Country Profile

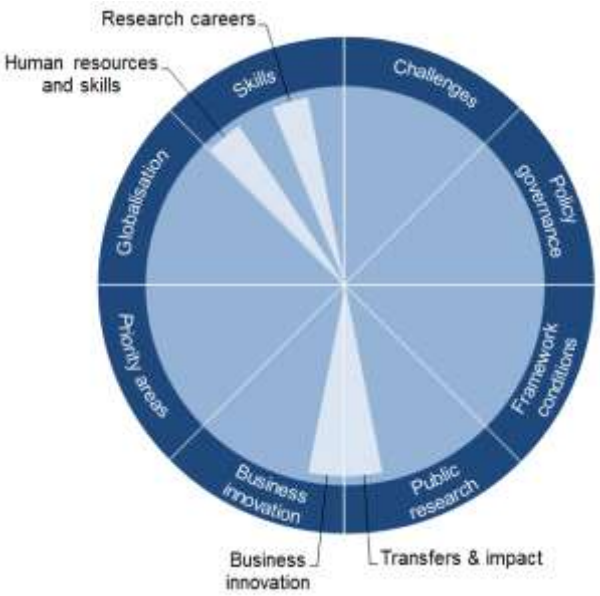
RUSSIAN FEDERATION

The Russian economy has been in recession since 2015, due to falling oil prices, international sanctions and capital flight, which together have reduced investment, domestic consumption and imports. Growth is projected to turn positive in 2017, as exports strengthen and domestic demand recovers. The Russian government aims to revitalise the country's long-standing strengths in science and technology in an effort to diversify the economy and reduce its reliance on natural resources. In 2015, amidst the economic downturn, the Innovation Development Strategy of the Russian Federation to 2020, adopted in 2011, was revised to address the economy's weaknesses by strengthening science, technology and innovation. A new strategic document, "Long-term Strategy for Scientific and Technological Development of the Russian Federation", is expected in late 2016 and will orient the national research and innovation agenda for the coming years.

Table 1. Gross domestic expenditure on R&D (GERD)

	RUS	OECD
GERD		
USD million PPP, 2014	39 863	1 181 495
As a % of total OECD, 2014	3.5	100
GERD intensity and growth		
As a % of GDP, 2014	1.09	2.38
(annual growth rate, 2009-14)	(+5.4)	(+2.3)
GERD publicly financed		
As a % of GDP, 2014	0.83	0.61
(annual growth rate, 2009-14)	(-0.1)	(+2.5)

Figure 1. Major STI policy priorities, 2016



Hot issues

Improving knowledge transfer and the returns on and impact of science

Patenting by universities and PRIs is below the OECD median (figure 5[p]). To derive greater returns from Russia's public research (see below), target indicators to evaluate the results of STI development and its impact for the economy and society have been integrated into key federal programmes and government strategies. There are currently 34 technology platforms, which were established in 2011 13 and bring together some 3 000 universities, research institutes and companies to share perspectives and co-operate on science and innovation. Changes made in 2012 in the legislation governing the exploitation of intellectual property assign IPRs resulting from public research to the Russian Federation and establish the principle of its free transfer so that these results feed more readily into industry and the society. Amendments to the federal law in 2013 make it easier for PRIs and universities to create business partnerships for transferring IP on the basis of licencing and commercialisation. The new Credit Guarantee Agency created in 2014 also supports universities and PRIs to commercialise their R&D results in spin-offs.

Encouraging business innovation and innovative entrepreneurship

BERD accounted for 0.71% of Russia's GDP in 2014. A distinguishing feature of the Russian system is that the federal budget for state-owned enterprises (SoEs) and industrial R&D organisations accounts for the major share of business R&D expenditures. On many measures, the innovation performance of Russian firms lags far behind their counterparts in OECD countries (figure 5[e,f,g]). Several government initiatives seek to stimulate innovative activities in the business sector. Russia updated its tax code in 2015 to provide exemptions from VAT for R&D and wider S&T activities, as well as for operations involving the protection and commercialisation of IPRs. The new allowances also provide for property tax exemptions for state scientific centres and income tax exemptions on educational organisations (including HEIs) in certain conditions. Several existing programmes remain prominent. The Innovation Development Programme (IDP) targets the largest SoEs, charging them to develop innovation strategies and to co-operate with universities and research institutes. As a result, the R&D and innovation expenditures of the largest SoEs increased from 1.59% to 2.02% of sales revenue between 2010 and 2014. A new round of strategy formulation is underway in 2015 16. The Federal Law on Public Procurement (2013) provides specifically for the procurement of high-technology and innovative products and goods and services from SMEs. The long-established Russian Research Foundation for Technological Development was transformed into the Industry Development Foundation in 2014 to provide interest-free loans to support business innovation activities. Its budget was increased significantly and is expected to be around USD 1.9 billion PPP (40 billion rubles, RUB) in 2016.

