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**CLUSTERS AS THE FACTOR OF INNOVATIVE DEVELOPMENT  
AND SUPPORT OF NATIONAL COMPETITIVENESS**

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***Abstract:** The article is devoted to the issue of clusters which is one of the factors of innovative economic development of the country. Article is partitioned into three bodies. In the first part the authors consider theoretical approaches to the determination of an essence of a cluster and its characteristics, distinctive features of the cluster approach from normal forms of cooperation, coordination of subjects of the economy and synergy effect of a clustering are shown. In the second part the authors consider world practice of the clusters formation and their role in economic growth in the developed and developing countries. The third part describes the main tendencies, the branch directions and results of development of innovative territorial clusters in the Russian Federation.*

***Keywords:** national competitiveness, cluster approach, innovative territorial cluster.*

### **1. Introduction**

Today the dominating purpose of the economic policy of the developed and developing countries is the growth of national competitiveness, expansion of a share of the national companies in the internal and world markets and the increase of their activities efficiency.

The globalization processes, strengthening of the international competition, characterizing the world economy, were an objective prerequisite of the paradigm shift of the competitiveness management. It consists of the traditional industrial policy refusal and transition to the new system of the production organization, based on the use of specialization and cooperation advantages.

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## **2. Clusters as the factor of innovative development and support of the national competitiveness**

The intensive development of technologies, logistics, automobiles has led to the fact that the information transfer and movement of financial flows became almost instantaneous, and transportation of the loads became cheap and fast. In this regard not only the innovations and education, but also the correlations between the enterprises has become the most important factors of the achievement and holding of the superiority over the competitors, that provides the conditions for the creation of the network structures, which are the clusters.

### ***2.1 Theoretical approaches to the clusters formation***

According to M. Porter's theory, the cluster is a group of geographically adjoining interdependent companies (suppliers, vendors, intermediaries) and the related organizations (educational institutions, state bodies, infra-the structural companies) operating in a certain sphere and complementary to each other.

In the course of operation over the competitiveness problems, M. Porter came to a conclusion that the leading role in its achievement in the world market belongs to the clusters. "When the cluster is created, all the productions in I begin to give each other mutual support. Advantage extends in all directions of communications. The active competition in one branch extends to other branches of a cluster. The new vendors coming from the other branches of a cluster accelerate the development, stimulating different approaches to the research and development, providing necessary means for the implementation of a new strategy and qualifications. There is free information exchange and fast distribution of innovations in the channels of the suppliers or customers, having contacts with the numerous competitors. Correlations in a cluster, often absolutely unexpected, lead to the new ways of development of the competition and generate absolutely new opportunities.

Human resources and ideas form new combinations. Silicon Valley is a good example of that. The cluster becomes the means for overcoming of an isolation of the internal problems, inertness, inflexibility and conspiracies between the rivals who reduce or completely lock beneficial influence of the competition and the appearance of the new firms. Clusters' existence promotes the increase of information exchange and probability of the new approaches appearance and also the origin of the new vendors appearing from the branches of customers (suppliers), from allied industries or by separation. Somewhat they play the role of the creator of outsiders who can enter something new in the competition. Thus, national branches have an opportunity to support the advantage, but not to give it to those countries which are more inclined to up-dating" [1].

The explanation of this phenomenon is that one or several firms, reaching the competitiveness in the world market, extend the positive influence on the immediate environment: suppliers, consumers and even competitors. Progress of the environment, in turn, influences on the further growth of competitiveness of the company creating the final product.

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Cluster approach is first of all the new administrative technology allowing to increase competitiveness of the certain region or branch, and the state in general. The cluster is, first of all, is the combining of persons: the enterprises, equipment providers, accessories, specialized in the production and services, the research, development and educational organizations connected by the relations of proximity and the functional dependence. Cluster development of the economy is a certain instrument of business. The oriented society is the market which creates the rules of activities of the economic entities through the laws, relations, the banking sector, institutes of support, etc.

