



Higher School of Economics



Institute for Statistical Studies and Economics of Knowledge



Foresight Centre

Foresight in Russia: Implications for Policy Making

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Innovation Policies: Best Practices”
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CONTENTS

- Major policy instruments for S&T and innovation
- S&T Foresight in Russia – vis-à-vis policy development
- New challenges: from informing policy to its designing

Key challenges for S&T and innovation policies

- Development of human resources
- Creation of innovation friendly environment for business
- Bridging the gap between business, R&D and state
- Strategies for sectors of economy
- Increasing efficiency of budget R&D funding
- Innovation in the government
- Innovation in public sector, infrastructure
- Social innovation
- Stimulating innovation from the government
- Building regional innovation clusters

Policy instruments related to S&T and innovation

- Concept of long-term social and economic development of Russia
- Priority S&T areas, list of critical technologies
- Priorities for technology modernisation
- Strategies for sectors of economy
- Research programmes funded from Federal budget
- Technology platforms
- Innovation programmes for state-owned companies
- National research universities + innovation infrastructure
- Linking enterprises and universities
- State programmes for human resources development
- National research centres, centres of excellence
- Budget procurements
- Regional strategies of social and economic development, innovation priorities

Priorities for S&T and innovation

- **Mission-oriented:**
Technology
modernisation

Energy efficiency
Nuclear technologies
Space technologies
Medicine
Strategic information technologies

- **Functional:**
Restructuring S&T
system

Research universities
Innovation infrastructure at universities
National research centres
Centres of excellence

- **Thematic:** Critical
technologies,
S&T programmes

Information and telecommunication systems
Living systems
Industry of nanosystems
Transportation and aerospace systems
Rational use of nature
Energy efficiency and energy saving

Major stages of S&T Foresight in Russia

- S&T priorities and critical technologies:
1996, 2002, 2006, 2011
- S&T Foresight: 2025 (Delphi) – 2007-2008
- S&T Foresight: 2030 – 2009-2010
- S&T Foresight: 2030 (new cycle) – 2011-2013

1st cycle – S&T Delphi: areas covered

Information and Telecommunication Systems

Industry of Nanosystems and Materials

Living Systems

Medicine and Health

Rational Use of Natural Resources

Transportation, Aviation and Space Systems

Power Engineering and Energy Saving

Manufacturing Systems

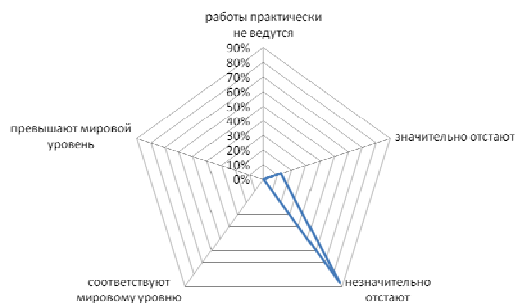
Safety and Security

Technologies for Society

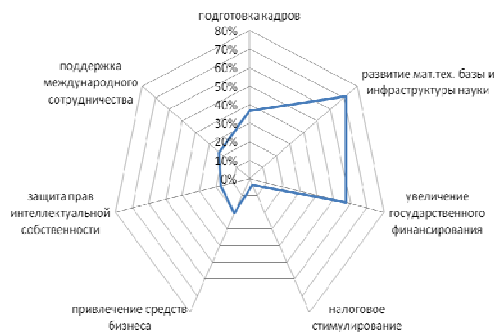
- nuclear technologies
- hydrogen energy
- organic fuel and microsystems
- composites and ceramic materials
- membranes and catalysts
- biocompatible materials

