

# Antecedents and Barriers to the Formation of Regional Innovation System: Case Study of the Kaliningrad Region

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## Abstract

The article summarizes various scientific approaches to the definition of the regional innovation system, while a certain tendency to consider it as a phenomenon similar to the innovation cluster is revealed. The study has shown the role of the state in the Russian model of the regional innovation system compared to the Asian, European, and North American approaches. A general unified goal is defined for the Russian regions in the process towards the formation of an innovation system. Authors have identified five main groups of factors that have a positive effect on the formation of the regional innovation system and a regional cluster as its core. Estimates on the process of the formation of the innovation system in the Kaliningrad region is given relative to all five groups of factors. Research results suggest certain barriers to the formation of the regional innovation system of the Kaliningrad region – the Russian exclave on the Baltic Sea.

**Keywords:** regional innovation system, cluster, innovation factors, Russia, Kaliningrad region

## 1. Introduction

A significant impact on the disproportion of the world's spatial arrangement has the internationalization process, which is characterized by an escalating aspiration of individual organizations and even entire states to form relationships and respective interdependencies, leading to the emergence of economic, political, military, cultural and other associations at the international level. Globalization, in turn, reflects on the current stage of internationalization, which is accompanied by expansion and deepening of global communications and acceleration of the collaboration process. One of the most important factors determining the nature and extent of internationalization achieved is the level of technological development, since it directly affects the degree of integration into the global exchange of knowledge and information flows. Internationalization of the regional economy is accompanied by the growing role of networking of economic functions and processes. Vertical hierarchical structures are increasingly giving way to hybrid organizations with a predominance of horizontal linkages.

Along with the development of science and technology, and the formation of a polycentric model of distribution of excellence centers, the essential value was acquired by internationalization of research activities and its elaborated form – the globalization of innovations. This process includes the international exploitation of technologies developed at the national level, the global generation of innovations by multinational corporations and a global scientific – technological cooperation (Archibugi and Iammarino, 2002; Mikhaylova and Mikhaylov, 2014).

The expanded access to the standard factors of production, technologies and information led to a paradox when a sustainable competitive advantage is local in nature, i.e. related to the characteristics of a particular region and cannot be fully alienated from its source and transferred (Porter, 1998). The role of regional clusters and innovation systems as points of economic growth on an international scale has escalated dramatically. In this regard, regions are increasingly considered in two capacities: as an independent party of innovation processes at different hierarchical levels; and at the same time a complex system consisting of a plurality of linkages and interdependencies, characterized by social embeddedness (Lorentzen, 2007), while having a specific ability to innovate. Of particular importance are the questions related to the search for tools, capable of active scientific, technological, and innovative development of the region. These issues are particularly relevant to the regions of Russia, especially to the most western subject of the Russian Federation – the Kaliningrad region – an exclave on

the Baltic Sea. This region is characterized by an active governmental policy taken as to build regional innovation clusters, seen as gravity points of economic development, bridging its peripheral border location. The purpose of this article is to identify groups of factors that have an impact on the formation of the regional innovation system (RIS) and the regional innovation cluster (RIC) as its core, and identify barriers to the innovative development of the Kaliningrad region.

## 2. Theoretical Background

### 2.1 Regional Innovation System: The Western Approach

Formation of the Regional Innovation System (RIS) concept refers to the early 1990s, and directly relates to the research of P. Cooke. He proposed one of the early definitions of RIS in 1992. Research on innovation systems of different regions involved studies of Asheim and Isaksen (2002), Asheim and Gertler (2005), Doloreux and Parto (2004), Cooke (1992), Cooke and Morgan (1998), Isaksen (2001), Maskell and Malmberg (1997) to name just a few. Especially significant influence on the study of RIS had the concept of National Innovation Systems (NIS) developed by B.A. Lundvall (1992) and R. Nelson (1993), and M. Porter's concept of clusters (1998).

A key methodological problem of studying RIS is to determine the criteria of selecting an object of study, i.e. the sampling method. According to P. Cooke and K. Morgan (1998), in a strict sense, only three regions in the world can be regarded as full-fledged RIS: Silicon Valley, Emilia-Romagna and Baden-Wuerttemberg. However, a broad interpretation of the region as a concept, as well as the innovative system concept has led to the empirical diversity of the types of RIS found. Scientists C. Dreger and G. Erber (2010) noted that the differences between the types of RIS in practice relate to their size (large, medium, small), level of development (developed, less developed and catching up), and a focus on innovation of a certain character (high-tech or low-tech). P. Cooke (1992) has proposed his own typology of RIS, advocating for the three main types: simple, networked, and dirigiste (i.e. centrally planned). Subsequently, the Swedish scientists B.T. Asheim and A. Isaksen (2002), based on research results of the Norwegian RIS, have refined this classification. Table 1 gives a brief description of each of the three types of RIS initially proposed by P. Cooke and further refined by B.T. Asheim and A. Isaksen.

