Trends in Russian Science and Innovation Policies and Prospects for International Cooperation

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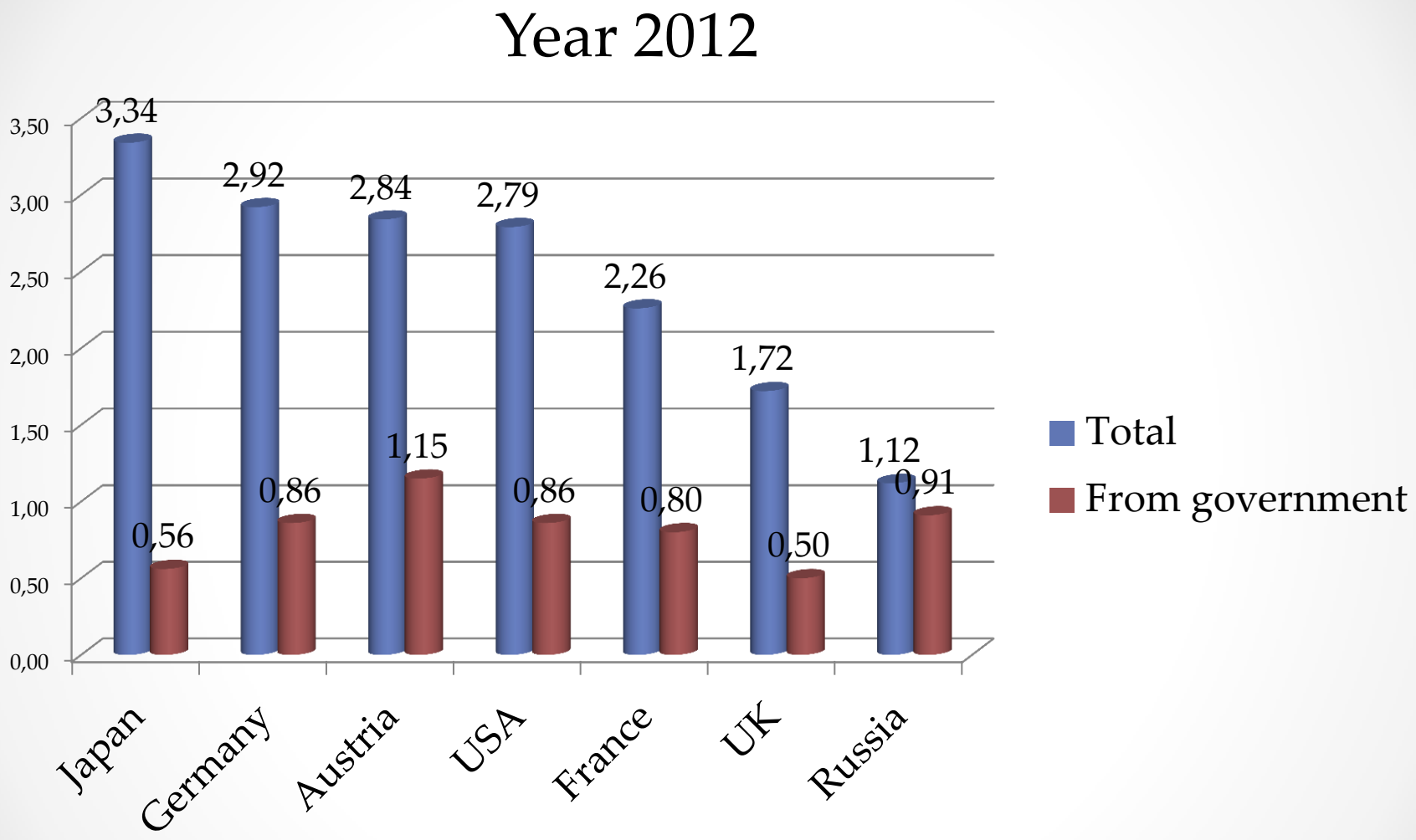
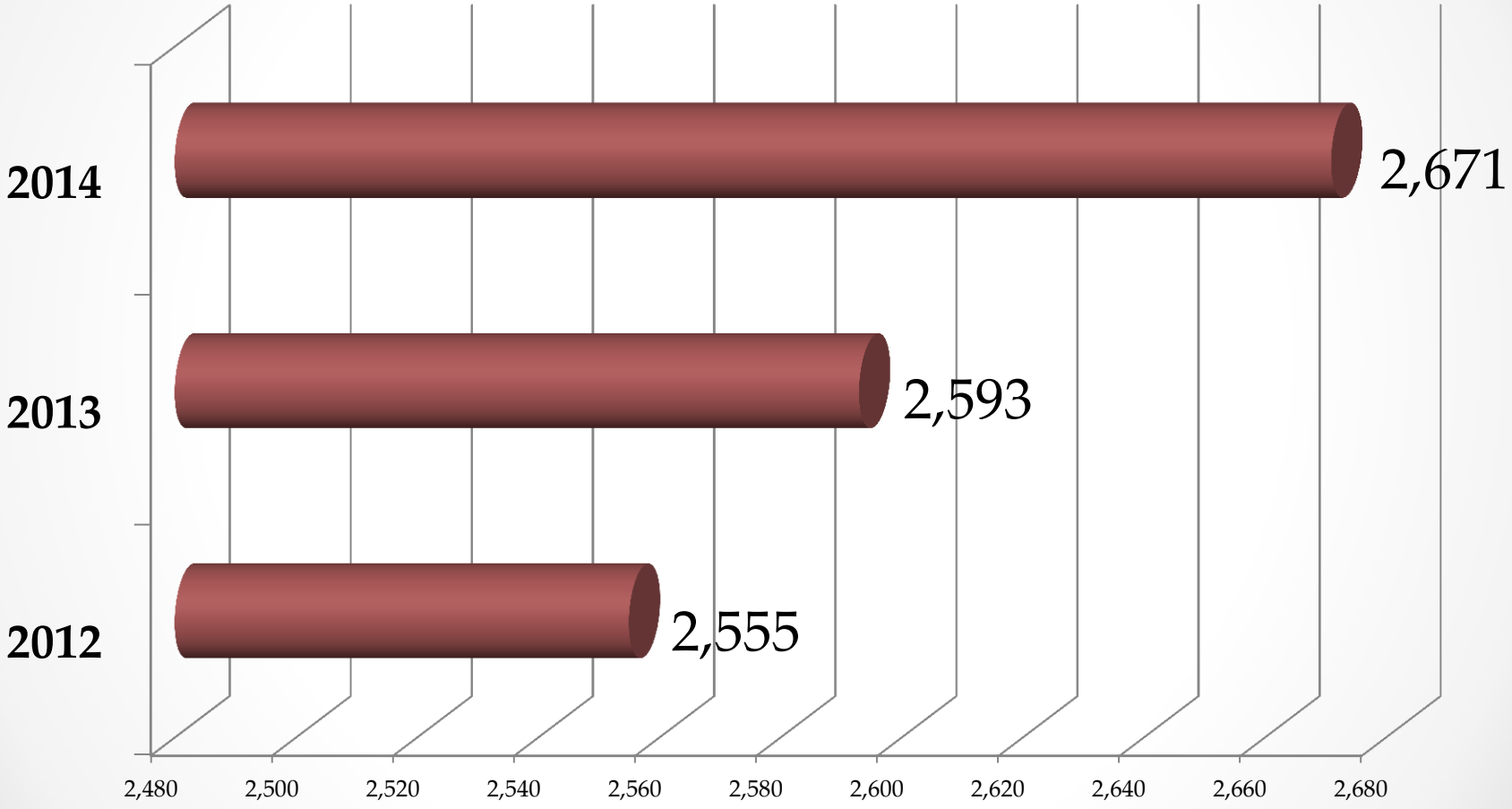
Expenditures on R&D (% of GDP)