Delphi 2025: informing policy making

Level of R&D



Support measures



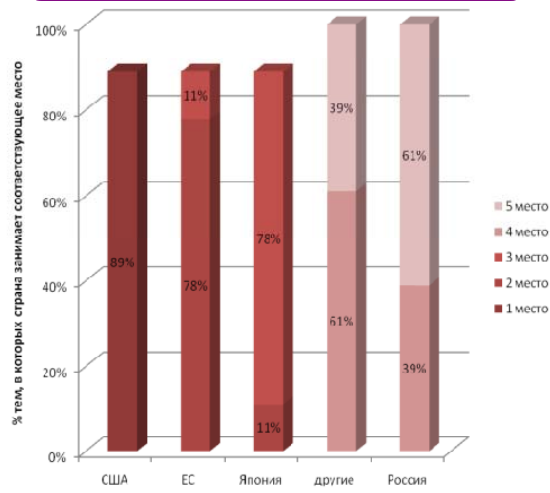
The most important topics



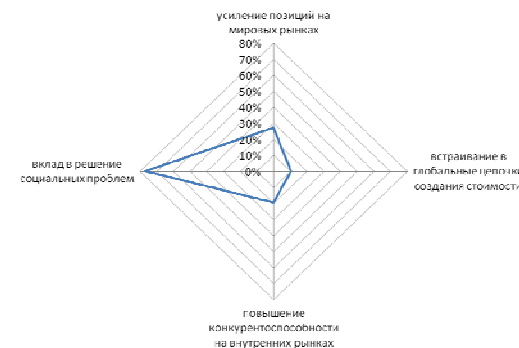
Time of realisation



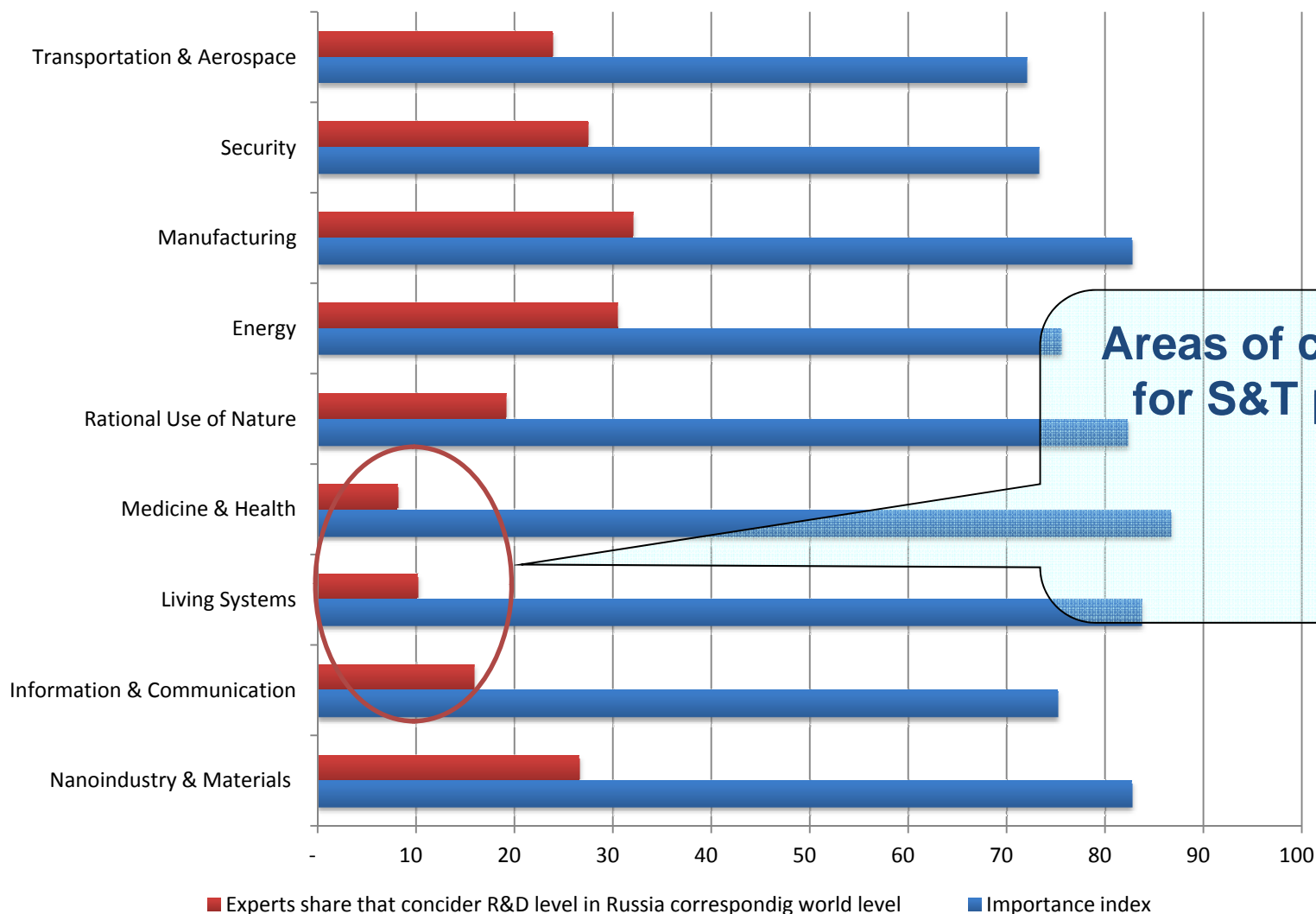
Leading country



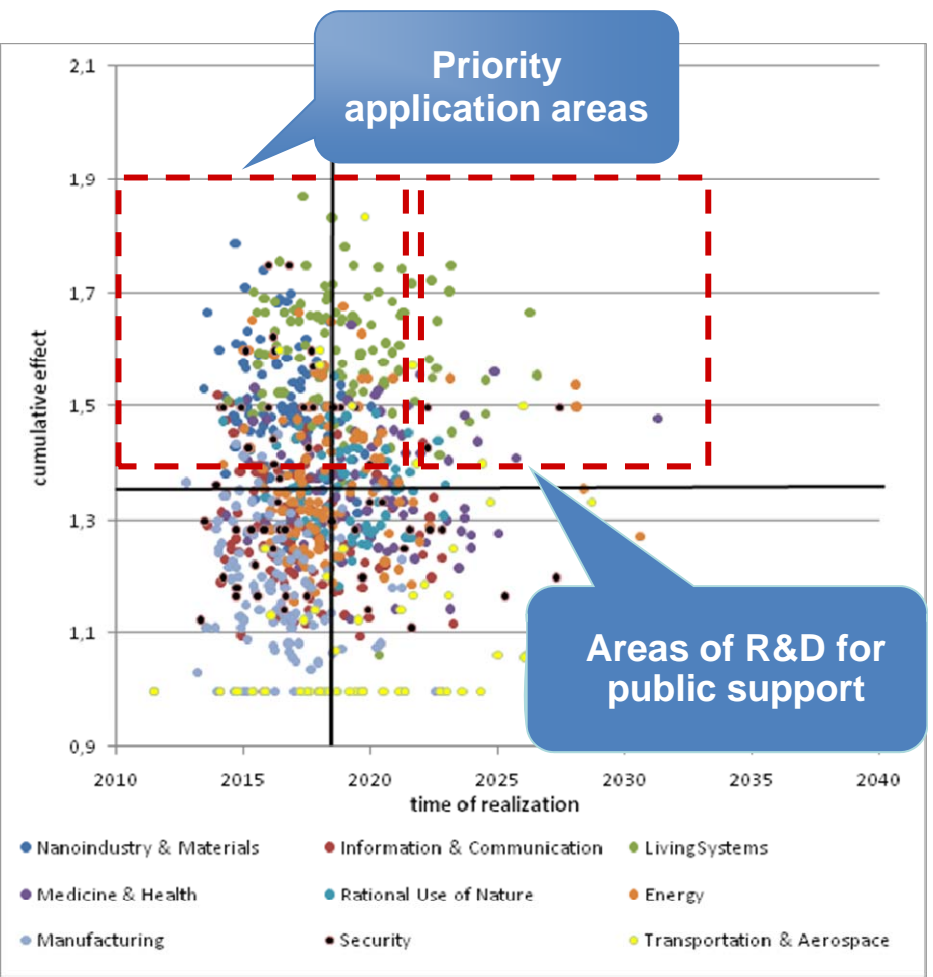
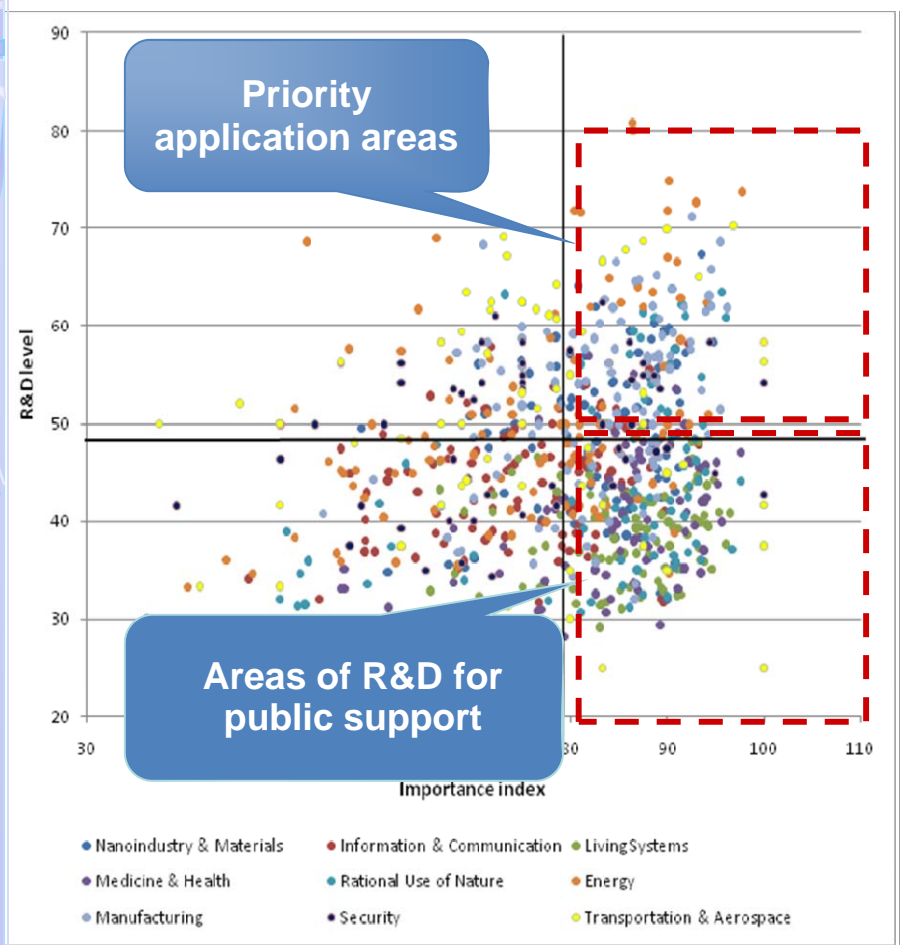
Application areas



