



Министерство  
образования и науки  
Российской Федерации

# Science and Technology Landscape Russian Federation

---

**By Lyudmila Ogorodova**  
Vice-Minister, Ministry of Education and  
Science of the Russian Federation



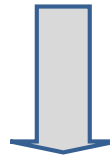
# Global challenges of the modern world

## Excellence vs Equity



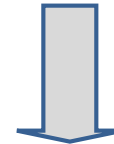
- ✓ Multi-vector policy
- ✓ Transparency  
(willingness to conduct a constructive dialogue)
- ✓ Scientific excellence

## Competition vs Cooperation



Participation in large-scale international research projects and support international programs in frameworks (UNIDO, APEC, ASEAN)

## Global vs Local

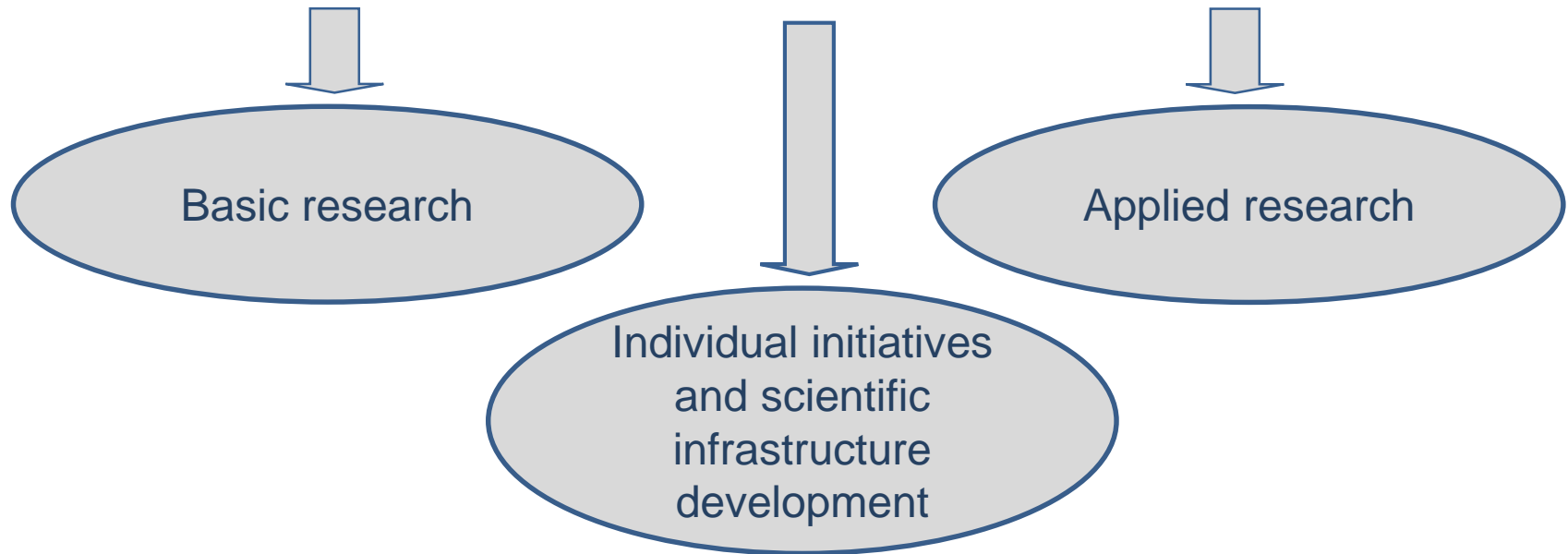


Cooperation on the basis of parity and mutual benefit, enlargement of scientific and technical cooperation - BRICS



# Mechanisms used by the Russian Ministry of Education and Science for supporting science and technology

## State program of development Science and technology





## Basic research

- ✓ Long-term program for basic scientific research in the Russian Federation (2013 – 2020) – coordinated by the Russian Ministry of Education and Science
- ✓ Programs of the state academies of science for supporting basic research for 2013-2020 (FASO, RAS, Russian Ministry of Education and Science, Russian Ministry of Construction Industry, Housing and Utilities)
- ✓ Scientific funds (RSF, RFBR, RFH)



## Applied research

- ✓ Russian Federal Targeted Programme "R&D in Priority Areas of Development of the Russian S&T Complex 2014-2020"
- ✓ Sectoral federal programs (such as the Federal Target Program "Development of the pharmaceutical and medical industry of the Russian Federation for the period up to 2020 and beyond")

