International Journal of Econometrics and Financial Management, 2014, Vol. 2, No. 4, 124-129
Available online at http://pubs.sciepub.com/ijefm/2/4/2

DOI:10.12691/ijefm-2-4-2

Cluster Approach in Implementing the Socio-economic Development Strategy of the Region

Askerov N.S.*

Department of Political Economy, Dagestan State University, Makhachkala, Russian Federation
*Corresponding author: n.s.askerov@mail.ru

Received July 26, 2014; Revised August 17, 2014; Accepted August 25, 2014

Abstract The article describes the features of the cluster methodology and cluster systems. The Russian practice in implementation of the cluster approach and the experience on the use of the cluster approach in the implementation of socio-economic development strategy of the region. The study uses an example of the Republic of Dagestan (Russian Federation). The main focus is made on clusters "Caspian HUB" (transport-trade-logistics cluster) and "People's House" (a unique cluster, aimed at stimulating the development of human capital) being nodal in the regions' strategy. Aspects of the innovation potential of the region and the main directions of innovative activities of major enterprises of the industrial cluster of Republic of Dagestan ('Aviaagregat', 'Hajiyev Plant', 'Research Institute 'Sapphire', 'Dagfos', etc.) are disclosed. Research results enabled to identify the main directions of the republic's economy required to stimulate clustering. The proposed initiatives are based on the improvement of mechanisms of state support for innovation at the regional level and on encouragement of the inflow of financial capital in the regional innovation system. The major objectives of the innovation potential of the Republic of Dagestan are defined.

Keywords: *cluster approach, strategy, region, innovative potential, innovative development, stimulation of clustering*

Cite This Article: Askerov, N.S., "Cluster Approach in Implementing the Socio-economic Development Strategy of the Region." *International Journal of Econometrics and Financial Management: Special Issue on Geography of Innovation and Economic Clusters: Evidence from Russia*, vol. 2, no. 4 (2014): 124-129. doi: 10.12691/ijefm-2-4-2.

1. Cluster Approach in the Russian Economic Practice

The cluster approach is one of the main methods of improving the competitiveness of the Russian economy [5]. That is becoming increasingly obvious to federal and regional authorities. The government of the Russian Federation is considering clusters as the most effective instrument for the development of territories [3,6]. However, the process of economic clustering is currently being implemented in a spontaneous manner, under the influence of market forces. While in developed countries, the formation of clusters occurs both naturally, and based on the mechanism of the state intervention (i.e. cluster initatives). At the present stage, this quite a natural phenomenon is not fully studied.

The core of the cluster methodology is the study of the form of economic relations aimed at creating a 'modern innovative product' as a complete set of elements in a set of relationships and connections inbetween. The process of economic clustering is implemented on the basis of the main tenets of the cluster theory. Control efforts of the state are always concrete, have a definite direction, solve urgent problems of development of the territory, carried out by an admissible in a market economy toolkit of clustering. Therefore, on the one hand, it is important to clearly identify the cluster as the object of theory, and on the other hand, as a matter of public administration (i.e. the object of governance).

The notion of 'cluster' is one of the elements of the competitiveness strategy proposed by M. Porter, professor in the Department of Business Administration of Harvard Business School, a leading specialist on competitiveness strategy and competition in international markets. He defined a cluster as a group of related companies (suppliers, manufacturers, and others) geographically adjacent and related organizations (e.g. educational institutions, bodies of state administration, infrastructure companies) operating in a particular area, and complementary to each other [9].

Russian economists define cluster as a group of geographically localized and related companies (suppliers of equipment, components, specialized services), infrastructure, research institutes, universities and other organizations complementary to each other, which reinforces the competitive benefits of individual companies and the cluster as a whole [10]. Thus, to be a cluster, a group of geographically adjacent and interconnected companies and associated institutions must act in a certain area, be characterized by common goals, activities and complement each other. In other words, cluster systems are characterized by the following features:

- The presence of actors (leading enterprises), which determine the long-term economic and innovation strategy of the whole system;

- Spatial localization of the main body of participants of the cluster system;
- Stable cooperative ties of the subjects – members of the cluster system and the coordination of long-term interaction between the participants of the system as part of its business programs and strategic objectives.