Therefore, the cluster operating within these rules is the space organized in a special way, which allows to develop successfully the major companies, small enterprises, suppliers (of the equipment, accessories, specialized services) to the infrastructure facilities, the scientific bodies to the research centers, the educational organizations, etc. At the same time, it is important that in a cluster there is, first of all, the synergy effect that is realized on the basis of the simplified access to its participants, financial resources, new technologies, marketing strategy and the new markets. So, the involvement into a cluster, even of the competitor companies, becomes favorable for them.

### *2.1.1. Features and purposes of clusters*

Distinctive feature of a cluster is the target business activity in which each of the element included in it, participates in the creation of the final product cost chain of [2].

For the economy of all the states, clusters play the role in the growth of the domestic market.

In a cluster the advantages extend in all the directions of communications:

- the new vendors coming from the other branches accelerate the development, stimulating the research and development operations and providing necessary means for the new strategy implementation;
- there is the free information exchange and fast distribution of innovations through the channels of the suppliers or customers, having contacts with the numerous competitors;
- correlations in a cluster, often absolutely unexpected, lead to the new ways in the competition and generate the absolutely new opportunities;
- human resources and the ideas form the new combinations.

Unlike normal forms of cooperation and coordination of the cluster systems subjects the cluster systems are characterized by the following features:

- existence of the leading enterprises defining the long-term economic, innovative and other strategy of all the systems;
- territorial localization of the bulk of the economic entities - participants of cluster system;
- stability of cooperation in the communication of the economic entities – the participants of a cluster system, the dominating value of these communication for most of its participants;

- long-term coordination of the system participant's interaction within its business programs and strategic objectives [4].

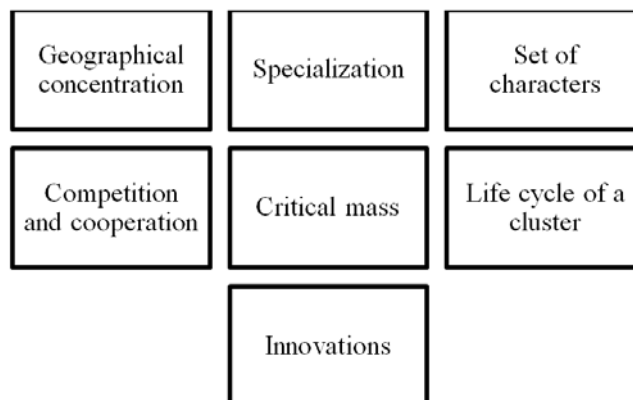
As a rule, clusters are directed to the achievement of the following purposes:

- increase in competitiveness of participants of a cluster due to the implementation of new technologies;
- cost cutting and improvement of quality of the appropriate knowledge-intensive services due to the effect of synergy and unification of approaches in quality, logistics, engineering, information technologies, etc.;
- employment in the conditions of reforming of the large enterprises and outsourcing;
- the consolidated lobbying of interests of participants of a cluster in the different authorities.

### 2.1.2. Main characteristics of clusters

In the process of a cluster development approach the essence of the cluster associations has changed and enriched. So, in the review of the Economic Commission for Europe UN (UNECE) of 2008 it is pointed that the "Increase in innovative level of the firms: the choice of a policy and practical tools", are the main characteristics of clusters which are selected into the following basic elements (figure 1)

**Figure 1: Main characteristics of clusters.**



*Source: Review of the Economic Commission for Europe of the UN (UNECE) of 2008. "Increase in innovative level of firms: choice of policy and practical tools" [5]*

On the basis of the clusters characteristics the choice of this or that cluster strategy is carried out, for example:

- geographical: creation of spatial clusters of economic activity from especially local (for example, gardening in the Netherlands) to really global (a space cluster – EADS in Europe);

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- horizontal: several branches/sectors can enter the larger cluster (for example, the system of mega clusters in the economy of the Netherlands);
- vertical: in the clusters there can be adjacent stages of production.

At the same time, it is important who exactly of the participants of a network, is an initiator and the finite performer of innovations within a cluster, being at the beginning and at the end of a chain of creation and advance of an innovative product;

- lateral: in a cluster, different sectors which can provide saving due to the scale effect, that leads to the new integrated combinations (for example, a multimedia cluster);
- technological: set of the branches using the same technology (for example, a biotechnological cluster);
- focal: a cluster of the firms concentrated around one center - the enterprise, scientific research institute or educational institution;
- qualitative: essential is the fact that the companies really cooperate but not how they do this. The network does not always automatically stimulate the innovations' development. It happens so that in the networks, on the contrary, the innovative processes are suppressed and the protective behavior is encouraged.

