Eurasian Development Bank
Research Department

STATUS OF CLUSTER DEVELOPMENT IN EDB MEMBER STATES

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CONTENTS

LIST OF ABBREVIATIONS

CDC – cluster development centre

DAI – digital adoption index

EAEU – Eurasian Economic Union

EBRD – European Bank for Reconstruction and Development

EDB – Eurasian Development Bank

EEC – Eurasian Economic Commission

EU – European Union

GDP – gross domestic product

IBRD – International Bank for Reconstruction and Development

ICT – information and communication technology

IDBs – international development banks

KR – Kyrgyz Republic

NAFTA – North American Free Trade Agreement

OECD – Organisation for Economic Cooperation and Development

RA – Republic of Armenia

RB – Republic of Belarus

RF – Russian Federation

RK – Republic of Kazakhstan

RT – Republic of Tajikistan

SMEs – small and medium-sized enterprises

USA – United States of America

STATUS OF CLUSTER DEVELOPMENT IN EDB MEMBER STATES

According to the Global Competitiveness Index 2018, no EDB member country ranks among the world's 40 most competitive countries (with Russia ranked 43rd; Kazakhstan 59th; Armenia 70th; Kyrgyzstan 97th; and Tajikistan 102nd). That said, all the countries except Tajikistan are improving their ranking. This points to the need to continue searching for methods of economic development and to work towards increasing their inclusion in global value chains.

Global practice confirms that the development of clusters broadens opportunities and has a positive multiplier effect on the economy. In many countries, cluster initiatives are regarded as an essential component of innovation policies, which is also indicative of the government's well-conceived long-term approach to comprehensive development of territories.

In the context of EDB member countries, cluster development acquires additional meaning. Vast and often undeveloped territories, a lack of well-developed transport corridors and most countries' status as 'land-locked developing countries' are all features of the EDB member countries' geo-economic development. If correctly approached, cluster formation may become a tool for promoting the countries' even economic development and raising their competitiveness through the creation of new growth centres.

This report deals with the key concepts of cluster development, inquires into clusters' significance for the competitiveness of national and regional economies, classifies the cluster strategies used by the EDB member countries, and reviews their cluster potential.

KEY CONCEPTS FROM THE THEORY OF REGIONAL AND INDUSTRIAL CLUSTER DEVELOPMENT

What is a cluster in an economy, and what types of clusters exist?

Back in the late 19th century Alfred Marshall noted that proximately located enterprises form 'industrial districts' where communication among workers becomes more intense, which leads to quicker spread of new ideas, improvement of production processes, and closer social ties. A century later, growing globalisation, competition and intense innovative development, along with the great success of such regional formations as Silicon Valley, led researchers to return to the subjects of location, innovation and regional economic development.

To describe these processes studies on industrial districts continued[1], and moreover such concepts as 'regional innovation systems'[2], 'learning regions'[3] and 'innovation and/or regional clusters'[4] came to be.

According to Michael Porter, one of the concept's authors, a **cluster** is a geographically proximate group of interconnected companies, specialised suppliers, service providers, companies operating in related sectors and related institutions in specific areas, competing with each other, but also cooperating at the same time[5]. Some researchers identify **industry clusters**, groups of related industries and service sectors, and **regional (local) clusters**, groups of geographically concentrated companies from one or more related industries and their supporting institutions, located in a certain area/municipality[6].

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[1] Beccatini, G., From Marshall's to the Italian "Industrial districts". A brief critical reconstruction.

[2] Cooke P. (2001), Regional innovation systems, clusters and the knowledge economy, Industrial and Corporate Change 10 (4), pp. 945–974.

[3] Asheim B. (1996), Industrial districts as 'learning regions': a condition for prosperity, European Planning Studies 4(4), pp. 379–400.

[4] Porter M. (1998), On Competition. Harvard Business School Press: Cambridge MA.

[5] Porter M., Clusters and Competition, New agendas for Companies, Governments and Institutions.

[6] Pilipenko I.V., Klastery i territorial'no-proizvodstvennye kompleksy v regional'nom razvitii [Clusters and territorial production complexes in the regional development] // Regional'noe razvitie i regional'naya politika Rossii v perekhodnyj period / –M: Bauman MSTU, 2011. – p. 191–208.

Examples of successful geographical concentration

The organisations' geographical proximity increases the chances of 'spill-over' of knowledge, technology and training, which makes the organisations inside the cluster more competitive than companies of the same industry located outside that innovative environment. Examples of successful geographical concentration include clusters of manufacturers of: shoes in northern Italy, cars in southern Germany, luxury watches in Geneva, and the wine cluster in California.

Innovation and industrial infrastructure facilities

Being spatial formations, clusters may overlap with other **innovation and industrial infrastructure**, including special/free economic zones (SEZs/FEZs), industrial estates, priority development areas (PDAs), technology parks, business incubators and accelerators, etc. A SEZ or PDA will create a special legal regime, which stimulates the attraction of new companies and creation of specialised jobs. The presence of specialised SME support organisations, such as business incubators, helps attract financing or strengthen ties among organisations in the cluster.

In addition, differently organised enterprises may require different forms of support that promote regional development and belong to the cluster's infrastructure: business incubators will be more helpful to micro-businesses, small businesses will benefit more from technology parks, and big businesses will rather seek the advantages of free economic zones[7].

How to identify a cluster?

There are different ways of defining and identifying clusters. Most studies are devoted to examples of long-standing industry clusters established in individual territories.

Industry specialisation of companies in a region

Porter suggests that companies primarily working for the **local market** should be distinguished from **export-oriented** ones (even at the inter-regional trade level). The latter type of clusters suggests that their products are truly competitive versus other regions and the market as a whole.

To better identify a cluster, we should review numerous aspects[8] (including, but not limited to):

- industry scope of the organisations in the region and their size, including the number of those employed in the industry;

[7] Obekty promyshlennoj i innovacionnoj infrastruktury gosudarstv – chlenov EAEU [Objects of the industrial and innovative architecture of the EAEU member states], Eurasion Economic Commission, March 2016.

[8] EU Commission, Smart Guide to Cluster Policy, 2016.

- performance indicators, including wage and productivity levels, and trends in the emergence of new companies;
- the regional context, including the region's overall competitiveness indicators and the existence of related clusters;
- the level of cooperation, defined as the presence and strength of cluster initiatives and regional social capital;
- other structural factors, including the composition of companies in the clusters.

A multitude of cluster definition and analysis criteria exist that describe the existing clusters in their diversity. Michael Enright identifies a number of **categories of clusters** depending on their level of development[9]:

- **Working clusters** – clusters that have attained a critical mass of local knowledge, expertise and human and other resources to elicit the **agglomeration effect**[10], used by companies for more effective competition with players outside the cluster.
- **Latent clusters** – have a critical mass of firms in related industries sufficient to benefit from co-location, but have not developed the required level of interaction and information flows.
- **Potential clusters** – have some of the elements necessary for the development of successful clusters, but these elements must be deepened and broadened so that the agglomeration effect can be obtained.
- **Policy-driven clusters** – chosen by the government as recipients of support but often lacking a critical mass of companies or conditions that might promote organic development.
- **Wishful thinking clusters** – chosen by the government as recipients of support but lacking not only a critical mass, but any particular source of advantage that might promote organic development.

[9] Enright, M. J. (2003). Regional Clusters: What We Know and What We Should Know. Advances in Spatial Science, 99–129. doi:10.1007/978-3-540-24760-9_6

[10] The agglomeration effect is the decrease of the cost of the products of individual enterprises working next to one another or sharing a common market in a compact territory, which reduces transportation and other costs.

International examples of cluster landscape maps

Identification of a cluster's type is important for understanding which specific actions will be effective for its further development – e.g. to attract more organisations from its particular and related industries to create critical mass, or to build physical infrastructure for better communication and information sharing among existing companies.

To better systematize the empirical data accumulated and to continue research into the clustering phenomena in the economy, cluster-mapping projects have been created.

U.S. cluster mapping and the **European Cluster Observatory**[11] are vivid examples of instruments for cluster data collection and visualisation.

In Russia, the Russian Cluster Observatory has been operating since 2012 under the auspices of the National Research University Higher School of Economics, and a Russian Clusters Map[12] is being maintained. Mapped as of mid-2019 are 119 clusters belonging to 28 industries/business lines. In 2019, the RB Ministry of Economy developed a Map of the Clusters of the Republic of Belarus that shows not only the existing but also emerging and potential clusters in the country.

Cluster initiative and cluster organisation

With the passage of time, clusters have become the focus of regional and national economic policies. States wishing to make industries or regions more competitive and innovative have become more active in supporting the creation and development of clusters, which has given rise to cluster initiatives and cluster organisations.

