# STATE POLICY FOR CREATION AND DEVELOPMENT OF TERRITORIAL CLUSTERS

**Rovshan Aghayev**

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**Author of Policy Paper:**
Rovshan AGHAYEV

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# INTRODUCTION

The practice of various countries in the use of cluster approach to the management of economic processes has become one of the main drivers of territorial development in recent decades. In particular, clusters remain the most common form of organizing the business in developed countries. When it comes to the advantage of cluster mechanism, field researchers argue it is possible to create competitive environment in any economy area, when economic subjects compete with and support each other in the given territory.

There exist various examples of cluster development in the world. For example, the government in Norway has prioritized the development of regional clusters for manufacturing products within the marine industry. Auto industry in Germany or telecommunications sector in Finland thrived on the cluster approach. Italy is considered an international model of best practice in terms of developing small and medium scale industry clusters. Nearly 10,000 SMEs, specialized in manufacturing clothing and footwear, operate in the regional clusters across the country.

After gaining independence, the main challenges set before Azerbaijan were to eliminate inequality in the regional economic development on the one hand, and increase the competitiveness of the economy on the other hand. The study of the best practices shows the application of cluster based approach to the solution of these two fundamental economic problems yields successful results. Indeed, the government implemented various programs for the development of the regions in the last 15 years, and a 5-year program on the socio-economic development of the regions is under implementation. However, analysis of the official statistical data shows the regions have not made a substantial contribution to the economic development yet. The regions account for approximately 24-25% of economic added value, 5-6% of tax revenues and 3-4% of exports.

The lack of export-oriented manufacturing businesses, especially in the regions, emphasizes the development of competitive business environment in the regions.

When analyzing the current state of affairs and examples of international best practice, it becomes apparent that working out mechanisms for the development of regional clusters is very important for Azerbaijan. Recently, the government approved the strategic roadmaps for national economy, which underlines the importance of establishing clusters. However, the studies show that a particular focus was made to examine the role of territorial clusters in the regional economic development as well as the conditions necessary for their formation. The assessment shows it is important to form a legal and regulatory framework for the development of clusters, establish reliable mechanisms for assessing competitiveness of the economy, and work out a national model for cluster development. In this regard, the study assesses the factors that hinder cluster development as well as offers a number of proposals for the implementation of cluster approach at the national level and assessing the suitability of the regions for cluster development.

## 1.   MAIN OBJECTIVES OF THE STUDY

The main objective of the study is to assess effectiveness of the government's cluster policy in terms of ensuring regional development. With a view to achieve these objectives, the study identifies the following tasks:

- Assessing the legal environment for clustering;
- Identifying obstacles that hinder the development of regional clusters;
- Assessing avenues for cluster based approach in the state policy for the development of the regions;

- Studying measures for the introduction of cluster approach to the regional development;
- Evaluating the prospects of building on best practices with regard to the introduction of cluster approach to the development of the regions;
- Working out proposals and recommendations on enhancing the impact of cluster approach to the development of the regions in Azerbaijan.

When developing the study, it was sought to analyze the programs, reports and legislative acts of the Azerbaijani government on the development of the regions and various sectors of the economy as well as to study the researches and policy documents on international experience.

## 2.  ROLE OF TERRITORIAL CLUSTERS IN REGIONAL ECONOMIC DEVELOPMENT AND CONDITIONS NECESSITATING THEIR CREATION

In the last 10 years, clusters played a significant role as a mechanism to enhance the effectiveness of links between geographically adjacent economic subjects that increased business competitiveness.

Michael E. Porter, who introduced the concept of clusters, defines clusters as geographically adjacent groups of interconnected companies, specialized providers, firms, related industries and other institutions providing technical support (such as universities, vocational training providers, trade associations, etc.) in a particular field[1].

The cluster approach is different from the traditional sectors of development in a way that it represents geographically adjacent firms,

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[1]Competitive regional clusters. OECD Reviews of Regional Innovation. http://art-net.unescap.org/tid/artnet/mtg/gmscb_regionalclusters.pdf

operating in a certain area, characterized by activities complementary to each other. These firms are interconnected in terms of value chain. The service and manufacturing sectors function under the same umbrella, all the manufacturing processes required to produce an end product occurs in a particular location.

Clustering can be a sector specific and geographically concentrated. Mixed models can also be found in practice, that is, the practice of organizing territorial clusters in a particular sector is common given the specific geographical concentrations. In other words, clusters are a geographic concentration of interconnected companies (such as think-tanks, consulting companies, civil society, universities, vocational training providers, trade associations, etc.) in a particular field, linked by the entire value chain.

According to the cluster theory, competitive advantage of a particular region depends on the presence of clusters that encompass export oriented and specialized local industry and service sector, interconnected with suppliers providing supporting services and associated networks. Clusters aim to increase the volume of production and services with which firms compete, promote knowledge transfer, disseminate information, fuel innovation, increase investment, provide skilled and competent workforce, create favorable conditions for them to work.

Participants in a cluster are not bound by compulsory legal norms, but their willingness to entrust and cooperate with each other. Private sector always remains a central actor in the cluster system, and the remaining participants serve the development of this sector. In practice, the cluster is comprised of 3 main elements: firms (including manufacturers, service providers and suppliers), supporting organizations (chambers, media, civil society, associations etc.), education and research institutes, vocational schools.

OECD defines a cluster as an agglomeration of vertically and hori-

zontally linked firms that specialize in related lines of business together with supporting organizations. OECD experts consider that it is important to apply cluster mechanism in order to ensure balanced regional development. The development of clusters necessitates intensive and effective cooperation between businesses and local institutes as well as local and central authorities. According to OECD experts, regional reliance on traditional industries and the agricultural sector as well as investment deficit bring about strong development disparities among the regions in many countries. The development of clusters on the basis of innovative projects is of importance to address these disparities. OECD experts believe that the national governments have to work out cluster strategy, create "cluster maps" and develop mechanisms for cluster management to ensure successful implementation of cluster initiatives. The strategy has to entail cluster policy goals, obligations set to achieve these goals, targets for upgrading competitiveness, ensuring innovative development, strengthening the capacity of SMEs and domestic industry, and advancing regional growth. The strategy mainly accommodates regional development policy to cluster based approach. Developed as part of the strategy, the "cluster map" is deemed to present the comparative analysis that identifies competitive advantage of territories concerned.[2]

While the concept of clusters is associated with Michael Porter, Alfred Marshall previously used "industrial district" concept. Industrial districts refer to agglomerations of geographically localized firms that develop and keep up strong social bonds of trust and reciprocity over time that are conducive to specialization and innovation. Marshall founded modern cluster theory in his work "industrial zones and foreign economies in 1890-1920," where he concluded

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[2]Business Clusters. Promoting enterprise in Central and Eastern Europe. http://artnet.unescap.org/tid/artnet/mtg/gmscb_businessclusters.pdf

that small scale firms, engaged in similar activity, may maximize the advantage of industrial zones in regional development by creating synergies, using resources of industrial zones, sharing their experience and knowledge and expanding industrial specialization.