Improving overall human resources and skills

Although Russia has few internationally renowned universities, the proportion of the tertiary-qualified population, at 53%, is well above that of any OECD country (figure 5[t]). Yet, the performance of 15 year-olds in science is below the OECD median (figure 5[v]). A key objective of government policy is to narrow the gap between the structure and quality of skill provision and current economic needs. To this end, the government has introduced many measures to improve the efficiency of the education system and its ability to meet the skills needs of the country. For example, the 2012 Federal Law on Education in the Russian Federation outlines the contours of a modern education system, developments in educational programmes and technologies, and new teaching methods and approaches. It has raised the standards for PhD qualification and made the process more transparent. Since 2012, the government implemented the Presidential Programme for Advanced Training of Engineering Personnel, with total state financing of USD 40 million PPP (RUB 750 million) over three years. The goal was to improve the qualification of engineers in Russia's strategic industries and to rationalise the structure of engineering education by organising training programmes in priority industrial sectors (energy and resource efficiency, nuclear technologies, space, medicine and ICT) and internships in leading research

and engineering centres in Russia and abroad. In 2012-14, the Programme funded 16 600 engineers to obtain higher qualifications and 2 100 engineers to be trained abroad. A special government programme provides "mega-grants" to help universities and research centres to attract leading scientists. Since 2010, it has supported 144 world-class researchers, half of them from abroad, to lead new laboratories in Russia. Currently, the Federal Targeted Programme for Education Development (2016-20) is being drawn up to address the skills needs envisaged for the implementation of the Strategy of Innovation Development until 2020. The programme's budget is approximately USD 4.7 billion PPP (RUB 113 billion).

Improving the attractiveness of scientific and research careers

One of the main challenges for Russia is the decline and ageing of its research community. Several measures seek to address this challenge by making research careers more attractive. The Innovation Development Strategy of the Russian Federation to 2020 focuses on the creation of an effective economic and moral impetus to attract the most qualified specialists, active entrepreneurs and creative youth to the education and science sectors, which are crucial for innovation. The Presidential Decree on Measures for the Implementation of State Social Policy targets raising the average salary of researchers to 200% of the regional average by 2018. To support the development of human resources for science and education and their effective reproduction, grants of the President of the Russian Federation provide financial support and incentives to young Russian scientists in two age groups, i.e. below the age of 35 and below the age of 40, respectively.

Some key STI performance indicators

Figure 2. Economic performance

Labour productivity, GDP per hour worked, index 2005=100

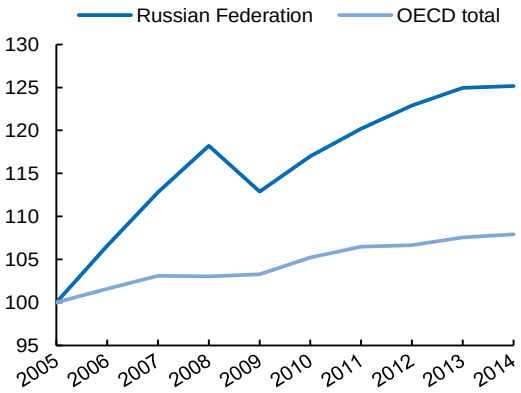
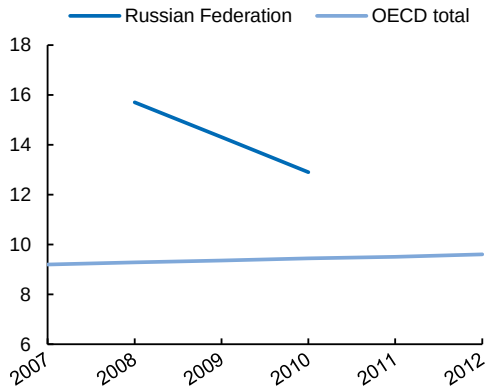


