

SLOVAK REPUBLIC

Hot STI issues

- Reversing the downward trend in private investments in R&D and ensuring support for businesses to engage more in R&D.
- Developing high-quality R&D and technical infrastructures.
- Strengthening the quality of human resources from primary to tertiary levels.
- Improving the governance of the national innovation system (transparency, co-ordination, administration of EU funds, universities, etc.).

General features of the STI system: Over the past two decades, the Slovak Republic has shifted from a centrally planned economy to a free market economy and has been among the fastest-growing economies in Europe. Good economic prospects, a low-cost, medium-skilled labour force and a central location have attracted massive FDI, in particular in automotive and electronics industries. However, progress towards a more efficient STI system has been slow. Firms are little involved in research and business R&D outputs are among the lowest in the OECD (Panel 1^{(d)(f)(g)}). BERD reached 0.27% of GDP in 2010, a level similar to the early 2000s, having bottomed at 0.18% in 2007. It is concentrated in a few medium-technology industries (machinery and transport equipment, 42%; rubber and plastics, 10%) or in R&D services (25%) (Panel 2). Links between industry and science are weak; industry funds only 9% of public research (1^(o)). However, the Slovak Republic is strongly integrated in global networks: 48% of scientific articles and a high 48% of PCT patent applications are produced with international collaboration (1^{(q)(r)}). ICT infrastructures are sub-optimal, with only 13 fixed broadband and 33 wireless subscriptions per 100 inhabitants (1^{(k)(l)}) and the

government makes little use of the Internet (1⁽ⁿ⁾). Skills foundations are weak but prospects for increasing human capital are robust. Only 17% of the adult population is tertiary-qualified (1^(s)) but 29% of people in employment are in S&T jobs (1^(v)). In spite of low R&D investments, the Slovak Republic has 7.1 researchers per 1 000 employment, above the EU27 average. Its 6% of top performers in science in the PISA ranking remains modest (1^(t)) but the doctoral graduation rate is well above the OECD median, on a par with Austria or France(1^(u)).

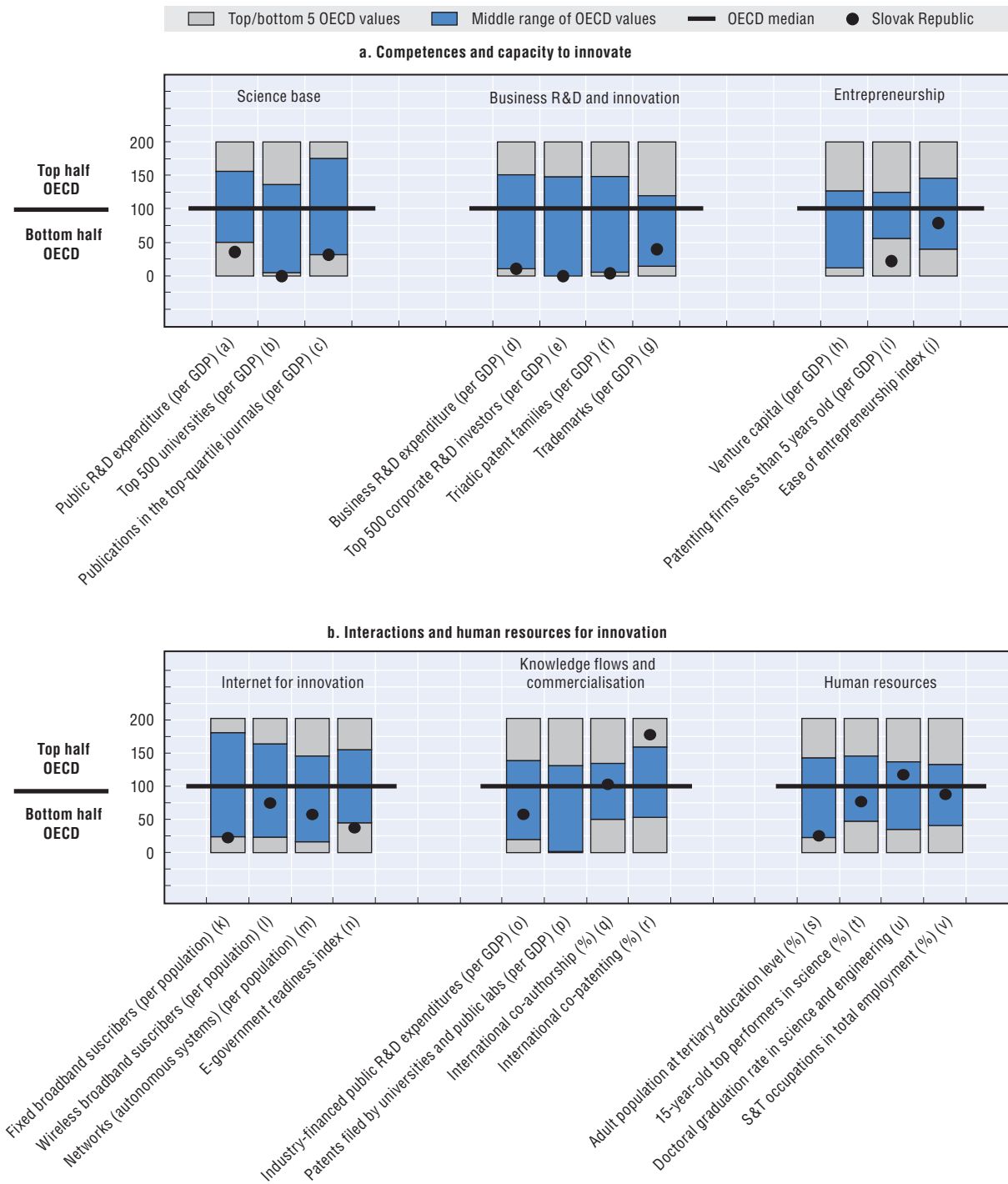
Recent changes in STI expenditures: GERD was USD 800 million and a low 0.63% of GDP in 2010. It grew however at a very fast 9.5% a year between 2005 and 2010. Business R&D investments fell in real terms from 2005 to 2009. Since 2000, the share of industry in total GERD funding dropped from 54% to 35%. Growth of GERD has been driven by the government's commitment (its share of GERD funding rose from 43% to 50%) and by massive inflows of foreign funding (from 2% to 15%) in particular from EU structural funds. Stimulus packages adopted by the government to mitigate the impact of the 2008 crisis have injected a further USD 50 million over four years to support R&D.