The analysis of practices in various countries has revealed distinctive features of clusters. **Geographic concentration remains an important factor.** It primarily denotes the availability of equal access to specific natural resources, human and financial resources locally. The studies have shown that leading cluster participants are geographically concentrated. According to the latest reports, 61 percent of clusters are globally located in the same city or metropolitan area, whereas 20 percent is concentrated within the same region or state. Only 19 percent of clusters encompass different regions or countries.

The **second** important factor is a broad participation in the process. A global survey conducted among 280 clusters has shown 42 percent of the clusters questioned encompass 100 firms, 14 percent 200 firms, 10 percent 400 firms, 25 percent more than 600 firms respectively. There exist large scale clusters in the world. For example, a clothing cluster in Prato, Italy is comprised of 9,000 firms.

The **third** factor is specialization. End-product manufacturers are concentrated within the same geographic unit, each has a clear role and specializes in a particular area of activity.

The **fourth** factor is innovation. All economic subjects that operate within the boundaries of the cluster are equipped with necessary knowledge to come up with innovative ideas. Moreover, the geographical location provides them with opportunities to rip the benefits of innovation. In partnership with cluster participants in the particular locality, research institutes present their products of innovation as well as scientific and technological novelties to entrepreneurs.

Communication and interaction between various cluster participants can be noted as the **fifth** factor. Constant communication and interaction between end-product manufacturers and service providers is inevitable to ensure continuity of the process, and production of quality products in line with market demand.

**Finally,** the last factor emphasizes competition and cooperation. On the one hand, business entities operating in clusters compete with each other for end-product to maximize their profits, on the other hand, responsibility and commitment for quality products facilitates their cooperation[3].

Clusters provides easy access to innovation and technology, specialized services and highly qualified personnel for economic subjects that cooperate to deliver end-product (work and services) to the market, and form prerequisite for taking advantage of the government's policy on cluster development and cooperation. Meantime, clusters facilitate access to new management methods, link to highly competitive international markets, optimize enterprise position in various chains of production process, streamline in-depth processing of raw materials (a value chain inputting to final product). Based on the summarized theoretical analysis of various materials, the main advantage of clusters can be further characterized as follows:

- Promoting regional economic growth and investment flow;
- Maintaining effective cooperation between the public and private sector;
- Ensuring rapid development of SMEs;
- Easing adaptation and flexibility of SMEs in the issues of production, market and technology;

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[3]"Кластерообразование в региональной экономике".
http://meu.usue.ru/search?searchword=%D0%9A%D0%9B%D0%90%D0%A1
%D0%A2%D0%95%D0%A0%D0%9E%D0%9E%D0%91%D0%A0%D0%90
%D0%97%D0%9E%D0%92%D0%90%D0%9D%D0%98%D0%95&order-
ing=&searchphrase=all

- Facilitating access to raw materials, skilled labor force and other resources, reducing costs;
- Offering a variety of choices to identify appropriate options for development;
- Streamlining creation and operation of various institutes in charge of providing counseling, laboratory and research services, and facilitating access to finance.
- Concentration of numerous firms directly or indirectly increases levels of employment;
- A multitude of firms jointly work in one location that strengthens the development of the region;
- Cooperation and competition between cluster firms increase the region's competitive advantage;
- Cluster tendency to exploit innovation facilitates rapid adaptation of the region's economy to the changing demands.

In the 1970s and 80s, certain projects, geared to introduce cluster-based approach, were implemented in various regions of Italy, Germany and Austria, nevertheless this mechanism was not incorporated into in the national policy of the governments concerned. National programs geared to develop the economy based on cluster approach. were only adopted starting from the second half of the 1990s. In the early 2000s, the countries of the European Union launched national cluster development programmes. The studies have shown that 60 percent of the national level projects geared to develop the economy on the basis of the cluster approach were mainly implemented in the 2000s. Nearly 75 percent of similar programs were implemented by transition countries from 2003 to 2005. In the early 2000s, several networks in charge of cluster development started to emerge in the European Union. These networks include the European Cluster Observatory, the European Cluster Policy Group, the European Cluster Alliance, and the European Innovation Platform for Clusters, which encompass firms

providing information, knowledge transfer and consulting services. These networks exercise cluster mapping of the EU regions, exchange on experience, propose cluster development initiatives, improve knowledge and capacity as well as render consultations. Some European countries, such as Norway and Denmark have put into practice specific programs for the development of cluster managers[4].

The recent data show that 38% of all European employees work in enterprises that are part of the cluster sector. However, this share goes up to over 50% in some regions. The highest concentration level of employment by cluster category is recorded in tobacco, footwear, fishing, oil and gas, textiles, sporting, jewelry and leather sectors. The concentration level of employment varies in the range of 50-80% in these sectors[5].

According to OECD statistics, clusters have a notable share in the economy of some European countries at the national and regional level. For example, 199 industrial districts represent 40% of employment in Italy, whereas 12 large-scale clusters account for 30% of industry GDP in Netherlands. The United Kingdom has 154 regional clusters, which make up 40% of regional employment[6].

Clusters significantly contribute to economic development of the United States. 36% of the economically active population works in the enterprises that are part of the cluster sector, clusters account for 97% of all patents across the country. In fact, studies have revealed correlation between the nation's innovative development and the cluster development. For example, the United States has the

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[4]"Пилотные инновационные территориальные кластеры в Российской Федерации". http://cluster.hse.ru/about/library.php
[5]Innovation Clusters in Europe. http://www.central2013.eu/fileadmin/user_upload/Downloads/Tools_Resources/Cluster.pdf
[6]Competitive regional clusters. OECD Reviews of Regional Innovation. http://artnet.unescap.org/tid/artnet/mtg/gmscb_regionalclusters.pdf

highest number of clusters in the world (380 clusters), and measured at 0,577 it ranks the first on the innovation development index. Italy is ranked second by the total number of clusters in the world (208 clusters operate in the country), and measured at 0,500 it comes second on the index's global ranking. Countries like Finland, Great Britain and France further top the rating based on the number of clusters and innovation development level[7].

