NATIONAL RESEARCH UNIVERSITY

The evolution of cluster initiatives in Russia: the impacts of policy, life-time, proximity and innovative environment

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Why clusters matter and what matters for clusters?

- Clusters in US-traded industries: **36%** of employment, **50%** of income, **96.5%** of patents
- **50%** of EU employment, higher productivity and patenting are in economic sectors that “cluster”

Harvard Business School, 2014; Ketels, 2014

- 1990-s: cluster initiatives (CI) appeared followed by cluster policy boost
- 2013: **2,580** CI around the globe
- Russia: **277** CI identified since 2008
- Cluster policy aims at overcoming systemic failures: "a mismatch between interrelated institutions, organizations, market conditions, or playing rules". CIs are able to organize the professional community, which, in turns, starts to provide additional expertise of new ideas and solutions.

Sölvell et al, 2003; Lindqvist et al., 2013; Russian Cluster Observatory, 2015; Andersson et al., 2004

- **32%** (2003) and **41%** (2013) of CI established under the influence of cluster policy
- **+11%** (2000-2004) in employment within CI that participated in the InnoRegio (Germany) programme

Sölvell et al., 2003; Lindqvist et al., 2013; BMBF, 2006

- CI improve their quality over time, involving new members, establishing management organizations
- However, economic benefits generated by the cluster are not permanent (‘museum’ cluster)

Hagenauer et al., 2011; Sölvell et al., 2003; INNO Germany AG, 2010; Menzel and Fornahl, 2007

- Concentration of industries in regions with the most favourable conditions for innovation

Sölvell Ö., 2009; Ketels and Protsiv, 2014; Chatterji et al., 2013

What affects the emergence of cluster initiatives (CI) and their performance?

Dependent Variables

Emergence :

- Number of CI identified with 2008, 2012, 2015-databases

Performance:

- Quantitative – average No. of employees within CI
- Qualitative – institutional development level of a CI (integral indicator of the Russian cluster mapping scorecard)

3 levels: initial, medium, high

31 indicators

Information blocks

Institutional development level	About the Cluster	Participants (i.a. employment data) and Partners	Priorities and Projects	Management and Governance
Initial	1. Name of the Cluster* 2. Location of the Cluster 3. Cluster constituent act	18. Participants (minimum 10)	12. Basic specialization of the Cluster 13. Additional specialization of the Cluster 14. Brief description of the key products and services of the Cluster participants 15. Aims of clustering 16. Cluster development priorities	19. Cluster manager information
Medium	6. Cluster presentation content in Russian 8. Web-site of the Cluster in Russian 9. English Web-site of the Cluster 10. Map or plan of Cluster participants location 11. Logo of the Cluster	18. Participants (from 11 to 49)	24. Current joint projects of the Cluster participants 25. Future joint projects of the Cluster participants	20. Cluster management and governance bodies 21. CMO services
High	4. Documents for the Cluster development (strategy, program, etc.) 5. Cluster status (according to the state support programme embeddedness) 7. Cluster presentation content in English	17. Cluster membership regulations 18. Participants (minimum 50) 30. Domestic partners of the Cluster 31. Overseas partners of the Cluster	26. Fulfilled joint projects of the Cluster participants, inter alia innovative 27. Investment proposals by Cluster members 28. Venture investment proposals by Cluster members 29. proposals to corporations by SME Cluster members	22. Funding structure of the CMO 23. Working groups on the Cluster development

*Indicators typed bold and underlined are obligatory to acknowledge a certain level of institutional development. Other indicators are used for informative purposes only

Factors

National support programme of pilot innovative clusters (PICs)

Proximity to regions with previously launched CI

Duration of CI existence

Accumulated innovative capacity of CI home regions

Features of the study

1. **The unique database on cluster initiatives** identified in 2008, 2012 and 2015: covers almost a decade of clustering activity in Russia during which cluster initiatives emerged, disappeared or transformed

2. **Valid data sources:** requests by the Economy Ministry of Russia, Cluster applications, National cluster mapping project; **NO surveys** about the effectiveness of CI or the cluster members' satisfaction

3. **Analyses of the solid data** (year of establishment, workforce, the number of participants in cluster initiatives): no estimation features and relatively easy verification

4. **Comprehensive study object**: not only the state supported cluster initiatives (PICs), but also those developed independently. => Extra opportunity for comparison to study the impact of state intervention

Database on cluster initiatives identified in 2008, 2012 and 2015

2008

❑ **169 cluster initiatives (name, region of location, specialization)**

Compiled according to the information provided by regional government offices at the request of the Economy Ministry of Russia

2012

❑ **92 cluster initiatives (name, region of location, specialization)**

Compiled according to the applications for the pilot innovative cluster (PIC) contest