Cluster initiatives

A **cluster initiative** is a programme, a policy effort to create, support or renovate clusters. Cluster initiatives may aim to strengthen links between companies, create the required infrastructure and/or support innovative companies or R&D. Various studies emphasise that cluster initiatives are the most efficient when the cluster itself is already sufficiently developed,[13] and rarely succeed in generating clustering effect 'from scratch'. The largest studies of cluster initiatives are two Green Books, one published in 2003 and the other in 2013, that review the operation of more than 350 cluster organisations worldwide.

[11] The European Observatory for Clusters and Industrial Change is currently being built on the basis of the European Cluster Observatory.

[12] Russian Clusters Map. Available at: http://map.cluster.hse.ru/

[13] Ketels C., Protsiv S., (2013), Clusters and the New Growth Path for Europe, WIFO, Vienna.

Cluster initiatives may be of a various nature. In the Russian Federation, cluster initiatives have emerged in three main formats[14]:

- based on Soviet and post-Soviet high technology industries (e.g. aerospace, machine-building, ship-building, petrochemical and coal processing initiatives in Zheleznogorsk, the republics of Bashkortostan and Tatarstan, Arkhangelsk, Kemerovo, Khabarovsk, Nizhny Novgorod, Samara, and Ulyanovsk);

- as branches of leading research centres, universities, or institutes of the Russian Academy of Sciences (e.g. nuclear and radio-electronic technology in Dubna and Obninsk, or IT and digital technology in Tomsk and Bryansk);

- using the innovative thrust of small and medium-sized enterprises (e.g. IT, pharmaceutical and biotechnology initiatives in St. Petersburg and Altai).

Cluster organisations

The implementation of a cluster initiative is often supported by a **cluster organisation**, that may be a non-profit association, a State-run development institution, or a company. Its functions will include collection and analysis of information about the cluster and its participants, organisation of joint conferences, working meetings and activities intended to improve communication and interaction among cluster participants, launch of joint projects, programmes, and studies on topics related to the specialisation of the cluster's companies, and many other things.

For example, a **European Cluster Collaboration Platform**[15] is operating in Europe, supported by the EU Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs; it serves, in particular, as a database for most cluster organisations from the EU and other countries. For example, three cluster organisations from Belarus (Creative Belarus, Infopark, and the Biotechnology Cluster based on the Polesye State University) are also registered in this platform.

[14] Ekaterina Islankina & Thomas Wolfgang Thurner (2018): Internationalization of cluster initiatives in Russia: empirical evidence, Entrepreneurship & Regional Development.

[15] Official website, European Cluster Collaboration Platform. Available at: https://www.clustercollaboration.eu

CLUSTERS' SIGNIFICANCE FOR THE COMPETITIVENESS OF NATIONAL AND REGIONAL ECONOMIES

Cluster effects on the national and regional economy

Among the mechanisms working in agglomerations, the following can be highlighted: better **matching** between supply and demand, **sharing** (risks and costs of large local projects can be shared between participants) and **learning,** as frequent interactions between actors facilitate knowledge spill-overs[16]. Nevertheless some researchers note negative repercussions among agglomeration effects: growing land prices, road congestion, environmental pollution, etc.

Clusters bring growth in productivity and capacity for innovation

An existing cluster raises its constituent companies' competitiveness in three ways: by increasing **productivity**, by increasing their capacity for **innovation**, and by stimulating **new business formation**, which promotes even more innovation and expansion of the cluster[17].

According to EU studies, regional companies note the following **benefits** of joining a cluster initiative: better networking with research centres; networking with other companies; access to better support services with respect to research, technology and innovation; access to funds for collaborative projects; access to services that support internationalisation, and others[18].

Within a national economy, regional clusters are a source of specialised workforce and a focus of innovation activity and creation of new products and companies.

[16] Brakman S., van Marrewijk C., (2013), Reflections on cluster policies, Cambridge Journal of Regions, Economy and Society, 6, 217–231.

[17] Porter M., Clusters and Competition, New agendas for Companies, Governments and Institutions.

[18] Cluster programmes in Europe and beyond, European Observatory for Clusters and Industrial Change, May 2019. Available at: https://www.eucluster2019.eu/files/events/4538/files/eocic-cluster-programme-report.pdf

In making foreign investment, **transnational companies** (TNCs) prefer to invest in well-established investment centres where other TNCs are already present. At the same time, cluster companies have a better chance of accessing the international market and staying competitive at the global level.

It is useful to cite the example of cluster initiatives in the EU and note that the efficient cluster policy implemented there has meant that clusters now account for 39% of European jobs. Moreover, due to clusters' greater competitiveness, employees of businesses within successful clusters earn around 10% more than their colleagues in similar positions outside the clusters. As a result, the staff of companies participating in clusters receive 55% of all the wages paid in the EU[19].

[19] Smart Guide to Cluster Policy (2016) European Commission.

SPECIFICS OF CLUSTER FORMATION AND CLUSTER POLICY IMPLEMENTATION

Clusters as dynamic entities

Like industries or products, clusters have their own **lifecycle**. Van Klink and de Langen describe the cluster cycle as a progression through the phases of development, expansion, maturation and transition[20]. A possible criterion for evaluating a stage of a cluster's lifecycle is heterogeneity (the presence of diverse participants in the cluster) and the ability of the companies in the cluster to exploit that heterogeneity. A cluster is often born as a few small companies that create an innovative product. Then the number of companies and specialists employed grows as the cluster's technological specialisation areas expand, until the cluster reaches its maturity stage. With the passage of time, if the cluster's companies fail to adapt to the changing conditions, decline sets in. The transition and renewal stages may be gradual, as in the case of the oil and gas cluster in Stavanger, Norway, or more drastic, like the switch from coal and metal production to the development of nature conservation and energy saving technologies in the Ruhr area of Germany.

The lifecycle stages offer opportunities for stimulating or supporting the cluster's development (applying cluster policy).

Principles of cluster policy implementation

The government's efforts to create, develop and/or support clusters are collectively termed **cluster policy**. Cluster policy differs from traditional industrial policies that only support industries prioritised by the government; it facilitates 'bottom-up' development of companies, helps stimulate emerging industries by creating favourable conditions for doing business, and supports entrepreneurial activities and innovation.

EU cluster policy as a set of 'best'/'good' practices, initiatives, and recommendations

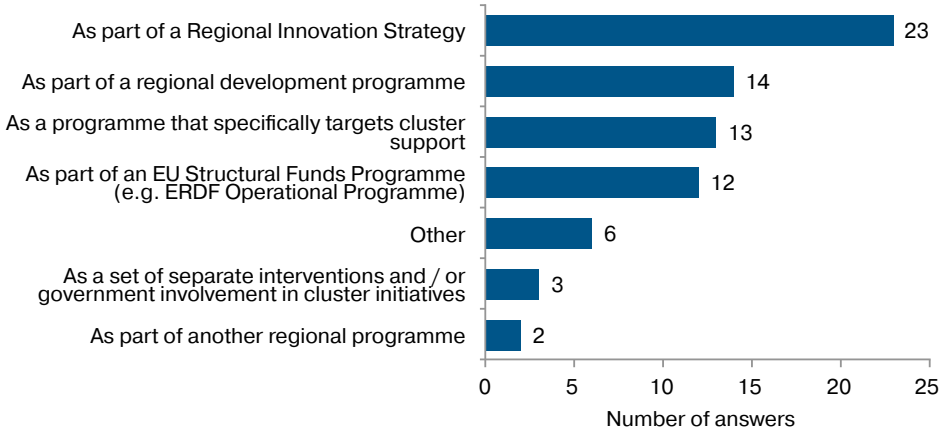
The **European Commission** stresses clusters' potential to build favourable innovation ecosystems for mutual strengthening of SME groups, and also sees its role in the co-ordination of the process of European companies' integration into European and global value chains. The focus is not only on the industrial sector but also on inter-sectoral and cross-border cooperation and innovation. It should be noted that cluster policy in the EU is not considered as a single and unified document binding on all its member countries but is

[20] Van Klink, A., & de Langen, P. (2001). Cycles in industrial clusters: the case of the shipbuilding industry in the Northern Netherlands. Tijdschrift Voor Economische En Sociale Geografie, 92(4), 449–463.

rather a set of 'best'/'good' practices, initiatives, and recommendations both for cluster organisations and for national and regional authorities.

In Europe, cluster programmes are usually supported under regional innovation strategies. In such regions as e.g. Catalonia (Spain), Norte (Portugal), Wallonia (Belgium), Hovedstaden (Denmark), Normandy (France), and Baden- Württemberg (Germany), there are regional cluster development programmes in place[21].