Nowadays clusters can be found in the high-tech industry and traditional sectors of economy (such as service, agriculture and tourism). In the experience of developed countries, the government takes 4 approaches to cluster policy: supporting clusters at national level, emphasizing the development of SME support programs, targeting the development of regional clusters, supporting clusters that employ industry-university cooperation model (this kind of clusters are usually established on the premises of the university).

The main difference between regional and industry clusters is that the latter is a concentration of firms that produce sector specific products or services. In this case, capitalizing on the economic opportunities of cluster location is not considered a primary target, and geographical proximity does not serve as an absolute criterion for establishing this kind of clusters.

Regional cluster is geographically proximate group of interconnected companies. Regional development is regarded as one of the main goals of cluster policy, which meantime emphasize creating of favorable environment for regional economic development. Porter divided regional clusters into 3 categories:

1) Local industry clusters - they offer products and services manu-

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[7]Роль кластеров в развитии современных национальных инновацион-ных систем субъектов мирового хозяйства. https://guu.ru/files/dissertations/2016/06/akopyan_a_r/dissertation.pdf

factured within the boundaries of particular region, and their ability to compete for market share with other regions is limited. This kind of clusters is usually specialized in service sector.

2) Resource dependent clusters – this kind of clusters are dependent on the natural resources (coal, oil and gas, forestry stocks, precious metals, etc.) of the territory they are located. In order to realize their products they are forced to compete in domestic and international markets.

3) Trade clusters – they are established given proximity to markets and resources, and offer goods and services of all kinds. Porter touted this type of clusters as more competitive.

In some cases, the concept of regional competitive advantage is likened to the concept of enterprise competitive advantage. According to Porter, regional competitive advantage is about the ability of a firm to compete for ensuring a favorable business environment and higher living condition rather than manufacturing products.[8]

Best practices of creating and developing regional clusters exist in different countries. It is worth to note the experience of Turkey that has made great progress in this direction in recent years. Upon invitation, Michael Porter traveled to Turkey in 1999, and his research group assessed the clustering potential of Turkish economy under the Project "Turkey's competitive advantages." This study was followed by the establishment of National Competitiveness Research Association in 2003, adoption of SME development strategy in 2007 that touted support for clusters, and development of the economic models for assessing the clustering potential in 36 regions, which was undertaken by KOSGEB in the following 2 years. The evaluation of competitive advantages of various sectors in Turkey

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[8]http://www.karacadag.org.tr/ContentDownload/Sanliurfa_Tekstil_ve_Hazir_Giyim_Kumelenme_Raporu.pdf

identified 32 cluster categories as well as regions equipped with better conditions for cluster development[9].

The experience of Turkey and a number of other countries that have made progress in this area implies to various factors that have played an important role in the successful implementation of cluster strategy. For example, the government in the United States supports scientific and technological initiatives proposed by the business sector, Japan has worked out special programs in support of the regions that are inclined to narrow specialization, Finland has invested in human capital development, Italy has introduced export incentives, and France has employed mechanisms for the government to enhance effectiveness of regulating innovations[10].

Italy is considered the world's leading countries in terms of cluster development, in particular the development of footwear, leather and textile clusters at the regional level. The studies have revealed that prioritizing small and medium-sized enterprise development can serve as an example of best practice in these sectors[11].

According to Alfred Marshall, the availability of opportunities for specialization allows realizing cluster potential in a particular region. He underlined 3 factors to maintain specialized production in any area: specialization of firms along the various stages and segments

[9]"Küme haritalama, analiz ve kümelenme yol haritalari - sentez raporu". http://www.smenetworking.gov.tr/userfiles/pdf/dcp/Kume%20Haritalama%20-%20Sentez%20Raporu/Kume%20Haritalama%20-%20Analiz%20ve%20Kumelenme%20Yol%20Haritalari%20-%20Sentez%20Raporu.pdf
[10]"Кластерообразование в региональной экономике". http://meu.usue.ru/search?searchword=%D0%9A%D0%9B%D0%90%D0%A1%D0%A2%D0%95%D0%A0%D0%9E%D0%9E%D0%91%D0%A0%D0%90%D0%97%D0%9E%D0%92%D0%90%D0%9D%D0%98%D0%95&ordering=&searchphrase=all
[11]"Şanlıurfa ili tekstil ve hazır giyim sektörü kümelenme yol haritası raporu". http://www.karacadag.org.tr/ContentDownload/Sanliurfa_Tekstil_ve_Hazir_Giyim_Kumelenme_Raporu.pdf

of production, the presence of various industries that support and complement each other, and high-skill workforce[12].

A range of factors associated with cluster development have practically become much broader in recent decades. For example, quality of infrastructure and access to services (road and energy infrastructure, information and communication technologies, the environment, security, market proximity, resources and opportunities for economic and demographic growth, cultural infrastructure), the presence of basic conditions for economic activity (entrepreneurial initiative, specialization, investment, limited barriers to market entry, competitive environment), innovation and training capacity (patents, scientific-technical research, think-tanks, linkages with enterprises and research institutes, universities), human capital development (patents, scientific-technical research, think-tanks, linkages with enterprises and research institutes, universities), governance and social capital (alliances, partner relations, institutional capacity, regional strategies, confidence) and other factors are of critical importance for the development of economy and regional clusters.

In some cases, clusters are completely likened to specialized parks. It should be noted that clusters include interconnected sectors, specialized providers and suppliers, customers, manufacturers of complementary products, state institutions providing tailor-made trainings, information, research and technical support as well as non-governmental organizations. Clusters create an entire value chain system that delivers final product (service). Specialized parks do not require the presence of interconnected firms that complement and support each other along the entire value chain. Businesses in the park can create synergy with a view to use infrastructure, rather than manufacture joint products (services). A spe-

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[12]"Пилотные инновационные территориальные кластеры в Российской Федерации" http://cluster.hse.ru/about/library.php

cialized park can be regarded as a cluster providing it incorporates a production process across the value chain.

