



Regional conditions, economic performance and quality of management as factors of innovative cluster support in Russia

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The Programme of Russian Pilot Innovative Clusters Support Started 4 Years Ago

Process of pilot innovative clusters selection in 2012

94

The total number of cluster applications before April 20, 2012

37

Applications that received high expert estimations

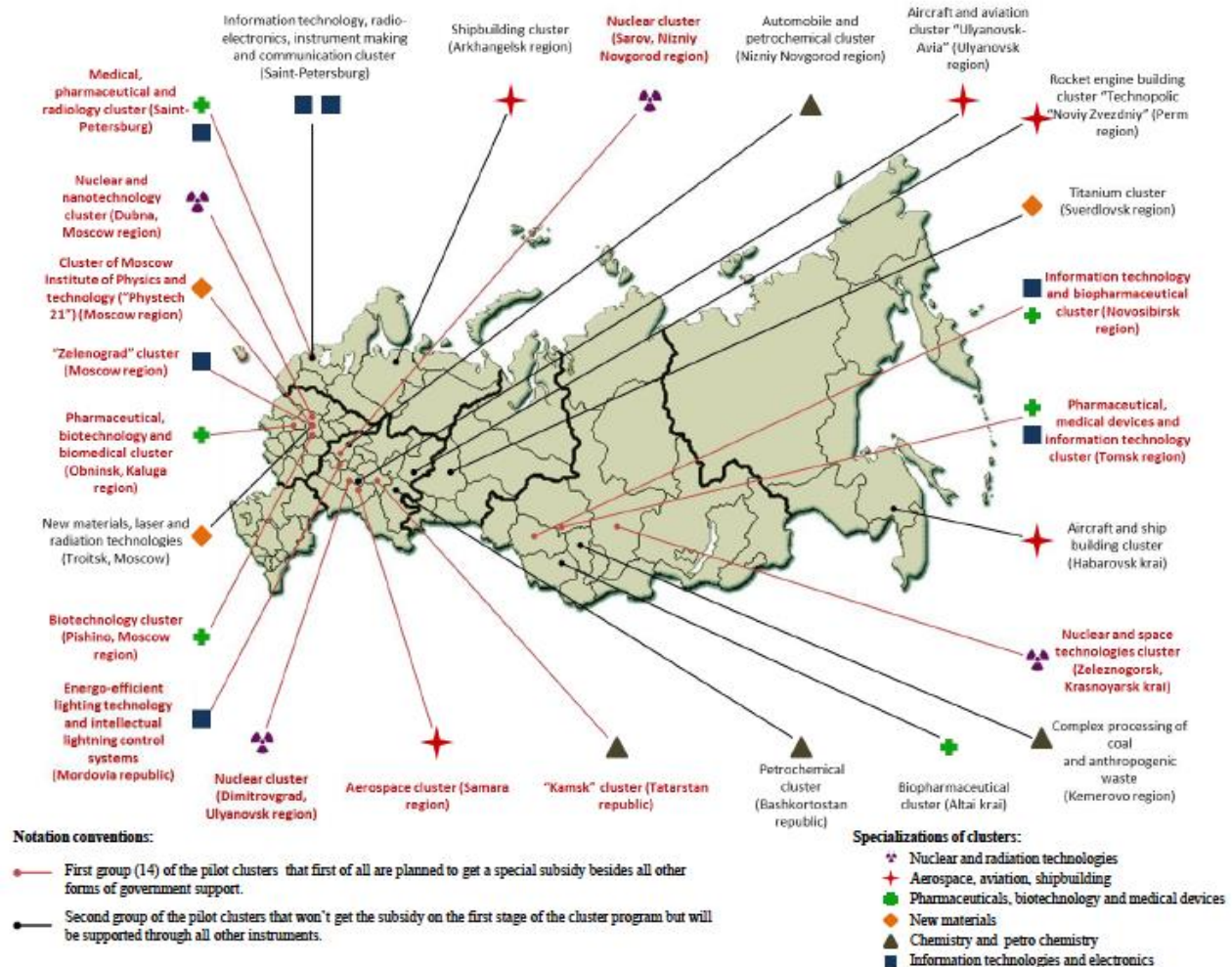
25

Pilot innovative clusters, selected according to the results of their project presentations to the working group