R&D level vs importance of S&T areas

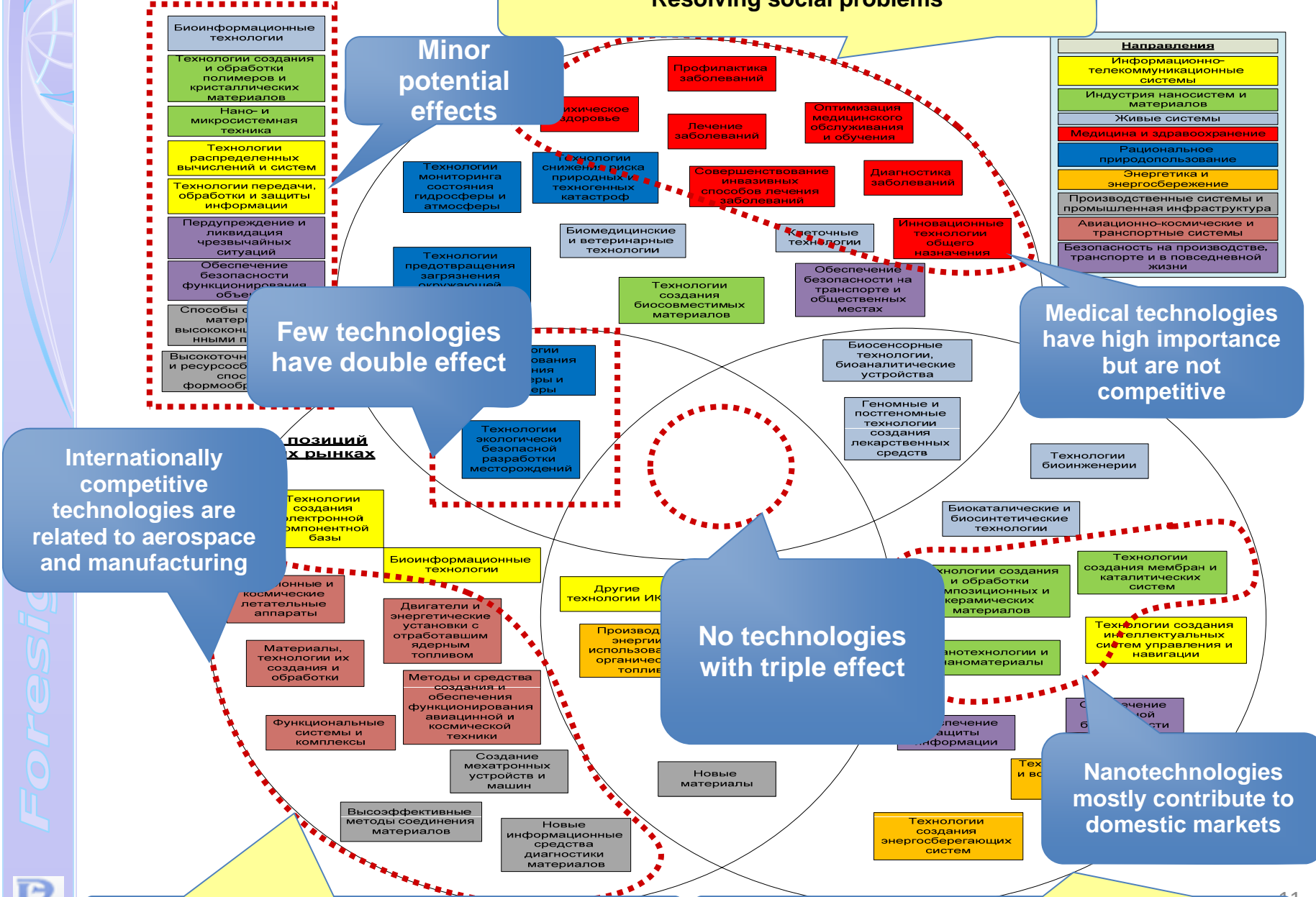


Selection of priorities on the basis of the Delphi survey



Expected effects

Resolving social problems



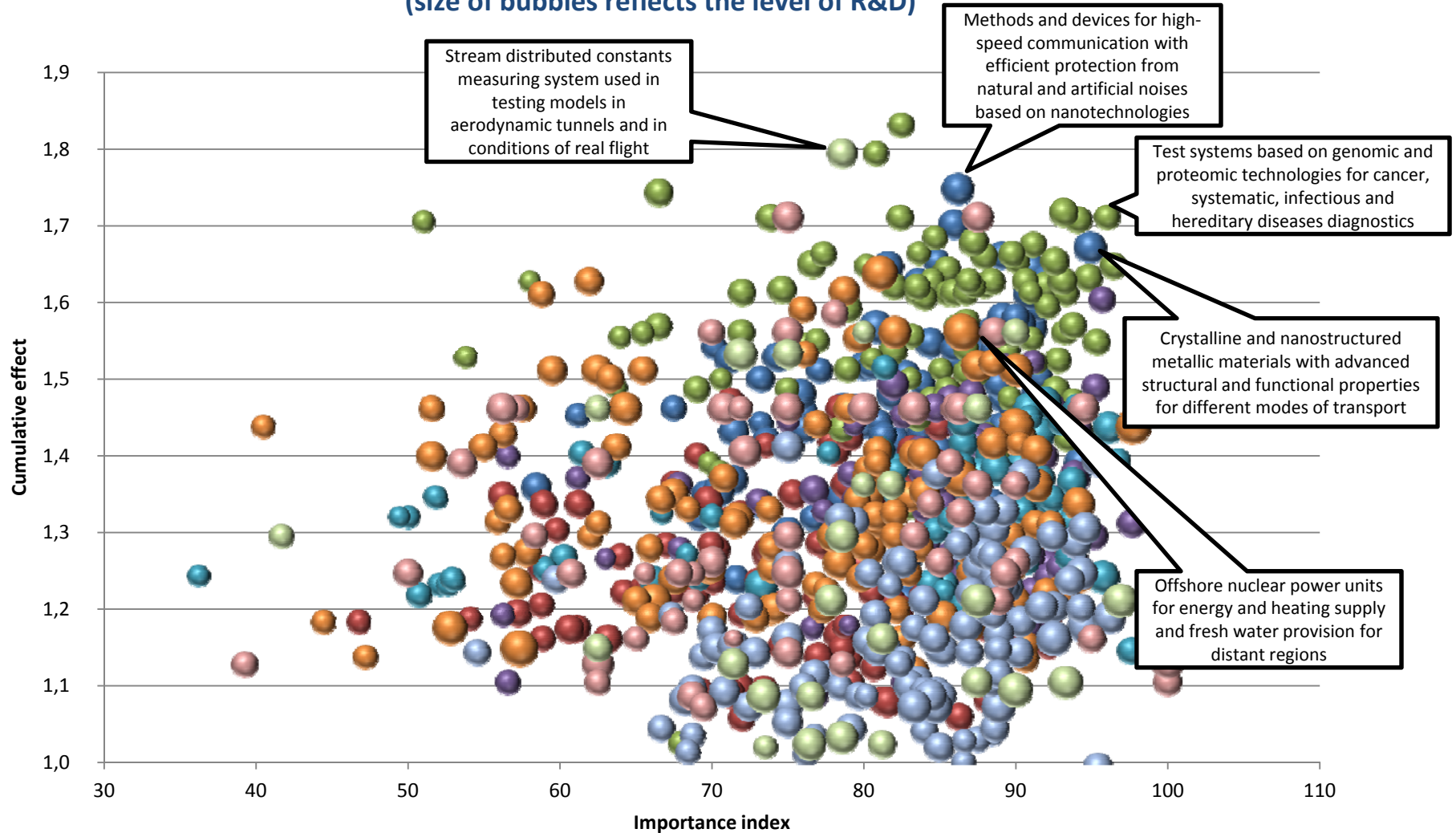
Foresight

Competitiveness at global markets

Competitiveness at domestic markets

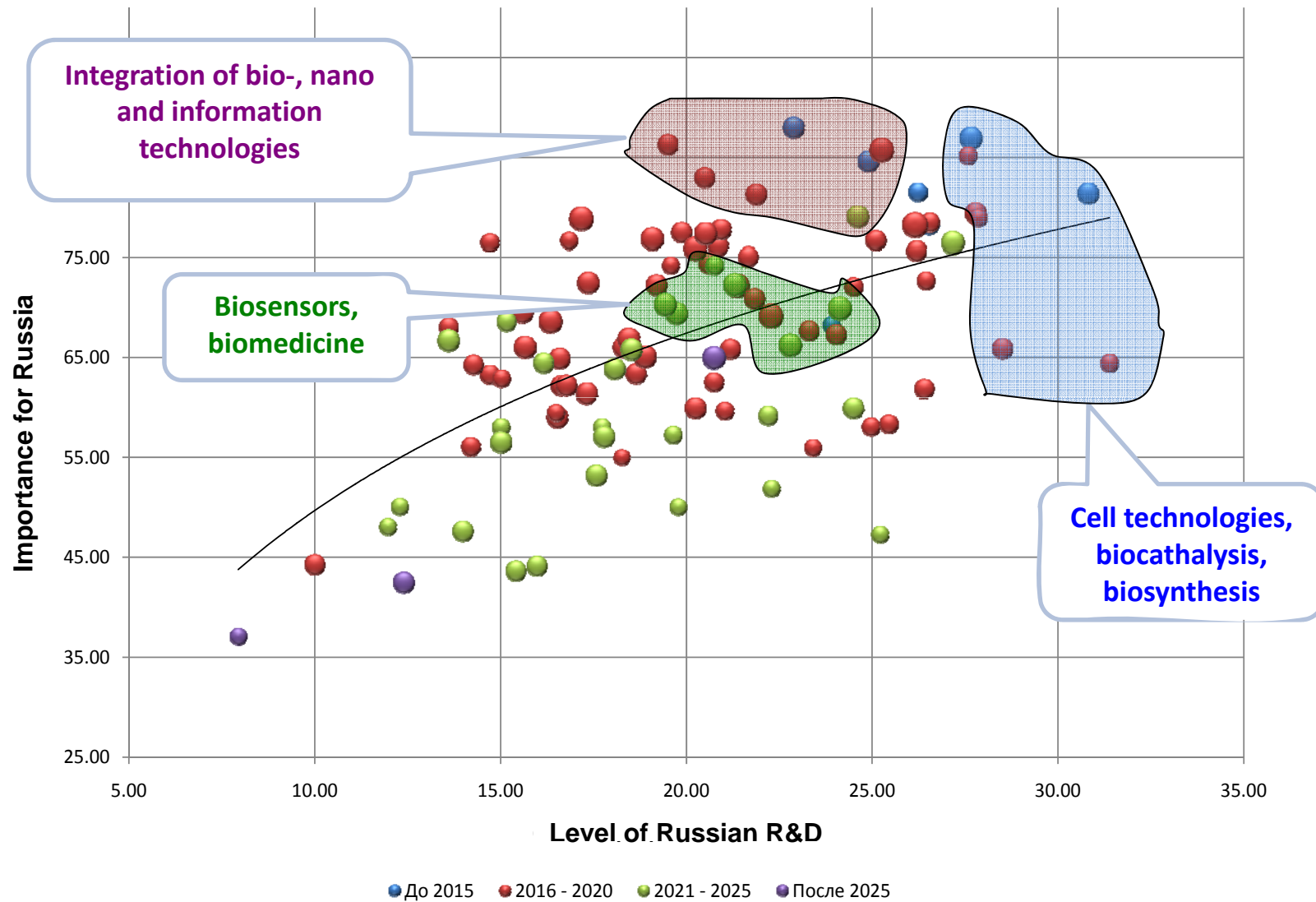
Themes' importance, R&D level and cumulative effect

(size of bubbles reflects the level of R&D)