Unlike a cluster, a park geographically embraces smaller area[13].

## 3. ANALYSIS OF LEGAL NORMS DESTINED TO REGIONAL DEVELOPMENT AND INTRODUCTION OF CLUSTER MECHANISM

Legal mechanisms aimed to ensure socio-economic development of the regions in Azerbaijan are established on the basis of various regulations. For example, the introduction of differential tax system in the regions, the introduction of tax incentives for the region-specific economic sectors (such as agriculture) are established under the Tax Code, while the budget laws establish the extent of funds each region may receive from the state budget. However, the framework of legal mechanisms aimed at ensuring social and economic development is entirely regulated by 2 main documents, that is, the Urban Planning and Construction Code, and the Law on "Territorial structure and administrative territorial division."

According to Article 19 of the Urban Planning and Construction Code, planning of territorial zones shall be conducted with a view to ensure balanced social, economic, environmental and cultural development in the country's territories as well as favorable, healthy and safe condition for human life, work and rest. The general layout of territories, master plan and comprehensive plans are considered the main instruments for planning.

The Law on "Territorial structure and administrative territorial division" establishes the basic principles and criteria for forming ad-

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[13]Kimya sanayiinde kümelenme: kimya parklari
http://www.kalkinma.gov.tr/Lists/Uzmanlk%20Tezleri/Attachments/382/Kimya%20Sanayiinde%20K%C3%BCmelenme%20Kimya%20Parklar%C4%B1.pdf

ministrative and territorial units, including cities, towns, villages and settlements in different parts of the country.

The laws regulating various industries (such as cotton production, tea growing, beekeeping and other areas) can also be regarded as legal documents from the viewpoint of regional socio-economic development.

The main instruments the government used to ensure the social and economic development of the regions are various government programs, strategy and concepts. At present, the development of the regions is directly or indirectly enshrined in the following documents:

- State program on the socio-economic development of the regions for 2014-2018
- State program on the development of viticulture in 2012-2020
- State program on the development of resort sites in 2009-2018
- "Azerbaijan 2020: outlook for the future" Concept.

**The state program on the socio-economic development of the regions specifies activities and measures aimed to ensure the development of social, economic and communal infrastructure in the country.**

"Azerbaijan 2020: outlook for the future" Concept specifies the main priorities of balanced development of the regions. These include coordinating public and private sector investment policies in the regions, reducing differences between the country's economic regions in terms of social and economic indicators, increasing the flexibility of local government bodies in the adoption of economic decisions, improving road and communal infrastructure in the regions, enhancing the level of social services, and expanding the application of information technologies.

Other industry-focused programs are targeted at developing region-specific industries (such as tourism, agriculture, etc.).

When it comes to the legal norms regulating the creation and operation of clusters, there exist no normative and legal act defining the legal approach to cluster concept as well as regulating cluster formation and operation. However, various regulatory documents entail limited number of legal provisions pertaining to cluster creation. For example, Article 5.0.2 of the Law on cotton growing stipulates the development of cotton growing based on cluster approach[14]. Pursuant to a presidential decree on additional measures for the implementation of the law, the Ministry of Agriculture must ensure the cluster-based development of cotton growing in coordination with the Ministry of Economic Development[15].

In addition, the order No. 40 of the Cabinet of Ministers on the approval of the Action Plan on promoting the export of non-oil products in 2011-2013, dated 8 February 2011, stipulates creation of industrial clusters[16].

In practice, a number of legal acts may contribute to the process of cluster formation. These documents include:

- "**Resolution No. 186 of the Cabinet of Ministers dated 13 May 2015 on the approval of the "Model statute on industrial districts."** The document regulates the process in which the state creates and manages industrial districts, equipped with necessary infrastructure to enable small and medium businesses manufacture their products and render services, and governs the issues related to conducting economic activities therein. The state assigns a governing body in charge of organizing, managing and developing industrial districts. The

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[14]http://www.e-qanun.az/framework/19873
[15]http://www.e-qanun.az/framework/21380
[16]http://www.e-qanun.az/framework/21350

governing body is responsible for the operation of the industrial district and may not act as its participant. With the aim of organizing the activity of the industrial district, the governing body makes allotment, designated for the industrial district, fit for use, builds infrastructure, and provides consulting, training, vocational training and other services to ensure the effective implementation of economic activity.

- "**Resolution No. 286 of the Cabinet of Ministers dated 1 August 2016 on the "Establishment of Khizi-Khachmaz, Guba, Gusar tourism and recreational zones."** According to the document, the tourism and recreational zones in the given territories cover a total area of 97.2 hectares. Under the resolution, maps for each of these zones were also approved.

- "**Resolution No. 370 of the Cabinet of Ministers dated 27 September 2016 on the approval of the "Rules of organizing and governing of joint technology park."** The rules provide for legal means and mechanisms for establishing industrial parks jointly with investors in the state, municipal or private property by attracting private and foreign investments in creative and high-tech industries. In other words, this legal act and the model statute on industrial districts entitle investors to establish joint industrial parks (innovation and high-tech) in the regions under public-private sector partnership. However, there is a need to make allotment, designated for industrial parks, fit for use, build infrastructure, and set up incubator and technology transfer center with a view to organize joint industrial park;

- "**Presidential decree dated 15 May 2014 on the approval of the "Model statute on technology parks."** The document regulates the process in which the state establishes and manages technology parks as well as governs the issues related to organizing economic activity therein. The statute defines

technology park as a territory equipped with necessary infrastructure, material and technical basis and management structures that allow carrying out scientific research and development efforts and using (commercializing) research findings in the industry, service sectors and other areas with a view to develop, process or improve innovative products and high technologies. The technology park is governed by a state-owned commercial entity responsible for organizing, managing and developing activities therein;

## 4.  STATE POLICY ON CREATING TERRITORIAL CLUSTERS

Adopted in recent years, various state programs, concepts and strategies of the government have encapsulated the framework and directions of the state policy on the development of regional clusters.

For example, the State program of the Republic of Azerbaijan on development of viticulture in 2012-2020 had to introduce cluster approach to grape production and processing between the periods of 2012-2016[17].

According to "Azerbaijan 2020: outlook for the future" Development Concept, it is planned to build a complex of oil and gas refineries and petrochemical factories, and create territorial production clusters in priority economic sectors under the cluster-based development of the economy[18].