27

The quantity on pilot innovative clusters at the end of 2015

Map of pilot innovative clusters (25)

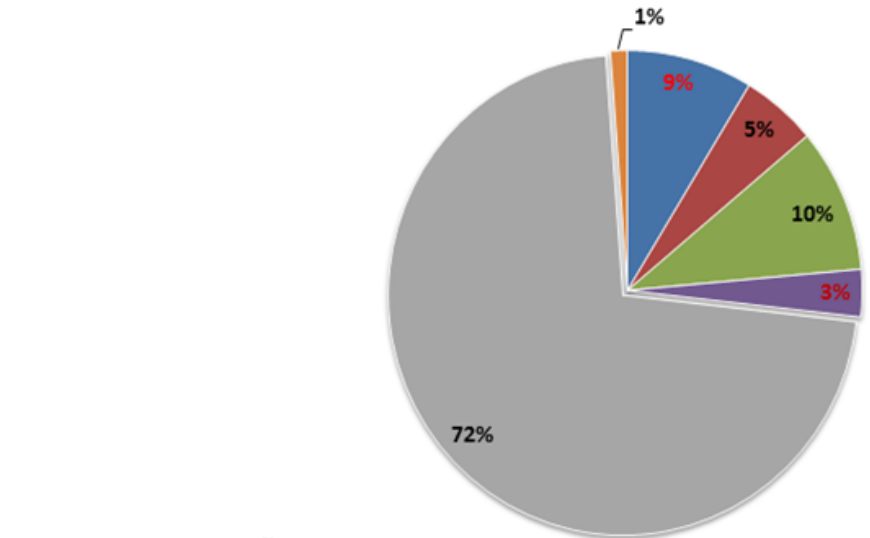
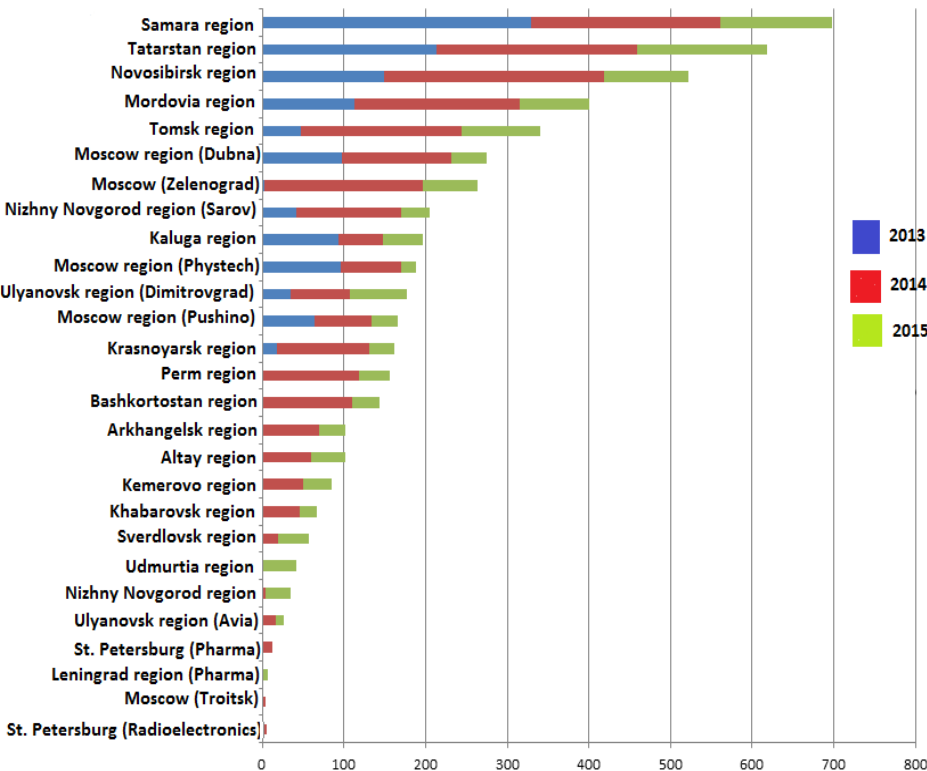