Main Science and Technology Indicators, OECD, 2014. P.21, 31.

Russian Government Spending on R&D

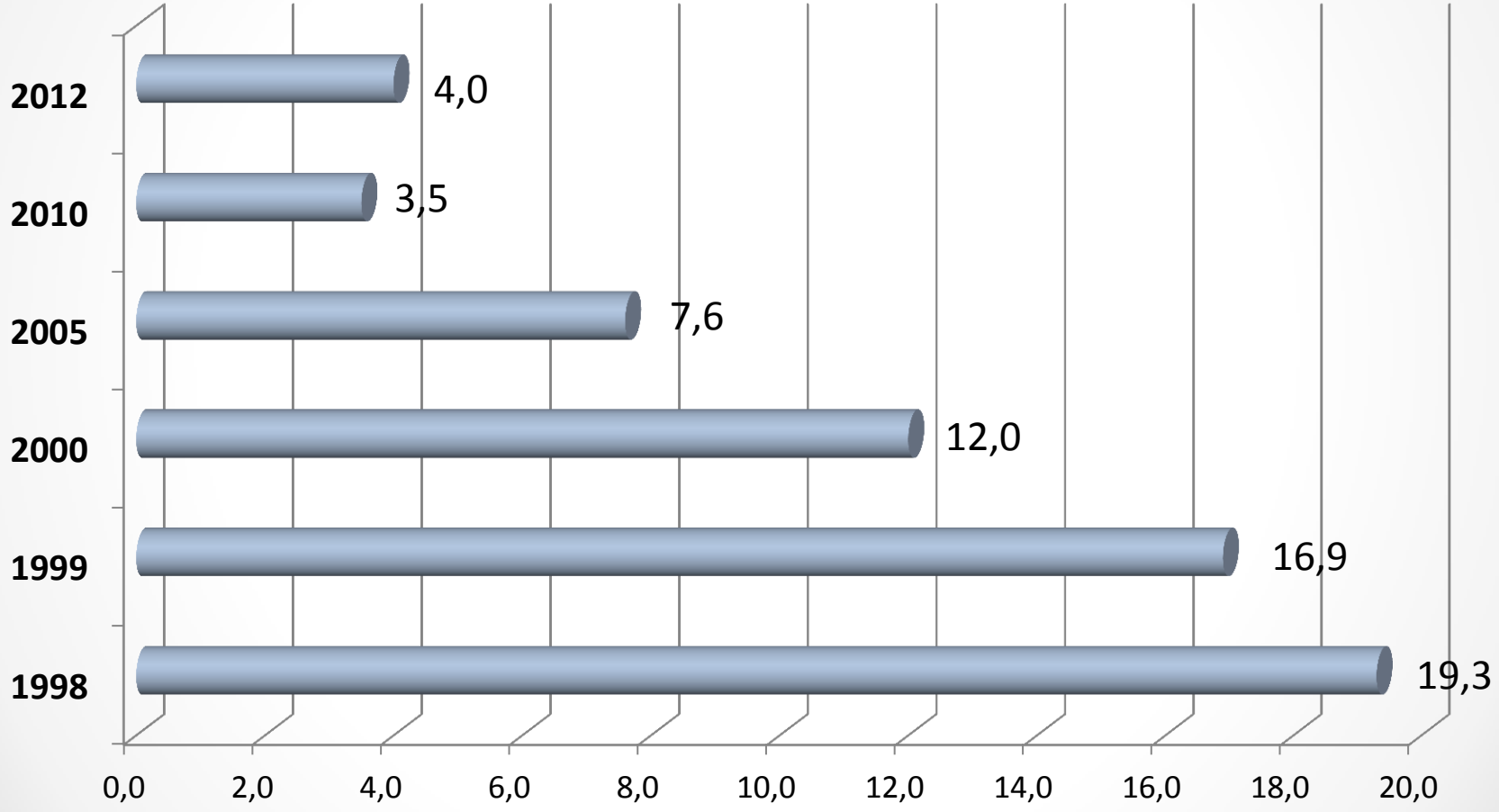
(Billions USD)



Russia: Focus on Innovation. Release II. M.: RVC, 2014. P.11.

Foreign Funding of R&D in Russia

(% of Total Funding)



Number of Researchers

(in thousands)

	2000	2005	2008	2010	2012	2012/2000, %
Researchers - total	426.0	391.1	375.8	368.9	372.6	-12.5
From total:						
RAS institutes	61.9	60.8	54.7	55.1	52.9	-14.5
Universities	28.3	30.1	33.2	38.6	43.0	+51.9

Publications & Citations: Russia, BRIC, Austria (2008-2012)

Web of Science

Country	Articles	Citations/ article
Russia	135,363	2.56
Brazil	160,443	3.22
India	207,086	3.87
China	699,044	4.01
Austria	57,429	6.88

Scopus

Country	Articles	Citations/ article
Russia	579,814	5.52
Brazil	446,892	10.09
India	716,232	7.99
China	2,655,272	6.17
Austria	204,243	16.67

International Collaborations

- Share of country in world citations, Scopus, 2012:
  - RUSSIA- 1.41%
  - AUSTRIA – 1.66%
- Publications coauthored by Russian scholars (% of the total in a given country); top-5 Western European countries:

- Finland – 4.33%
- Norway – 2.68%
- AUSTRIA – 2.66%
- Switzerland – 2.53%
- Germany – 2.23%

- Source: Indicators of science-2014. M.: HSE, 2014. P.381; 383.