2015

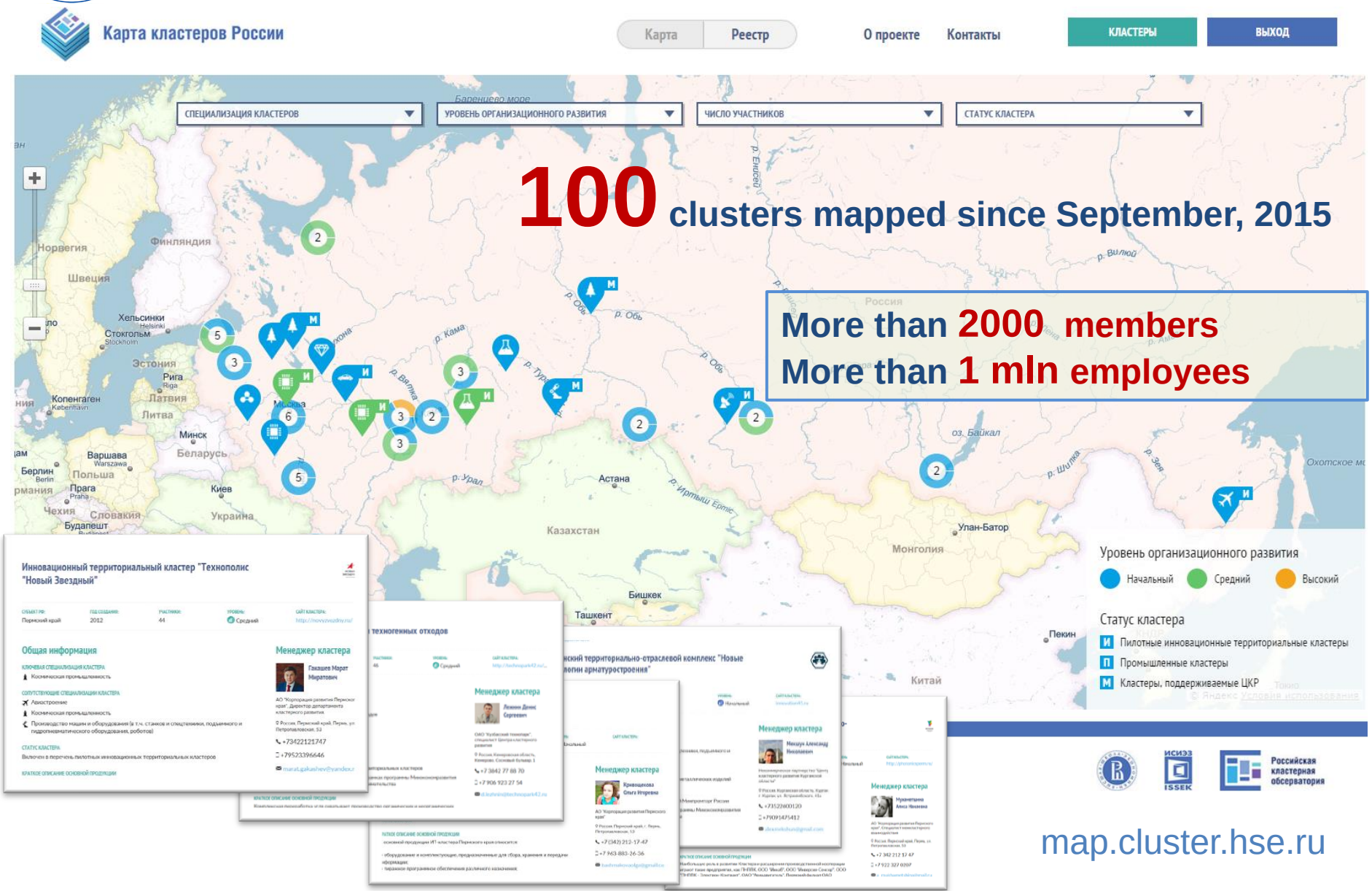
❑ **107 cluster initiatives (information reflecting 31 indicators)**

Compiled according to the Russian cluster mapping project (http://map.cluster.hse.ru/)