Volume and Support Areas of Pilot Innovative Clusters programme

Federal subsidy allocation in 2013-2015 by clusters

Federal subsidy allocation in 2013-2015 by costs



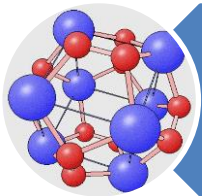
- Design and implementation of Cluster development projects
- Market entry services, STI cooperation
- HR training, development, internships
- Exhibition activities (in Russia and abroad)
- Innovative and educational infrastructure development
- Engineering and social infrastructure development



On which aspects of their development should regional authorities focus to maximize the volumes of the federal budget subsidies?



Level of regional development



Cluster members performance



Cluster management performance



Quality and quantity of cluster projects



Hypotheses: what affects the subsidy volume apart from the cluster programme characteristics?

Regional characteristics

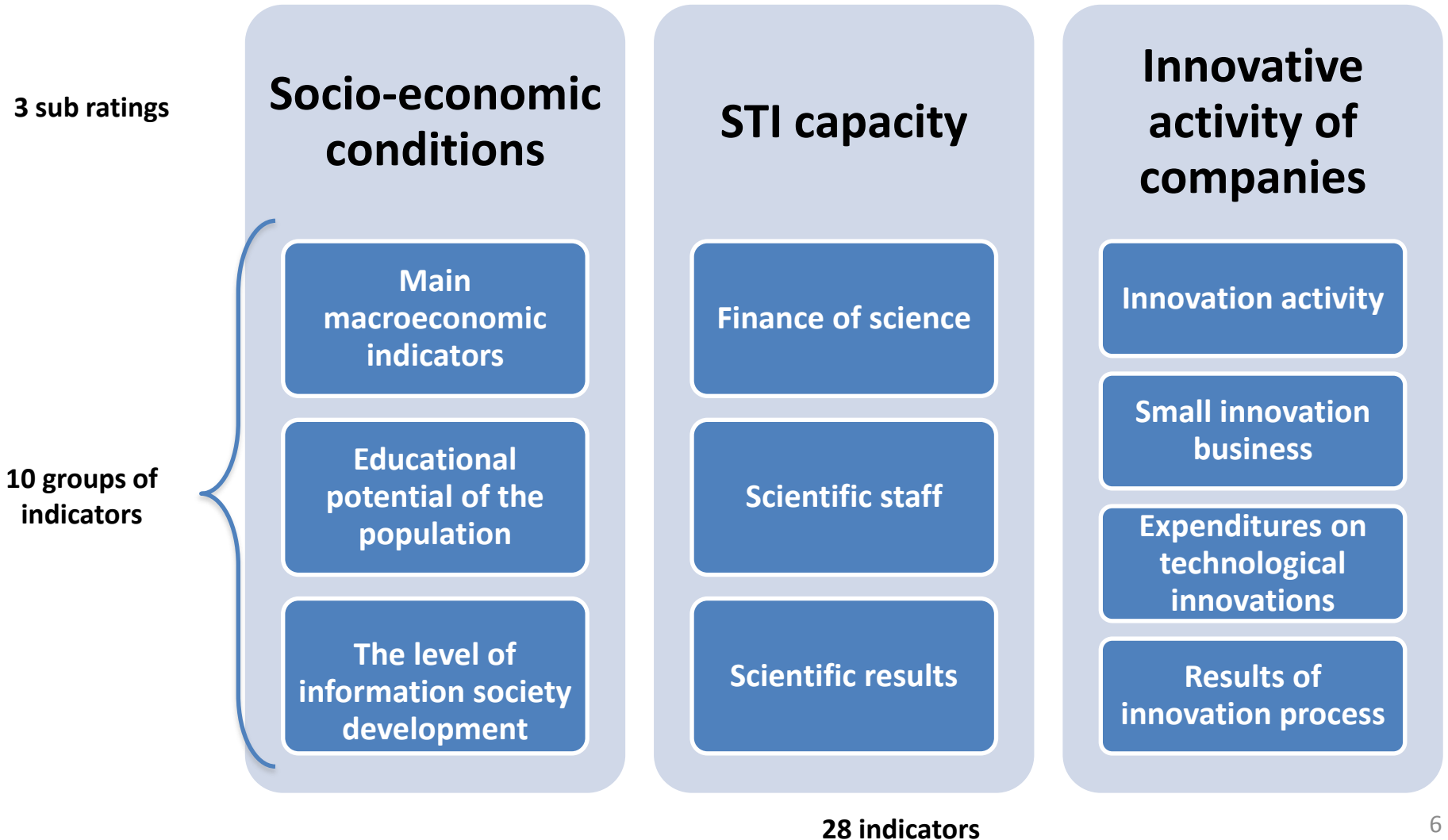
- 1) The total level of regional innovation development and innovation policy quality. The cluster policy aims at picking winners (regions not companies).