Russia in World Ratings

Index	2012	2013
Global Innovation Index	**32**	**62**
QS World University Ratings	**116**	**120**
World Gross Expenditure on R&D	**6**	**5**

Russia: Focus on Innovation. Release II. M.: RVC, 2014. P.12.

Do World Ratings Reflect Reality?

Survey of 174 respondents, from which about 65% - representatives of science and business:

- **Yes – 65%**
- Russia's place is lower than deserved– 28%
- Russia's place is higher than deserved – 7%

Source: Russia: Focus on Innovation. Release II. M.: RVC, 2014. P.75.

Science Policy

Programs Supporting Universities

(Data from the National Training Fund, 2014)

2006 - 2008	2009–2013 (2014)	2012-2014	2013-2020
Innovative Educational Programs / Federal Univ (FU)	**National Research Universities (NRU)**	**Programs for strategic development**	**Top 5 / 100**
• 57 universities, up to 260M RUR/year per university • 9 FU up to 1B RUR/year per university	• 29 NRU- 340M RUR/ year per university	• 55 universities, 100M RUR/year per university	• 14 universities – average 524M RUR/year per university
Average Yearly Budget for Elite Universities			
523M RUR 2006	813M RUR 2008	929M RUR 2011	1125M RUR 2012

Role of Leading Universities

- Centers for fundamental research
- Substitute corporate research and be "in demand" by industry
- Internationalization: publications in international journals; foreign students (at least 15%); foreign professors

Creating Laboratories Led by World's Level Scientists

- 4 rounds of competition since 2010; open for Russian and foreign applicants
- Rounds 1-2 (2010, 2011): up to $5M for 3 years with possible 2-year extension; In Russia – **only universities** were eligible to apply.
- Rounds 3-4 (2012, 2013): up to $2.5M for 3 years; 25% co-financing required; possible 2-year extension. **RAS and universities are eligible to apply.**
- Expert evaluation: total 1299 experts (47% foreign)

Data for New Labs: Foreign Participation

Year	Number of applications	Foreign applicants %	Number of awards	Foreign recipients %	Country with most winners
2010	507	35.3	39	43.6	Germany
2011	517	41.0	38	50.0	USA
2012	720	47.2	42	54.8	USA
2013	503	59.6	42	54.8	Germany

Source: http://www.p220.ru/

Current Institutional Reforms - Directions

1. Reform of RAS: combining RAS, RAMS, and RAAS
2. 1007 former Academy institutes transferred to the Federal Agency of Scientific Organizations (FASO)
3. Developing new organizational types for former Academy research network
4. Assessing performance of research institutes (NOT linked to reorganization of former Academy institutes universities)
5. Increasing grant support: Russian Science Foundation

Institutional Reforms -Plans

Approved by the government:

- Salary growth for researchers – should raise to double average salary in a given region by 2018
- Cuts in administrative and auxiliary services staff - from 51.7% (2013) to 40% (2018)
- No cuts in research workforce but increasing share of young people (up to 35 years old)

Under discussion:

- Limit age of directors & deputy directors to 65
- Types of new institutes (by major function), merging