+

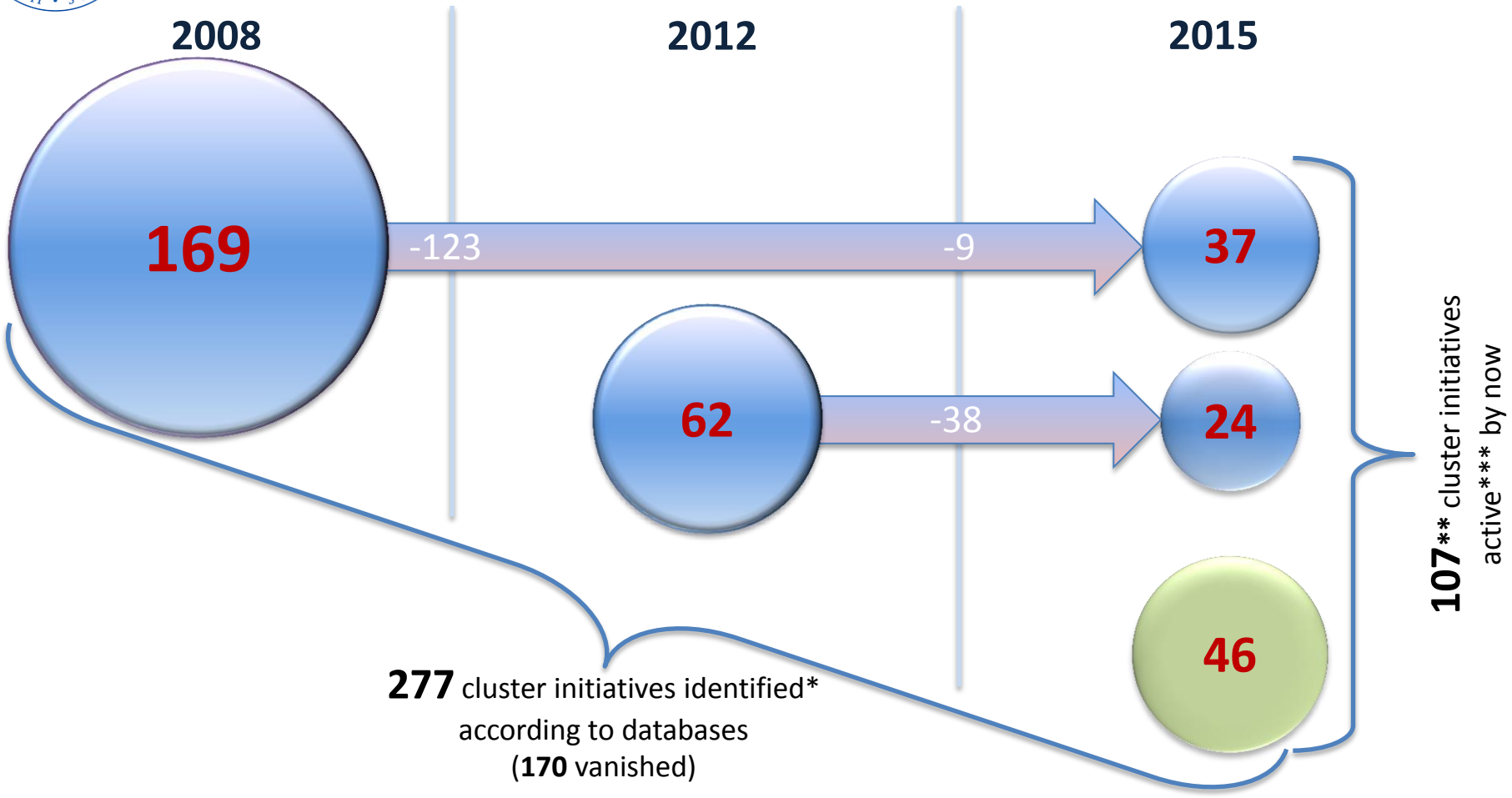
❑ **Russian regional innovative development rating** using the data on **83** regions in 2014: **37** indicators grouped into **4** thematic blocks: "Social and economic conditions of innovative activity", "S&T potential", "Innovation activity of organizations" and "The quality of regional innovation policy"