Cluster characteristics

- 2) The cluster size (number of cluster members, total revenues, number of cluster members` employees, investments, R&D expenditures, etc.). Pilot innovative clusters are nationally significant growth points.
- 3) The quality of cluster management. An indicator which can be influenced in a short-term period.
- 4) The quality of cluster governance. Satisfaction and growth, private funding and sustainability.
- 5) Federal authorities` trust in a cluster team (cluster management organization).



Source of information for the 1st hypothesis: Russian Regional Innovation Rating by HSE (3rd edition, 2015; data for 2012)





Indicators used to check other hypotheses

Groups of indicators

Indicators used for basic specification (1)

Indicators used for supplementary specifications (2-5)

2. Size (Cluster Size)

- Cluster revenues
- The volume of cluster members` R&D expenditures

- The number of cluster members
- The number of cluster members` employees
- The volume of cluster members` investments
- The volume of innovative products (works, services) in-house output by cluster members
- The share of SMEs` employment in the total employment within a cluster

3. Management (Cluster Management Performance)

- The number of cluster management organization employees
- The number of cluster members involved in joint projects over the last 2 years

- The number of new cluster members over the last 2 years
- The number of partnership agreements with innovation infrastructure institutions and business-service providers
- Cluster visibility

4. Governance (Cluster Governance)

- The share of private funding in cluster management organization budget
- The quality of the decision making process within a cluster

- Evaluation or monitoring procedures of the cluster management organization performance
- Satisfaction surveys of the cluster management organization performance

5. Trust (Federal authorities` trust in a cluster team)

- The value of subsidies allocated from the federal budget to support regional innovative infrastructure
- The number of cluster members participating in technological platforms
- The number of top universities from Russian '5-100' shortlist that are cluster members

- The number of technoparks supported by the Russian Ministry of Telecom and Mass Communications, that are located in pilot cluster home regions
- The number of technology innovative special economic zones in pilot cluster home regions
- The number of state-owned companies that are cluster members
- Special status of a cluster-home location
- Governor influence rating



Methods of hypotheses testing

Problem: need to separate the direct cluster effects from the general level of STI development in regions.

Method: The Heckman correction (*Heckman, 1979*)

Step 1 – for all regions: probit-regression of the selection

- regional characteristics that affect cluster emergence

Step 2 – for approved cluster applications: the regression corrected for the selection bias (using inverse mills ratio from the previous step)

- cluster characteristics that affect the subsidy volumes



1st step results: regional characteristics that affect cluster emergence

	(1)	(2)	(3)	(4)	(5)
VARIABLES	base spec	size	management	governance	trust
Socio-economic conditions	10.11*** (3.789)	8.114** (4.064)	10.04** (3.909)	6.533*** (1.436)	10.01** (3.955)
STI capacity	6.366** (2.864)	7.639*** (2.846)	6.429** (2.939)	5.958*** (1.678)	6.354** (2.892)
Innovative activity of companies	4.626** (1.956)	5.238** (2.142)	4.634** (1.958)	3.580* (2.103)	4.700** (1.950)
Constant	-8.753*** (1.732)	-8.637*** (1.775)	-8.749*** (1.738)	-6.777*** (1.161)	-8.732*** (1.755)
Observations	90	90	90	90	90
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					