Figure 3. Environmental performance

Green productivity, GDP per unit of CO_2 emitted, index 2005=100

Figure 4. Income inequality

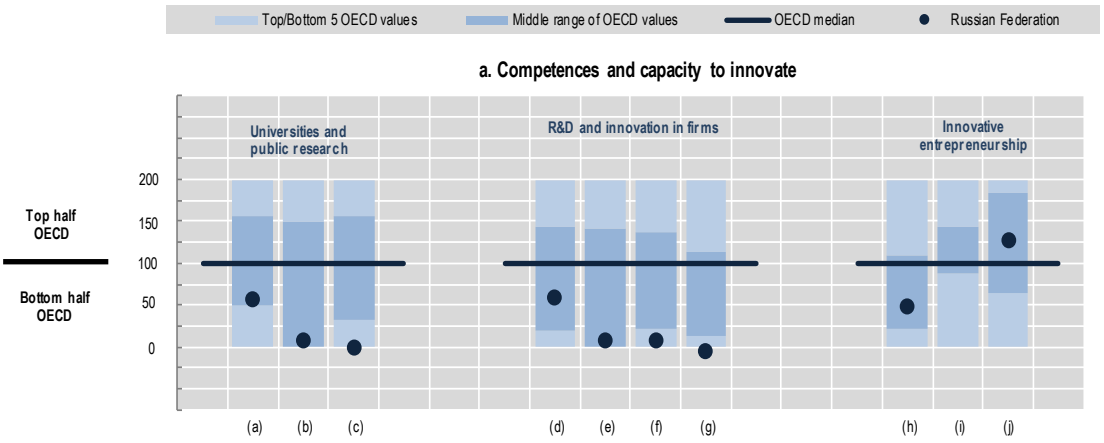
Ratio top decile/first decile of real household net disposable income



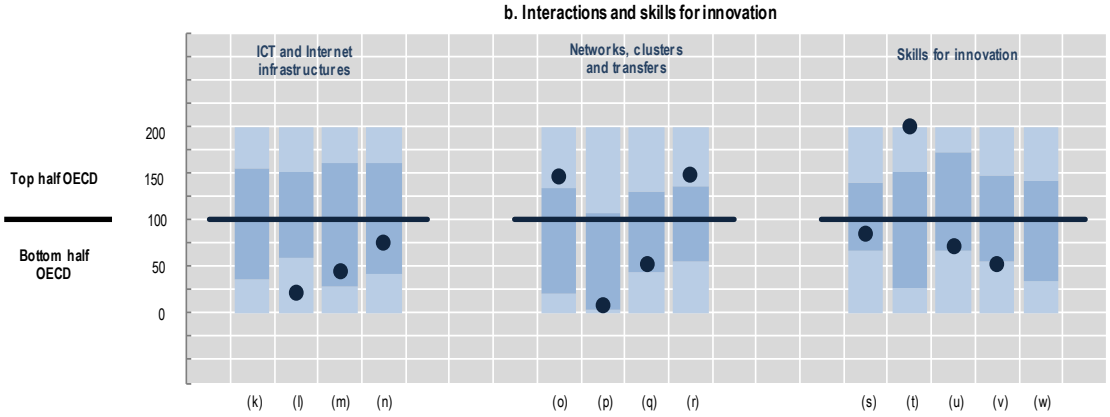
Benchmarking national STI systems

Figure 5. Science and Innovation in the Russian Federation

Comparative performance of national science and innovation systems, 2016



(a) Public R&D expenditure (per GDP)
(b) Top 500 universities (per GDP)
(c) Publications in the top journals (per GDP)
(d) Business R&D expenditure (per GDP)
(e) Top 500 corporate R&D investors (per GDP)
(f) Triadic patent families (per GDP)
(g) Trademarks (per GDP)
(h) Venture capital (per GDP)
(i) Young patenting firms (per GDP)
(j) Ease of entrepreneurship index



(k) ICT investment (per GDP)
(l) Fixed broadband subscriptions (per population)
(m) Wireless broadband subscriptions (per population)
(n) E-government development index
(o) Industry-financed public R&D expenditure (per GDP)
(p) Patents filed by universities and public labs (per GDP)
(q) International co-authorship (%)
(r) International co-invention (%)
(s) Tertiary education expenditure (per GDP)
(t) Adult population at tertiary education level (%)
(u) Top adult performers in technology problem-solving (%)
(v) Top 15 year-old performers in science (%)
(w) Doctoral graduate rate in science and engineering (%)

Note: Normalised index of performance relative to the median values in the OECD area (Index median=100). Please note that for the Russian Federation, the 2012 value was used for the indicator (m) Wireless broadband subscriptions (per population). It is compared to values of December 2015 for OECD countries.