Cluster initiatives mapping in Russia



map.cluster.hse.ru

The number of cluster initiatives in Russia in dynamics

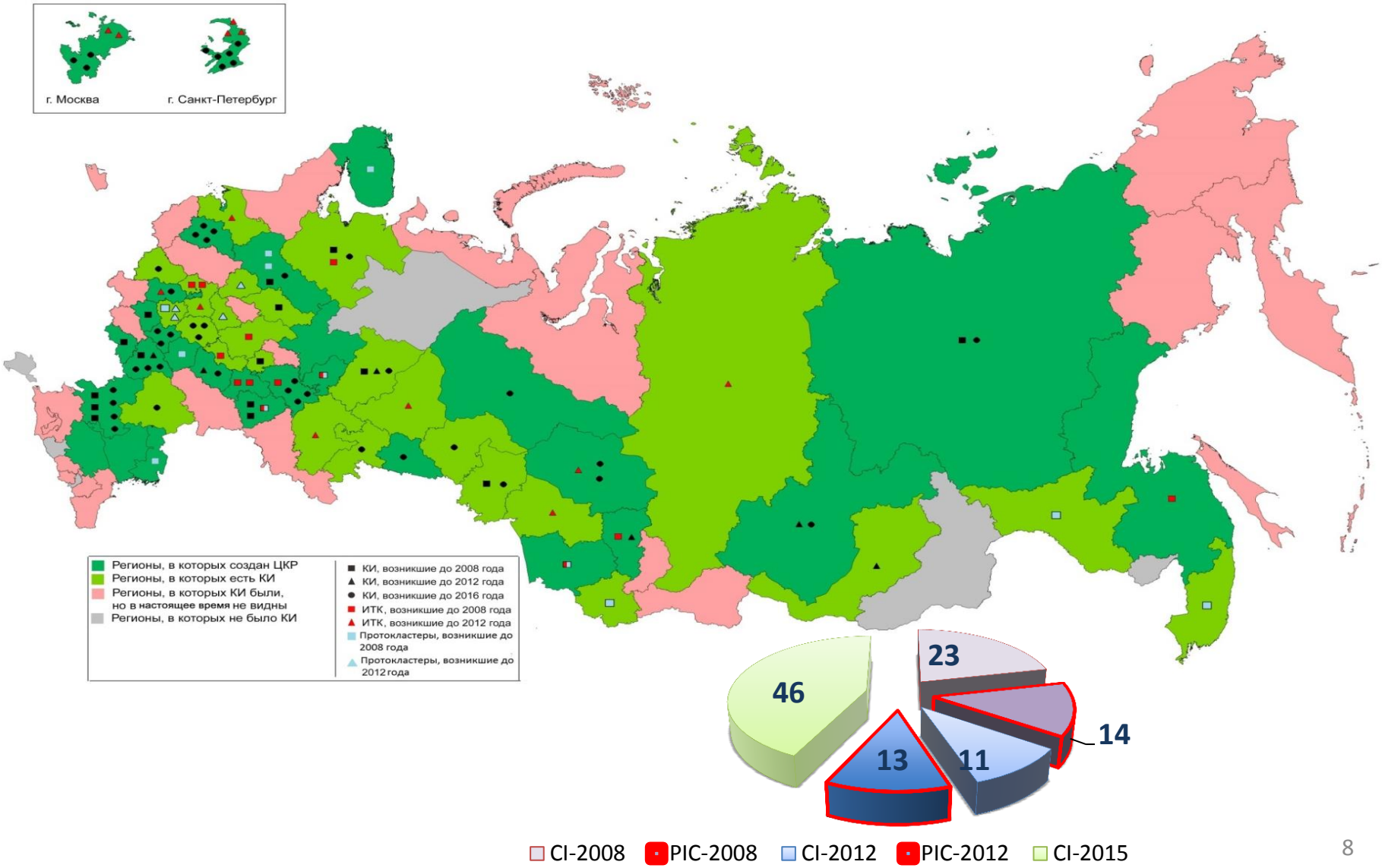


* Identification means the emergence of a cluster initiative in any of the databases analyzed

** The calculations based on quality indicators (for cluster performance evaluation) were made using the data on 91 cluster initiatives – those having completed profiles on the Russian cluster map. The calculations based merely on the number of cluster initiatives were made using data on all 107 cluster initiatives from the Russian cluster map, including 16 so-called proto-clusters – the cluster initiatives registered in the cluster mapping system with partially filled or unfilled profiles.

***A cluster initiative was defined to be active at the time of the survey (December 2015) if it was registered on the Russian cluster map

Russian CI landscape: 25% of active CI are state supported (PICs)



Russian cluster mapping scorecard

Information blocks

Institutional development level

	About the Cluster	Participants (i.a. employment data) and Partners	Priorities and Projects	Management and Governance
Initial	**1. Name of the Cluster*** **2. Location of the Cluster** **3. Cluster constituent act**	**18. Participants (minimum 10)**	**12. Basic specialization of the Cluster** 13. Additional specialization of the Cluster **14. Brief description of the key products and services of the Cluster participants** **15. Aims of clustering** **16. Cluster development priorities**	**19. Cluster manager information**
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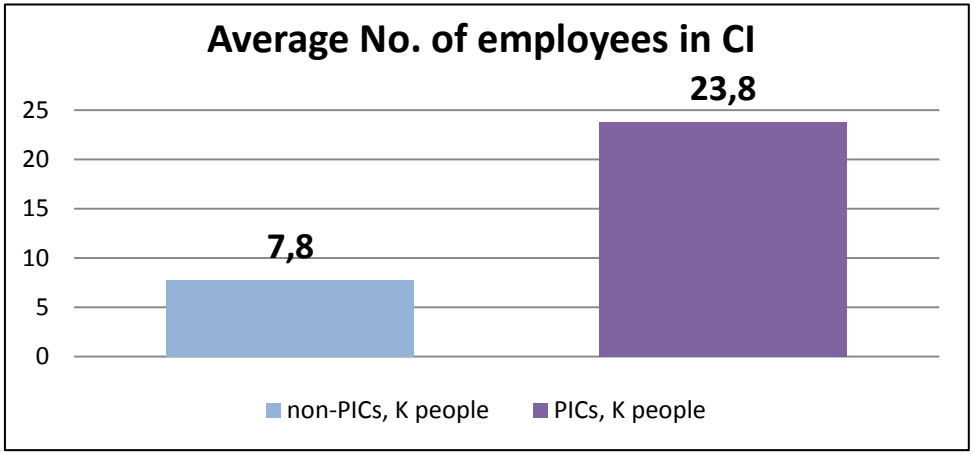
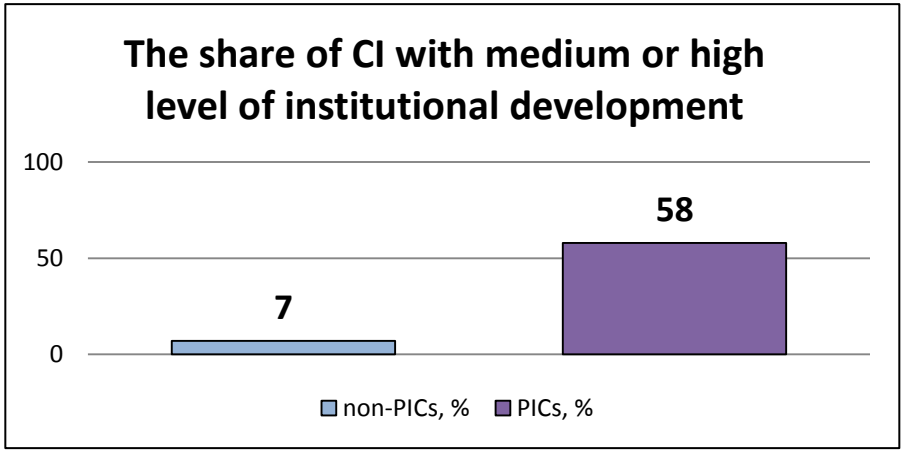
***Indicators typed bold and underlined are obligatory to acknowledge a certain level of institutional development. Other indicators are used for informative purposes only**