Figure 1. Organisation of Regional Cluster Policy Interventions



Source: European Observatory for Clusters and Industrial Change, online survey on regional cluster programmes 2018 (33 answers for 32 regions; multiple answers were possible)

The cluster programmes' annual budgets are quite diverse: from EUR 144 million for the *Pôle de compétitivité* programme in France to EUR 57 million for the United Kingdom's Strength in Places Fund and EUR 45 million for various programmes in Germany. The sources of funds for the cluster programmes include the State and the participants themselves, who pay certain contributions, and private investments by various associations, funds, and international organisations.

At the same time, it is important to note that the rapid popularisation of the ideas of cluster development and cluster policy has aroused **scepticism on the part of the academic community**.

Some researchers note the paradoxical nature of cluster policy or challenge the very need for the State's involvement in cluster formation[22]. Instead of

[21] Cluster programmes in Europe and beyond, European Observatory for Clusters and Industrial Change, May 2019. Available at: https://www.eucluster2019.eu/files/events/4538/files/eocic-cluster-programme-report-2905.pdf

[22] See e.g. Hospers, G.–J., Sautet, F. and Desrochers, P. (2008), "Silicon Somewhere: Is There a Need for Cluster Policy?", Handbook of research on innovation and clusters, Charlie Karlsson, ed., Edward Elgar Publishing, Vol. 2, Available at SSRN: https://ssrn.com/abstract=1321496 or Pessoa, A. (2011), "The cluster policy paradox: externalities vs. comparative advantages", FEP Working papers 431, Universidade do Porto, Faculdade de Economia de Porto.

active State participation in the creation of regional innovation systems, they see it more reasonable to stimulate the growth of strong – and inherently more proactive – private investment organisations, for it is impossible to predict in advance which technologies and regions will be the 'winning' ones in the future. Other research stresses that the State should concentrate on its traditional tasks, such as e.g. the creation of infrastructure (transport, energy, and other), the provision of social services, and nature use planning, instead of innovation systems.

There remain open questions of how to accurately define a cluster, how to correctly delineate its spatial or industry boundaries, and how to identify the effects resulting precisely from cluster development and take into account the adverse effects that may arise from cluster development[23].

Box 1. France

Since 2004–2005, France has been implementing its programme of competitiveness clusters (*Pôles de Compétitivité***)**. The programme of support for individual regions and clusters has been implemented in three stages (2005–2008; 2009–2012; 2013–2018) and has encompassed 71 clusters.

Between 2005 and 2013, some 1,313 joint R&D projects involving almost 15 thousand researchers received funding amounting to EUR 6 billion, of which EUR 2.4 billion were public funds.

In France there exist several formats for supporting cluster development at the national and regional levels:

- Support for the best national research projects being implemented in public-private partnership via the Unified Inter-Ministerial Fund (FUI) and the *Invest in the Future* programme.
- Provision of loans to SMEs willing to enter the market or start production following joint research projects. The loans for industrial replication of projects in the cluster are funded by the *Invest in the Future* programme.
- Assistance to clusters and their participants in finding the best international partners and establishing technological partnerships with them, aimed at value creation.
- Supporting cluster organisations with a view to the introduction of thematic collective initiatives in the cluster.
- Involvement of different partners, including the French National Research Agency (ANR), State investment banks (Bpifrance), the Deposits and Consignments Fund (CDC), and the *Business France* Agency.

[23] Steven Brakman, Charles van Marrewijk, Reflections on cluster policies, Cambridge Journal of Regions, Economy and Society, Volume 6, Issue 2, July 2013, Pages 217–231.

Clusters as a European economic recovery tool

Nevertheless, clusters, considered as hotspots of economic growth on the map of Europe, have become important elements in the overall European programme of economic recovery. In the programme documents of the European Commission and the EU Council, clusters were defined as effective means for strengthening regional innovation and shortening the gap between business, research and resources, and were also included in European regional policy programmes for 2007–2013. Moreover, in the communication on the new multi-annual EU budget cycle (2021–2027) clusters are mentioned as the basis for industrial competitiveness as part of the EU's *New Horizons* research and innovation stimulation programme.

It's important for State interventions to avoid leading to the so-called problem of 'places that don't matter'[24] – initially poor or economically declining territories that lack the features required for significant performance and are consequently overshadowed by better-developed areas with better prospects. The cluster policy should not attempt to reproduce 'best practices' elsewhere and in a quite different setting, but should rather identify and build on the strengths and **comparative competitive advantages** in the region or industry.

Box 2. Japan

Since 2001, Japan has been implementing its Industrial Cluster Plan – a programme supported by the Ministry of Economy, Trade and Industry (METI). The programme for the development of industrial clusters in Japan is also divided into three stages: launch (2001–2005), development (2006–2010) and autonomous growth (2011–2020)[25]. Nineteen industrial clusters were defined in 9 zones of the country.

Most of the clusters belong to four sectors: pharmaceuticals, biotechnology, medicine, and 'quality of life'.

The Japan External Trade Organisation (JETRO) maintains a map of industrial clusters. Mapping these clusters enables external parties to classify the regional and local strengths.

Determinants of effective clusters

More information on cluster initiatives is available in the EU countries, where they number more than 2,000[26]. Proceeding from many years' experience of their development and detailed analysis, the report of the European

[24] Rodriguez-Pose, A., (2018) The Revenge of Places That Don't Matter (and What To Do About It), Cambridge Journal of Regions, Economy and Society, 11, 189–209.

[25] Official website of the Ministry of Economy, Trade and Industry of Japan. Available at: https://www.meti.go.jp/english/policy/sme_chiiki/industrial_cluster_en.html

[26] European Commission data. Available at: https://ec.europa.eu/growth/industry/policy/cluster_en

Commission entitled *Smart Guide to Cluster Policy* identifies the following series of factors that pre-determine clusters' efficiency:

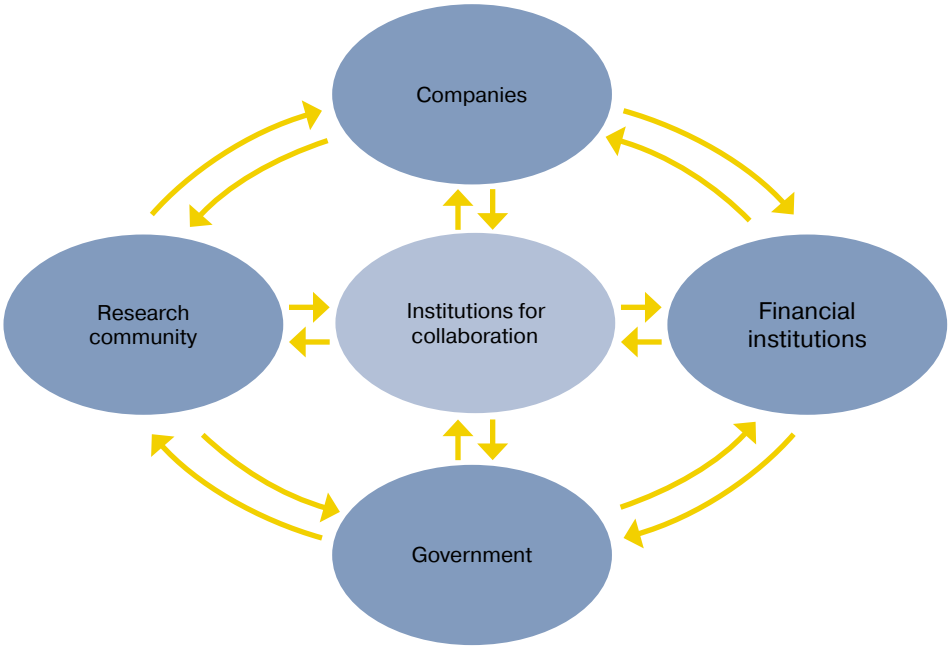
- **Critical mass:** it is essential that a sufficient number of companies be reached so that the cluster initiatives can efficiently return the desired result. The higher the number of companies working in the same industry, the more productive and innovative it is. This is due to higher competition and the companies' efforts to develop novel and innovative products.

- **Highly interconnected industries:** clusters reflect the crossindustry nature of value chains and innovation systems, in which inter-sectoral links generate greater economies of scale. Also, this guarantees more positive 'spill-over effects', including growth of employment in inter-related industries.

- **Location**, i.e. companies' geographic proximity, promotes their closer interaction. Location is especially important because cluster development largely depends on the presence and quality of human resources in the local labour markets.

- **The organic nature of clusters' emergence** as a manifestation of comparative competitive advantage over other regions within the country and abroad. A region's cluster potential is a natural reflection of competitive advantages and accumulation of resources.

Diagram 1.
Five Participants in a Cluster



Source: The Cluster Initiative Greenbook

A widespread opinion is that the Government should take part in cluster development, but its functions should be limited to:

- institutional support;
- development of infrastructure for clusters;
- strengthening vertical linkages among the clusters' participants.