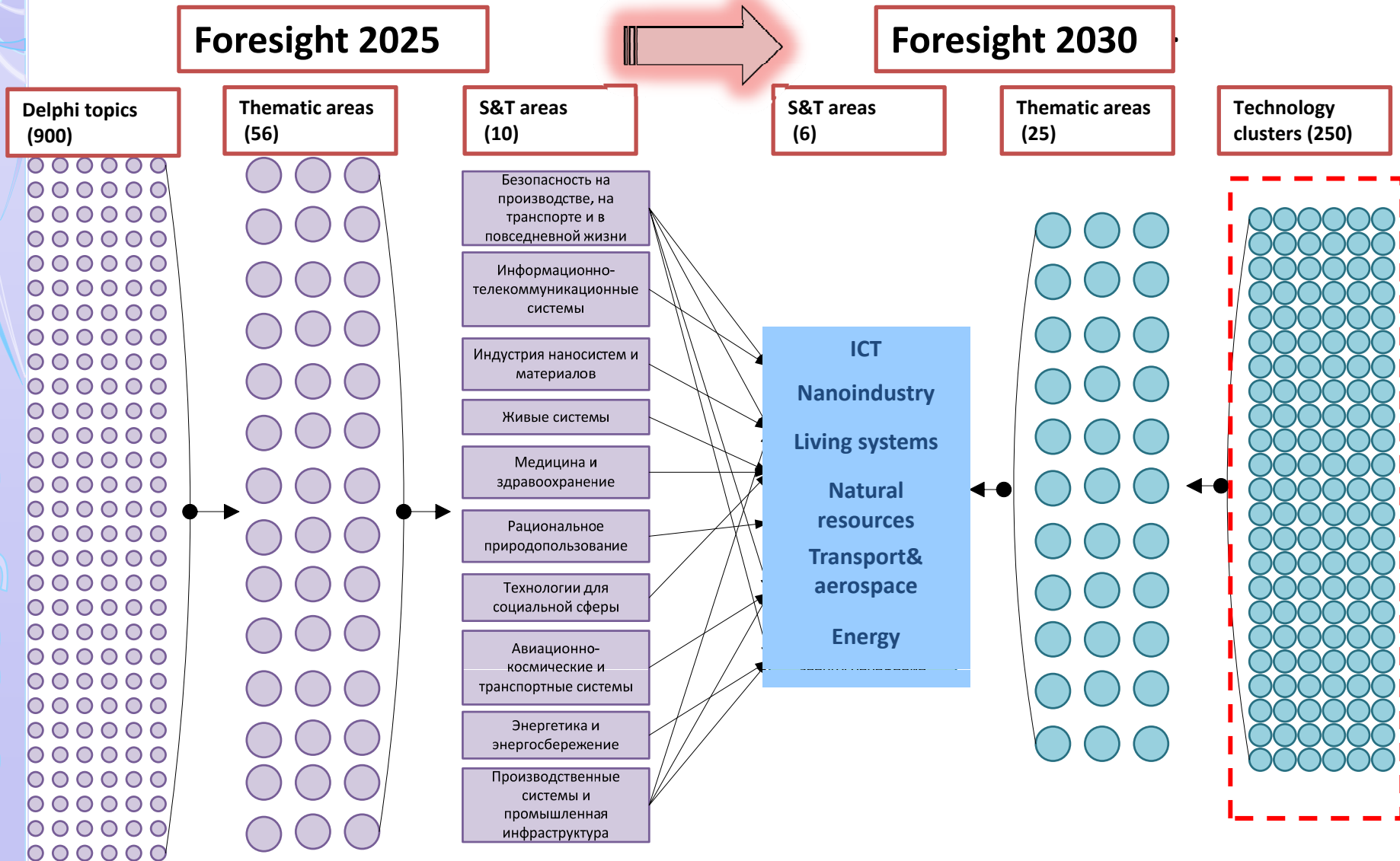


- | | | |
|----------------------------|-------------------------------|------------------------------|
| ● Nanoindustry & Materials | ● Information & Communication | ● Living Systems |
| ● Medicine & Health | ● Rational Use of Nature | ● Energy |
| ● Manufacturing | ● Security | ● Transportation & Aerospace |

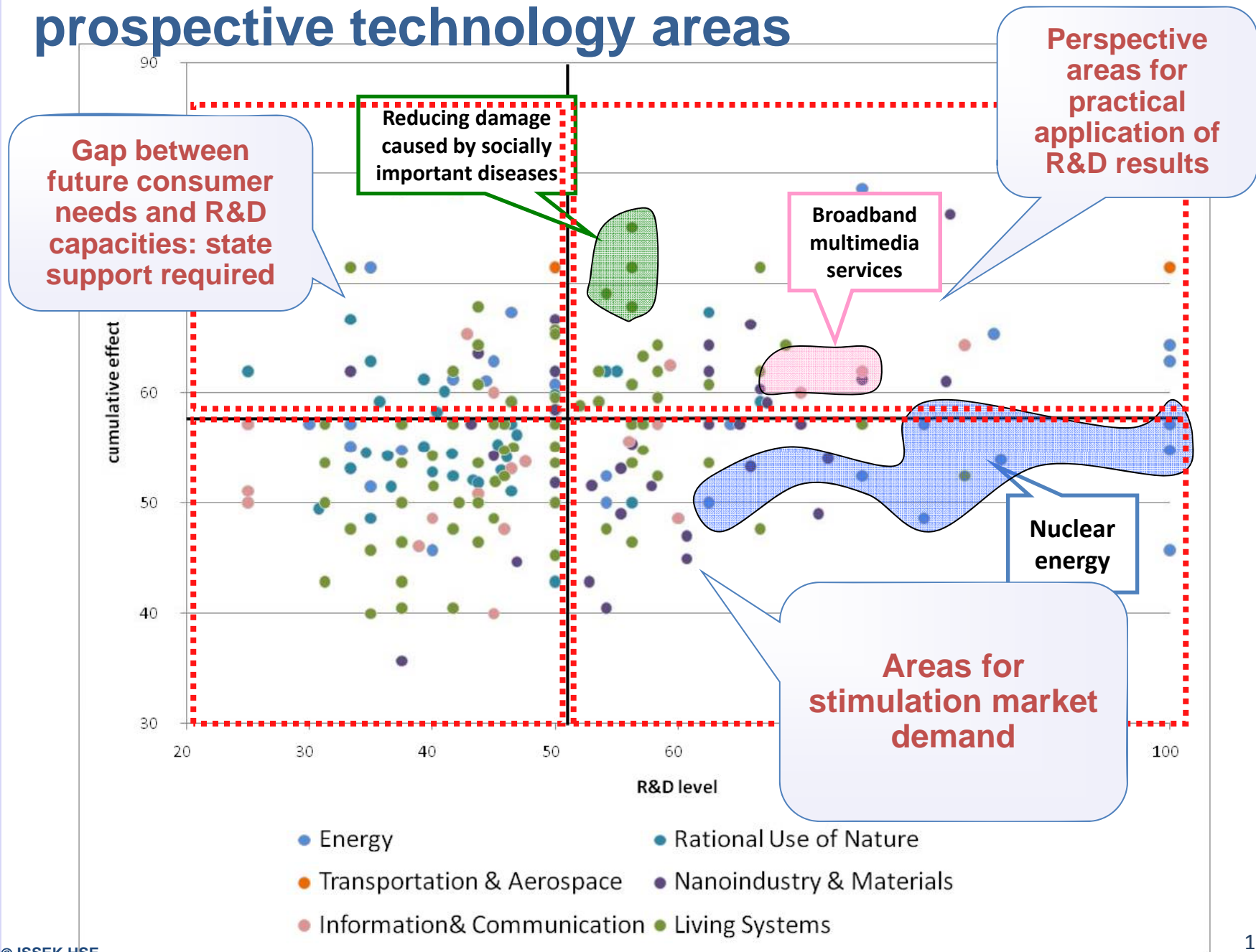
Identification of promising innovation clusters



2nd cycle: from topics to technology areas



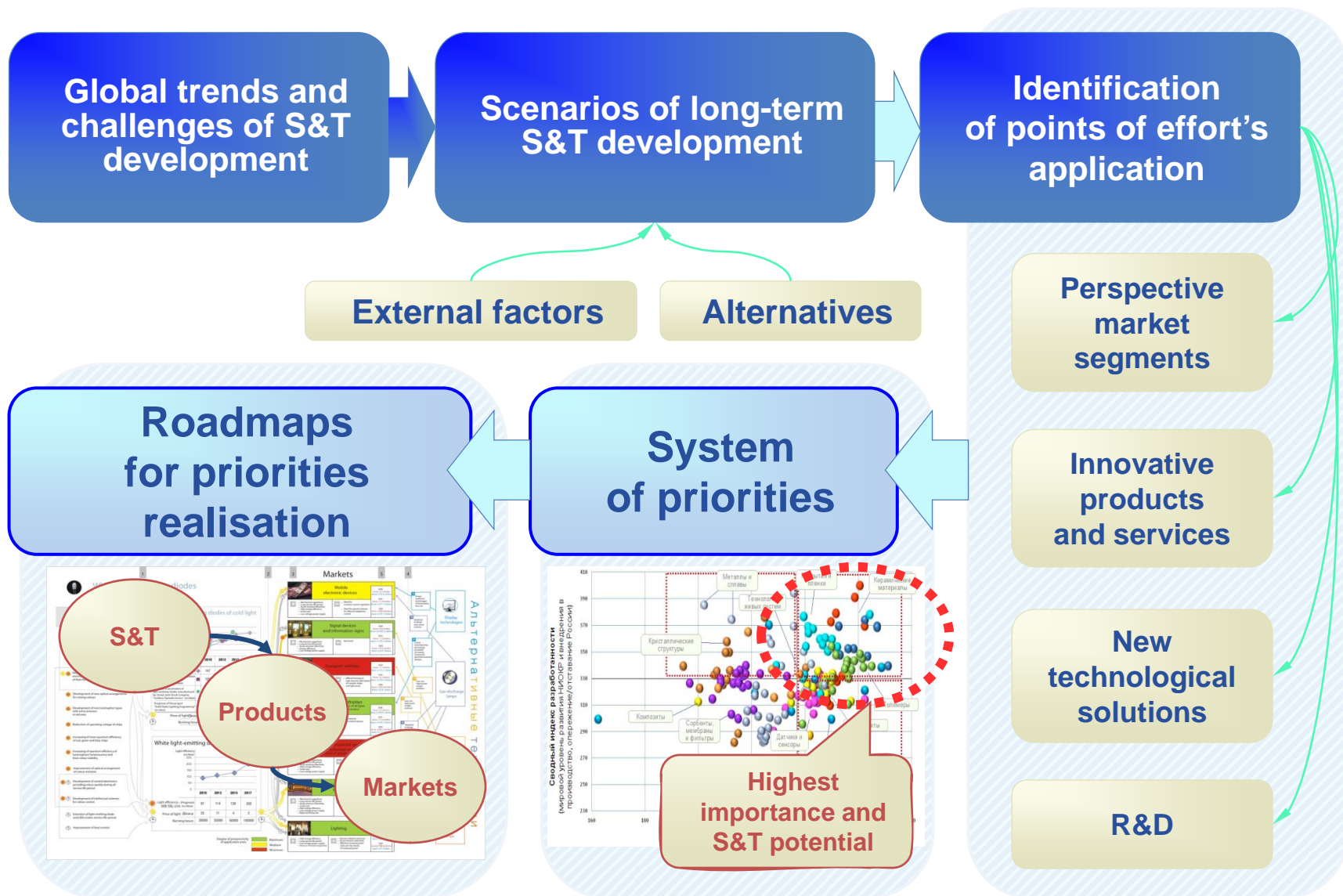
Foresight 2030: detailed assessment of prospective technology areas