Hypothesis 1. National policy has had a significant impact on the emergence of cluster initiatives and their performance

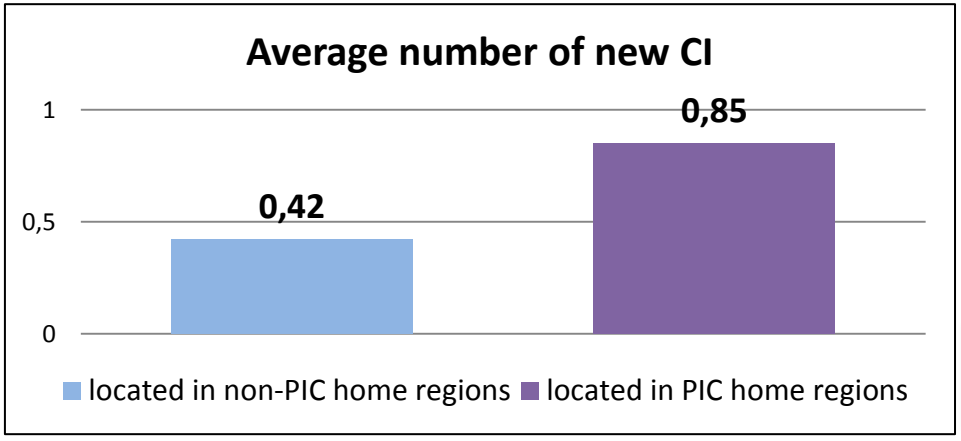
1 Average employment in the clusters supported by the state subsidy was **3 times higher** than in the clusters with private funding only



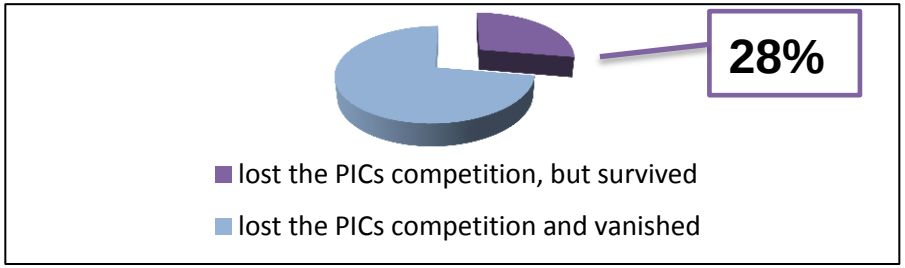
2 The share of PICs with high and medium level of institutional development is **8.29 times higher** than the respective share of non-PICs



3 In the regions of the state supported clusters (PICs) new cluster initiatives were created on average **twice as intensively** as in the other regions.



4 18 of 65 CI which had lost the contest **continued functioning**, **despite the lack of state support**



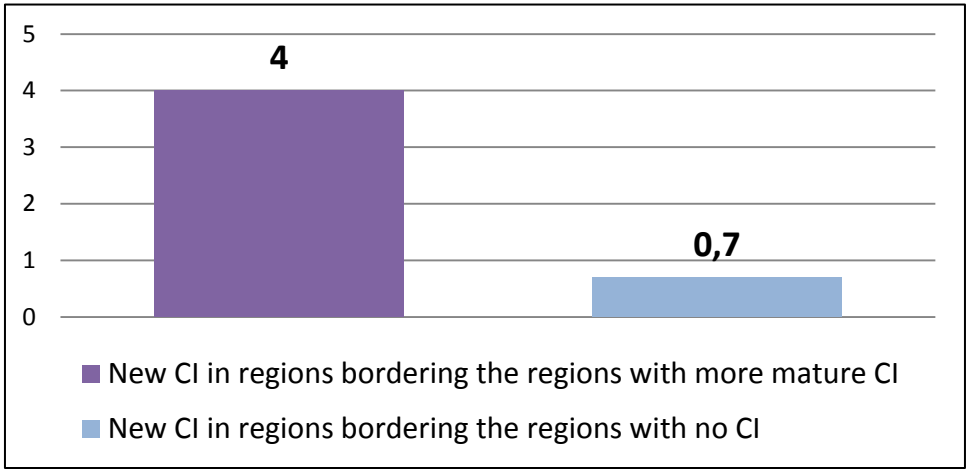
40% of the German cluster initiatives with rejected applications for InnoRegio programme contest still exist and implement their projects (Eickelpasch and Fritsch, 2005).

Hypothesis 2. Proximity to regions with previously established CI influenced the emergence of new CI. However, no extra impact of the neighboring PICs on fostering the new CI creation was detected

1

Proximity to more mature CI:

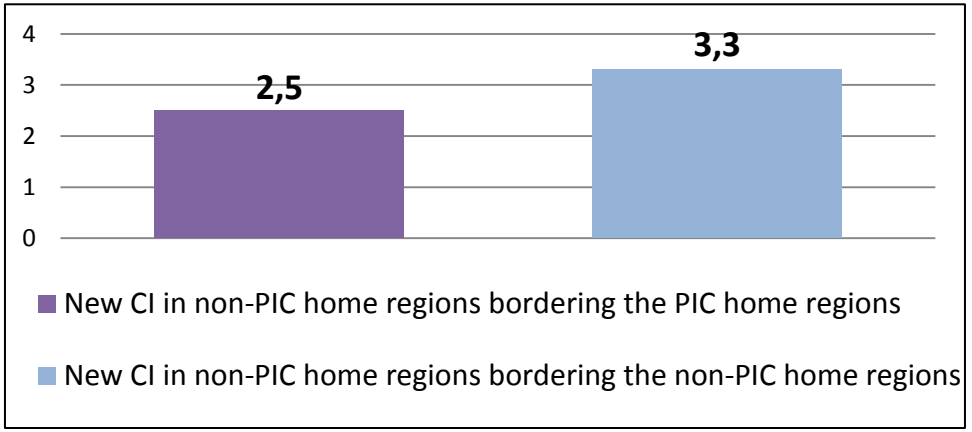
- in the regions bordering the home locations of more mature CI (2008 and 2012), there emerged **4** new CI on average
- in the regions bordering the locations with no CI there emerged **0.71** new CI on average



2

Proximity to the state-supported CI (PICS):

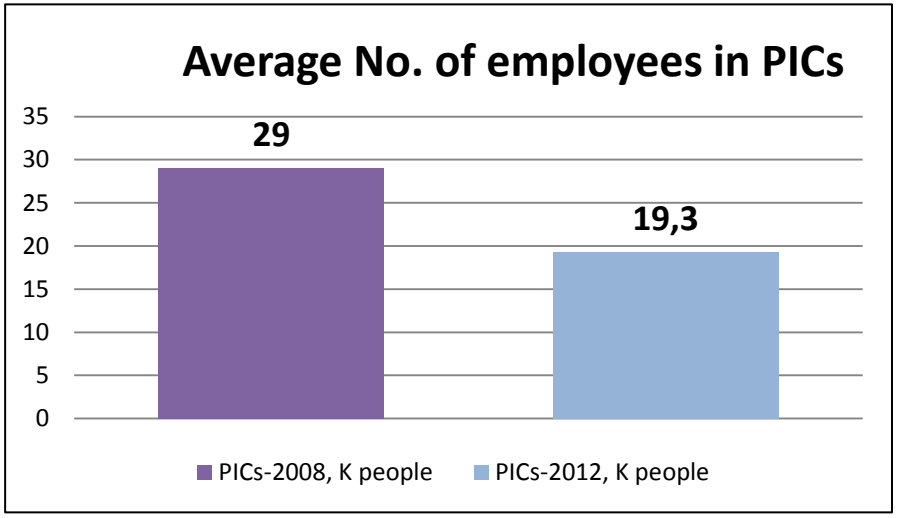
- an average of **2.46** new cluster emerged in the locations neighboring PIC home regions
- while **3.3** new clusters appeared in the regions bordering the non-PIC home regions



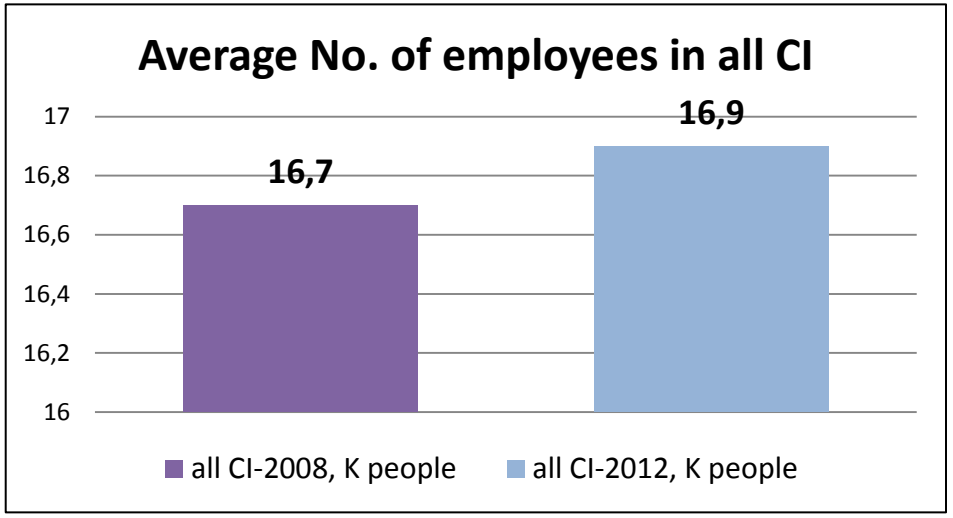
Such outcomes may occur because the cities of Moscow and St. Petersburg with 5 PICs border only the locations of PICs as well: Moscow, Kaluga and Leningrad regions.

