

## RUSSIAN FEDERATION

### Hot STI issues

- Increasing firms' innovation activities and strengthening the research activities of universities
- Better exploiting the commercial potential of public-sector R&D.
- Improving framework conditions for entrepreneurship and innovation.

**General features of the STI system:** The Russian Federation has a longstanding S&E tradition and many centres of excellence. It has a strong international reputation in key S&T fields such as aerospace, nuclear science and engineering, and advanced software. The bulk of Russian R&D is still performed in state-owned branch research institutes, which are mostly separate from industrial firms and HEIs. The share of public research funded by industry is slightly above the OECD median but the relative number of patents filed by universities and public labs is on a par with the bottom OECD countries (Panel 1<sup>(o)(p)</sup>). The picture for international collaboration is mixed: 31% of scientific articles are produced with international co-authorship (1<sup>(a)</sup>), which is on the low side, and 22% of PCT patent applications are produced with international collaboration (1<sup>(t)</sup>), which is close to the OECD median but reflects in part the patenting activities of international firms operating in the country. In spite of recent policy initiatives, overly restrictive regulation, exceptions to the rule of law, and a lack of competition are still major disincentives to entrepreneurship (1<sup>(b)</sup>). The tertiary attainment rate of 54% is very high (1<sup>(s)</sup>), well above any OECD country, but PISA scores in science for 15-year-olds are low (1<sup>(t)</sup>). Furthermore, the ageing of researchers and engineers raises concerns for future R&D capabilities. Russian RTA is close to the OECD average, with marked increases in nanotechnologies in recent years (Panel 3). ICT infrastructures are weak with 11 subscribers to fixed broadband networks per 100

inhabitants (1<sup>(k)</sup>). The e-government readiness index is below the OECD median (1<sup>(n)</sup>).

**Recent developments in STI expenditures:** GERD was 1.16% of GDP in 2010, a level significantly below the OECD median. The business enterprise sector funded just 26% of GERD in 2010, and government funded 70%, following a steady rise from 55% in 2000. R&D expenditure funded by government grew at an annual rate of 7.9% in the five years to 2010.

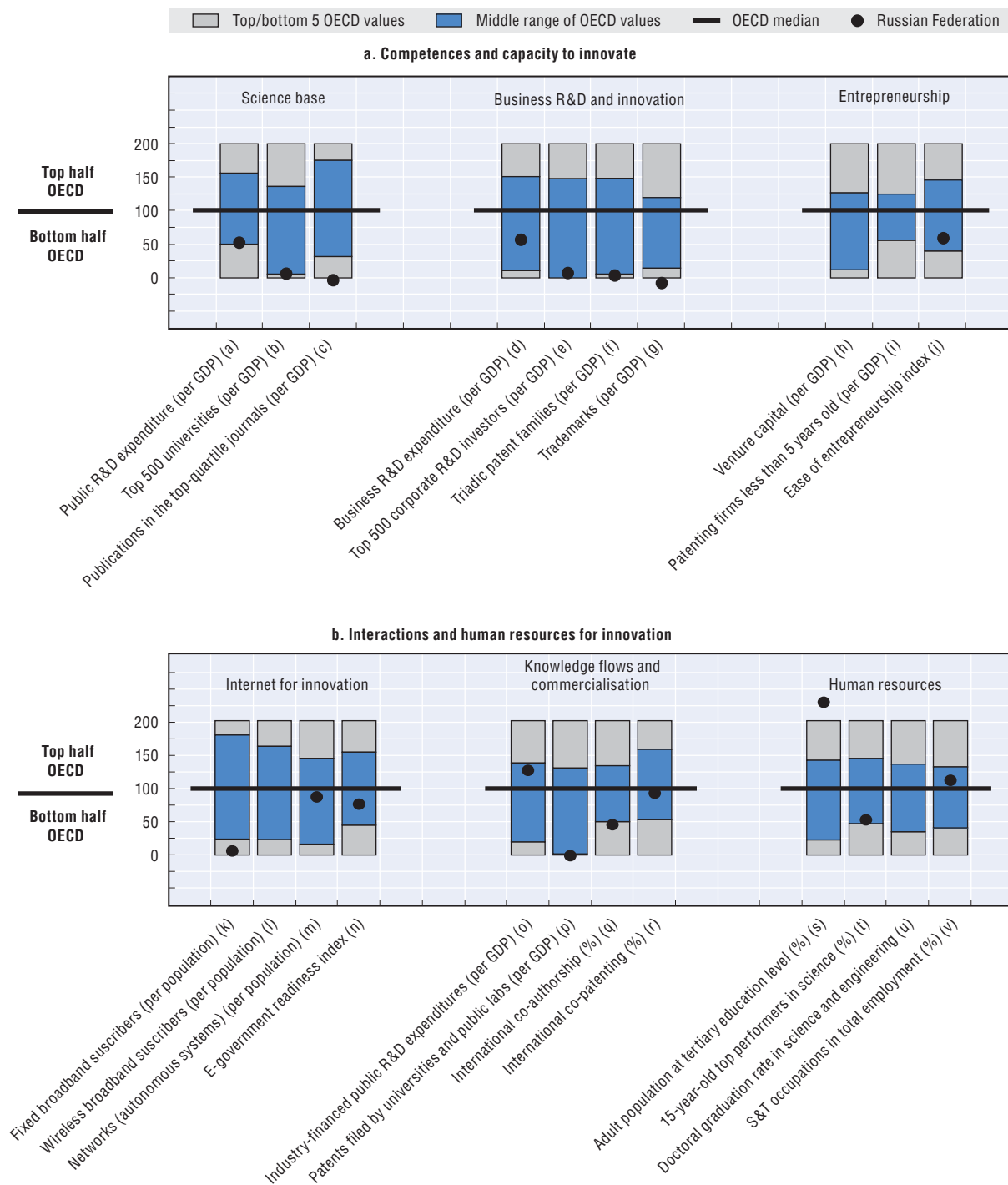
**Overall STI strategy:** After the onset of the financial crisis in 2008, a new strategic approach to Russia's modernisation emerged, with key long-term priorities for the national STI complex as well as a new framework for its governance. At the same time, a broader concept of innovation is being promoted, encapsulated in the Ministry of Economic Development's Innovation Development Strategy of the Russian Federation to 2020. Its objectives are to further develop human capital, stimulate innovation activities in the business sector, create a climate conducive to innovation in the public sector, increase the efficiency and dynamism of R&D, and promote international STI co-operation. In addition, the State Programme for Development of Science and Technology for 2012-20 has been established. Its goal is to concentrate resources on creating a competitive and effective R&D sector as a key driver for technological modernisation of the economy. In particular, it extends public support for priority technology areas and inter-sectoral S&T infrastructure.