# The mechanisms of state support of science and technology in the Russian Ministry of Education and Science

- The Federal Targeting Program (FTP) «Research and development of the priority areas of the scientific and technological complex in Russia» in 2014-2020
- The FTP «Development of pharmaceutical and medical industry of the Russian Federation until 2020 and beyond»
- The Government Regulation № 218 of 9 April 2012 «On the measures of state support of cooperation between the “Russian higher education institutions and organisations»
- The Government Regulation № 219 of 9 April 2012 «Support of the development of innovative infrastructure in educational institutions»
- The Government Regulation № 220 of 9 April 2012 «On the measures aimed to attract leading scientists to the Russian establishments of higher professional education, scientific institutions of the state science academies and state research centers of the Russian Federation»
- Federal Statute №291-FS of 2 November 2013 «On the Russian Science Fund and amendments to certain legislative acts of the Russian Federation»



# The FTP «Research and development of the priority areas of the scientific and technological complex in Russia» in 2014-2020

Overall objective: To support the development of a competitive and effective sector of applied scientific innovations.

## **Conduction of the applied scientific researches**

~400 projects up to \$0.6 million a year/ up to 3 years

## **Conduction of the applied scientific researches for certain economy sectors**

~500 projects up to \$0.9 million a year/up to 3 years

## **Conduction of the complex scientific researches**

~30 projects up to \$3 million a year

## **Conduction of the researches within international scientific and technological cooperation**

~130 projects up to \$1.5million a year/up to 3 years

## **Support and development of unique scientific installations**

~15 projects up to \$1.5 million a year/up to 3 yrs

## **Support and development of centers of collective use of scientific equipment**

~40 projects up to \$3 million a year/up to 3 years

## Objectives:

- To support the development of advanced scientific and technological innovations of an inter-disciplinary character in the priority areas.
- To support the planning and co-ordination of research and product development.
- To ensure the integration of the Russian sector of applied scientific innovation into the global environment including BRICS cooperation.
- To ensure higher productivity of the Russian sector of applied scientific innovation.



## Individual initiatives and scientific infrastructure development

- ✓ Programmes for leading universities “5 to top 100”
- ✓ Mega-grants (Decree №220 «On the measures aimed to attract leading scientists to the Russian establishments of higher professional education, scientific institutions of the state science academies and state research centers of the Russian Federation»)
- ✓ Mega-science research infrastructure
- ✓ Network of centres of collective usage of scientific equipment