It is generally believed that, for efficient development of clusters, the Government should tackle market failures and help eliminate the barriers faced by SMEs that hinder cluster development and growth of innovation. Such assistance is of special importance where regions of the country already possess considerable potential and specialisation rather than cluster formation 'from scratch' is attempted.

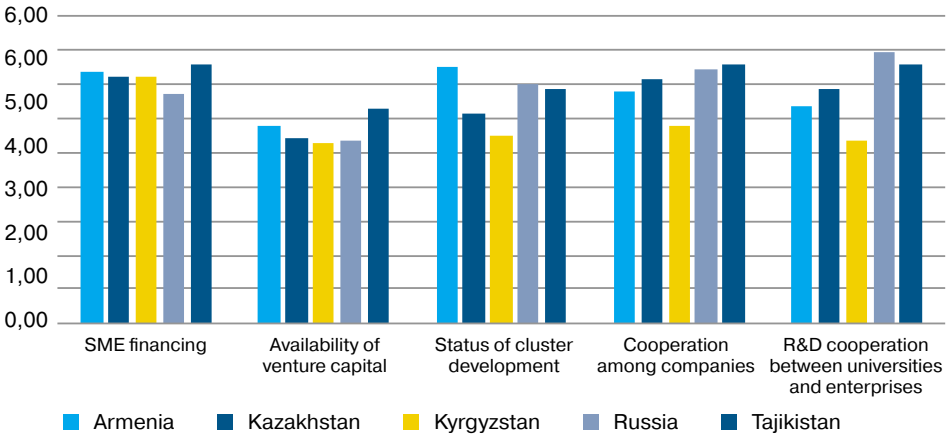
CLUSTERS IN EDB MEMBER COUNTRIES

An important feature of cluster development in the Eurasian space is the transitional nature of the regional economies. The report entitled *The Cluster Initiative Green Book* notes the specifics of cluster initiatives in transitional economies:

- a relative low degree of trust in government initiatives;
- a lower level of cluster development due to insufficient national competition and limited foreign investment;
- insufficient awareness of cluster initiatives and difficulty of creating common mechanisms for the development of cluster initiatives;
- significant barriers to entrepreneurship;
- an insufficiently comprehensive or long-term approach to the development of cluster initiatives; the latter are often developed without any steps taken to develop the education system or improve the investment climate.

Whether the microeconomic environment favours cluster development can be assessed using the indicators that underlie the rankings in the World Economic Forum's Global Competitiveness Report 2018.

Diagram 2. Selected Indicators of EDB Member Economies' Competitiveness in 2018



Source: World Economic Forum

Cluster initiatives weaker in EDB member countries

The level of cluster development in EDB member States is generally much lower than in industrially developed countries. No EDB member country ranks among the world's top 50 countries in terms of cluster development (Armenia is ranked 72nd; Kazakhstan 120th; Kyrgyzstan 135th; Russia 95th; and Tajikistan 100th). This fact is mainly due to a number of economic factors. Limited financing of SMEs and insufficiently developed venture capital markets hold back the development of innovative companies. Moreover, high barriers to new business establishment, observed in most of the countries, also negatively affect the level of competition in their national markets which, in turn, affects industries' productivity and innovation potential in the country.

Links with research institutes, as sources of innovation and new ideas, are also essential for clusters' development. According to Diagram 3, the EDB member States under review insufficiently develop and exploit cooperation with universities and other research organisations for innovation development purposes. Moreover, the level of cooperation among businesses is low, which is indicative of weak vertical and horizontal links among companies.

The National Cluster Policies of EDB Member Countries

Cluster development as a strategic priority

In the context of the EDB member countries, cluster development appears, to some extent or other, on all their State development agendas. This is indeed the case, for in recent years cluster development has become an integral part of any national strategy aiming to make the economy more competitive.

Smart specialisation

However, cluster development in EDB member countries should embrace, as an important priority, the concept of 'smart specialisation', based on the exploitation of relative competitive advantages and resources for continued growth of the competitiveness of regional and, eventually, national economies. For a more effective and thought-out Government policy it is important to establish what exactly public interest in the development of business-to-business cooperation under the cluster initiatives consists of.

Clusters as a means of managing the structure of the economy

First and foremost, participation in clusters may raise companies' productivity, expedite innovation and enhance competitiveness. Cluster initiatives may become a foundation on which smaller firms can combine their advantages to achieve economies of scale and become more competitive. Clusters act as tools for managing the economy's structure at both regional and national levels. This is especially important in EDB member economies, often tilted

towards commodity industries. Clusters deliver a comprehensive set of measures for the diversification of regional and national economies.

Classification of cluster initiatives

There exists a broad spectrum of types and interpretations of cluster initiatives worldwide, broken down in particular by industry, size of the clusters' member companies, innovation diffusion channels, and production links among participants. According to the OECD, cluster initiatives may also be classified by the levels of government involvement[27].

- **Local and regional**: in major developed economies, most cluster initiatives fall within this group. The competitive advantage of the decentralised approach to cluster development is that the local authorities can assess the conditions and opportunities for, and challenges to, cluster development at a 'closer distance' than national authorities – and devise their strategies accordingly.

- **National**: widespread in developed and many developing countries where governance is considerably centralised. The national governments play a pivotal role in cluster initiatives. This often results from the local or regional authorities' limited ability to become full partners for the private sector. In many countries, the adoption of cluster initiatives at the national level is the first stage and serves as a basis for their further development and delegation to the local and regional authorities.

- **Supra-national**: cross-border cluster initiatives play an increasingly important role, supported by supra-national governmental institutions. Such cluster initiatives are most widespread in the EU.

Classification by development strategy

Moreover, cluster initiatives may be classified by their development strategies: to exploit the existing national cluster potential or to attract international expertise and investment by involving foreign companies in cluster development.

- **Organic cluster strategies** seek to broaden and deepen the existing economic base for the region's cluster development by identifying the region's clusters and then trying to promote their development. This approach focuses on increasing interaction among local firms, awareness-building, elimination of the barriers faced by SMEs, infrastructure development and expansion of human resources and cooperation with research institutions.

[27] Enhancing SME Competitiveness, The OECD Bologna Ministerial Conference.

- **Transplant cluster strategies**: development of cluster initiatives by attracting foreign companies to interact with local firms. This strategy is mainly used to strengthen ties between the cluster's member companies and foreign investors, and the cluster's international status generally.

- **Hybrid strategies** result when organic cluster development programmes recruit foreign investment or when transplant strategies succeed in creating a critical mass of national enterprises, which increases the cluster's organic potential.

Centralised cluster policies in EDB member countries

In the case of the EDB member countries, most of the cluster initiatives may be classified as national, for their development plans are set out in national-level legal documents. As for classification by development strategies, the approaches differ. It should be noted that, with the aim of deepening integration, hybrid and transplant strategies offer broader opportunities for international and regional cooperation.

Table 1. Classification of EDB Member Countries' Cluster Policies by the Cluster Initiative Development Strategies Used

	RA	RB	RK	KR	RF	RT*
ORGANIC STRATEGY				▨		
TRANSPLANT STRATEGY	▨		▨			
HYBRID STRATEGY		▨			▨	▨

* – As there are virtually no working clusters in Tajikistan, classification was based on the cluster development goals and objectives set in the National Development Strategy of the Republic of Tajikistan for the Period to 2030.

Source: prepared by the authors on the basis of government programmes.

Armenia

Cluster policy in Armenia exists in a special format: while in the official documents the terms, 'cluster initiatives', 'cluster policy' or 'cluster development' are not frequently used, the term 'free economic zones' (FEZs)

is often used as a synonym, for Armenian FEZs are narrowly specialised. Clusters and FEZs are different legal concepts, but both feature geographical concentration of enterprises and organisations doing business in the same industry or in related industries. The special legal status of FEZs means that they are established for a fixed period of time and provide residents with a special tax, customs and foreign currency regulation regime.

As Armenia's investment and industrial policy provides for the creation and development of economically specialised FEZs with a view to raising individual industries' competitiveness, in the case of Armenia it is only possible to assess its cluster development on the basis of its FEZ creation and development policy.

The key document that determines the vector of FEZ-based cluster development is the Law of the Republic of Armenia 'On Free Economic Zones' No. ZR-193 of 18 June 2011 stipulating that FEZs are established at the Government's initiative. There are currently four FEZs in Armenia, each with its own economic specialisation.

The first FEZ, **ALLIANCE**, was established in 2013 to specialise in high technology production, innovation and IT[28]. A review of the origins of the FEZ resident enterprises shows that Armenia pursues an open policy to attract foreign companies as residents: as of 2018, seven out of the nine officially registered residents of ALLIANCE FEZ were foreign companies, one was a joint venture between Russia and Armenia, and just one company was registered as an Armenian one[29].