The development of the regions and the creation of industrial clusters are prioritized by the government in the State Program of the Republic of Azerbaijan on the development of industry in 2015-2020. The Program provides for elaboration and implementation of proposals

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[17]http://www.e-qanun.az/framework/22694
[18]http://www.e-qanun.az/framework/25029

on relevant measures for the establishment of industrial clusters in 2015-2020 with a view to ensure the promotion and development of industrial clusters. The Ministry of Economy was assigned to implement these activities[19].

The newly approved Strategic roadmaps for the national economy and main economic sectors emphasize the application of cluster approach. For example, the Strategic Road Map for the prospects of the national economy of the Republic of Azerbaijan underlines that workforce is much cheaper in the regions of Azerbaijan compared to Baku city and this makes a big potential for the development of labor-intensive cluster. To this end, ensuring of high-quality education in the regions, development of highly specialized human capital and supporting cluster initiatives are shown as main priorities. Given the fact that university clusters enhance the effectiveness of education, research and innovation, several specialized universities intend to incentivize cluster creation and thus apply findings of scientific research to production in clusters.

It is intended to incentivize activities related to the establishment of regional and functional university and production clusters in order to ensure effective working mechanism of education, science and production infrastructure. Supporting continuous multilevel education system, university complexes, scientific research institutes (National Academy of Sciences and industry-specific institutes) as well as the development of manufacturing and service sectors that increase the economic efficiency of these institutes' activity are among the proposed measures.

Increasing labor productivity in Azerbaijan's agribusiness sector can be achieved by incentivizing the promotion of assurance system, production and innovation. It is planned to set up training centers and agro clusters with an aim of training skilled workforce in various sec-

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[19]http://www.e-qanun.az/framework/28964

tors, and supporting businesses to generate income and expand their activities.

In order to establish supporting system in Azerbaijan, efforts have been made to improve the infrastructure, facilitate workforce training, put in practice labour standards, ease and speed up access to markets through trade agreements as well as promote cluster development by means of industrial centers or industry platforms. In the last decade, successful investment projects were executed to improve the public infrastructure, various action plans were implemented to increase the level of vocational education and training as well as cluster-based development approach was applied to logistics, agriculture and heavy engineering industry. It is planned to upgrade and develop the capacity of labour force in existing manufacturing enterprises, continue the process of training and re-training of workforce for cluster development, implement various incentives and promotional measures to improve recruitment and training mechanism.

Incentive measures will be undertaken to establish ties between transnational companies and local businesses operating in already defined priority sectors. In order to ensure the promotion of these measures, the companies concerned are expected to benefit from results-based incentives and investment subsidies. These incentives aim to increase the volume of production, create a number of government subsidized small-scale clusters of local sub-providers and attract additional companies to these clusters. These factors, in turn, will enhance labor productivity[20].

**The Strategic roadmap for the development of logistics and trade in the Republic of Azerbaijan** stipulates the creation of industrial and sub-industry sectors for cluster development in various industries of the free trade zone located in Alat settlement. It is planned to set up a working group responsible for assessing the potential of these

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[20]http://president.az/articles/21993

sectors. The document also underlines that intensive meetings will be held with strategic partners for the approval of priority industries in the territory of the new Baku Port, and action plans will be developed with a view to properly identify the needs for infrastructure and support services in these clusters. The Baku Port is supposed to develop investment plans for the processing clusters in the free trade zone and present them to potential investors. Local and international investors and processing companies will be invited to build facilities in the free trade zone based on the priority industrial sectors. The government approach is that the new Baku Port complex will identify potential investors to assume initial liability for the development of the free trade zone. According to the document, investor liability will be used by the new Baku Port complex as an example of best practice to increase investor confidence on the project and attract other potential investors to the processing cluster. In partnership with these companies, the new Baku Port complex is bound to improve the proposals on free trade zones and hold consultations to identify other possible companies interested in investing in the area[21].

**The Strategic roadmap for the development of communication and information technologies in the Republic of Azerbaijan** envisions the creation of clusters with a view to stimulate the development of start-ups and innovative enterprises[22].

**The Strategic roadmap for the manufacture of small and medium entrepreneurship-level consumer goods in the Republic of Azerbaijan** underlines the importance of creating horizontal and vertical clusters so as to maintain market position of SMEs and reduce maintenance and production costs. These clusters thus enable SMEs achieve economies of scale by optimization of costs. The document identifies increasing the SME contribution to products produced within industrial clusters by 40%, and establishing 3 innovation-ori-

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[21]http://president.az/articles/22383
[22]http://president.az/articles/22382

ented regional clusters as key performance indicators. An information center that will operate within the SME house is expected to provide entrepreneurs with necessary information and services about industrial clusters.

According to the document, the recently established industrial parks and districts have laid the foundations of cluster policy. It should be noted that Sumgait Chemical Industrial Park and Balakhani Industrial Park are functional, and measures have been undertaken to complete the formation of Mingachevir and Pirallahi industrial parks. The creation of Masalli and Neftchala industrial districts assumes importance to clustering of small and medium enterprises. However, the functional industrial parks and districts were initiated by the government rather than established voluntarily by the private sector. Cluster model was already introduced to the industry at the national level. Although these clusters (focusing on the entire value chain) were formed on the basis of vertical industry cluster model, they do not implicate required clustering qualities and function ineffectively. However, the private sector will be further encouraged to play an active role in creating of special economic zones, industrial parks, industrial districts, etc. In particular, business partnership initiatives will be widely applied to existing and future industrial zones and industrial clusters. Strengthening business partnership in Azerbaijan will positively impact on the development of SMEs, increase their competitiveness and expand their access to foreign markets.

One of the measures laid out in the document is the creation of new private industrial clusters for SMEs by attracting private investment. It also is planned to conduct surveys as well as technical and feasibility studies to assess cooperation opportunities and needs between SMEs in the newly created industrial clusters with a view to enhance their competitiveness in Azerbaijan. The studies are expected to analyze vertical and horizontal industrial cluster models, and identify advantages and disadvantages of each model for the country. In order to enhance the effectiveness of industrial cluster mechanism, it is planned

to identify industries that have relatively competitive advantage in the regional economy and facilitate government support to ensure maximum output in the short run.