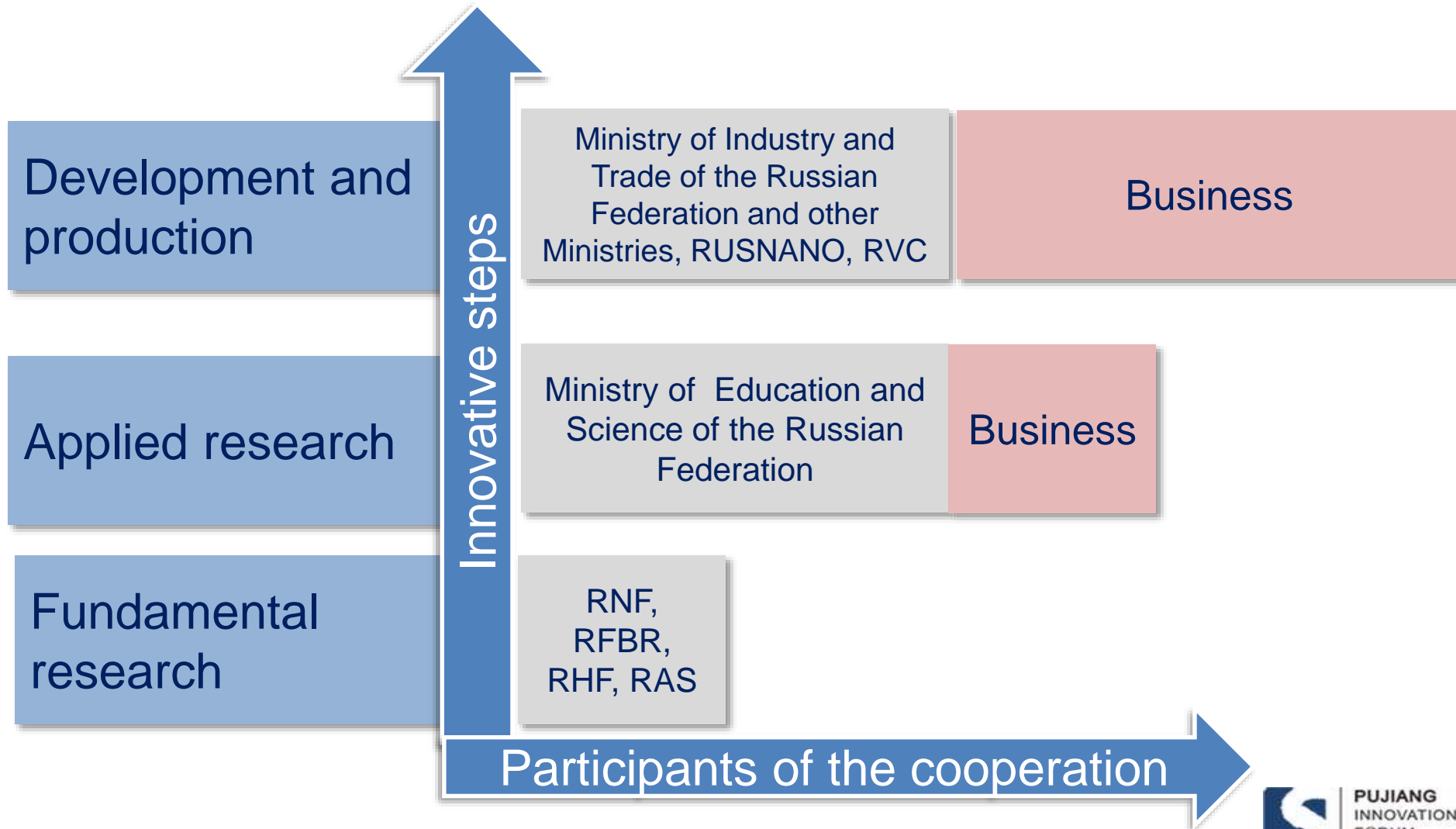


## Priority areas of science and technology development in the Russian Federation

- ✓ Security and terrorism counteraction
- ✓ Nanosystems
- ✓ ICT
- ✓ Life sciences
- ✓ Transport and Space Systems
- ✓ Prospective weapons, military and specialized equipment
- ✓ Efficient use of natural resources
- ✓ Energy efficiency, energy saving, nuclear energy



## Interagency cooperation for research planning





# State program of development Science and technology FTP «RHARMA 2020»

## Pre-clinical research into innovative medications

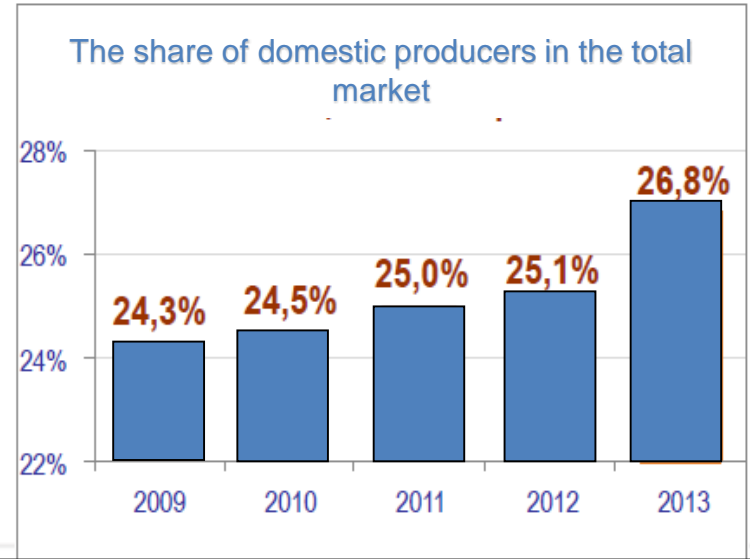
Funding from the Ministry—  
(\$353.7 million)

## Development of new educational programs

Funding from the Ministry—  
(\$7.8 million)

## Resource & technology base for production

Funding from the Ministry -  
(\$103.6 million)



The total market for pharmaceuticals is 191.7 billion rubles

## Objectives:

- Introduce modern technologies into the production process
- Ensure that the most important medications, medical equipment and devices (used to treat most common/serious/life threatening diseases) are produced domestically (overcome dependence on imports)
- Support the marketing of innovative products
- Increase the export potential of domestic medical and pharmaceutical industry



# Mega-grants in the Russia Federation

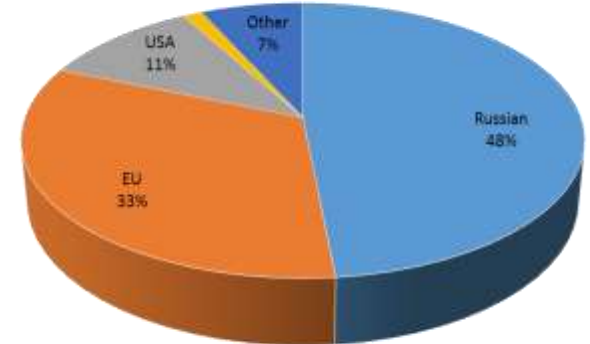
**160 laboratories in various scientific fields**  
**Leading scientists from more than 15 countries**  
**Nobel prize winners and winners of the Fields Medal**

**1st call (2010):** 39 grant contracts were signed. Among the grantees 21 are Russian (including 11 with double residence), 12 EU citizens, 3 winners from USA and 3 from other countries.