Highlights of the Russian STI system

New sources of growth

To boost future growth, several state technology-oriented programmes support specific industrial sectors (aircraft, shipbuilding, electronics, etc.) and technological areas (biotechnology, composite materials, photonics, etc.). The most recent initiative in this regard is the National Technology Initiatives (NTI) programme, which was introduced in 2015 with the aim of creating new markets and achieving global technological leadership in selected areas by 2035. The NTI is led by the new Agency for Strategic Initiatives (ASI), which is also responsible for foresight and developing roadmaps. The NTI attempts to take a holistic approach to priority-setting and implementation, identifying opportunities and challenges in markets, technologies, infrastructures and institutions.

New challenges

Several new initiatives were launched in recent years to address social and environmental challenges. For example, the Strategy for Rural Territories Sustainable Development (2015-30) aims to improve living conditions and create better jobs in the agriculture sector and enhance its productivity, thereby helping stabilise the rural population by reducing outmigration from the Russian countryside. The New National Energy Strategy for 2035 sets long-term goals for the development of Russia's energy sector, while several government decrees were adopted in 2015 to stimulate the use of renewable energy sources, to improve the energy efficiency of the country's heating system, which is the world's largest, to protect the environment, and to support innovation in oil and alternative energy.

STI policy governance

The Presidential Council for Science and Education and the Presidential Council for Economic Modernisation and Innovative Development have been established to improve policy co-ordination on science and innovation. Two programmes, the Development of Science and Technology (DST) (2013-20) and Economic Development and Innovative Economy (2013-20), both approved in 2013, aim to organise and systematically coordinate all major federal budget-funded initiatives in science and innovation. To strengthen strategic policy intelligence, foresight studies, e.g. within the framework of the Interdepartmental Commission on Technology Foresight, are increasingly being used in the selection of national and sectoral STI priorities. The Long-term S&T Foresight Towards 2030 programme, approved in January 2014, is a major input to strategic planning and policy formulation. A further national foresight exercise, with a 2040 time horizon, is currently underway. The aforementioned National Technology Initiatives programme is also increasingly prominent in organising and coordinating STI policy across government and makes extensive use of foresight and road-mapping studies. The evaluation of government programmes, including Federal Targeted Programmes, has been recently reinforced and is now planned according to the new Federal Budget for 2014-16.

Universities and public research

Russia has a large public science base, dominated by industrial research institutes and the institutes of the State Academies of Sciences (RAS). In 2013, the latter were extensively reorganised through the establishment of the Federal Agency for Scientific Organisations, which has the responsibility to administer the property of the RAS, to evaluate and oversee the activities of the RAS institutes and to distribute public funding to them. New arrangements for assessing the performance of public scientific organisations in the civil sector were also introduced in 2013 to improve accountability, while a new Russian Research Foundation was set up to distribute research grants on a competitive basis. Since 2013, the government has adopted several roadmaps aimed at stimulating the productivity of the Russian science sector, delivering a greater economic impact from research, and redressing the ageing of the Russian research community. A series of initiatives should improve the country's public research infrastructure, including a Mega-Science Infrastructure Projects programme within the DST (2013-20) for creating and developing very large research

facilities. It provides competitive funding for infrastructures to both public and private research institutes and universities.

ICT and Internet infrastructures

Russia's ICT infrastructure is comparatively weak, partly on account of the country's large size, with 14.5 subscribers to fixed broadband networks per 100 inhabitants (figure 5[i]). Russia also shows a low level of specialisation in ICT, although ICT-related patent applications have more than doubled in a decade. Under the government Information Society programme, a total of USD 5 billion PPP (RUB 1.2 trillion) is to be invested over 2012-20 to improve e government, overcome digital divides and develop new communications technologies. In 2013, the Russian Federation adopted its Cybersecurity Strategy.