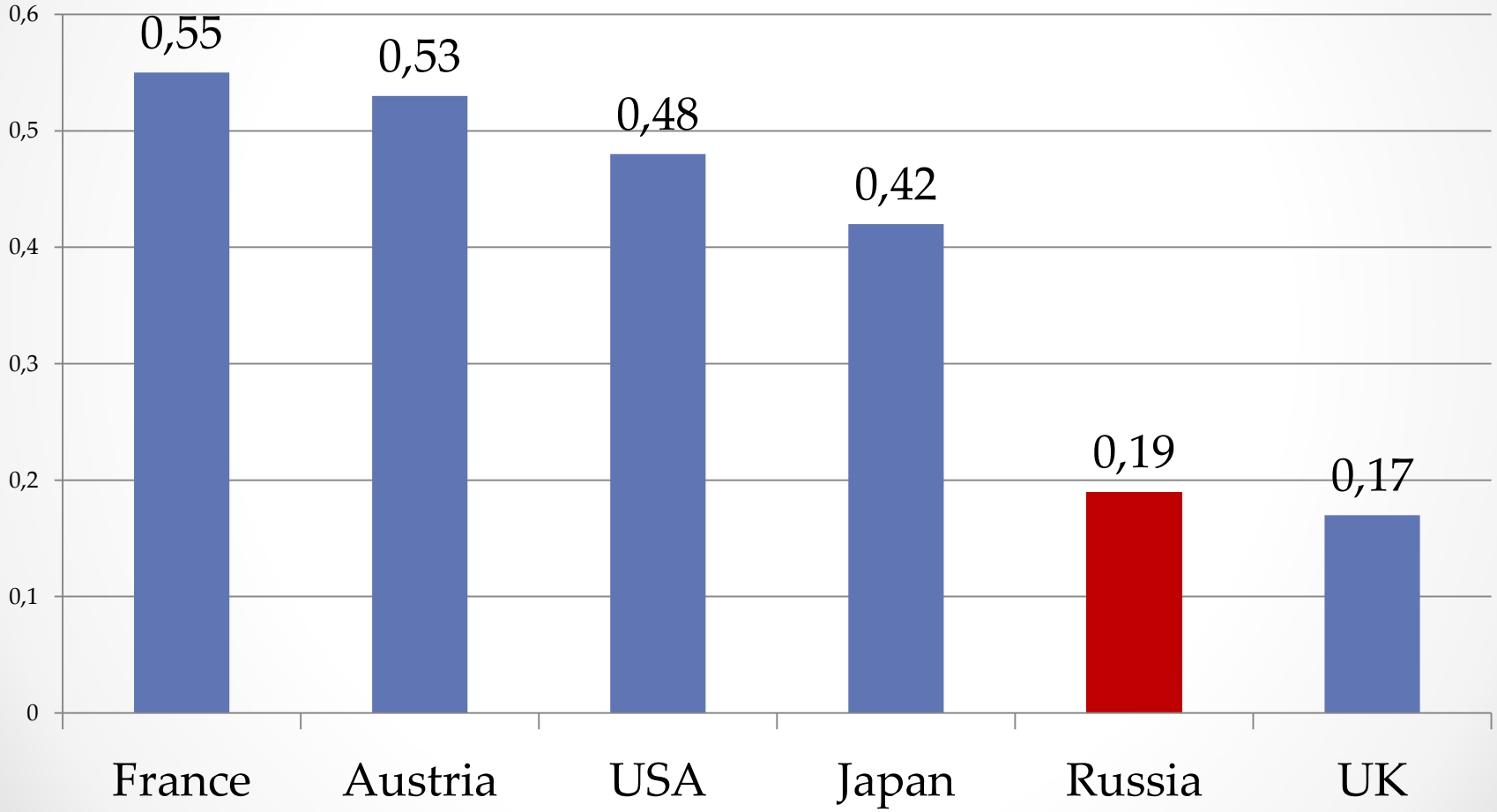
Proposed New Types of Institutes

By 2020, the following types of organizations replacing former Academy institutes may be formed:

- Federal Research Centers – based on integration of institutes; goal - breakthrough research in areas of strategic importance for Russia
- National Research Institutes – for fundamental research
- Federal Scientific Centers – R&D for creation of new technologies for modernization in industry
- Regional Scientific Centers – R&D for regional needs
- **By the end of 2014** – **define several pilot projects in priority areas: medicine, life sciences, energetics, agro-technologies and food industry**

Expenditures on Basic Research

(% GDP for 2011)



Source: Main Science and Technology Indicators, OECD, 2014. P.25.

Measuring Performance of Research Institutes

- Interagency evaluation of performance
- 25 major criteria which will be grouped (by 6-7) for assessing different types of institutes
- 4 groups of indicators:
  1) Outputs (bibliometrics, patent stats, and attracted funds)
  2) Workforce development (number of graduate students and personnel who took part in various trainings)
  3) Integration into the world's community (co-authorship)
  4) Resources (funding, researchers and their demographic profile, salaries)

- **Three groups of institutes should be identified: leaders, regular performance, and outsiders.**

Is Russia Attractive for Doing Scientific Research?

Survey of 174 respondents, from which 19% - researchers and teaching staff, 16% - representative of government agencies and Institutes for development, 37% - entrepreneurs and industry representatives:

- **Foreign countries offer broader opportunities – 67%**
- Russia is not better or worse than other countries – 27%
- Russia is a place of brain-gain – 6%

Source: Russia: Focus on Innovation. Release II. M.: RVC, 2014. P.44.