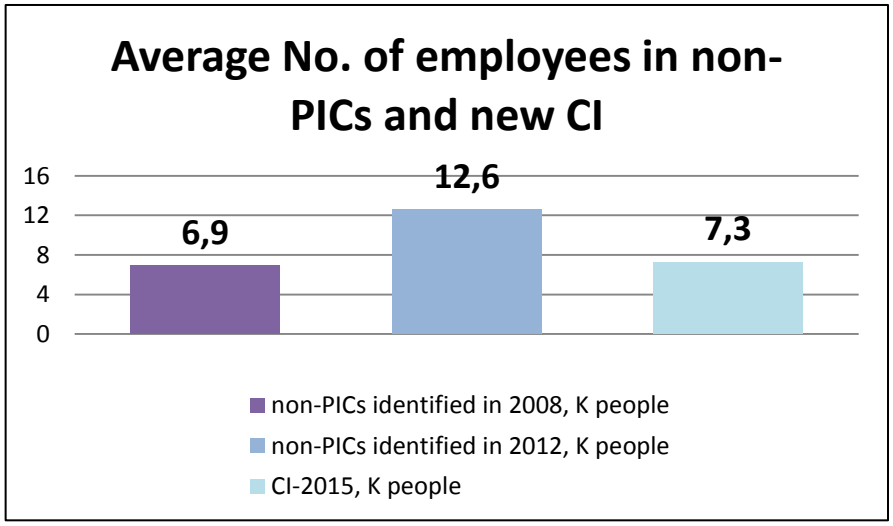
Hypothesis 3 (1). CIs` age is positively correlated with the average No. of employees only for state-supported clusters (PICs)

1 The PICs identified in 2008 are **34% stronger** in terms of average No. of employees than the PICs identified in 2012.



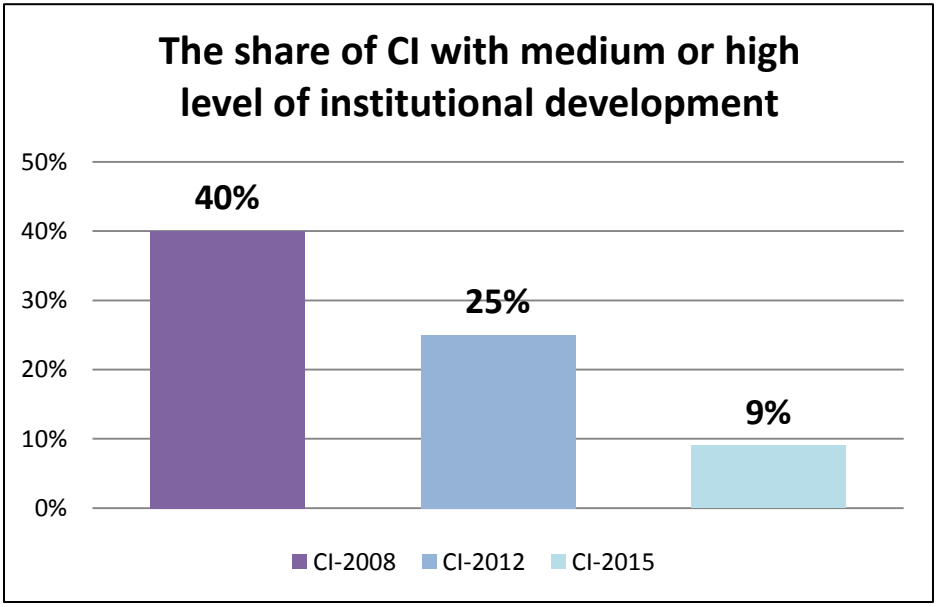
2 Average No. of employees in all CI was **practically constant** regardless of their identification period: 2012 or 2008