### Key figures

<b>Labour productivity, GDP per hour worked in USD, 2010</b> (annual growth rate, 2005-10 )	<b>20.6</b> (+3.3)	<b>GERD, as % of GDP, 2010</b> (annual growth rate, 2005-10)	<b>1.16</b> (+5.2)
<b>Environmental productivity, GDP per unit of CO<sub>2</sub> emitted in USD, 2009</b> (annual growth rate, 2005-09)	<b>1.75</b> (+3.1)	<b>GERD publicly financed, as % of GDP, 2010</b> (annual growth rate, 2005-10)	<b>0.82</b> (+7.9)

Figure 10.34. **Science and innovation in the Russian Federation**

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).

**STI policy governance:** Several ministries support R&D and innovation, notably the Ministry of Education and Science and the Ministry of Economic Development. At the same time, the impact of the government's High Technology and Innovation Commission, as well as the President's Commission for Modernisation and Technological Development of Russia's Economy, is growing. They have become the main locus of policy decisions, with strong co-ordination powers in matters relating to R&D and innovation policies.

**Science base:** The public science base is large and dominated by industrial branch institutes. The institutes of the Russian Academy of Sciences also account for a significant share of publicly performed R&D and conduct the sorts of basic research carried out in HEIs in many OECD countries. Research outputs, as measured by the number of publications in scientific journals (1<sup>(c)</sup>) and triadic patent applications (1<sup>(f)</sup>) are weak. Efforts to strengthen research in HEIs include the launch of the programmes Research and Academic Teaching Potential of an Innovative Russia (2009-13) and Federal Targeted Support to Leading High Schools (2010-12). Much of the new investment aims to establish an elite cadre of research-led HEIs, similar to those of many OECD countries.

**Business R&D and innovation:** Business R&D is concentrated in larger companies, especially in resource-based industries. Besides traditional areas of excellence (e.g. nuclear energy, aerospace), these activities mainly support modernisation and technological renewal for productivity growth. Apart from a few high-technology firms (especially in the ICT sector), SMEs pursue non-R&D innovation strategies including technology adoption. Current policy practice for fostering innovation is twofold. A first group of measures seeks to relieve administrative barriers and improve framework conditions (including taxation and customs regimes) to stimulate innovation. A second set of measures targets major state-owned enterprises, notably the Innovation Enforcement initiative (2011-12), which obliges them to formulate and carry out innovation development strategies.

**Clusters and regional policies:** Russian R&D and innovation activities are largely concentrated in and

around Moscow and St. Petersburg. The government has various schemes to promote regional clusters, including special economic zones, techno-parks and innovation and technology centres. In 2010, the government announced the creation of the new Skolkovo Innovation City, which offers incentives for the establishment of foreign subsidiaries.

**Knowledge flows and commercialisation:** Limited co-operation between science, education and industry hampers innovation. The legal framework has been recently amended to promote co-operation. A series of federal laws (2009-11) encourages the creation of spin-offs from universities and research institutes, provides co-funding of research co-operation between companies and universities, and offers assistance in developing university innovation infrastructure. The Technology Platforms Initiative (2011) aims at fostering knowledge exchange and pre-competitive co-operation by enterprises, research institutes, universities and design bureaus along competitively selected thematic areas.

**Globalisation:** Russian innovation system has much to gain from stronger international connections. Among non-members the scale of the country's participation in the EU Framework Programmes is second only to that of the United States. At the same time, the government has continued efforts to stimulate inward FDI: in 2011, the need for prior government approval for foreign acquisitions in identified strategic sectors was removed.