Budgets of Russian State Foundations Supporting Scientific Research

Billions of RUR

	2014	2015	2016
Russian Science Foundation	11.4	17.2	19.1
Russian Foundation for Basic Research	9.2	10.93	14.3
Russian Foundation for Humanities	1.54	1.82	2.37

Russian Science Foundation: Principles of Operation

- **Support of the best** (groups, labs, institutes)
- Funding of **fundamental and exploratory research**
- Basis for evaluation – bibliometric indicators
- **Big projects** (start from 5M RUR per year)
- Proclaimed support of young researchers
- **Participation of foreign scholars – grants and evaluation of proposals (under negotiation)**

RSF Support of International Research

- Support of international research groups with no more than 50% of Russian scientists
- 3-year grants, 90-185 thousand Euro (in current RUR) annually
- 487 applications, 30 grants (1:16)
- Researchers from 23 countries

Source: RSF data, http://www.rscf.ru/node/1096

Innovation Policy

Technology Platforms

- Initiative announced in 2010, concept adopted from EU experience
- Communicative instruments aimed to activate creation of new technologies and products due to synergy of business, science, government, and civil society (*Strategy for innovation development-2020*)
- Participants: research organizations, universities, state and private companies. Majority: government R&D institutes and universities
- 34 platforms founded during 2011-2013.

Technology Platforms: EU versus Russia

Characteristics	EU	Russia
Principle of formation	Bottom-up	Top-down
Goals	1) Coordinating EU countries interests 2) Linking fundamental research to practical applications 3) Synergy among major stakeholders	1) Creating new technologies 2) Attractiing additional resources for R&D 3) Improving legal regulations in R&D and innovation
Tasks	Developing Strategic Plan and roadmaps Marketing of ideas in EU	Developing Strategic Program Developing programs to disseminate new technologies Educational activities **Expert functions for the government**
Financing	State, private, self-funding	Government funding (planned), private (planned)
Government role	Promoting the platforms' concept Limited financial support of operational activities	Participating in governance of platforms Attracting platforms as experts Monitoring

Technology Platforms: International Cooperation (Source: RFTR brochure, Oct. 2014)

Platform	Active in development of international linkages	Foreign organizations among members
Medicine of the future	+	+
Biotech and bioindustry-2030	+	-
Bioenergy	+	+
Photonics	+	-
Radiation technologies	+	-
Ocean	+	-
Textile and light industry	+	+
5 platforms in resource-extracting industries	-	+
Green car	-	+
Building construction and architecture	-	+

Barriers to Innovations (assessments from Institutes for Development and foreign experts)

Barrier	Gov-nt Institutes	Experts
Inadequate qualifications of those who tries to be in innovations-related business	Yes	yes
Lack of "breakthrough" projects, which in part reflects weakness of research potential	Yes	yes
Lack of financing at pre-seed and seed stages and thus lack of projects that could be further developed	yes	No (too much government money)
Cautious attitude of private companies to government initiatives, low demand for innovations	Yes	yes

Possibilities for Austrian-Russian Cooperation (1)

- increase STI cooperation via Joint Research Calls and make use of European structures (especially ERA-NET Plus)

Possible, with attention to mutually defined priority areas (national interest). Current aspect: sanctions

- negotiate more bilateral Memoranda of Understanding (MoU)

Non-binding, does not impose much obligations which has pluses (better acquaintance and possibility to change the mind) and minuses (passive instrument)

- increase incentives of researcher exchange via mobility programs

May be difficult in current conditions; clear rules for return should be defined by the country-recipient (the US experience)

Possibilities for Austrian-Russian Cooperation (2)

- develop infrastructure technology cooperation, i.e. passenger train technologies, freight transport, transport infrastructure, organizational aspects etc.

Starting point – Russian technology platforms

- in the long-term, make a utility assessment to introduce an Austrian Office of Science & Technology in Russia

Politically important

Conclusions

- Russian R&D complex is funded mainly by the government; government's role is increasing
- Time of uncertainty because of large institutional reform based on ill-conceived decisions (brain drain is becoming an issue)
- Positive development - support of research at universities, inviting foreign scholars, new financial mechanisms aimed at internationalization
- International aspect: supported by the government; so far out of sanctions context though may be affected in selected areas of R&D