Key figures

Labour productivity, GDP per hour worked in USD, 2010 (annual growth rate, 2005-10)	33.6 (+4.2)	GERD, as % of GDP, 2010 (annual growth rate, 2005-10)	0.63 (+9.5)
Environmental productivity, GDP per unit of CO₂ emitted in USD, 2009 (annual growth rate, 2005-09)	3.71 (+9.1)	GERD publicly financed, as % of GDP, 2010 (annual growth rate, 2005-10)	0.32 (+6.5)

Figure 10.35. **Science and innovation in the Slovak Republic**

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).

Overall STI strategy: The Long-Term Plan for Science and Technology Policy to 2015 aims to increase involvement in S&T and raise GERD to 1.8% of GDP. The Phoenix Strategy (2011) provides updates and emphasises universities as a tool for developing human resources. It fosters the internationalisation of R&D, better co-operation between the academic sector and industry, the creation of high-quality technical infrastructure, the development of human resources and the popularisation of S&T.

STI policy governance: The Phoenix Strategy identified several governance issues which need to be addressed: increasing the transparency and efficiency of the STI system; reforming public support mechanisms for effective R&D funding; less red tape in administering EU structural funds.

Science base: The Slovak Republic has a narrow science base, with public R&D expenditures at 0.36% of GDP (1^(a)) and few articles in international publications (1^(c)). The research system is dominated by public labs and focuses on basic research (Panel 4). University governance reform and a fundamental reform of the Slovak Academy of Sciences (SAV) are under way.

Business R&D and innovation: The R&D system relies heavily on direct financial measures. Competitive grants have become the main public funding instrument, for an estimated total of USD 111 million in 2012.

Entrepreneurship: The JEREMIE Initiative provides SMEs with equity for seed, start-up and development phases, with investment tranches up to USD 1.8 million. Boosting the Innovation of Small and Medium Enterprises in Slovakia (BISMES) also aims to provide information, analysis and funding to SMEs. The National Agency for the Development of Small and Medium Enterprises (NADSME) has conducted two important surveys to measure the innovation capacity and eco-innovation intentions of SMEs. The Ministry of Economy (MoE) uses the Innovative Deed of the Year and Young Designer competitions as incentives for innovators.

ICT and scientific infrastructures: The Research and Development Agency supports research teams at

centres of excellence. The Ministry of Education, Science, Research and Sports (MESRS) is also working on a call to support R&D infrastructure. The National Information System (NISPEZ) operates an electronic information support system for R&D.