According to one of the proposed measures, SME agency will study the use of new business incentives in industrial clusters, subsequently business friendly incentive and concession mechanisms will be applied to new clusters. In particular, it is planned to continue the use of concessions with regard to corporate, personal profit, income, land, property tax as well as VAT on imported goods, ensure preferential lending for SMEs, and conclude bilateral investment agreements on investment projects.

Establishing effective cooperation between business incubators, universities, secondary schools and vocational institutes and industrial clusters, creating innovation-orinted regional clusters are among the main targets of the roadmap[23].

**The Strategic roadmap for the development of heavy industry and machinery in the Republic of Azerbaijan** underlines that support for the promotion of establishing industrial clusters is among the government's priorities[24].

According to **the Strategic roadmap for the manufacture and processing of agricultural products in the Republic of Azerbaijan,** poor integration relations within agro-industry sectors in the country stifled the development of regional clusters[25]. Though there are regional processing enterprises that produce grape, cotton, tobacco and tea, it has not led to the creation of territorial clusters in the region/s concerned. Thus, these enterprises carry out only preprocessing. The preprocessed product is either exported or transformed to end prod-

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[23]http://president.az/articles/22197
[24]http://president.az/articles/22139
[25]http://president.az/articles/22110

uct for consumer markets. Being used in agro-food production system and serving as a new business technology based on territorial cluster approach, agro parks have been set up in Azerbaijan since the beginning of the twenty-first century. The competitiveness of agricultural production and processing industry will be reinforced by increasing the volume of production, and in order to reach growth target the main focus will be put on creating intensive farms that use advanced agro-technical regulations and automation. Given the potential of each region in the country, it is planned to undertake measures to create specific grouped production areas (clusters) and sub-sectors as well as ensure the active involvement of manufacturers, set up as a result of measures undertaken to improve agricultural production and processing, in high-value areas, where production is focused on the entire value chain.

Networks of agricultural parks, agribusiness incubators and startups open up opportunities to introduce cluster approach to the agricultural sector, as agricultural clusters are the main driving force in increasing production and strengthening export potential.

Agricultural parks necessitate implementing a series of targeted measures to create business-friendly environment with a view to attract local and foreign investors. Compared to firms, model agro-park complex is established based on cluster (grouping) approach and paves the way for the formation of highly centralized processing centers that encompass larger areas geographically. Proximity of agricultural parks to logistical infrastructure eases their access to local and foreign markets, and paves the way for increasing exports and attracting international investors.

The document also notes that the government aims to support agro-industrial clusters. It is necessary to plan agro parks and determine their investment needs in order to achieve the said objective. Planning process requires to identify optimal location and area of an agro-park at the first stage, specify purpose of industrial sectors, level of produc-

tion targets, type of businesses and areas of their activity (for example, production, processing, storage and support services) based on the analysis of production and market opportunities for various proposed value chains, and finally ensure public (for example, carrying out scientific researches) and private (e.g., rendering financial services) sector involvement to provide support services for businesses.

**The Strategic roadmap for the development of specialized tourism industry in the Republic of Azerbaijan** envisions the creation of tourism clusters in tourist-recreational zones[26]. In order to ensure effective use of tourism potential in the tourist-recreational zones, the Ministry of Culture and Tourism is tasked to develop strategic plans that determine tourism cluster for each zone at the macrolevel as well as general and current plans of these zones on the basis of tourism cluster model. The government takes position that the creation of cluster-based tourism infrastructure in tourist-recreational zones will ensure continuous activity, enhance effective management, increase quality of service and attract more tourists.

## 5. MAIN FACTORS HINDERING THE DEVELOPMENT OF TERRITORIAL CLUSTERS

Various factors impact on the development of territorial clusters. The effective elaboration and implementation of regional development policy, and the presence of strong institutional capacity for regional development minimize the factors that stifle the development of territorial clusters. In other words, the development of geographical clusters depends on the level of regional socio-economic growth.

OECD experts categorize the factors hindering the development of regional clusters as follows[27]:

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[26]http://president.az/articles/22134
[27]Clusters, Innovation and Entrepreneurship. OECD 2009 http://www.clusterpolisees3.eu/ClusterpoliSEEPortal/resources/cms/documents/2009_OECD_Clusters_Innovation_and_Entrepreneurship.pdf

**1) Insufficient level of entrepreneurial initiatives.** OECD experts attribute it to a narrow interest shown by the SME sector in scientific research and innovations. According to the World Bank statistics, research and development (R&D) expenditures in developed countries vary in the range of 2-4% of GDP. Economically advanced countries such as Israel, Finland and Korea rank highest[28]. It is worth to note that a significant portion of spending on research and development was realized by the business sector. For example, over 80% of research and development expenditure falls to the share of business sector in Israel. In general, the business sector in nearly all developed countries accounts for 50-80% research and development expenditure on average, while the rest is provided by the government and universities.[29]

According to the World Bank data, research and development expenditure in Azerbaijan constitutes about 0.2% of GDP. The State Statistical Committee reports that the share of business sector in research and development totals 5%[30].

**2) Inadequate involvement of SMEs in clusters.** Among the leading players, SMEs have held a special place in all the countries, which set examples of best practice on clustering.

**3) Lack of seed capital.** SMEs, which play an important role in cluster development, and a large number of newly established firms usually lack seed capital. When mechanisms to facilitate access of startups to finance are underdeveloped, and a variety of incentives lack to enhance competitive advantage of SMEs it becomes difficult to establish clusters, catalyze their role in the economy.

**4) Lack of qualified workforce.** Cluster development involves deep specialization. When the labour with work-related knowledge,

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[28]http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS
[29]http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_domestic_expenditure_on_R_%26_D_by_sector,_2014_(%25_of_GDP)_YB16.png
[30]http://www.stat.gov.az/source/education/

skills and narrow specialization don't meet industrial needs it creates obstacles for cluster development.

**5) Ineffective coordination of cluster policy.** 3 elements are important for the formation of successful clusters: leading firms (product manufacturers or service providers); sectors, where economic relations are established (raw material suppliers, product manufacturers, advisory services providers etc.), and supporting organizations (universities, research centers, vocational institutes, regulatory bodies, laboratories, certification agencies, state authorities and municipalities). Cluster development is stifled, when responsibilities of cluster participants with regard to production and delivery of high-quality final product (service) are not well-defined or functions between the relevant agencies responsible for cluster policy formulation and implementation are not effectively divided.