In 2018, ECOS FEZ was established, aiming to stimulate the development of a digital business environment and the production of innovative technology-based products and services by attracting high technology start-up companies from all over the world. Also, there are the special cases of Meridian FEZ established in 2014 to develop the jewellery cluster in Armenia and raise the competitiveness of its jewellery industry in general, and Megri FEZ, founded to promote integration and development of trade and economic relations with Iran and to position Armenia as a link between Iran and the EAEU countries and Georgia.

[28] Investment Guide Armenia, KPMG (2016).

[29] Biznes-putevoditel' po Respublike Armeniya [The Business Guidebook to the Republic of Armenia] Trade Representation of the Russian Federation in the Republic of Armenia, 2018.

Belarus

The priorities of the cluster policy of Belarus are set out in the 'Concept of the Formation and Development of Innovation and Industrial Clusters in the Republic of Belarus' approved by the resolution of the Council of Ministers of the Republic of Belarus dated 16 January 2014. According to the Concept, the main conditions for and drivers of cluster development in the national economy include:

- ownership reforms intended to promote the growth of the small and medium-sized business sector, and development of a favourable competitive environment in the economy;
- the investment and structural transformation of the economy towards digitalisation and a switch to growth based on high technology industries; and
- clear division of functions between Government regulation and economic management for the exclusive benefit of functions of strategic development of industry activities.

Also, the National Strategy of Sustainable Socio-Economic Development of the Republic of Belarus for the Period to 2030 reflects the intention of Belarus to take part in 'the formation of co-operative processing chains with enterprises in EAEU countries (in the form of holding structures and cross-border clusters in boundary regions) in machine-building, chemical industry, and metal processing, and to establish joint marketing alliances with them in third countries' markets'

In its National Concept, Belarus points out the main obstacles to the development of cluster initiatives: low competition, a less than flexible economic management system, vertical links prevailing over horizontal ones, an insufficient number of skilled experts competent to develop and implement cluster initiatives and projects, considerable presence of the public sector in the economy, and insufficient development of small and medium-sized businesses.

According to the Ministry of Economy of the Republic of Belarus, there are currently four clusters operating in the country: 'Medicine and Pharmaceuticals – Innovative Projects' in the Vitebsk Region, 'Innovative Instrument Engineering' and 'Infopark' in Minsk, and 'Technopark Polesye' in the Brest Region. The ministry also notes four energy and green economy clusters emerging. A special feature of clusters in the Republic of Belarus is that their participants are granted tax exemptions and other benefits, which makes them similar to FEZs. It should also be noted that e.g. in the case of

the Infopark cluster a set of criteria exists for membership of the Park that cover not only its members' activities matching the cluster's purpose but also the enterprises' efficiency, scale and success.

Box 3.

Comparing the criteria for participation in the information cluster in Belarus with the criteria for FEZ operators (residents) in Armenia we see the difference between the approaches to their development: the criteria prevalent in Belarus include signs of financial success and economic capacity, while Armenia places emphasis on international and reputational components important for the attraction of international partners and investors. This is a vivid example of the difference between the strategies followed in Armenia and Belarus (Table 2).

Table 2. Criteria for membership in innovation and industrial infrastructure objects in Belarus and Armenia

Criteria for Membership of the Infopark Cluster in Belarus	Criteria for FEZ Operators in Armenia
Main Criterion • 'Core business' criterion: the enterprise's core business should consist of the development of information technology, including software. **Basic Criteria**[30] ***Main Basic Criteria*** • 'Efficiency' criterion: average revenue per employee should be at least the equivalent of EUR 800. • 'Remuneration' criterion: the average wage of the enterprise's employees should be at least the equivalent of EUR 500 ***Additional Basic Criteria*** • 'Maturity' criterion: the enterprise should have operated for at least six months since registration and before joining the association. • 'Scale' criterion: the enterprise should have employed at least five persons over a one-year period. • 'Success' criterion: the enterprise's return on sales should have been at least 5% in the reporting period. • 'Reciprocity' criterion: mandatory accession to the declaration 'On Voluntary Mutual Obligations in Respect of Hiring Specialists'.	• Each potential operator's business should be consistent with the purpose of the free economic zone; • The list of services provided by the operator, and their tariffs; • Amount, purpose and term of investment, including form (financial or property investment); • Steps taken to secure international recognition of the free economic zone's brand and disseminate it, including the existence of marketing agreements and work to attract international brands and other operators to the free economic zone; • Experience in the organisation of free economic zones (will be considered an advantage); • Division of the organiser's and the state's duties, and the parties' participation ratio; • Justification of the need to create the free economic zone (in the case of a private initiative); • Environmental impact assessment; • Number of jobs that the operator intends to create, and wage amount.

Source: prepared by the authors using data from the Infopark research and technology association and the Ministry of Economy of the Republic of Armenia

[30] Scientific and educational organisations may be exempted from the application of the basic criteria by decision of the association's council.

Kyrgyzstan

In Kyrgyzstan, cluster initiatives are reflected in the 'Concept of Regional Policy of the Kyrgyz Republic for 2018–2022'. Kyrgyzstan views clusters in their classical sense (as defined by Porter) as an efficient instrument for the development of the country's territories based on the principles of specialisation. The concept defines clusters as regions' points of growth and considers 20 locations as the most promising ones for such points of growth: Bishkek, Osh, Karakol, Balykchy, Naryn, Kochkor, Tokmok, Kara-Balta, Talas, Isfana, Batken, Kadamjay, Uzgen, Kara-Suu, Sary-Tash, Tash-Kumyr, Karaköl, Jalal-Abad, Kerben, and Kochkor-Ata. The cities of Bishkek and Osh will be developed under separate programmes due to their strategic importance and more diverse economies.

The national strategies name specific areas of cluster development in Kyrgyzstan, particularly in light industry. The concept's vision of further development of light industry consists in its clustering, with a view to raising its efficiency, increasing its innovation potential, and integration with related industries. The promising outlook for light industry as the main field of cluster development results from the local human and raw material resources, experience accumulated in light industry, and manufacturing ties: textile, apparel, knitwear, leather, and other industries. The main purpose of the textile cluster initiatives in Kyrgyzstan is to create national value chains that will integrate all the stages of light industry production: from the supply of raw materials to delivery of the finished product to the end consumer. Moreover, Kyrgyzstan regards textile cluster initiatives as a means of increasing its presence in international markets. The creation of a highly efficient and competitive light industry will generate a considerable multiplier effect for the whole economy and create points of growth in various regions of the country. Clusters will help make light industry a profitable sector of the economy.

Box 4.

Analysis of regions' location quotients based on the number of those employed and comparing these gives an understanding of what cluster potential exists in various industries of Kyrgyz regions. A quotient above 1 indicates possible specialisation potential. The table also specifies regional points of growth of various levels as defined in the Concept of the Regional Policy of the Kyrgyz Republic for 2018–2022.

Table 3. Cluster Development Potential of Regions of Kyrgyzstan in 2018 as Defined on the Basis of the Regions' Specialisation[#]

Economic activity	Location quotient
Batken Region	
Agriculture	1.29
Extraction and processing of commercial minerals	5.62
Water supply, purification, and waste treatment	2.41
Construction	1.06
Education	1.11
Arts, entertainment, and recreation	1.24
Jalal-Abad Region	
Agriculture	1.07
Extraction and processing of commercial minerals	1.42
Manufacturing	1.27
Supply of electricity, gas, steam, etc.	1.19
Financial intermediation and insurance	1.05
Education	1.30
Health care and social services	1.03
Arts, entertainment, and recreation	1.76
Issyk-Kul Region	
Water supply, purification, and waste treatment	1.04
Agriculture	0.76
Hotels and restaurants	0.80
Naryn Region	
Agriculture	2.19
Extraction and processing of commercial minerals	3.24
Water supply, purification, and waste treatment	2.18
Public administration	1.15
Education	2.29
Arts, entertainment, and recreation	2.13
Supply of electricity, gas, steam, etc.	0.64
Transportation and cargo storage	0.44
Osh Region	
Agriculture	1.51
Construction	1.35
Wholesale and retail trade	1.02
Transportation and cargo storage	1.06
Hotels and restaurants	1.44
Talas Region	
Agriculture	2.50
Extraction and processing of commercial minerals	0.24
Transportation and cargo storage	0.57
Water supply, purification, and waste treatment	5.03
Education	1.09

[#] Industries that are 'first, second and third level points of growth' according to the Concept of the Regional Policy of the Kyrgyz Republic for 2018–2022 are marked with blue colour.

