Note: Normalised index of performance relative to the median values in the OECD area (Index median = 100).

**Science base:** Slovenia has strengths in universities (1<sup>(b)</sup>) and in scientific output, as measured by the relative number of scientific articles per GDP (1<sup>(c)</sup>). Slovenia has a strong endowment of scientific and creative talent and a research culture. It has five universities and more than 40 PRIs. Unlike other transition economies, Slovenia has maintained and strengthened its PRIs. HERD stands at 0.29% and GOVERD at around 0.38% of GDP. Scientific output is outstanding in various respects, and there is considerable scope to increase the contribution of domestic research to Slovenia's socio-economic development, including through various forms of collaboration with industry. Among others, RISS sets out a plan for performance-based funding. A law on research and development that will provide a legal basis for renewed funding is in preparation.

**Business R&D and innovation:** To foster business R&D and innovation Slovenia operates a mix of instruments, including grants, tax incentives and instruments such as loan guarantees, mezzanine capital and equity. The Slovene Enterprise Fund grants start-up capital for new innovative companies. Mentor voucher and process voucher schemes have also been established.

**Knowledge flows and commercialisation:** There are several new mechanisms to foster knowledge flows. The centres of excellence (CoE) aim at strengthening quality and co-operation, building critical mass and linking up to top centres abroad through partnerships between industrial partners and academia. Competence centres (CCs) link science and industry and give a strong role to industrial partners, applied research and industrial networks. USD 188 million has been allocated for these two types of centres for 2010-14. The Development Centres programme supports projects that include R&D and investments in

related infrastructure to promote technological development through consortia.

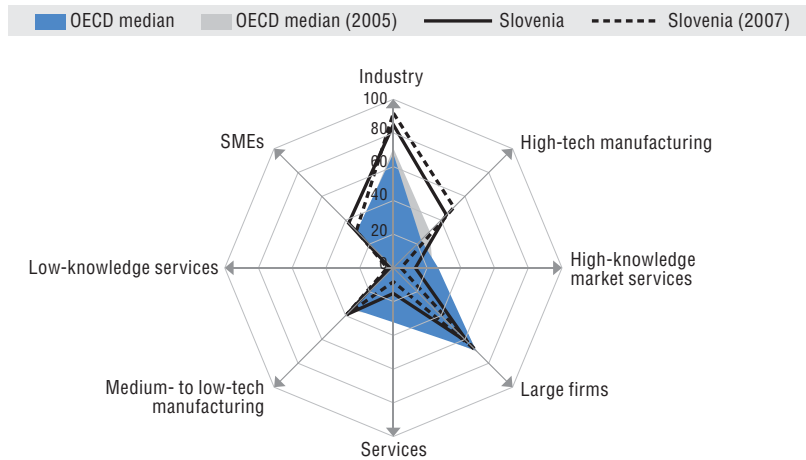
**Globalisation:** High absorptive capacity and integration in international research and innovation networks are critical for a small country's success in innovation. While Slovenia's innovation system is highly internationalised in some respects (e.g. a strong record of participation in European R&D programmes) it is much less so in others (e.g. attraction of foreign researchers, students and FDI, including in R&D). For instance, in 2008/09, only 1.7% of students were foreign. Several measures aim to make Slovenia more attractive internationally, such as university programmes in foreign languages, payment of European funds to foreign researchers and opening of research programmes to foreign participation (e.g. in the Young Researcher Programme).

**Human resources:** Slovenia is comparatively strong in human resources and in S&T occupations (1<sup>(v)</sup>). They constitute an important pillar of Slovenia's innovation system. In the past five years, the number of researchers and R&D personnel has increased steadily. However, tertiary education completion rates are low compared to OECD and EU averages (1<sup>(s)</sup>). There are some disincentives for students to fast-track the completion of their courses as they may lose preferential treatment in the social and tax system.

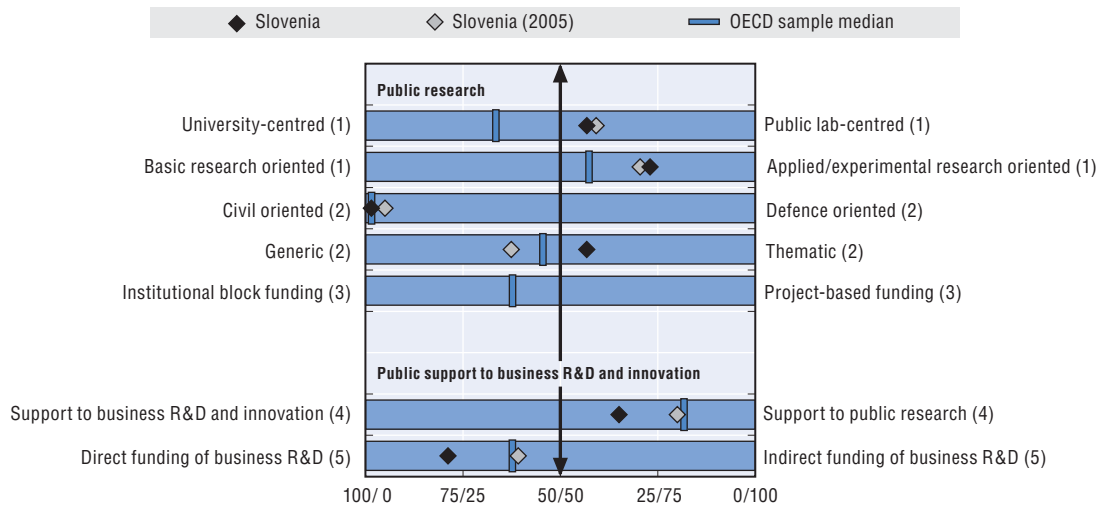
**Emerging technologies:** Emerging areas of research and technology in Slovenia, which are reflected in the CoE and CC priorities, include ICTs, nanotechnology, health and life sciences, process technologies and effective use of energy.

**Green innovation:** An action plan for the implementation of cradle-to-cradle principles is based on the concepts of eco-effectiveness, eco-efficiency and closed-loop economy.

**Panel 2. Structural composition of BERD, 2009**  
As a % of total BERD



**Panel 3. Overview of national innovation policy mix, 2010**



1. Balance as a percentage of the sum of HERD and GOVERD.
2. Balance as a percentage of total GBAORD.
3. Balance as a percentage of total funding to national performers.
4. Balance as a percentage of the sum of HERD and GOVERD funded by government and higher education and components of (5).
5. Balance as a percentage of the sum of indirect funding of business R&D and innovation through R&D tax incentives and direct funding of BERD through grants, contracts and loans.

Source: See reader's guide and methodological annex.

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