2nd step results: cluster characteristics that affect the subsidy volumes

VARIABLES	(1) base spec	(2) size	(3) management	(4) governance	(5) trust
Clusterrevenues	0.191 (0.212)	-1.141*** (0.398)	-0.126 (0.230)	0.119 (0.221)	0.163 (0.189)
clusterRDesp	-0.410 (0.306)	-0.866*** (0.286)	-0.678** (0.292)	-0.233 (0.256)	-0.320 (0.307)
clustermanagementemp	20.43** (9.372)	17.81** (8.218)	23.01*** (8.066)	3.588 (12.20)	16.25* (8.906)
clustercoopmembers	1.053 (1.009)	1.419 (1.603)	2.720 (1.830)	-0.408 (0.929)	1.840* (1.086)
governance_budget	-1.968*** (0.679)	-2.014** (0.787)	-2.764*** (0.673)	-1.930*** (0.417)	-1.159 (0.768)
governance_decision	6.522 (19.01)	48.24*** (17.85)	-5.894 (19.02)	30.63* (16.53)	2.604 (17.26)
Innovation infrastructure	0.390* (0.235)	-0.210 (0.227)	0.183 (0.266)	0.851*** (0.171)	-0.00874 (0.238)
federal_techplatforms	40.46*** (14.00)	77.91*** (12.75)	73.55*** (16.45)	41.92*** (9.579)	37.89*** (14.19)
federal_universities	19.02 (36.20)	103.1*** (34.72)	23.81 (35.66)	38.39 (24.74)	-17.88 (37.05)
clusternumberofparticipants		-1.210* (0.708)			
clusteremployees		-3.132*** (1.071)			
clusterinnovsales		8.238*** (1.803)			
clusterinvestment		0.873 (1.388)			
clustersmeshare		1.477 (1.656)			
clusternewmembers			-0.519 (0.847)		
clustercoopagreements			47.46** (19.24)		
clustermedia			-4.356*** (1.547)		
governance_evaluation				-41.50 (55.64)	
governance_satisfact				236.0*** (73.49)	
federal_techparks					150.4** (71.39)
federal_oez					65.34 (86.36)
federal_statecompanies					30.03 (33.47)
federal_municipalstatus					85.36* (47.48)
Governor					-15.07 (34.74)
Observations	90	90	90	90	90



Results 1: Regional conditions matter

- There is positive correlation between regional innovation level and cluster selection probability (most pilot innovative clusters are located in leading regions in terms of innovation development)
- Long-term factors (socio-economic conditions, STI capacity, innovation activity of companies) that are strongly affected by the federal policy and not by current regional government activities, turned out to be most important



Results 2: It is important for the cluster team to be able to obtain other public support contests

- There is **no positive correlation between cluster size** (number of cluster members and employment therein) as well as **economic performance indicators** (cluster revenues, R&D expenditures, investments) **and the subsidy volumes**. The only influencing indicator is the volume of innovative products (works, services) in-house output by cluster members (directly reflects innovation activity?)
- **Cluster management / governance indicators show ambiguous influence on the scope of public support**. On the one hand, there is correlation between the subsidy volumes and evaluation / monitoring procedures of the cluster management organization performance as well as satisfaction surveys of the cluster management organization performance. Plus there is positive correlation between the subsidy volumes and the number of cluster management organization employees. On the other hand, there is negative correlation with the share of private funding in a cluster management organization budget (the case of Saint Petersburg IT cluster: the higher private funding is, the less subsidy volume is).
- There are **trust indicators that affect the subsidy volumes**: integration with technoparks previously supported by the state, and cluster members` participation in technological platforms. They confirm cluster teams` reputation in terms of fulfilling the requirements of public support programmes.

Meanwhile there are some trust indicators of less importance: top universities and SOEs among cluster members, the volume of subsidies allocated from the federal budget to support regional innovation infrastructure. Possible reasons: these entities are less innovation active, their role in cluster development is less estimable, and their budgets are less subsidy sensitive.

Thank you for your attention!

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