Clusters and regional policies

The government launched a new nationwide programme in 2012 to support pilot innovative territorial clusters to promote value-added production chains and drive growth in Russia's regions. A total of 25 clusters were established, in seven strategic sectors: nuclear and radiation technology; aircraft and space vehicles manufacturing; shipbuilding; pharmaceutical, biotechnology and medical industries; new materials; chemicals and petrochemicals; and information technology and electronics. In 2013, a federal subsidy of USD 63 million PPP (RUB 1.3 billion) was allocated to support 14 pilot clusters, with an equal matching fund provided by the regional governments. Funding support was further extended to another 11 clusters in 2014, with up to USD 154 million PPP (RUB 3.1 billion) expected to be available from the federal budget annually over 2014 16. The next focus of the Russian cluster policy is to implement broader regional cluster programmes and to create cluster development centres to facilitate co-ordination and networking. Furthermore, the Small and Medium-sized Enterprise Development Programme, with a budget of USD 8 billion PPP (RUB 155 billion) over 2013-20, distributes federal subsidies to co finance regional SME development, supports local clusters of engineering and prototyping centres, and provides credit guarantees.

Globalisation

A number of administrative barriers hamper deeper and more efficient international co-operation on STI, including visa issues and the misalignment of funding procedures with foreign and international funding agencies. In 2013, the government announced two major STI funding programmes, i.e. R&D in Priority Fields of Russia's S&T Complex 2014-20 and R&D Personnel for Innovative Russia 2014-20, both of which include provisions that support international co-operation.

Specialisation

Figure 6. Revealed technology advantage in selected fields, 2011-13

Index based on IP5 patent families applications

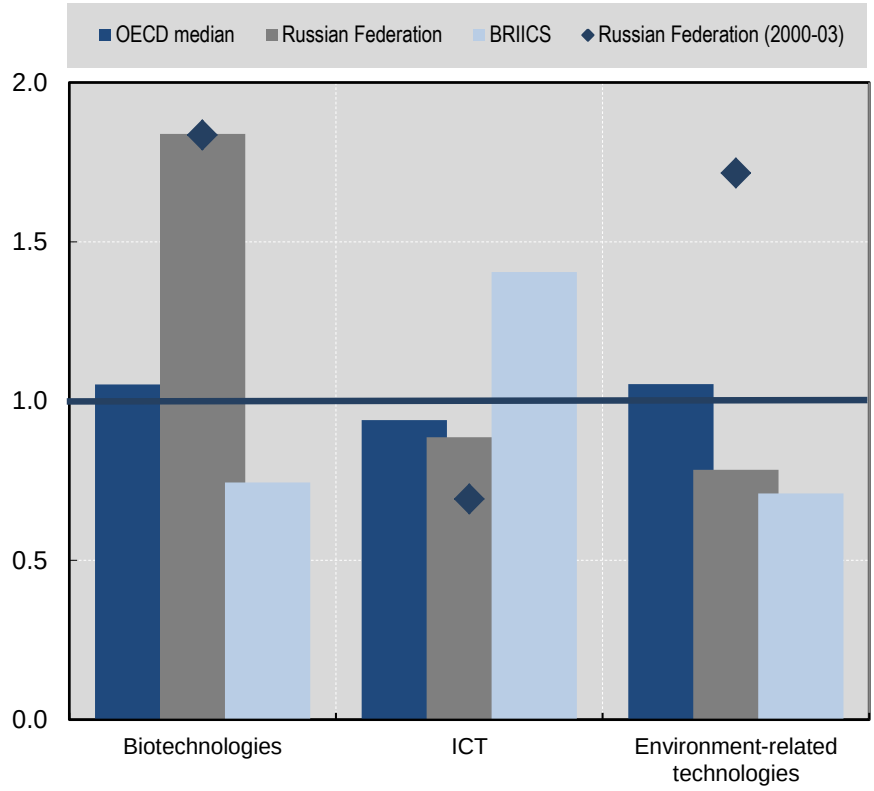
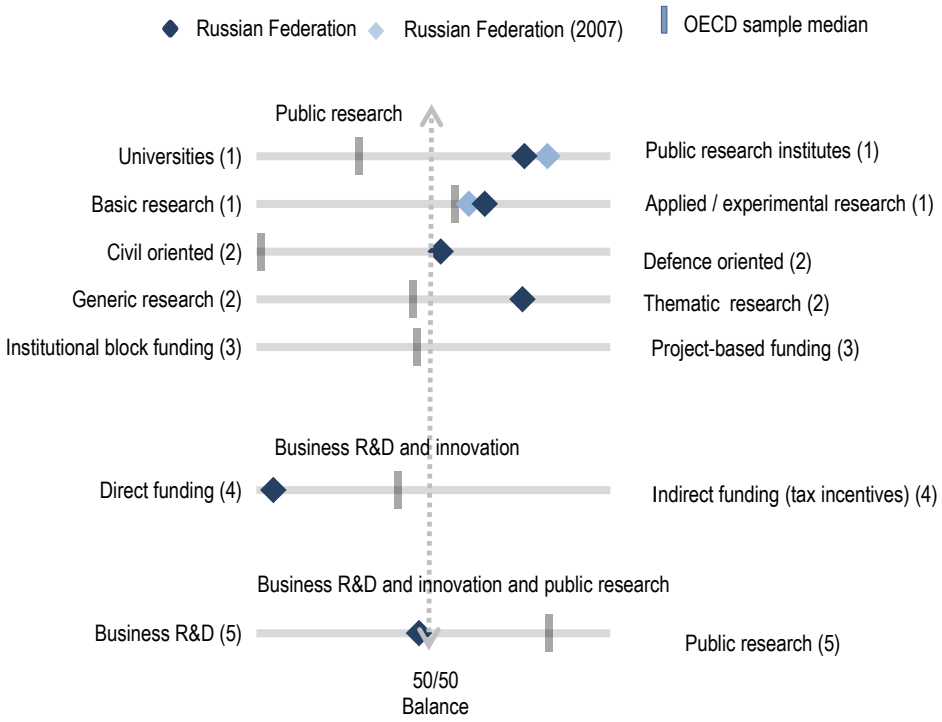