The experience of various countries shows that failure to correctly determine the role of clusters in regional development strategies remains one of the factors hindering cluster development. In countries with models of best practice, clusters are regarded as one of the main tools used for regional development, in some cases cluster strategy is even developed.

## 6. POSSIBLE MECHANISMS OF REMOVING IMPEDIMENTS TO THE DEVELOPMENT OF REGIONAL CLUSTERS

Long-term studies conducted by OECD experts came to the conclusion that comprehensive measures are needed to remove impediments to cluster development. The following directions are noted as priority measures[31].

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[31]Clusters, Innovation and Entrepreneurship. OECD 2009
http://www.clusterpolisees3.eu/ClusterpoliSEEPortal/resources/cms/documents/
2009_OECD_Clusters_Innovation_and_Entrepreneurship.pdf

1) **Ensure solid partnership.** For successful implementation of cluster concept, it is essential to ensure partnership comprising the business sector, leading universities and high-level research centers that generate and realize innovative ideas.

2) **Create a strong mechanism of partnership.** Cluster concept tends to be successful, when the state cluster policy is targeted at strengthening the capacity of each participant of tripartite partnership, that is, the government, the business sector and research industry.

3) **Research commercialization.** It is crucial for successful spin-off activity to identify the market for innovations developed by research organizations. They must be able to commercialize research products and discoveries easily. To this end, it is important to ensure functionality and accessibility of mechanisms, geared to create venture funds with a view to finance innovation and provide risk capital for technology projects, to raise the supply of students of tech specialties, and to stimulate scientific research and innovative ideas in the given area.

4) **Ensure the availability of qualified workforce.** In particular, there is a need for highly skilled specialists across all industries to meet cluster needs for qualified workers. To meet the demand for qualified personnel by newly formed clusters, the government can run the programs to attract international trainers in support of skills training and upgrading.

5) **Define clear obligations for the public sector.** The government must be committed to ensure cluster accessibility to public services and infrastructure, improve quality of public service infrastructure. It is important to regularly assess specific needs of geographical clusters in this regard.

6) **Develop government strategy on cluster development.** The strategy has to include objectives of cluster policy, gov-

ernment's expectation for the policy, support mechanisms, criteria for the formation of clusters and principles of cluster mapping as well as framework public-private sector partnership.

7) **Social capital formation.** It implies to trust and mutual dialogue between cluster participants. It would be useful to create existence of trust between the government and the business sector, civil society, and between the research sector and industry. The government has to entrust them all, hear their voices and ensure their participation in decision-making.

The government's strategic vision for cluster approach is of particular importance among the above-mentioned aspects. For example, in 2006, the European Union identified cluster development as one of the important drivers of local economic growth and competitiveness of the region, and declared it one of 9 strategic priorities set to promote innovative development[32]. It demonstrates the importance of cluster approach as a policy mechanism in developing and transition countries.

Neighboring Turkey achieved notable success by introducing cluster approach to regional development over the past decade. Strategic approach taken by the government was decisive in driving the work in this direction. The formation of cluster policy in Turkey is based on 3 components: capacity building for developing national cluster policy, preparing strategic document for the implementation of cluster policy as well as elaboration of cluster maps and undertaking cluster analysis[33].

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[32]http://www.smenetworking.gov.tr/userfiles/pdf/dcp/Beyaz%20Kitap/Beyaz_Ki tap.pdf
[33]"Küme haritalama, analiz ve kümelenme yol haritalari - sentez raporu".
"http://www.smenetworking.gov.tr/userfiles/pdf/dcp/Kume%20Haritalama%20-%20Sentez%20Raporu/Kume%20Haritalama%20-%20Analiz%20ve%20Kumelenme%20Yol%20Haritalari%20-%20Sentez%20R aporu.pdf

It is possible to develop effective cluster strategy based on the experience of countries that have successfully introduced cluster approach. Firstly, it requires clearly determining the objectives of cluster strategy. In some countries, these objectives hinge upon the challenges facing the national economy. For example, formation of competitive scientific and technological base at the national level, new enterprise creation and export promotion were identified as the main targets in Canada.

In international practice, emphasis is placed on setting up entities responsible for developing and implementing cluster strategy and ensuring effective communication between them. The Regional Development Agency (DIACT), the Interministerial Committee for Regional Planning and Development (CIADT), the Business Department under the Ministry of Economy are the main authorities that act on behalf of the government in France. The activity of these authorities is based on the National Cluster Program.

Another important point is to determine the minimum requirements for cluster creation. The minimum standards do not exist in many countries, this mechanism was successfully put in practice in the Czech Republic though. The mechanism stipulates for at least 15 independent entities in order to register a cluster. SMEs must compose a minimum 60% of founders, at least one university or research institute is also required in the composition of founders.

**Finally,** one of the most important issues to study from the prism of international practice is how to organize the legal framework for cluster approach. For example, Italy is considered one of the world's most successful countries in terms of clustering, and cluster development is particularly regulated by the national legislation. The law, adopted in 1991, defines the institutional framework for creating regional clusters. The law stipulates stimulating the activity of economic subjects that are characterized by close cooperation and sectoral special-

ization in a geographically concentrated area. The law sets forth the implementation of clustering by means of support programs.

One of the factors impeding cluster formation and development is an absence of investment and venture capital funds that usually meet investment needs of the private sector and facilitate business access to financial resources. In particular, venture capital funds are rather important institute in terms of financing SME projects on the use of innovative and high technologies, and providing risk capital.

In international practice, one of the important mechanisms to eliminate the factors affecting the growth of territorial clusters requires developing and putting into practice mechanisms and methodological approaches geared to analyze regional competitive advantage. For example, a statistical method, known as '3 stars,' is widely in the European Union for analysis of regional clustering[34]. The main point is this method helps to assess the clustering potential of each region on the basis of 3 measures: **(i) size; (ii) focus; (iii) specialization**.

'Size' is measured by the ratio between regional and national economic performance indicators (e.g. employment, added value, export, etc.) across each sector. The European Cluster Observatory employs a 10% coefficient with regard to 'size' measure. In other words, if a regional sector is top 10% among all sectors at the national level, it receives 1 star and is considered as a sector with clustering potential.