Chuy Region	
Manufacturing	1.79
Extraction and processing of commercial minerals	0.18
Water supply, purification, and waste treatment	1.68
Transportation and cargo storage	1.36
Professional, scientific and technical activities	1.51
Administrative and support service activities	1.50
Health care and social services	1.27
Arts, entertainment, and recreation	1.01
Bishkek	
Manufacturing	1.37
Supply of electricity, gas, steam, etc.	1.36
Wholesale and retail trade	1.34
Transportation and cargo storage	1.13
Information and communication	2.52
Financial intermediation and insurance	1.82
Real estate activities	4.99
Professional, scientific and technical activities	1.59
Administrative and support service activities	1.96
Public administration	1.74
Health care and social services	1.25
Arts, entertainment, and recreation	1.28
Education	1.0
Osh	
Supply of electricity, gas, steam, etc.	1.26
Extraction and processing of commercial minerals	0.17
Construction	1.99
Wholesale and retail trade	1.49
Transportation and cargo storage	1.05
Hotels and restaurants	1.44
Information and communication	1.45
Financial intermediation and insurance	2.25
Health care and social services	1.11
Education	0.97

Source: calculated by the authors from data of the National Statistical Committee of the Kyrgyz Republic

It should be noted that, besides light industry, which is considered the most promising sector for cluster initiatives, there are other sectors with significant potential for cluster development. However, the points of growth defined in the Concept often differ from the industries with higher location quotients. The Concept also mentions the existence of pre-requisites for the development of the following clusters:

- educational (cities of Bishkek and Osh);
- construction (Chuy and Osh regions);
- tourist industry (Issyk-Kuk Region);
- petrochemical (Jalal-Abad Region);
- agro-industrial (most territories);
- livestock farming (Chuy and Naryn regions);
- transport and communication (Naryn, Osh, Issyk-Kul, and Chuy regions and Bishkek);
- medical and pharmaceutical (Bishkek).

The Concept shows that Kyrgyzstan applies a comprehensive approach to cluster development and closely identifies it with the creation of points of growth in all the regions of the country.

Kazakhstan

Kazakhstan's national approach to cluster formation and development was worked out in 2014 as part of Decree No. 874 of the President of the Republic of Kazakhstan dated 1 August 2014 'On Approval of the State Programme of Industrial and Innovation Development of the Republic of Kazakhstan for 2015–2019' (hereinafter referred to as 'SPIID') that declared cluster initiatives 'an important instrument for promoting industrial development, competitiveness and efficiency of the economy'. Cluster development of Kazakhstan is specific in that its cluster initiatives fall into two groups: narrowly specialised territorial clusters (six pilot clusters: a flour mill cluster in the Kostanay Region, a tourist cluster of the Almaty Region, a construction cluster in the Karaganda Region, a furniture cluster in Almaty, a milk processing cluster in the Akmola Region, and a pharmaceutical cluster in the Turkistan Region) and a national cluster that encompasses three 'sub-clusters' located in the Atyrau, West Kazakhstan and Mangystau regions.

The national cluster of Kazakhstan was established in order to diversify the economy of the country's western region and to make its oil and gas enterprises more efficient and competitive by employing new technology, making new competitive products, and more active involvement of micro, small and medium-sized businesses in the energy industry[31]. One more group, innovation clusters, is expected to join them by 2050.

It should be noted that Kazakhstan, like most EDB member countries, closely associates cluster development with a strategic approach to regional development, as indicated by the inter-regional schemes for the development of the Western, Central and Southern regions adopted in 2017 as parts of the Resolution 'On Approving the Inter-Regional Schemes of Territorial Development of the Republic of Kazakhstan'. Also, Kazakhstan's cluster policy is distinguished by efforts to attract foreign companies and cooperation with international organisations for its development and implementation[32]. Thus, the RK Government adopts a cluster development strategy providing for greater participation by international partners in order

[31] Inter-Regional Scheme of the Territorial Development of the Western Region.

[32] An example is the 2016 contract for the provision of cluster policy deployment services in Kazakhstan, entered into between the Ministry of National Economy and Spanish consulting company INFYDE LTD. The European Foundation for Cluster Excellence and The Cluster Competitiveness Group Inc. were invited to provide consulting services on raising the potential of the Kazakhstan Centre of Industry and Export, the operator of the cluster policy in Kazakhstan, as well as that of other interested parties.

to identify and realise their production potential (a transplant strategy). An integral part of the national strategy is its emphasis on human resources development for efficient development of the clusters. Kazakhstan's cluster policy seeks 'a transition from industrial clusters based on value chain creation in traditional sectors in the economy to innovation clusters based on key competencies, transfer of knowledge and technology in innovative entrepreneurship.' Another specific feature of the Kazakh approach to cluster policy is the official appointment of the Kazakhstan Centre of Industry and Export JSC (QazIndustry) as the territorial clusters' operator at the national level.

Notably, active cooperation with international specialists in cluster development has enabled Kazakhstan to obtain certification by the European Secretariat for Cluster Analysis (ESCA), with all six clusters assigned the 'Bronze' level of cluster management excellence. Successfully passing benchmarking will enable the Kazakh clusters to register in the EU cluster platforms and take part in competitions for grant support from the EU Government.

Box 5.

Figure 3. Purposes and Initiatives of the Pilot Clusters in Kazakhstan: Raising Existing Businesses' Competitiveness

Construction cluster, Karaganda Region

Improve the quality of building materials, works and services and to master new trends in the construction sector

- Mastering the construction of energy-efficient and smart facilities, and development of the building re-construction and modernisation sector
- Analysis of prospective markets
- Creation of a competence centre and a certification centre
- Cooperation with Spanish construction companies

Pharmaceutical cluster, Turkistan Region

Increase the domestic market share to 20% and initiate export activity

- Development of herbal medicinal products and nutriceuticals
- Establishment of a research laboratory
- Establishment of a Competence Centre
- Mastering local herbal substances
- Studying the export markets
- Organisation of an exhibition of herbal products involving Korean firms and companies

Furniture cluster, Almaty City

Double the domestic market share and initiate export activity

- Development of the contract furniture sector
- Quality improvement through standardisation
- Creation of a Competence Centre with an emphasis on interior design
- Creation of show-rooms in Nur-Sultan, Almaty and Shymkent
- Carrying out a study of board materials
- Cooperation with designers and developers

Flour mill cluster, Kostanay Region

Diversify the export market of flour mill products

- Facilitating the development of the services market: diagnosis and repair of modern milling equipment
- Attraction of EU grant resources for value chain (VC) creation
- Organisation of monitoring studies of the status of the mill products market in prospective importing countries
- Facilitating the use of new technology to expand the product range

Milk processing cluster, Akmola Region

Supply the domestic market with products of higher quality and ensure food security

- Attraction of EU grant resources for VC creation
- Study the sustainable use of forage and other lands
- Establishment of a Competence Centre
- Study the dairy products market
- Process audit of enterprises
- Better market positioning of the local brand

Tourist industry cluster, Almaty City and Region

Improve the quality and availability of tourist products and services

- Assistance in the development and implementation of minimum standards and a quality assessment system in the tourist industry
- Creation of a Competence Centre taking into account the needs of businesses
- Assistance in the improvement of statistical record-keeping in tourism
- Making the regional tour operators' and other tourist organisations' services more digitally accessible by launching an online platform/portal

Source: Kazakhstan Centre of Industry and Export (QazIndustry)

Russia

Russia is the leader among the EDB member countries in terms of number of cluster initiatives and industries in which they operate, with 119 clusters from 28 industries[33]. Cluster initiatives were first mentioned in the 'Concept of Long-term Socio-Economic Development of the Russian Federation for the Period to 2020', approved by Resolution No. 1662-r of the Government of the Russian Federation dated 17 November 2008, that highlighted them as instruments of 'balanced spatial development', which laid the foundation for the appearance of the first industrial clusters. In 2015, the Russian Ministry of Industry and Trade launched its own programme of support for industrial clusters. The programme aims at import substitution through the development of value chains in industrial clusters.

In the field of innovation, in 2011 the development and implementation of the cluster initiative became part of the first stage of the realisation of the country's innovation potential under the 'Strategy of the Innovation Development of the Russian Federation for the Period to 2020'. As a result, in 2012 the first specialised national programme on innovative territorial clusters (ITCs) was adopted, aiming primarily to facilitate the creation of value chains and economic growth of regions of the Russian Federation. At present, some 30 ITC are operating nation-wide.

An important feature of Russian cluster policy consists of a gradual transition from national to regional cluster policy through de-centralised management of cluster development. While clusters receive subsidies from the federal budget, operations management is actually conducted by Cluster Development Centres (CDCs) under the auspices of the local executive authorities. The CDCs are specialised organisations designed to implement cluster policy in the regions by assisting small and medium-sized businesses through a range of consulting and organisational services. There are currently more than 40 CDCs in Russia[34].