Clusters are formed among the participants with related economic interests. At the same time, clusters contribute to:

- Increase in the competitiveness of cluster members through the introduction of new technologies;
- Reduction of the costs and improvement of quality of respective knowledge-intensive services through synergies and unification of approaches in quality, logistics, engineering, information technology, etc.;
- Growth of employment under the reform of large enterprises;
- Consolidated lobbying of cluster members in different authorities.

Clusters are usually created where the 'breakthrough' in the promotion to the new market niches is done or expected [11]. In this regard, the cluster approach is being increasingly used in the world for the development and regulation of innovation policies, supporting the most promising areas and forms of entrepreneurial activity. Russian practice suggests a number of examples of the effective influences made on the development of clusters.

Currently in the Sverdlovsk region, pilot projects of the "Titanium Valley" and the concept of the "Ural automobile cluster" are being developed. Creation of the first of them is aimed at strengthening the competitive position of the Russian titanium industry in the world markets. This is expected to be achieved by attracting foreign and domestic investments to create new companies, develop high-tech methods of manufacturing of titanium products and create new import-substituting industries.

Creation of the "Ural Automotive Cluster" aims at development of a new industry – automotive, based on production of cars and trucks, which are expected to be competitive in price and quality. Additionally, the creation of the modern industry of automotive components in Ural is planned.

In recent years, the scheme of cluster formation in the economy of the Republic of Tatarstan is being actively developed. The economy of this republic traditionally involves oil extraction, petrochemical and automotive; a complex mechanical engineering and petrochemistry sectors are identified as growth points of clusters.

Modernization of mechanical engineering and development of petrochemical production contributes to solving major economic problems for the country – the transition from the raw model economy to an innovative one.

Another region where the cluster approach is being actively developed – Samara region, which is among the most developed industrial regions of Russia. Nowadays, its industrial complex consists of nearly 400 large and medium-sized enterprises and more than four thousand small businesses. Regional program provides state support to innovative scientific and technical projects in priority areas of science and technology (primarily in the major industrial clusters: automotive, aerospace, and petrochemical). Activities are aimed at building an innovative infrastructure, such as centers of commercialization and technology transfer, technology parks, business incubators, as well as the creation of a database of information about innovations, exhibitions and fairs.

Along with the automotove sector, the formation of aviation and rocket-space clusters are planned using existing competitive advantages in the Samara region. Its strong scientific, technological and engineering base is represented by "D.N. Kuznetsov Samara Space Center", "Samara State Aerospace University", which is among seventeen national innovation universities. All this contributes to the improvement of the innovation activity in the region.

Generalizing the Russian practice of implementation of the cluster approach in solving the problems of innovative development, we can conclude that the country and its regions are now at the very beginning of the road to take advantage of the cluster approach in addressing the challenges of modernization and innovative development of the country. For the successful implementation of the objectives and planned programs, consolidation of public and private agencies, educational and banking institutions, mutual coordination of their goals and interests is required.

2. The Use of the Cluster Approach in the Implementation of Socio-economic Development of the Region

The cluster approach can be successfully applied in the implementation of socio-economic development of the region [1,2]. For example, in the Republic of Dagestan is developed a "Strategy of socio-economic development for the period up to 2025" (hereinafter - the Strategy), which is derived from the main macroeconomic and regional targets defined in the "Concept of long-term socio-economic development of Russia until 2020", the "Strategy of social and economic development of the North Caucasus federal District until 2025" and the respective sectoral strategies of the Russian Federation.

The Strategy sets new representation of the image of the Republic's future to the year 2025. According to the scenarios of socio-economic development of the Republic, during the implementation of the Strategy, the GRP per capita should increase by 3-4.5 times, tax payments to budgets of all levels - by 5-8 times, and the average salary - by 2,9-4,6 times.

The development scenarios are based upon the potential growth of the Republic of Dagestan, which is due to the specific conditions of formation of competitive clusters the "Caspian HUB" and the "People's House" derived from the following competitive advantages: extremely favorable conditions for participation in the global division of labor, on the basis of the development of trade, tranport and logistics infrastructure; comfortable prosperous life, work and creativity, tourism and recreation.