2nd cycle results: use for policy making

- Assessment of S&T impact as a means for better grounded long-term social and economic planning and budgeting
- Development of scenarios and policy measures to support innovation in particular sectors of the Russian economy
- Identification of large-scale promising innovation projects aimed at development of new products on the basis of “technology packages” (e.g. potential “marrying” of domestic and imported technologies)
- Identification of key areas of basic research
- Creating a background for selection of S&T priority areas and critical technologies

3rd cycle: application-driven S&T Foresight



Major goals

- Identification of the most prospective for Russia in the long run areas of **S&T** and their implementation providing for **competitive advantages**
- Identification of areas for potential **large scale innovation projects**
- Assessment of **future demand for key S&T related resources** (basic and applied research, HRST and their skills et al)
- **Integration with the formulation of national S&T and innovation policies** (technology platforms, programmes of innovation development, government S&T programmes et al)

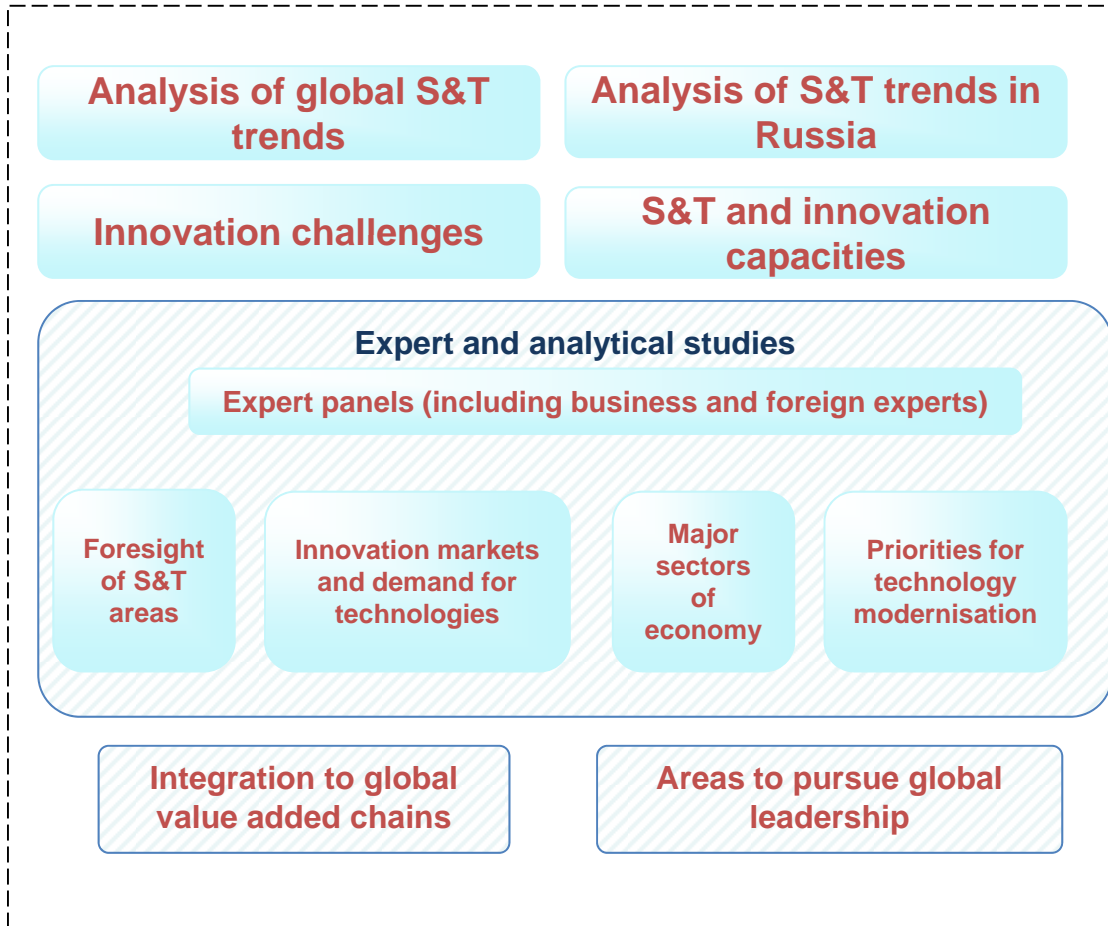
S&T Foresight: further activities

Development of a network of Foresight Centres at leading universities

Integrated models for forecasting major S&T, innovation and education indicators

Dissemination and discussion of results

Involvement of businesses, technology platforms, development institutes, large companies