Correlations with the suppliers can stimulate the innovative processes, but they can be used for the expenditures on partners' rearrangement and their financial infringements. In the latter case the networks are not neither stable, nor stimulating [3].

**2.2. Clustering world practice**

The world practice demonstrates that in the last two decades the process of the clusters formation goes quite actively. In general, according to the experts, the clustering has enveloped about 50% of the economies of the leading countries of the world (table 1):

**Table 1: Clustering of the leading countries of the world.**

Country	Quantity of clusters
USA	380
Germany	32
Great Britain	168
Denmark	34
Italy	206
India	106
Netherlands	20
France	96
Finland	9
Poland	61

*Source: International center of the scientific and technical information International Centre for Scientific and Technical Information, Innovative and technological clusters of the member countries of the ICSTI*

In the USA within the clusters more than a half of the enterprises works, and the share of GDP made in them has exceeded 60%. 38% of its labor power is engaged in the EU clusters. Completely enveloped into the clustering are the Danish, Finnish, Norwegian and Swedish industries. So, Finland, whose economic policy is based on a clustering, by the 2000-th takes the leading places in the world rankings of competitiveness. Because of the highly effective clusters this country having only 0,5% of the world forestry resources, provides 10% of the world's timber processing products and 25% of the paper products. In the telecommunication market it provides 30% of world export of the mobile communication equipment and 40% of mobile phones.

In the Italian industrial clusters work 43% of the employed population and they bring 30% of the national export.

Very effectively function the cluster structures in Germany (chemistry and mechanical engineering). In France they produce food products and cosmetics.

Very active is the process of the clusters formation in Southeast Asia and China, in particular, in Singapore, in the field of petro chemistry, in Japan in the automotive industry. In China there are today more than 60 special zones clusters in which there are about 30 thousand firms with the numbering staff of 3,5 million people and with the sales level in the amount about 200 bln. dollars a year [2].

The increase in competitiveness by the means of cluster initiatives becomes Basic Element of the development strategies for the vast majority of the countries. This process hasn't bypassed also the Russian Federation

### ***2.3. Main tendencies and results of the innovative territorial clusters development in the Russian Federation***

The vigorous legislative work in the field of cluster initiatives as the instrument of the increase in the competitiveness of the national economy has begun in the Russian Federation a few years ago. At this moment this direction is at an early stage of the development. The creation and development of the innovative territorial clusters network as the method of the competitive potential of the Federal Subjects implementation, is one of points of the Concept for the long-term social and economic development of the Russian Federation till 2020. The relevance of carrying out an effective cluster policy is caused, first of all, by the importance of the Russian economy transition into the innovative developing type and, secondly, by the need of the high level of the national competitiveness maintenance, in connection with an unstable external economic situation [6]. Now in the Russian Federation 25 innovative territorial clusters which are distributed into the following branch directions that realize their activities in:

- nuclear and radiation technologies;
- laser technologies;
- supercomputer technologies;
- instruments production;
- engine building;
- automotive industry;
- production of space crafts;

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- oil and gas processing;
- pharmaceuticals, biotechnologies and medical industry;
- new nanomaterials.

Operating clusters are localized preferentially in the territories with the high level of concentration of scientific, technical and production activity: in the Central, Siberian and Volga federal districts.

Depending on the readiness level and potential, the clusters were partitioned into two groups:

- Group 1: 14 clusters with the most developed requests and high potential.
- Group 2: 11 clusters which development programs require further finishing.

For the support of the innovative territorial clusters network development, the total amount of financing of the projects put into the development programs, for the period from 2012 to 2017 are 1,5 trillion of rubles. At the same time from the means of the Federal budget it is planned to invest 480 billion of rubles (33% of the total amount). The amount of about 213 billion of rubles (14%), will be taken from the regional and local budgets. It is planned to invest 780 billion rubles (53% of the total amount of financing) from the non-budget sources.