Figure 7. Allocation of public funds to R&D, 2014 or latest year available

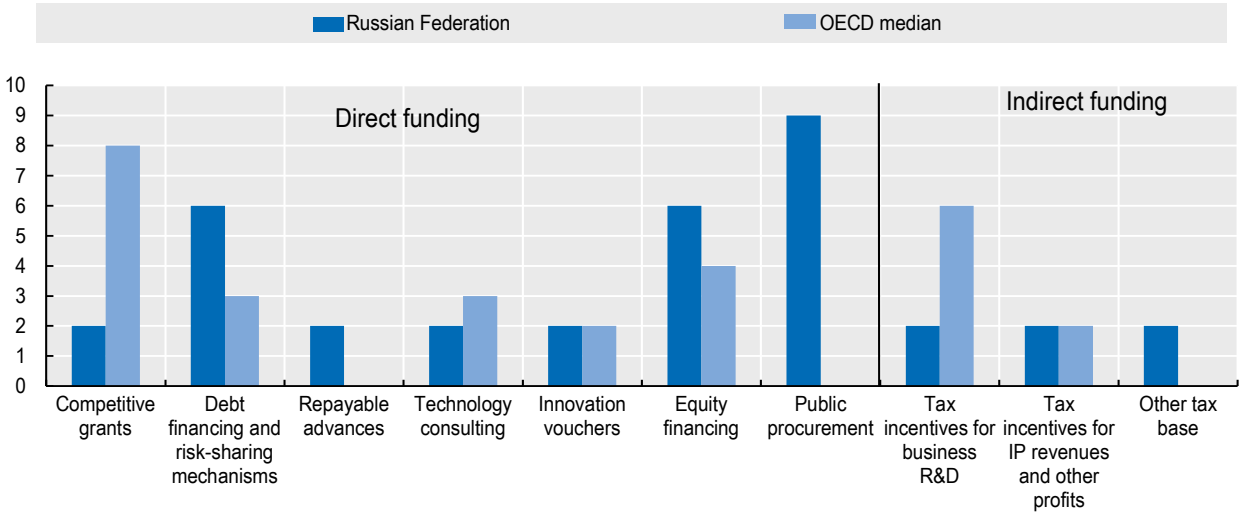
By sector, type of R&D and mode of funding



(1) Balance as a share of both higher education (HERD) and government (GOVERD) R&D expenditure.
(2) Balance as a share of total government budget appropriations and outlays for R&D (GBAORD).
(3) Balance as a share of total funding to national performers.
(4) Balance as a share of both indirect funding (through R&D tax incentives) and direct funding (through grants, procurement, loans, etc.).
(5) Balance as a share of publicly-funded HERD and GOVERD and components of (4).

Figure 8. Most relevant policy instruments of funding of business R&D, 2016

Country self-assessment, index (9 = high and increasing relevance to 0 = not used



Note: Policy information comes from country responses to the *OECD STI Outlook* policy questionnaires 2016 and 2014. The Russian Federation's responses are available in the EC/OECD STI Policy Database, edition 2016 at http://qdd.oecd.org/DATA/STIPSurvey/RUS...STIO_2016.

Source: See the reader's guide and methodological annex.

StatLink http://dx.doi.org/10.1787/888933434033

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