Macroeconomic scenarios

Foresight of Basic Research

Future demand for skills

Roadmaps for sectors and product groups

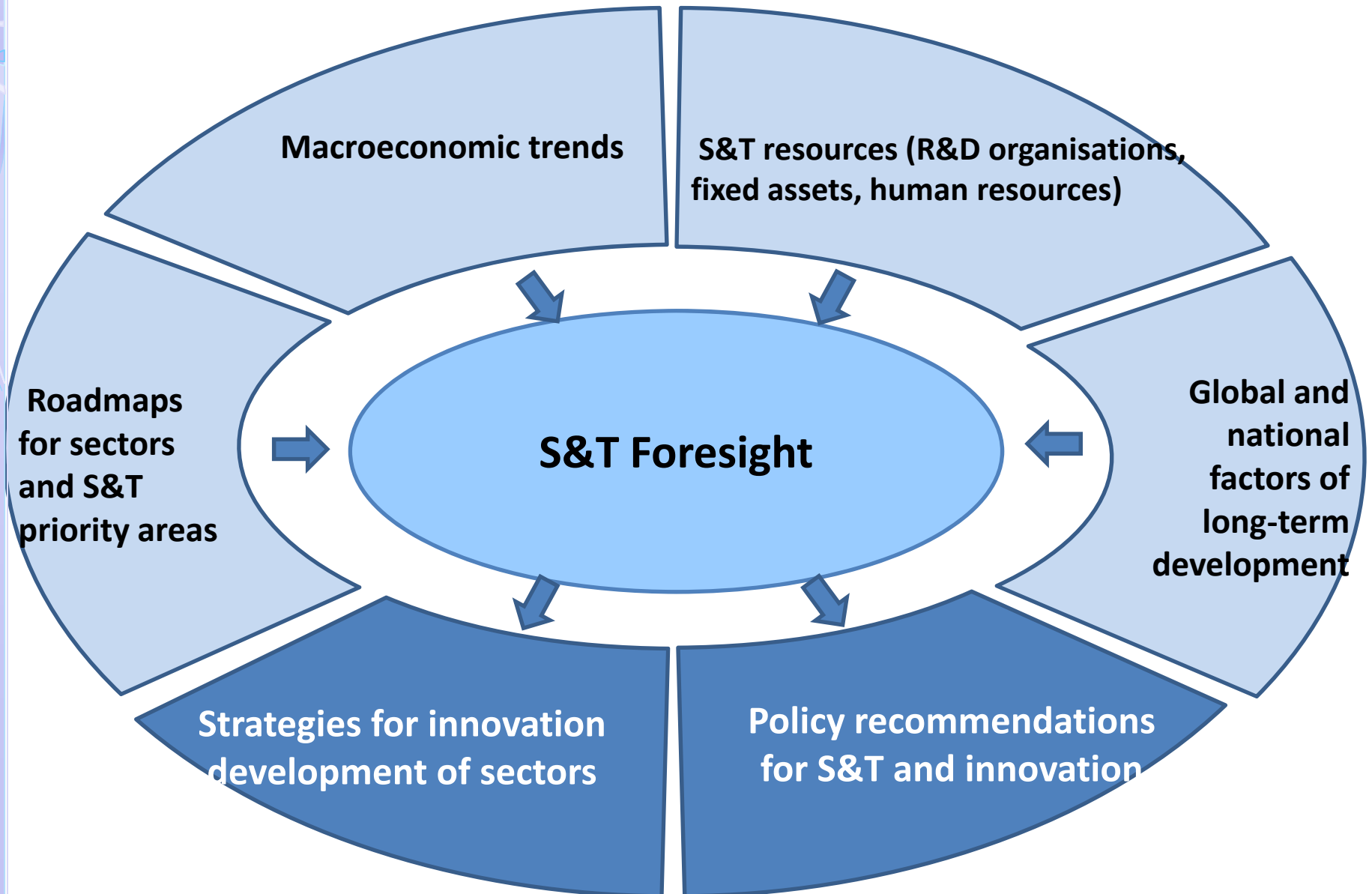


Innovation strategies for sectors of economy

Policy recommendations

S&T Priorities

Major components of S&T Foresight



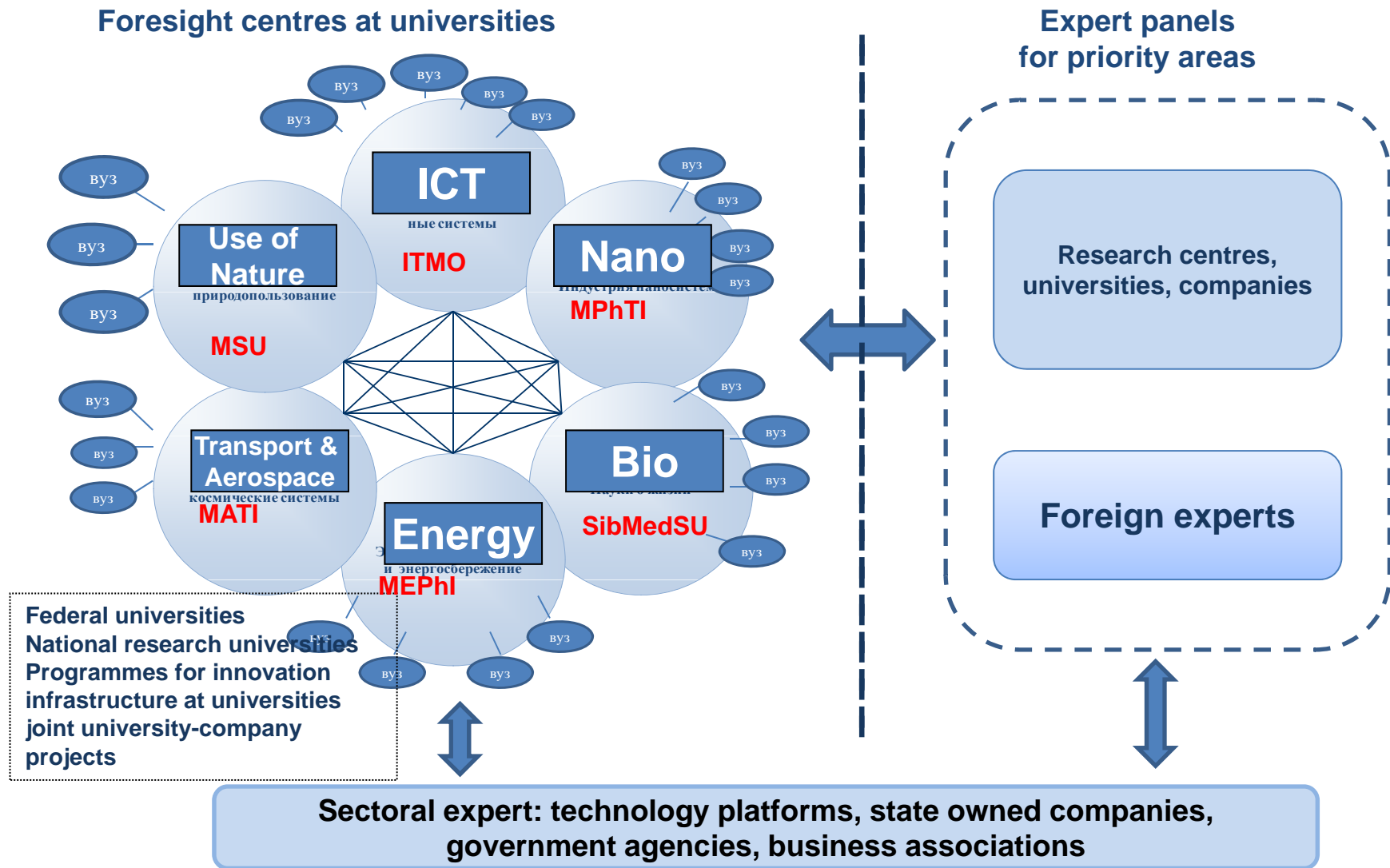
Key features of the ongoing activities

- **Methodology: from sectoral structures – to markets**
- **Assessing future demand for skills**
- **Wider coverage of the sectors of the Russian economy**
- **Building a sustainable participants' networks: expert panels, sectoral Foresight centres at leading universities**
- **Engagement of businesses: technology platforms, programmes of innovation development of state owned companies, business associations**
- **Closer interaction with everyday policy making in S&T and innovation: presentation of outputs**
- **Wide dissemination and discussion of results, building sustainable feedback**