In the context of these two cluster groups financing the different volumes of investment for the first and second groups are assumed. 14 clusters of the first group will receive about 80% (1,2 trillion of rubles) of total amount of the funds raised for the further development. Remaining 20% (282 billion of rubles) will be directed to the support of 11 clusters of the second group.

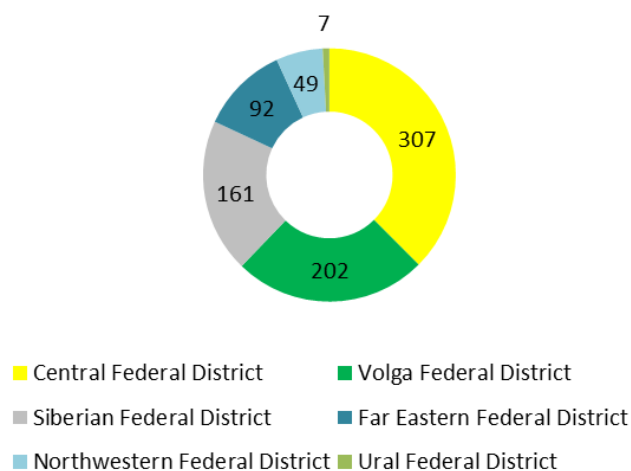
Taking into account the higher potential of the first group clusters development the volume of the raised funds from the non-budget sources and the federal budget is 55% and 30% respectively. In turn, the development of the second group clusters requires the bigger involvement of the state and therefore the share of the federal financial means is higher than for the first group — it is equal to 41%.

The number of the leading scientific and educational organizations and enterprises of Russia is among the participants of the Russian innovative territorial clusters, including:

- institutes of RAS and Russian Academy of Medical Science, research centers and universities, federal universities, main higher education institutions;
- the largest companies of the Russian sector machine and shipbuilding, fuel and energy complex and metallurgy;
- the largest Russian companies of the information and communication technologies and biotechnologies;
- the branches and affiliated structures of the multinational corporations.

The number of participants of innovative territorial clusters in general reflects geographical feature of their layout. The greatest number of participants is concentrated in the Central and Volga federal districts (38% and 25% respectively) [7].

**Chart 1. The number of participants of innovative territorial clusters on the districts of the Russian Federation**



*Source: Uniform information and analytical portal of the state support of innovative development of business [8].*

### 3. Conclusion

The cluster policy is one of the most effective instruments of the development control of the Regional economy of the Russian Federation. Generalizing the above material, it is possible to draw the conclusions that the cluster as a steady partnership of the interdependent enterprises, institutions, organizations and individuals can have the potential which exceeds the simple amount of the separate components potential. This increment arises as the result of cooperation and effective use of the partners' opportunities in the long period, as well as the combination of cooperation and the competition.

Carrying out an effective cluster policy can become one of methods of the national competitiveness maintenance of the country at the world level, the creation of the conditions for a stable economic growth and transition from the raw to an innovative economy.

As the world practice demonstrates, the clusters appear artificially very seldom and from a zero level. They evolve and make their evolution naturally in the spheres where there are conditions in the forms of inter-industrial connections.

The role of the state, at the same time, consists of the development conditions creation as well as the creation of the new firms, encouragement of innovations, and the healthy investment climate improving.



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### **KLASTERI KAO FAKTOR INOVATIVNOG RAZVOJA I PODRŠKA NACIONALNOJ KONKURENTNOSTI**

*Apstrakt: Članak je posvećen problemu klastera koji je jedan od faktora inovativnog ekonomskog razvoja zemlje. Članak je podjeljen na tri dela. U prvom delu autori razmatraju teorijske pristupe utvrđivanju suštine klastera i njegovih karakteristika, karakteristične osobine klasterskog pristupa od normalnih oblika saradnje, koordinacije subjekata ekonomije i sinergijskog efekta grupisanja. U drugom delu autori razmatraju svetsku praksu formiranja klastera i njihovu ulogu u ekonomskom rastu u razvijenim i zemljama u razvoju. Treći deo opisuje glavne tendencije, pravce grana i rezultate razvoja inovativnih teritorijalnih klastera u Ruskoj Federaciji.*

*Ključne reči: nacionalna konkurentnost, klusterski pristup, inovativni teritorijalni klaster.*