Republic's support frame of spatial development is the concept of 'advanced economic development areas', which will focus the main power of industrial and agricultural production, as well as most of the trade, transport and logistics facilities and basic infrastructure of the "Caspian HUB".

Socio-innovative development will be formed within the cluster "People's House". This cluster is a system of

complex conditions for a prosperous life, giving the possibility of personal fulfillment. Cluster is formed on the entire territory of the Republic of Dagestan, which will be positioned as a comfortable place of living, work and creativity, recreation and sports. The development of the People's House cluster is designed to stimulate the development of human capital and the 'knowledge and technology economy' for the transition to a postindustrial society.

Transport, trade and logistics cluster 'Caspian HUB', based on geo-strategic advantages of the region, will help organize the industry, which will not be limited to one-pointedness in the vector of integration ties and will be aimed at the geographical diversification of ties in all directions – as with other regions of the country and with the states of the Caspian macro-region. The end result is the transformation of Dagestan into the center of international trade, finance and investment, serving the regions of the North Caucasus Federal District and the border states.

The Strategy also envisages the development of folk crafts and support of traditional crafts of Dagestan – Kubachi craft made of gold and silver, Untsukulsky wooden souvenirs, Balharskie pottery, Tabasaran carpet weaving of highest artistic level and others.

The main objective of the development of the Republic of Dagestan is indicated in the Strategy as an increase in the quality of life by improving the region's competitiveness, sustainable economic development and security. Competitiveness of the region can be achieved, if the Republic will be represented as a single cluster.

3. Innovative Scenario of Implementation of the Cluster Approach in the Region

The most important strategic national goal of Russia is the modernization of the existing socio-economic system, focusing on the implementation of innovative technologies and the knowledge economy [4,8].

Similar task is for the regions. The analysis carried out in the preparation of the Strategy showed that economic growth in recent years was largely due to favorable macroeconomic conditions of the Russian economy. It had little to do with the growth of labor productivity and market capitalization, based on the exploitation of resources and was predominantly of extensive character. In these circumstances, there is an objective need for a transition to innovative development, having a long-term prospect. This requires assessment of the investment potential.

Innovation potential contained in each of the constituent elements of the reproductive capacity of the economy sector, region, municipality, enterprise and is considered as an integrated set of all. The task of management to reach innovative development is to find innovative capacity in each structural element and to be abile to use it in order to ensure sustainable economic growth.

The most important innovation potential is concentrated in the scientific field of the economy. In the Republic of Dagestan on 01.01.2013, the research and development activities are carried out by 28 organizations (see. Table 1).

Table 1. Organizations performing research and development (units)

	2005	2007	2008	2009	2010	2011	2012
Total number of organizations, including:	22	31	31	30	29	29	28
scientific research organizations	18	24	24	24	24	24	23
institutions of higher education	4	5	5	5	5	5	5
others		2	2	1			

Source: based on the data from Dagestanstat [7].

However, the technical level of the overwhelming mass of the fixed assets of the scientific sphere in the region is far behind the world's avarage, while spending money on its reproduction means to preserve the technological backwardness of the economy. Achievement of a tangible and rapid success is possible only by reaching the efficiency of scientific research and implementation of the results of fundamental and applied research in production (i.e. commercialization), the concentration of resources in priority areas of science and technology development, builind market competitiveness of the economy based on substantial innovation and technological restructuring.

At the same time, the share of high-tech industries of the country is very low (8.3%). This is because, on the one hand, the development of existing scientific organizations are mainly carried out in the field of basic research (98.7%), at the expense of applied areas (1.3%). Although it is the applied research that has a real possibility of additional funding from extrabudgetary sources. On the other hand, the implementation of the novations of research institutions into production is poorly organized (i.e. stage of commercialization). Leading enterprises and governmental agencies do not show enough interest in the projects developed by scientific organizations of the Republic. All of this suggests a low interaction of business, science and the state.

On the other hand, the Republic is a leader in the number of personnel engaged in research and development among the regions of the North Caucasus Federal District (see. Table 2).

Table 2. Number of personnel engaged in research and development, by regions of the North Caucasus Federal District (pers.)