Knowledge flows and commercialisation: There is strong policy support for S&T parks and business incubators, although development is at an early stage. Minerva 2.0, a strategy to move the country into the “first league”, contains a number of measures to link academics and the business sector at university science parks. A Risk Capital Programme has been operating since 2006. Minerva 2.0 and the Phoenix Strategy have a range of instruments and financial incentives to improve industry-academic co-operation and support the establishment of a national knowledge transfer centre and a better framework for protecting intellectual property.

Globalisation: Minerva 2.0 noted a low level of participation in international research, and the Phoenix Strategy puts a high premium on mobility and promotes joint study programmes with prestigious foreign institutions. Mobility centres, the National Scholarship Programme for Mobility Support and the EC EURAXESS portals present opportunities to access global networks.

Human resources: One of the main priorities of the Phoenix Strategy is to popularise science. To this end, the National Centre for Science and Technology runs a variety of information campaigns. The strategy targets better secondary education through the PIAAC literacy and numeracy programme and supports doctoral studies through installation grants, English language assistance and streamlined research career paths. The Lifelong Learning Strategy and New Skills for New Jobs initiatives are directed at the adult labour market.

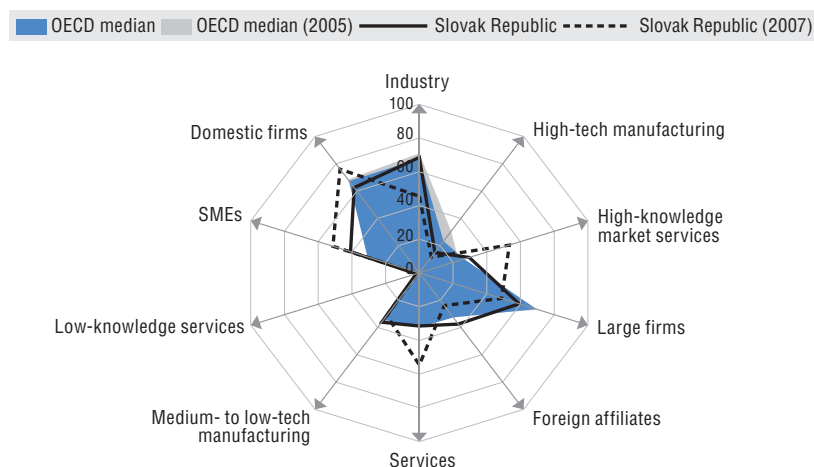
Green innovation: Eco-innovations are part of the country’s Innovation Strategy and Innovation Policy to 2013. Support for eco-innovation is mainly provided through non-repayable grants from EU structural funds to increase energy efficiency in production and consumption, upgrade public

lighting, promote green innovation activities in enterprises and green innovation and technology transfer. The government approved the National Action Plan for Green Public Procurement in 2012 to

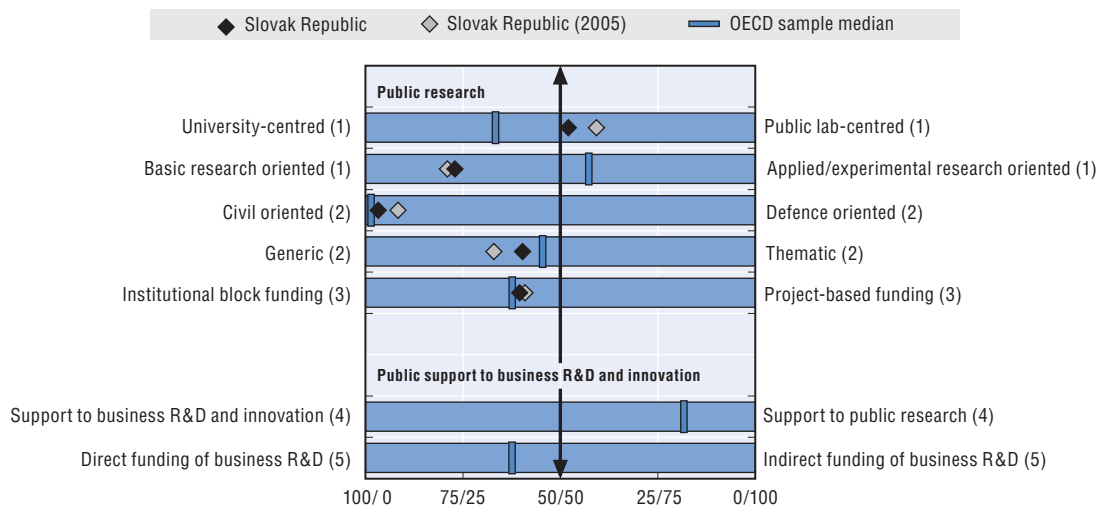
improve the implementation of green procurement in central and local governments through training, information, diffusion of tender models and monitoring.

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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