Moving from informing policies to designing them

Building sustainable expert networks



Addressing global and national factors of long-term development

Major factors of S&T development

Demand for innovation

Social, cultural and geopolitical factors

Measures to increase Russia's competitiveness in the long run

Global technology trends

Scenarios for global shifts of technological modes

Assessment of Russia's potential for technology development

Recommendations on priorities for basic production facilities

Comparative analysis of Foresight practices

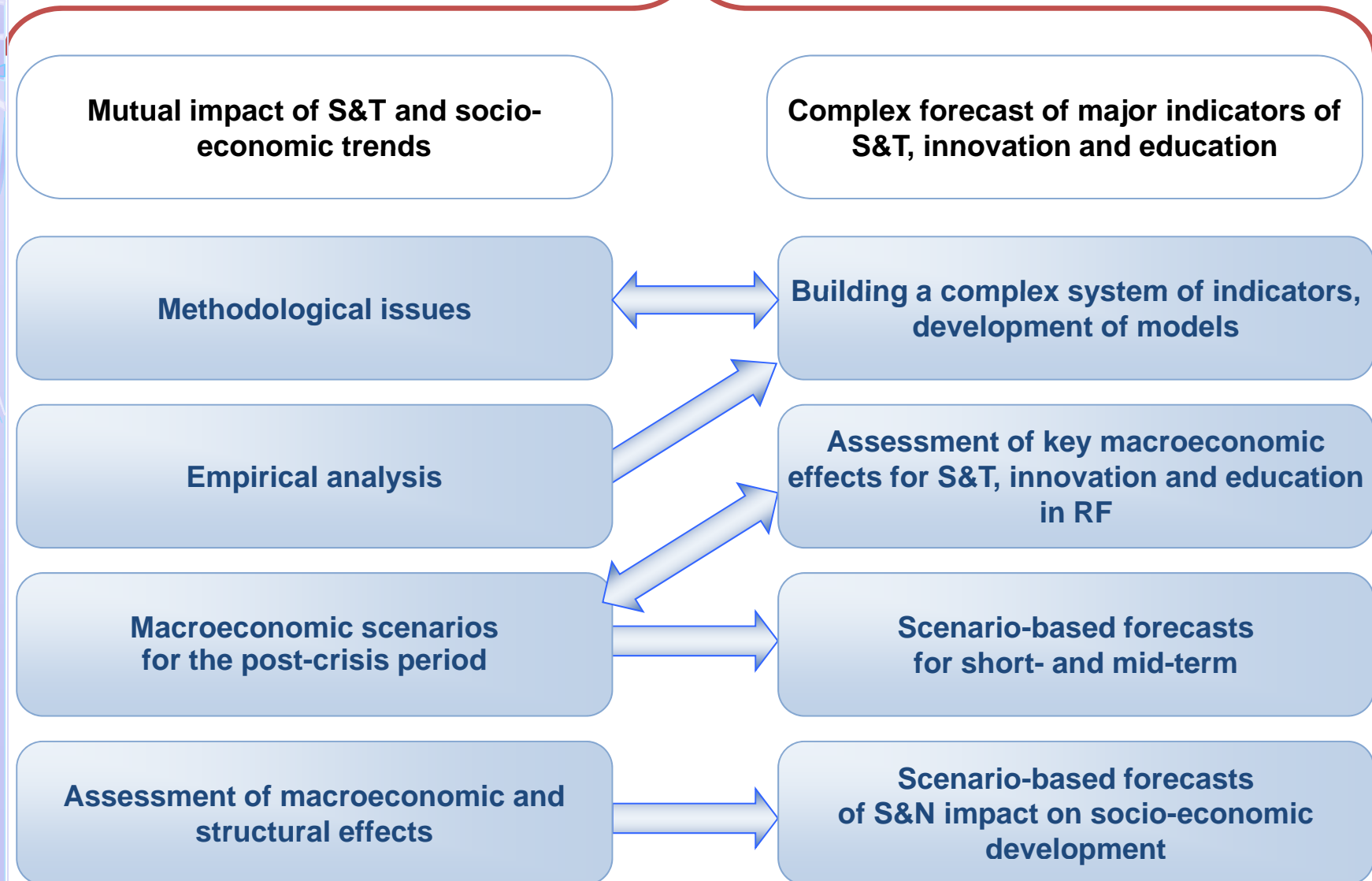
S&T trends

Analysis of S&T Foresight methodologies

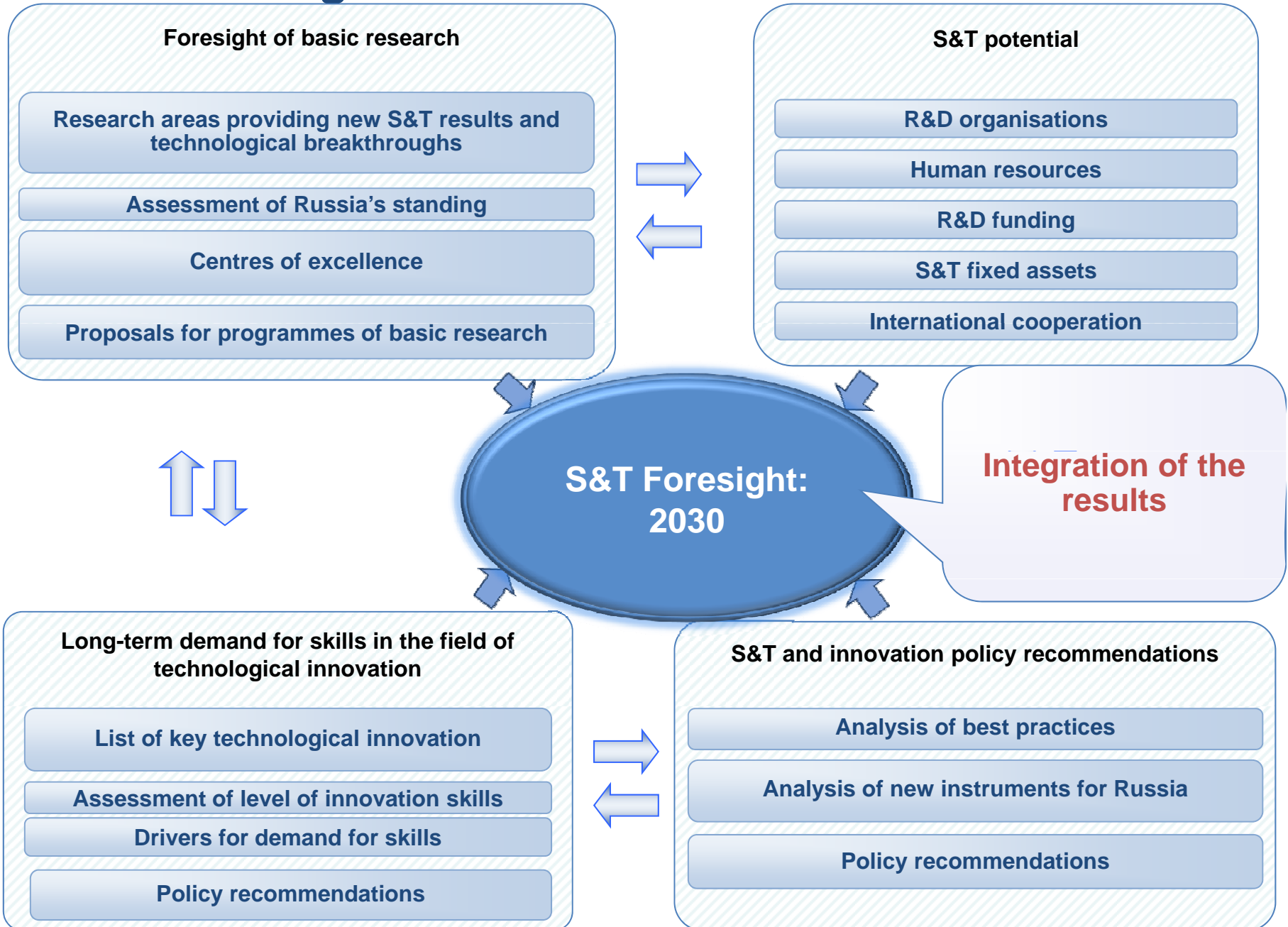
Recommendations on development of Foresight methodologies

STEEPV
Society Technology Economy Environment Policy Values

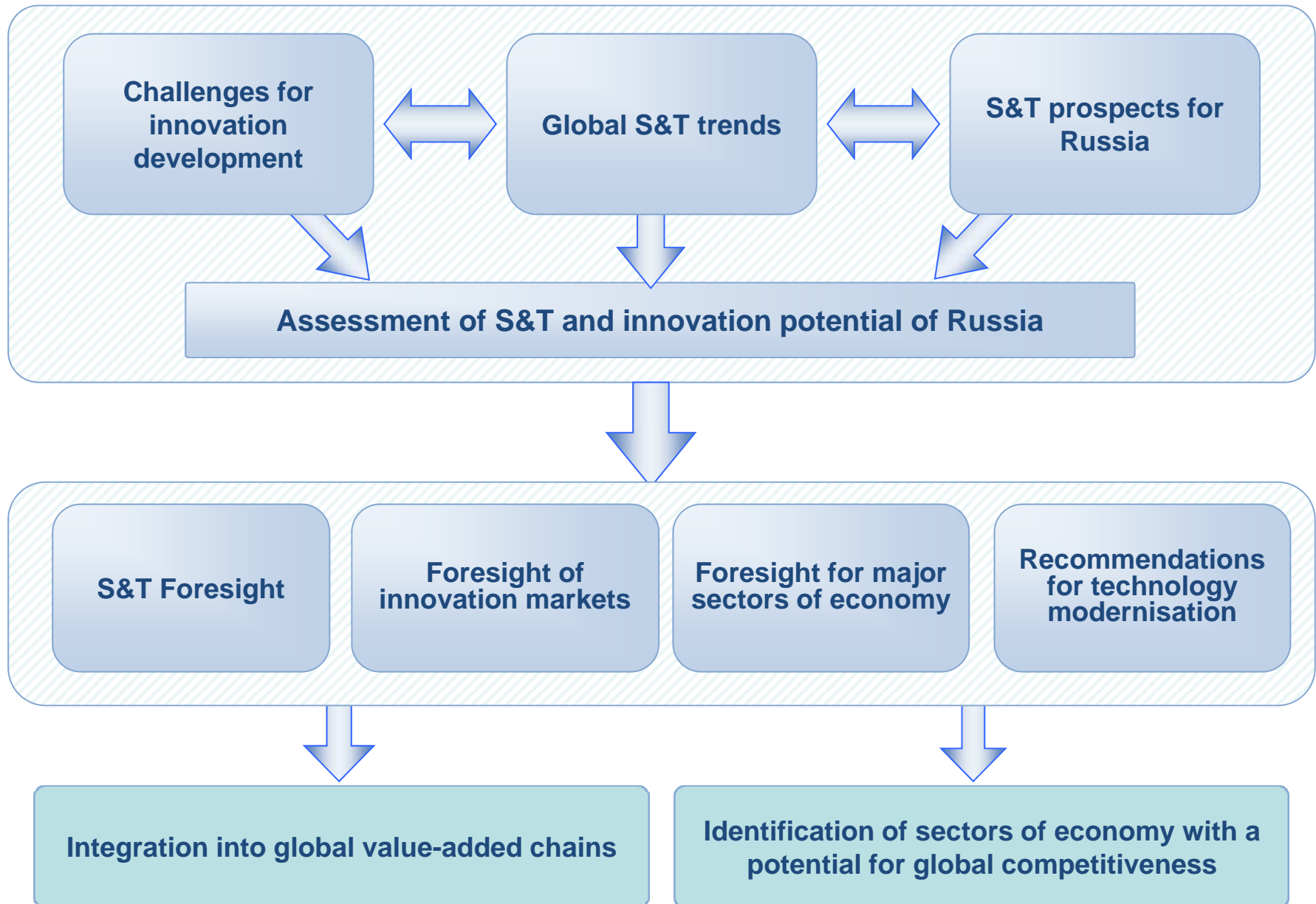
Contribution to macroeconomic policies



Assessing future demand for S&T resources



S&T Foresight



Integration to policy design

- **Priority S&T areas, list of critical technologies**
- **Priorities for technology modernisation**
- **Strategies for sectors of economy**
- **Research programmes funded from Federal budget**
- **Technology platforms**
- **Innovation programmes for state-owned companies**
- **National Research universities + innovation infrastructure**
- **Linking enterprises and universities**
- **State programmes for human resources development**
- **National research centres, centres of excellence**
- **Budget procurements**
- **Regional strategies of social and economic development, innovation priorities**
- **Regional innovation clusters**

Anticipated outputs

- **S&T**

- Scientific results
- Breakthrough technologies
- Innovation products and services
- Assessment of Russia vis-à-vis world leaders

- **Demand for technologies from innovation markets**

- Urgent demand for S&T for achieving development goals
- New markets
- risks, barriers, limitations
- Russia's competitive advantages

- **Major sectors of economy**

- Scenarios
- Strategic forks
- Technological priorities

Issues for discussion

Engagement of experts:

- how to assure participation of business?
- number of experts vs their quality – a right balance?
- how to prove the quality of experts and their sufficiency?
- how to engage foreign experts?