	2010	2011	2012
Russian Federation	736540	735273	726318
North Caucasus Federal District	*6053*	*8585*	*7188*
The Republic of Dagestan	1642	1628	1606
Republic of Ingushetia	95	112	114
Kabardino-Balkar Republic	677	704	746
Karachay-Cherkess Republic	491	506	505
Republic of North Ossetia - Alania	643	685	648
The Chechen Republic	412	639	592
Stavropol Krai	2093	4311	2977

Source: based on the data from Dagestanstat [7].

One of the most important tasks of government agencies is to work on improving the legal framework for the implementation of the Strategy. In this regard, new laws are required on forecasting and planning the industrial and science policy, etc. There are changes and additions required to the previously adopted legal acts of social and economic units in accordance with the new Strategy.

The Republic is facing long-term systemic challenges, reflecting both Russian and international trends and internal obstacles to development. Under this circumstances it is nessesary to:

- increase competition between the subjects of the Russian Federation;
- increase the role of human capital and innovation as key drivers of growth;
- reduce the role of the resource model of economic development based on the pre-industrial sectors and the low-cost factors of production (e.g. labor, natural resources and capital).

Table 3. Amount of funds allocated for social innovation development

Type	2013-2015	2016-2020	2021-2025
Amounts of funding: (annual average) the federal budget, mln. rub.	19633	20588	29689
Amounts of funding: (annual average) regional budget, mln. rub.	14403	14044	17367
Amounts of funding: (annual average) extra-budgetary sources, mln. rub.	17122	18868	21616

Source: compiled based on the Strategy for Socio-Economic Development of the Republic of Dagestan [12].

One of the goals of the Strategy is a socially innovative development, namely the creation of complex conditions for safe and secure life. Social innovation complex focuses on the high level of human development and innovation. The strategic funding for social and innovative development is shown in Table 3.

In the first instance, the Strategy implies the introduction of new and innovative programs related to the priority areas of economic development of the Republic in the medium and long term, identification of strategies of socio-economic development of the Republic up to 2025. This applies in particular to the field of trade, transport and logistics systems, social innovation center, agriculture and industry, nano-electronics, architecture, urban planning, energy conservation and efficiency, mechanical engeneering, tourist and recreational complex, spatial planning and territorial development, and others.

It should be noted that Dagestan has sufficient conditions to start large-scale conversion of innovative modernization. Republic has 40% of hydropower resources of the North Caucasus, scientific and educational institutions, the transportation network of federal and international importance, preserved industrial potential, etc.

The strategy will be implemented through the regional competitive advantages of Dagestan. The basis of the competitiveness of the region are the industry and energy, manufacturing, agriculture (in particular - viticulture and winemaking), recreation and others.

In view of these features in the ‘Strategy 2020’ priority directions of economic development based on the cluster approach: the development of the agro-industrial complex; creation of transport and logistics cluster; development of the fuel and energy complex; creation of industry building materials; technological modernization of industry; development of health resort and tourist and recreational services.

To support investors the People’s Assembly of the Republic of Dagestan has taken a number of important laws on state support of investment activity, the participation of the Republic in public-private partnerships.

The innovative scenario for the region is a new phenomenon. Implementation of new projects and developments in Dagestan is quite difficult, due to lack of working capital and investment, physical and moral depreciation of fixed assets.

One of the acute problems in the region is a shortage of qualified labor market, optimization of the number of skilled workers in the factories is required. Skills shortages are an obstacle for building knowledge-based economy in the region.

Innovative activities are carried out in many enterprises of the republic. The ‘Aviaagregat’ designed a contemporary original device – an electromechanical power steering for vehicles of thr ‘AvtoVAZ’ series, which greatly increases their competitiveness. This company is the only enterprise in Russia to develop and master the product of this kind. Development corresponds to the modern world achievements in the automotive industry. Currently is considered the possibility of organizing the production of gaz-fuel automotive equipment and development of starter-generator device manufacturing plant.

The ‘Hajiyev’s Plant’ developes deep screw submersible pump, which has no analogues in Russia or abroad. This pump significantly simplifies the design of oilfield equipment used in the present time, has several times the service life and allows to organize the production of abandoned and conserved oil wells.

The creative team of another enterprise – the Research Institute ‘Sapphire’ has developed and organized the production of new models of automatic direction finders, representing complex wireless devices of defense and civil purposes. They are made with the use of advanced design techniques and technologies using modern components.