**2nd call (2011):** 38 grant contracts were signed. Among the grantees 18 are Russian (including 12 double citizenships), 12 EU citizens, 7 winners from USA and 1 from Japan.

**3rd call (2012):** 41 grant contracts were signed. Among the grantees 19 are Russian (including 9 double citizenships), 9 EU citizens, 5 winners from USA and 8 from other countries.

**4th call (2013):** 42 grant contracts were signed. Among the grantees 19 are Russian (including 11 double citizenships), 19 EU citizens, 2 winners from USA and 1 from Japan.



# Russia's involvement in the development of Mega-Science research infrastructure

## Mega-Science research infrastructure

MEGA-SCIENCE RESEARCH INFRASTRUCTURE	RUSSIAN FEDERATION FUNDING
The European X-ray Free Electron Laser (XFEL)	306 400 000 (25%) EURO
International Thermonuclear Experimental Reactor (ITER)	900 000 000 (9,09%) EURO
Facility for Antiproton and Ion Research (FAIR)	178 050 000 (17.34%) EURO
European Synchrotron Radiation Facility (ESRF)	10 000 000 + 5 261 000 EURO/Y

## Development of advanced research infrastructure in the Russian Federation

- ✓ Tokamak "Ignitor"
- ✓ High flux research reactor,
- ✓ PIK complex
- ✓ Special Synchrotron Radiation Source of the 4th generation, SSRS-4
- ✓ Complex of Superconducting Rings for Heavy Ion Colliding Beams, NICA complex
- ✓ eXawatt Center for Extreme Light Studies (XCELS)
- ✓ Electron-Positron Collider
- ✓ (Super-Tau-Charm Factory)



## From the blocks of the World to the modern Universe

Construction of the experimental base for studies of baryonic matter fundamental properties and carry out innovational research on the base of the Joint Institute of Nuclear Research (Dubna)

### NICA complex:

- ✓ Fundamental research that are not available in other centers around the world
- ✓ Superdense nuclear matter research
- ✓ Implementation of wide range of innovative and applied research



*Straw Detector*

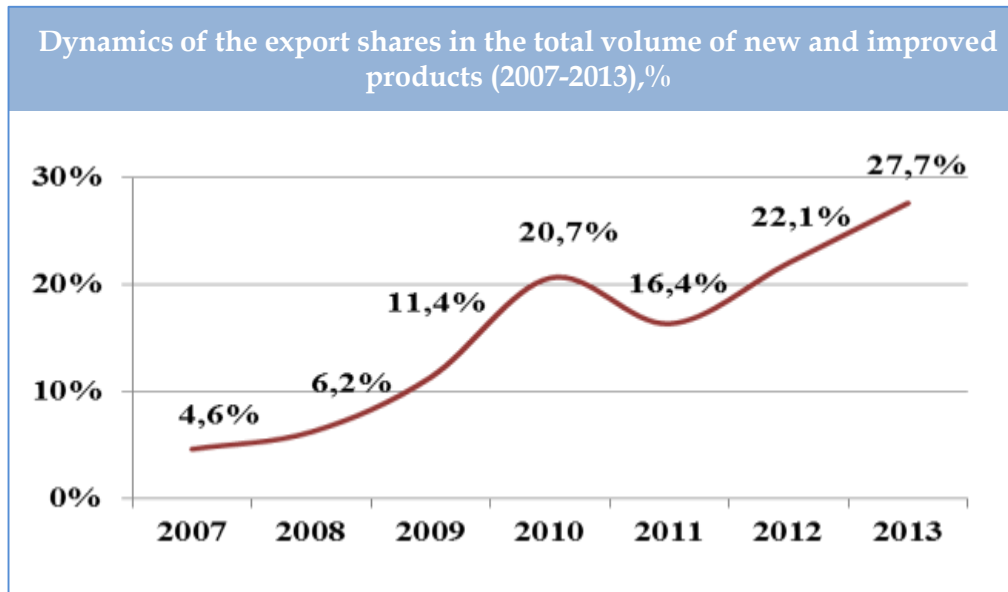


*Magnetic optics  
for the NICA Complex*





# Changes of export structure dues to investments in R&D sector



- ✓ The annual contribution of the Program to increase in the share of high-tech products in total exports makes an average of 0.015% on the first stage of the Program at the level of 0.06% - the second stage of the Program
- ✓ Annual export growth in total production of new and improved products developed in the framework of Program is from 4.6% in 2007 to 27.7% in 2013
- ✓ The increased presence of the Russian Federation on the world market of high-tech products in field of critical technologies



Министерство  
образования и науки  
Российской Федерации

**Thank you for attention!**

**Lyudmila Ogorodova**

Vice-Minister, Ministry of Education and  
Science of the Russian Federation