How Foresight can help to opt between the support of “traditional” areas and emerging fields with potentially high economic and social return

Issues for discussion

How can regular monitoring and evaluation of Foresight contribute to the quality assurance?

How to find a balance between different types of priorities (macro-, mission-oriented, thematic et al)?

How to provide a stronger focus on policy agenda and a better 'grounded' approach (articulation of business demand, roadmapping for promising areas, evidence-based studies, integrated forecasting S&T, innovation and education indicators etc)

Is a broader set of instruments required (combination of qualitative and quantitative methods, weak signals and wild cards, horizon scanning et al)?

Issues for discussion

Implementation of Foresight outputs

National S&T Programme 2013-2020

- Thematic Priorities
- Results to be achieved
- A background for formulation of research projects to be funded
- Distribution of funding between priorities

Strategies for the sectors of economy

Strategies for social and economic development



Diminishing uncertainties
Managing risks **Issues for discussion**

Informing policies

Designing policies

Priorities : mission oriented

Infrastructural

Thematic

Policies for regions

Corporations (private vs public)

Resource allocation

Early warning

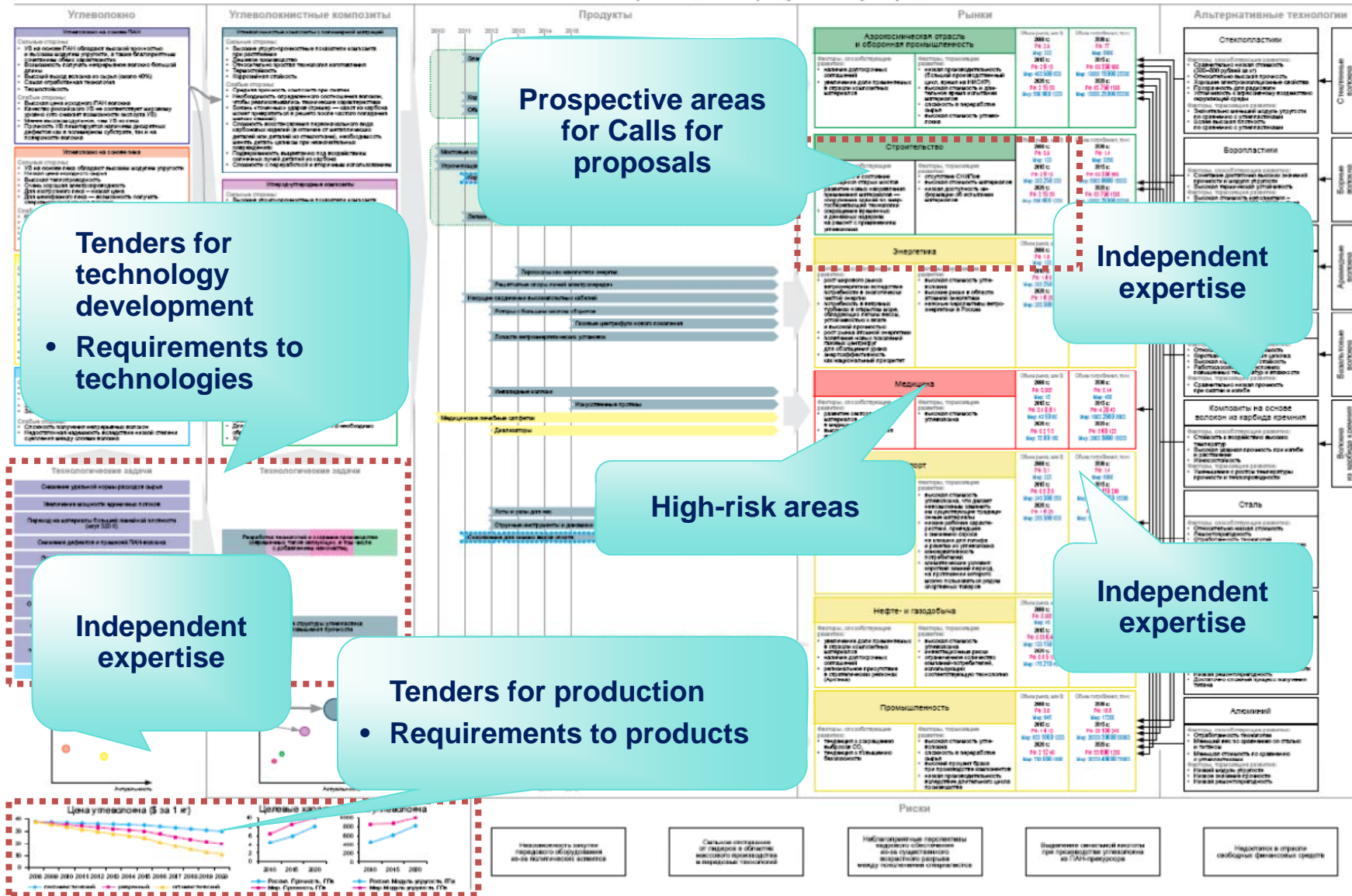
Future demand

Future trends

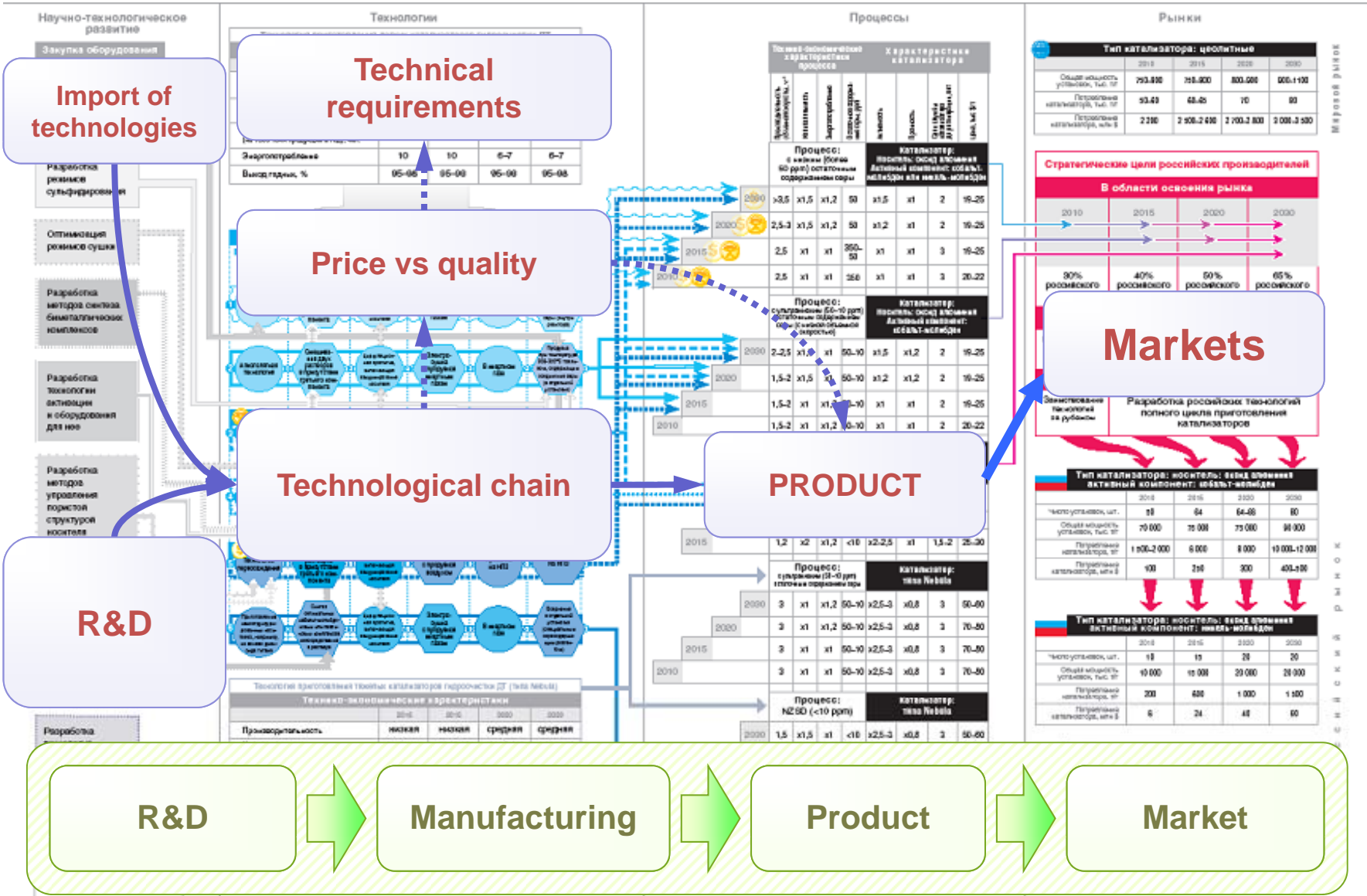
Public interests vs corporate interests

Roadmaps as a policy instrument

Использование нанотехнологий в производстве продуктов из углеродных волокон



Optional strategies based on roadmaps



Foresight



Thank you!

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