Russia's only manufacturer of marine diesel engines ranging from 12 to 60 hp, used as supporting elements in various marine aggregates are produced by the ‘Plant Dagdizel’, whose recently developed diesel engines “DS-35” and “DS-55” are equipped with revers-reducers.

Scientific and production association ‘Nutrient environ’ on the results of the competition held by the International Academy of the regional economy, was awarded the title of “Leader of the regional economy”. In the last five years, it has developed and released several new items of culture media for the diagnosis of infection. NGO is recorded in the international catalogs.

The 'Dagfos' is the second largest company in Russia for processing and manufacture of phosphorus-containing products. During the period of market reforms was idle due to lack of domestic and high cost of imported raw materials. Together with the Institute Giprokhim (St. Petersburg), the company has created a program for the development of phosphoric industry in Russia, aimed at obtaining a cheap yellow phosphorus at Russian plants ('Phosphorus', Samara city) from Kola and Verkhnekamsk apatite. Negotiations with the largest chemical companies in Europe to attract foreign capital in return for exports are ongoing.

To realize the potential of defense enterprises need to further build knowledge-based high-tech products with high added value. Designed and produced by the enterprises of the Republic the communication facilities for ground vehicles, automatic direction finders, pump products for the oil and mines, and others meet these requirements. The need for systematic market research, including the identification and registration of customer needs, evaluating the commercial potential of products and of products based on them, the potential market, demand stimulation and promotion of goods from producer to consumer, and others.

One of the most important tools of modern spatial development of the Republic is to use the cluster approach of economic activity. According to the Strategy by the 2025 the Republic is supposed to create clusters in the following sectors: Wine and Brandy, energy, tinned vegetables, construction materials, shipbuilding, industry, tourism and recreation.

A key condition for the development of industrial capacity and competitiveness of the Republic is the creation of regional innovation networks based on the use of information and communication technologies (ICT), providing entry into the knowledge economy. The use of ICT is essential for the growth of labor productivity, significantly increases the industrial potential of the Republic and contributes to accelerated development. Foreign experience shows that the growth of GDP by half can be provided through the effective use of information technology in the economy.

Implementation of the project requires a set of measures for the creation and development of regional ICT cluster, which will ensure the availability of high-quality telecommunications services, modern computer systems, production management, customer relationship and supply throughout the region, which is crucial for the integration of the enterprises and organizations of the Republic in the global economic chain. The task of public authorities in this area – to provide conditions for the accelerated development of regional ICT cluster.

Development of innovative products and technologies in the field of IT and ICT provides a high dynamics of the external technological environment of business. At the same time focus on the implementation of the project and the development of innovative IT-projects within the business incubator causes a beneficial effect of external technological environment on the project. The project provides the continuous introduction of new technologies at all levels of the work of the IT Park. The growth of rates for transport, communications and energy determines the likelihood of indirect influence on the development of the project. Most important factor for changes in the external technological environment of the project may be an increase in the cost of telecommunications and server equipment.

In the future, in the Republic of Dagestan should be formed a self-sustaining economy, which operates within the common economic space of the Russian Federation as an autonomous unit. Socio-economic transformation of the region should be based on the national approaches and consider the individual development formula, social and national priorities of Dagestan.

Thus, the present analysis allows us to make a number of important theoretical and practical conclusions that can form the basis of modern cluster theory, innovation policy, and can also be used as a methodological tool for further research within the institutional and Keynesian schools of economic theory. A number of conclusions can be used in regional economic policy in the implementation of the Strategy of socio-economic development of regions.

4. Conclusion

The main conclusions drawn from this research paper are following:

1. Distinctive parameters of the cluster approach are: a strategy for the territory; production and technology; spatial development; the relationship between business and government; competition; institutional environment; criteria of economic efficiency; the labor market.

2. The most important modern tool for spatial development of the region stands cluster organization of economic activity. The Republic of Dagestan is supposed to create the following clusters: Wine and Brandy, shipbuilding, energy, tinned vegetables, industry, building materials, tourism and recreation.