A new round of the implementation of the cluster policy started in 2016 as the Russian Ministry of Economic Development launched a priority project entitled 'Development of Innovative Clusters, Global Level Leaders in Investment Attractiveness', whose main purpose is to create points of accelerated economic growth, innovative development, increased high technology exports, and make the Russian economy more competitive. An active import substitution policy, resulting from tense relations with traditional foreign partners in the fields of technology and innovation and from the impact of currency exchange rate changes on the price of imports, serves to catalyse

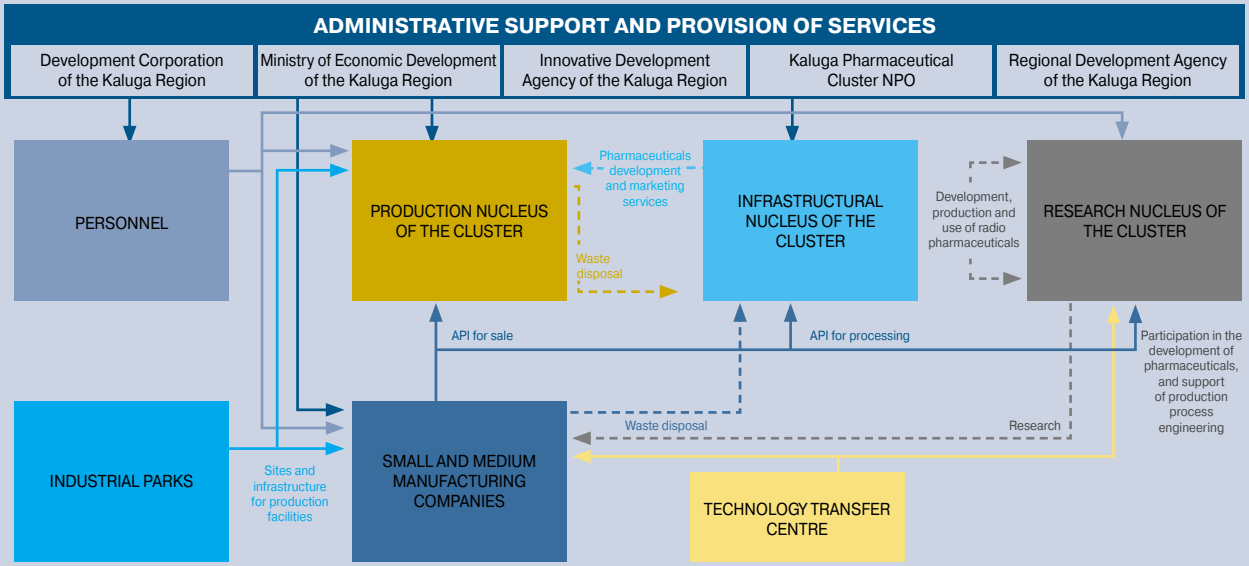
[33] According to the Russian Cluster Observatory.

[34] According to the Russian Cluster Observatory.

continued development of innovation clusters. In 2018, Russia had four ESCA certified clusters (one 'silver' and three 'bronze' certificates)[35]. A vivid example of a successful cluster initiative is the pharmaceutical cluster in the Kaluga region formed in 2011, which became the first Russian holder of a 'silver' ESCA certificate in 2017. All the leading innovation clusters of Russia use a hybrid development strategy and actively engage with a broad range of foreign partners, which considerably strengthens their synergetic effect and enables them to grow their investment potential. The cluster's purpose is to 'form a high technology research and production complex of territorially interconnected and complementary production facilities and infrastructure organisations with a view to developing, mastering, and producing new generation pharmaceuticals and medical products'[36]. Notably, in addition to the pharmaceutical cluster, the Kaluga Region is now actively developing clusters in seven other industries. The volume of the leading cluster companies' non-commodity exports is expected to grow by 52% by 2025; the number of highly productive jobs will grow by 88%, and the value of joint R&D projects will double, as will the total number of foreign patents for inventions[37].

Box 6.

Figure 4. Cooperation Ties of the Kaluga Pharmaceutical Cluster



Source: Ministry of Economic Development of Russia, JSC RVC, and National Research University Higher School of Economics.

[35] Cluster Policy in Russia: Reaching Global Competitiveness. Issue 2 / V. Abashkin, S. Artemov, A. Gusev et al.; Ministry of Economic Development of the Russian Federation; RVC JSC; National Research University Higher School of Economics. – Moscow: HSE, 2018. Available at: https://cluster.hse.ru/mirror/pubs/share/226124073

[36] The Kaluga pharmaceutical cluster, http://www.pharmclusterkaluga.ru/

[37] Klasternaya politika: dostizhenie global'noj konkurentosposobnosti [Cluster policy: achievements in global competitiveness]. M.: NRU HSE, 2017.

Tajikistan

Tajikistan defined the goals of its cluster development in 2016 as it adopted the 'National Development Strategy of the Republic of Tajikistan for the Period to 2030'. The Strategy envisages a complete switch to a new model of economic growth by 2020, to be followed by a second stage of the strategy, aiming at accelerated investment-based growth (2021–2025). At the latter stage, Tajikistan intends to use clusters to make its national economy more competitive, integrate it into global and regional value chains, and develop its regions. Cluster development will be based on sharp growth in both foreign and national investment in the real sector and infrastructure.

The strategy also identifies a number of industries in which Tajikistan is planning to develop clusters: the AIC, industry, education, transport and logistics, and the creative economy. The development of cluster initiatives in those sectors is considered an opportunity for forming competitive production chains with a view to import substitution and raising exports. Moreover, given the broad spectrum of industrial and innovation infrastructure facilities that Tajikistan also regards as cluster initiatives (new industrialisation and integration areas, free economic zones, business incubators, technology parks, and innovation centres), its positive 'cluster landscape' development trend will promote the formation of an entrepreneurial culture in the country through the establishment of a 'multi-level institutional support system'. There are no cluster initiatives in the Republic's territory as of now, so its strategic approach to their development is difficult to classify. Yet in 2019 the first steps were taken to establish a cluster for innovation and research in the field of integrated water resources management, as a tripartite memorandum was signed by the Ministry of Energy and Water Resources of Tajikistan, the Shirinsho Shohtemur Tajik Agrarian University, and the Regional Environmental Centre for Central Asia.[38]

[38] Regional Environmental Centre for Central Asia, https://www.carececo.org/main/news/news/cluster-TJ/

CLUSTER DEVELOPMENT AND INTERNATIONAL COOPERATION

Clusters as an efficient tool for deepening cooperation

Clusters may be an efficient instrument for deepening cooperation and strengthening horizontal ties and, consequently, a driver of integration processes in the Eurasian space. Joint projects, development of cross-border clusters, increasing cross-border flows of foreign direct investment and international and regional exchange of experience and best practice are effective levers for strengthening integration in the field of cluster initiatives.

In the context of the Eurasian Economic Union (EAEU) that includes all the EDB member countries except Tajikistan, its common customs infrastructure is an important feature of cluster development. The customs union's deeper internal market makes clusters, particularly export-oriented ones, far more attractive than similar formations in individual countries. The absence of tariffs within the customs union adds to industrial clusters' interest in exporting to other countries of the EAEU.

Economists believe that the Union's countries should join their efforts as soon as possible and enable their industries that can compete in the global economy to develop on their own, while seeking the inclusion of other enterprises – also promising but working at a loss now – in global value chains in order to steadily increase their competitiveness and bring their products to the global markets. [39]