'Focus' is calculated by the ratio between economic indicators of each sector (e.g. employment, added value, export, etc.) and regional economic indicators. The European Cluster Observatory employs a 10% coefficient with regard to 'focus' measure. In other words, if a regional sector is top 10% among all sectors at the re-

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[34]Clusters in the EU-10 new member countries. http://cordis.europa.eu/innovation-policy/studies/pdf/eucluster.pdf

gional level, it receives 1 star and is considered as a sector with clustering potential.

'Specialization' is calculated by comparing 'focus' and 'size' coefficients. If the result is greater than 1, the sector receives 1 star and is considered as a sector with clustering potential.

According to the 3-star statistical method, if a regional sector that is assessed in terms of its potential for cluster development, receives stars with regard to each of 3 measures, then it is considered as a potential industry and included in priority development industries.

In international practice, another method used to assess the cluster potential is a rhombus model (also known as 'diamond'). This method was first introduced by Michael Porter in his research work titled "National competitive advantage." The model allows assessing the cluster potential of each region on the basis of 4 factors: **(i) factor input conditions; (ii) firm strategy/rivalry; (iii) regional demand conditions; (iv) related and supporting industries.**

This model envisages in-depth analysis of target regional sectors for cluster strategy.

Analysis of **'production factors'** studies and assesses the factors, such as the region's natural resources, availability of raw materials for manufacturing products (services), skilled workforce, state of infrastructure, access to basic services, and investment.

**'Firm strategy/rivalry'** provides for assessing the potential of firms and companies, identified as a target to work in a cluster industry. It assesses the factors, such as quality of business management, particularly state of applying accountability standards, willingness to employ innovations, potential for attracting investments, workforce competence and qualification, willingness to invest in training of personnel, access to foreign markets, healthy competition and other requirements.

'**Regional demand conditions**' refers to the extent of domestic market demand of the region. Prior to sale outside the region, the manufactured products (services) are offered to households and the business sector in the internal market. The growth in the volume of domestic demand creates favorable condition for clustering in the region.

'**Related and supporting industries**' is essential for implementing clustering in any region. In international practice, related industries include raw material suppliers for manufacturing products (services), services (logistics, communication, finance, consulting, etc.).

Supporting organizations that regulate and support cluster development include state authorities, municipalities, civil society organizations, research institutes and universities. The assessment needs to evaluate physical presence of these organizations in the region and quality of their work.

## KEY RESULTS OF THE STUDY

The study assessment on the development of territorial clusters has revealed the following results:

1. Prospects of cluster-based development are limited in an environment unfavorable for the development of small and medium-sized enterprises.
2. Potential for cluster development tends to be weak when innovative development is not supported.
3. It is impossible to realize cluster formation if partnership between universities and research centers is not established.
4. Cluster development is impossible without human capital development.
5. Implementation of cluster policy is challenged by the absence of strategy that implicates performance indicators to assess

clustering criteria, principles and results, and without cluster mapping.

6. Increased competitive advantage of the regions occurs by introducing cluster mechanism.

7. Share of clusters in regional economy is relatively high in developed countries, this indicator is around 40% in some OECD countries.

8. Innovation and high-tech industry have forced out traditional sectors of economy in recent years, nevertheless cluster mechanism can still be applied to any sector of economy.

9. Development of territorial clusters is possible only through high degree of specialization in the given area.

## MAIN FINDINGS

Analysis of the government's cluster policy in Azerbaijan has revealed the following findings:

- Legal approach to cluster concept is not established by the national legislation;

- Though various government programs, strategy and concepts entail approaches pertaining to introduction of cluster mechanism, no cluster strategy with precise and clear objectives on the development of territorial clusters was elaborated yet;

- Sectoral development rather than regional development is set as economic growth target in Azerbaijan;

- Launch of some industrial and technological parks was ascribed to some extent to the introduction of cluster approach, whereas these parks do not focus on the entire supply chain like traditional clusters, in this case these parks may not be theoretically considered as cluster.

- Recently approved by the government, the strategic roadmaps

for the national economy and main economic sectors provide for establishing clusters under specialized universities, creating agricultural clusters, setting up industrial clusters by attracting private sector investment, and forming tourism clusters in tourism-recreational zones;

- The Strategic roadmap is targeted to increase the SME contribution to products produced within industrial clusters by 40%, and establish 3 innovation-oriented regional clusters as key performance indicators;

## RECOMMENDATIONS

1) **Working out a strategy on the cluster-based economic and regional development.** This strategy bodes well to coordinate and link sectoral and regional economic development policies as well as accurately determine mid and long-term regional development objectives and priorities. It is possible to elaborate criteria for selecting clusters within the framework of cluster strategy. From the global perspective, these criteria include measurement (number of companies, number of employees and turnover in a particular industry), level of geographic concentration (extent of physical proximity to capitalize on all possible positive external factors and social relations), homogeneous businesses (related to one industry), depth of value chain (cluster focus on the entire value chain) as well as supporting organizations. It enables to determine a set of indicators for measuring economic importance of the region identified as cluster target. This set of indicators includes employment, export potential, added value level, region's technological potential, growth potential, innovation, capacity to create new products, and adaptation to new technologies.

2) **Encouraging and supporting SMEs and start-ups in particu-**

**lar.** At first, it requires creating insitutisional environment for the creation and development of investment and venture capital funds in support of SMEs.

3) **Analyzing regional capacity for cluster creation by using qualitative and quantitative methods that meantime allow evaluating competitive advantage of the regions.** Assessments have to be open for discussion with stakeholders, including civil society, and findings need to be fully publicized.

4) **Strengthen scientific research capacity of universities.** Currently, universities account for least 8% of research and development expenditure in Azerbaijan, the amount itself is quite low (AZN10 million / USD6 million in 2016).

5) **Commercializing scientific research.** The government has to show interest in promoting innovative and technological findings of research organizations in the provide sector, and incentivizing the private sector to use scientific research. Meantime, it is important to create venture funds to finance innovation and provide risk capital for technology projects, to raise the supply of students of tech specialties, to stimulate scientific research and innovative ideas in the given area;

6) **Setting specific requirements for cluster creation.** For example, it is expedient to set minimum requirements as regards the number of cluster participants, level of SME representation in clusters, and composition of founding members, which may include at least one university or research center.

# STATE POLICY FOR CREATION
# AND DEVELOPMENT
# OF TERRITORIAL CLUSTERS

**Rovshan Aghayev**