3. The principal characteristics of the most advanced clusters are: a) the availability of communication and interaction between the participants of clusters; b) the presence in the region's competitive advantages for the development of the cluster; c) geographical concentration and proximity; d) a wide range of participants and the presence of a 'critical mass'; d) the availability of competitive enterprises.

4. The experience of developed countries with the formed cluster system shows that one of the most important tasks of the preparatory phase of the clustering of the economy is to identify and do the mapping of regional clusters in the country. In the transition from industry to the cluster principle of formation of the economy in Russia and the Republic of Dagestan, the government should work towards the preservation of intra-economic links and their reorientation to the principles of the cluster.

5. In order to stimulate the economy of the Republic of clustering is necessary to: a) improve the mechanisms of state support of innovation at the regional level; b) stimulate the inflow of financial capital in the regional innovation system; c) develop the mechanisms for the integration of science and education in the real sector of the economy; d) determine the form of government involvement in support of innovation; d) establish an institutional framework for venture capital; e) to stimulate demand for innovation by reducing the tax burden and selective stimulation of individual sectors of the economy;

g) develop mechanisms for public-private partnerships in infrastructure projects.

6. Innovative activities are carried out by many enterprises of the republic. However, requires a detailed study of the activities of leading companies of the Republic of Dagestan (‘Plant Dagdizel’, ‘Dagfos’, ‘Sapphire’, ‘Hajiyev Plant’, ‘Nutrient environ’ and a few others) in order to identify their innovation capacity.

7. The main objectives of the development of the innovative potential of the Republic of Dagestan are:

a) Development of the Republican innovation system capable of providing comprehensive management of innovation;

b) Adoption of the organizational, economic and administrative measures for the development of innovation infrastructure to ensure a continuous process of the relationship of scientific, research and industrial enterprises, improve the implementation of innovations in production;

c) Take measures to ensure preferential treatment on taxes, utilities, rent relationships enterprises and research organizations of innovation orientation;

d) Promotion of investments in innovation by providing preferences to investors;

e) Justification for a significant increase in budget funding of innovation and increasing the share of budgeting innovation from 0.3% to 2.5 - 3% of the GRP;

f) Establish institutional conditions for the development of innovative potential of the country through the creation of venture capital funds, promotional organizations, legislative and regulatory acts to grant preferences.

References

[1] Askerov, N.S., "Institutional and theoretical foundations of the development strategy of the crisis territory", *Regional economy: theory and practice*, 2013. 47 (326). 19-24. 2013.

[2] Askerov, N.S. "Scientific and educational cluster in the regional economy" in the *V International conference “Innovative technologies in humanitarian sciences*”. Ulyanovsk, 2012.

[3] Askerov, N.S., Abakarov, M.I., Talibov, A.O., "Public-private partnership in the economy of the Republic of Dagestan", *Regional economy: theory and practice*, 18 (297). 26-33. 2013.

[4] Askerov, N.S., Alikerimova, T.D., "Methods of stimulating the subjects of innovative entrepreneurship" [metodi stimulirovania subjectov innovatsionnogo predprinimatelstva]. *Problems of regional agribusiness*. 2 (14). 69-73. 2013.

[5] *Cluster mechanism of economic modernization: Monograph*. Eds. Askerov N.S., Dgavatova D.K. Nauka – Dagestan. Mahachkala. 2013.

[6] *Guidelines for implementing cluster policies in the northern regions of the Russian Federation* [Online]. Available: http://www.tpprf.ru [Accessed Jul. 13, 2014].

[7] Dagstat. [Online]. Available: http://dagstat.gks.ru.

[8] Jurgens, I., *Creation of a new economy requires clusters* [Dlia sozdaniya novoy ekonomiki nuzgni klasteru]. [E-book] Available: http://www.allmedia.ru

[9] Porter, M., *Competitive Advantage of Nations.* FreePress, NewYork, 1990.

[10] Rudneva, P.S., The experience of creating structural clusters in developed countries. *Economy of the region.* 18 (2). dec. 2002. [Online]. Available: http://journal.vlsu.ru.

[11] Skoch, A., *International experience of cluster formation* [E-book] Available: http://www.intelros.ru [Accessed Jul. 10, 2014].

[12] *Strategy for Socio-Economic Development of the Republic of Dagestan to 2025*. [Online]. Available: http://www.minec-rd.ru.