**Emerging technologies:** With traditional strengths in the materials and physical sciences, the government has placed great importance on becoming a world leader in nanotechnology. Federal investments increased with the creation of Rusnano in 2007. Significant support for emerging technologies also come from by the Russian Technologies State Corporation and the State Atomic Energy Corporation.

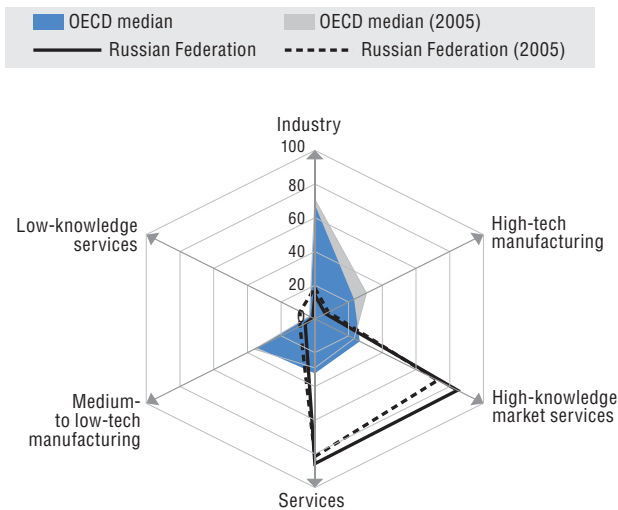
**Green innovation:** Owing to Russian high energy intensity, the government aims to implement measures to address energy efficiency. The *Federal Law on Energy Saving and Increasing Energy Efficiency* (2009) was the first step to promote International Energy Agency standards in the country. Further initiatives towards an energy-efficient economy are

included in the Energy Strategy of Russia for the period to 2030. At the same time, investments in developing environment-related technologies have

increased through dedicated programmes such as the New Generation Nuclear Energy Technologies (2011-15).

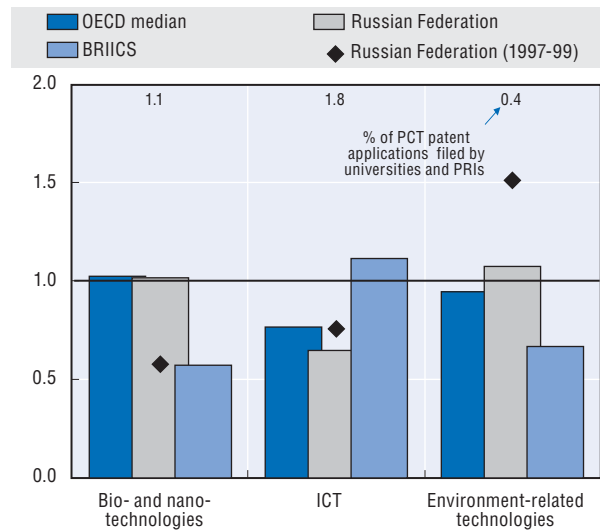
**Panel 2. Structural composition of BERD, 2009**

As a % of total BERD

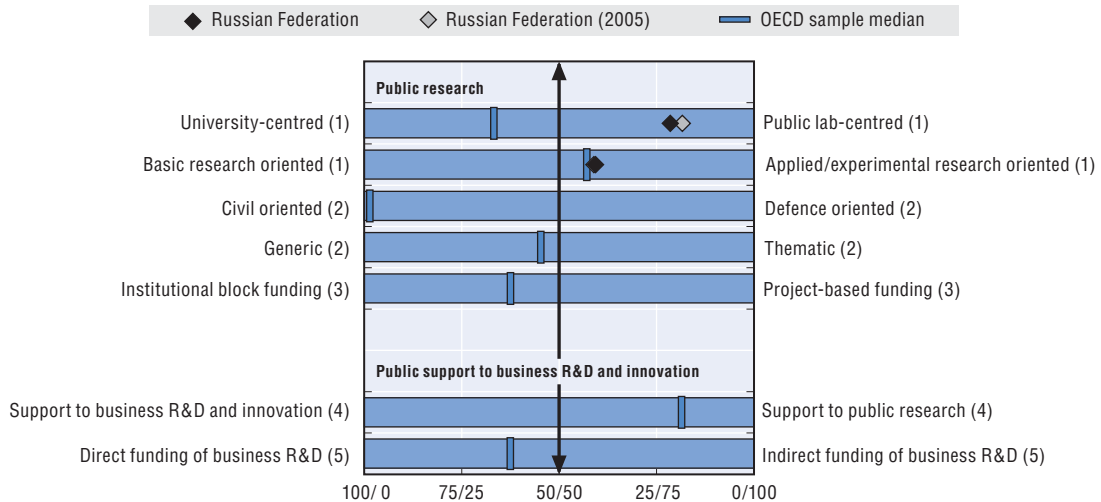


**Panel 3. Revealed technology advantage in selected fields, 2007-09**

Index based on PCT patent applications



**Panel 4. 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.

StatLink <http://dx.doi.org/10.1787/888932690776>