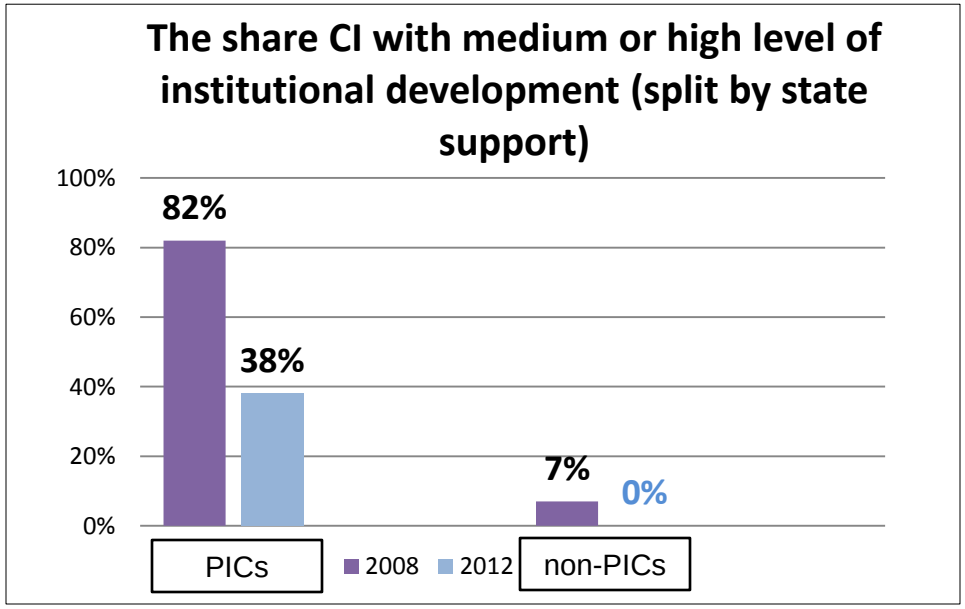




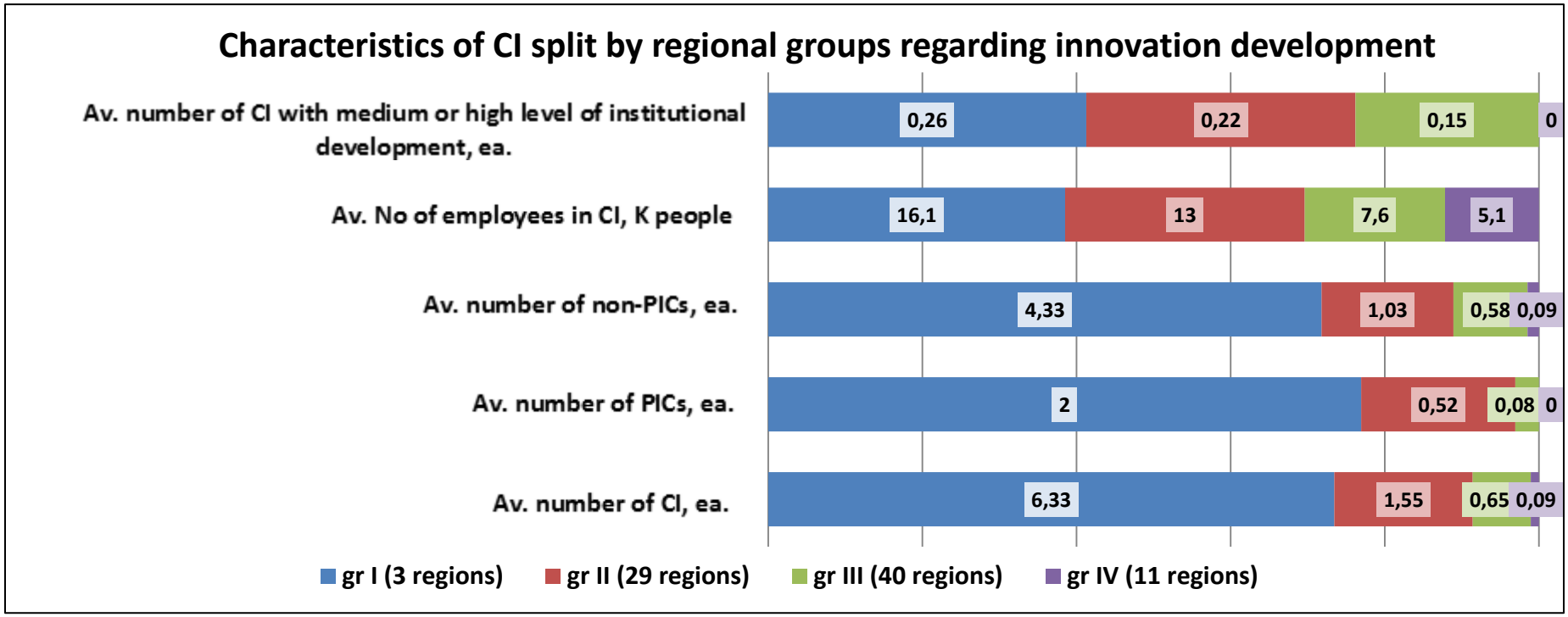
3 The oldest CI without state support (non-PICs-2008) demonstrated **the lowest employment characteristics** compared to the cluster initiatives identified later (non-PICs-2012) and even to new clusters (2015)

Hypothesis 3 (2). The level of institutional development in earlier generated CI was, in all cases, higher than in the CI that emerged later, regardless state support





Hypothesis 4. The innovative capacity of regions is closely linked to the number of CI located there. The majority of CI that received state support are located in the most innovative regions



- The average number of all CI located in the most innovative regions (group I) exceeds the number of CI in other regions (groups II - IV) by **7 times**, the number of PICs is **9 times** higher, the number of non-PICs is **3 times** higher

- The comparison of PICs and non-PICs revealed no significant difference between the innovation leaders (group I) and other regions (groups II - IV) in terms of the average employment or the average number of CI with high and medium levels of institutional development

- Despite that the state-supported CIs are concentrated in a few of the most innovative regions, the qualitative characteristics of all PICs are generally similar, regardless of the home region's group.

Conclusions

The number of new clusters in PIC home regions, the average employment in PICs and the share of PICs with high and medium level of institutional development were 2.02, 3.05 and 8.29 times higher, respectively, than the similar characteristics of cluster initiatives not supported by the State

The impact of proximity to the home regions of previously established CI on the emergence of new CI is empirically proved. In the regions bordering the locations where the cluster initiatives had appeared earlier, there emerged an average of 4 cluster initiatives. Meanwhile an analysis of proximity to the state-supported cluster home regions revealed no special influence

The length of cluster initiatives' existence is always positively correlated with their institutional development level, and only in the cases of budget funding - with No. of employess

The strongest CI are concentrated in regions with an adequate STI capacity, high innovation performance of businesses, well-developed innovative infrastructure and tangible financial support of innovation activity. BUT: the qualitative characteristics of state-supported clusters (PICs) are generally comparable among all groups of regions

Practical implications and future research ideas

Positive effects of cluster policy such as the increase of new cluster initiatives suggest the importance of long-standing cluster support programmes.

The government's role is not only in the allocation of funds, but also in the legitimation of relevant regional clustering initiatives and policies. Even with limited financial resources, cluster policy should remain the focus of the state agenda.

Over time some of the cluster initiatives become prone to grant-seeking behaviour and blocking disruptive innovations as alternative sources of competitiveness. If this hypothesis is true, then the government's contribution to overcoming systemic failures by supporting cluster initiatives will be insufficient for intensive economic growth

Thank you!

Questions, please!

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