Case Study: Integration and Cluster Potential of Agro-Logistical Centres

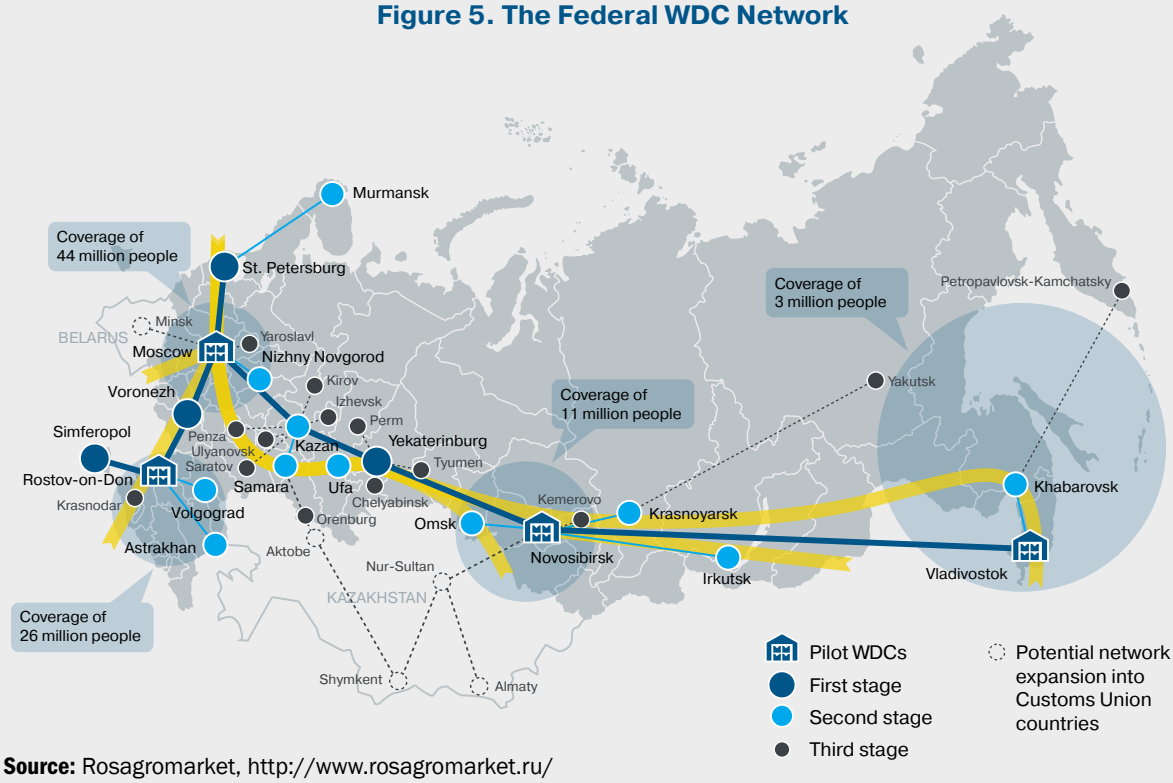
Among promising initiatives based on clustering principles that will serve as centres of economic activity in rural areas we highlight Wholesale Distribution Centres (WDCs). WDCs are versatile sites that provide a range of produce storage, quality control, post-harvesting treatment, washing, packaging, sale, and transportation services. In the context of a sizable presence of the agricultural sector in the EDB member countries and domination in some of their regions, the establishment of WDCs becomes a logical stage in their regional development policies. In the context of Russia, WDCs

[39] Pilipenko I.V., THE EURASIAN ECONOMIC UNION: QUO VADIS? Available at: http://www.i-pilipenko.narod.ru/Pilipenko-EAEU_Quo_vadis-No.1-Vol.4-2019.pdf

will give its agrarian regions a broader opportunity to integrate into the national economy, market their food produce at the levels of big, medium-sized and small businesses and thus improve the regional populations' well-being. For example, in the North Caucasian Federal District (NCFD) 18% of those employed are working in the agricultural sector, which accounts for 11% of all the enterprises registered in the region and for more than 16% of its added value[40]. These values are well above the sector's average nation-wide figures, which shows the region to be well-placed to form agricultural clusters. According to the RF Ministry of Agriculture, WDCs are operating in five regions of the NCFD: Ingushetia, Kabardino-Balkaria, Stavropol Territory, Dagestan, and Karachay-Cherkessia. The establishment of such agro-logistical centres is expected to help improve economic ties among the countries' regions and raise some regions' produce export potential. Moreover, WDCs are a solution to the problem of the considerable losses that occur during the storage of unsold grain and vegetables[41].

Importantly, the Russian Ministry of Agriculture has developed a master plan for the establishment of agricultural produce wholesale distribution centres, entrusted to the RosAgroMarket holding company. The federal WDC network will include 60 facilities in 48 regions of the country that will be connected by unified information and trade systems to permit tracking and adjustment of goods flows among the federal districts.

Figure 5. The Federal WDC Network



Source: Rosagromarket, http://www.rosagromarket.ru/

[40] Calculated by the author using data from the Federal State Statistics Service.

[41] Statement by the Ministry of Agriculture of the Karachay-Cherkess Republic, https://tass.ru/ekonomika/4614747

WDCs are of special interest, for positive experience of creating them may be replicated in other EDB member economies in which agriculture plays an important role. A well-conceived approach to WDC location may pre-determine their impact on the integration processes in the region and increase their economic significance and spill-over effects if they are located near operating infrastructure (a highway or railway). This will, in turn, serve as a basis for WDC integration: in the future, WDCs are expected to help form a single trade and logistical space to include Russia, Belarus, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and even China[42]. It was with this prospect in mind that the RosAgroMarket holding company and the Ministry of Agriculture of Kyrgyzstan signed a memorandum in February 2019[43].

In Kazakhstan, the WDC creation and development measures are already being widely implemented. State departments, business and the Asian Development Bank are co-operating actively to expand the country's transit potential and use its geographical location in creating the WDC network in accordance with the world's best practices. The Atameken National Chamber of Entrepreneurs of the RK has begun supporting four pilot WDC projects in the cities of Nur-Sultan, Almaty, Karaganda and Aktobe[44]. According to calculations by the Ministry of Agriculture of Kazakhstan, the creation of the WDC network will reduce food prices by 13% on average and reduce transportation and storage losses by 20%[45]. In addition, WDCs may serve as a food security mechanism. Due to the specifics of the EDB member economies, in which agriculture holds a prominent place, WDCs are a real tool for making this sector more competitive by achieving synergies in clustering the enterprises. Moreover, combined with a comprehensive approach that includes the development of infrastructural networks, WDCs may spur the integration process among regions and countries.

[42] http://www.rosagromarket.ru/na-vystavke-prodekspo-2019-kompaniya-rosagromarket-predstavila-proekt-sozdaniya-seti-optovo-raspredelitelnyh-centrov.html

[43] http://www.rosagromarket.ru/publication_one_54.html

[44] http://atameken.kz/ru/news/30461-hod-sozdaniya-optovo-raspredelitel-nyh-centrov-obsudili-v-atamekene

[45] WDC development map, 2017, Ministry of Agriculture of the RK.

Participation of international financial institutions in cluster development

Noteworthy is the participation of international financial institutions in the development of national cluster policies and initiatives in EDB member countries, which may take such forms as financing, technical assistance, grants, and development programmes and strategies. In the Eurasian space, major IFIs' activities are mainly limited to the World Bank's projects in Kazakhstan and the investment activities of the European Bank for Reconstruction and Development (EBRD) in Russia (the projects are already completed) and Belarus (one project at the approval stage).

In the process of the provision of a loan to Kazakhstan by the International Bank for Reconstruction and Development (hereinafter referred to as the 'World Bank'), a project entitled 'Raising the Competitiveness of Small and Medium-Sized enterprises' was initiated, aimed primarily to increase the potential of Kazakh SMEs and strengthen their ties in competitive sectors of

the economy. Under the auspices of this investment project, the World Bank provides technical assistance under a programme for the development of competitive industries and innovation through the design and application of cluster development approaches and methodology. Moreover, this project's key performance indicators include the number of specific activity initiatives advanced to make the clusters more competitive. According to its Project Appraisal Document (PAD956), considerable attention is also accorded to expanding the expertise of the Kazakhstan Centre of Industry and Export as the organisation responsible for cluster development in the RK. The World Bank's project in Kazakhstan stands out due to its comprehensive nature.

Before it discontinued its activities in the RF in 2014, the EBRD was the most active in financing cluster development in Russia – under two projects, including one joint project with the Black Sea Trade and Development Bank (BSTDB), intended to diversify regional economies and support the establishment of more horizontal ties among enterprises:

- **Pulkovo Technopark, second stage** worth EUR 49.3 million. Funding of the second stage of construction of the Pulkovo Technopark with a view to providing high-technology companies and their service providers with high-quality office space and business development services. The project was considered important for the further development of clusters in the region and for the creation of a successful technology park ecosystem.

- **Industrial park in the Kaluga Region** worth EUR 22.2 million (jointly with the BSTDB). Funding of the construction of an industrial facility with considerable logistical capacity near the Volkswagen plant to support suppliers of automotive components.

In July 2019, the EBRD approved funding to the amount of EUR 45 million for a project in Belarus aimed at creating a furniture production cluster in the Grodno Region.

Infrastructure is an integral part of any cluster's development, for it provides links among all the participants in the cluster and, moreover, links the cluster itself to the national, regional and global economy. Infrastructure is a promising area for IDB lending. Successful experience in this field (cluster development) means interdependence and integration of the production processes. In the absence of the required infrastructure, clusters will have no positive social or economic effect in their region or country. Due to the specifics of infrastructural development and the experience and best practices accumulated by the IDBs, the investment projects for the development of clusters' infrastructural networks are a forward-looking strategic activity.

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