Table 1. Comparative characteristics of the types of regional innovation systems proposed by P. Cooke, B.T. Asheim and A. Isaksen

Criteria	Types of RIS		
	simple	networked	dirigiste
Name	territorially embedded RIS	networked RIS	regionalised national innovation systems
Development model	endogenous	endogenous	exogenous
Principle of formation	bottom-up	bottom-up	top-down
Basis of innovative cooperation	geographical, social and cultural proximity	network links	similarity of competencies
The learning process	localized	localized	integrated into the innovative system of higher level
The combination of explicit and implicit knowledge in the learning process	prevalence of tacit knowledge	combination of tacit and codified knowledge, the growing demand for the latter	predominance of codified knowledge
The flow of new knowledge	interactive	interactive	within specific innovation projects
Interaction of firms in the region with the research sector	links are almost absent	links are limited to the regional level	links beyond the region
The prevailing nature of the knowledge generated	applied	combination of applied and fundamental	basic (i.e. fundamental)
The predominant nature of innovation	consistent improvements	new to the region / country	radical

Represented types of RIS suggest that there is the potential ability to generate innovation by the regions of different development levels, both high and low. The totality of incentives and constraints creates the preconditions for the formation of one of the types of RIS from those described above. In this context, the identification of existing drivers and barriers to the innovative development of a particular region determines the type of RIS that is the closest to its current conditions. Based on knowledge of a certain type of RIS and its features, the authorities can more effectively build a regional innovation policy, using the most appropriate tools for action.

### 2.2 Regional Innovation System: The Russian Approach

In recent years, Russian scientists have taken an active role in studying the concept of RIS. A number of top articles of the leading Russian scientists were evaluated in order to highlight the nature of clarifications made within the concept of RIS (see Berezhnaya and Smirnova, 2011; Egorova and Avilova, 2007; Monastyrnyi, 2005; Sukhovey and Golova, 2007; Suslov, 2012; Pilyasov, 2012; Zadumkin and Kondakov, 2008; Zhiharev, 2010; etc.). Table 2 presents a summary of an object and nature of clarifications made by the Russian scholars with regards to the RIS concept.

Table 2. Perfection of representations about RIS in the Russian science over the past decade

The object of clarification within RIS concept	The nature of clarification
Elements	Expansion of the actors' diversity, their division into groups on a functional basis with respect to their role in the innovation process; the emergence of different approaches: institutional, network, organizational, functional, complex.
Innovative (main) activity of the elements	Along with the traditional functions (generation, commercialization and diffusion of innovations) scholars allocate additional ones, such as approbation of innovations, initiation of new technologies, generation and dissemination of new knowledge
Relationship between the elements	A more complete account of the variety of relations within the RIS, including through joint consideration of cooperative ties and competitive relations; an indication of the networked type of connections between the actors
Territorial identity	Indication to a particular territory / region
Basis for actors' association	Voluntary nature of association of actors is observed; the presence of mutual interest and common goals of improving the efficiency of the innovation process and the use of resource opportunities in the region

The results of a broad literature review of about 30 scientific papers of the leading Russian scientists on the concept of RIS suggests that the representations over the concept of RIS are largely consonant with the concept of RIC. Among the major similarities of the RIS and RIC concepts are:

- composition of the participants;
- indication of the geographical location of actors;
- networked nature of links;
- interactions are focused on the generation and diffusion of innovation.

In our opinion, this similarity is due to the fact that RIC forms the core of RIS. Hence, some of its properties are transferred on to the entire system (i.e. RIS). The formation of innovation cluster is an important prerequisite to the emergence of a full-fledged innovation system of the region. However, we believe it is incorrect to equate the two, since RIS is a broader phenomenon, and may include one or several innovation clusters. Important distinguishing characteristics of RIS from RIC are the incorporation of an innovative environment in which the innovation process is localized, along with a higher level of institutional infrastructure involved.

By studying the different types of RIS, Russian scientists tend to set themselves a task to identify the features inherent to the Russian regions in comparison with North American, European or Asian. Some scholars, such as Suslov (2012), come to the conclusion about the inefficiency of the Russian model of RIS, as it is not conducive

to the emergence of synergies between the individual elements of the innovation system, which is a major barrier to innovative development of the region. Yet Russian approach to the construction of RIS is a certain type of combination of the features of North American, European and Asian models (see figure 1).

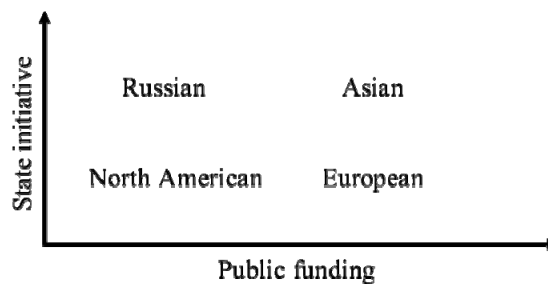


Figure 1. Role of the state in various models of regional innovation system

The principal feature of the Russian model, showing its nonviability in the formation of the RIS, is a lack of coherence between government and business under conditions where the initiative comes from the state (“top-down”). In other words, the strategic vision of the authorities over the innovative development path of the country, which it translates to the society, has no real financial support neither on behalf of the state, nor from the private sector.

Lack of awareness of the business community in the vital necessity to innovate (besides being imposed “top-down”) and, consequently, of a single unifying idea; underdevelopment of market relations, leading to an imbalance in the system of cooperation-competition at the global and local levels; weakness of horizontal integrating relations against the background of the unfolding state initiatives, unsupported by sufficient funding – are the general constraints for an innovative breakthrough in the Russian regions.

### 3. Methodology

Research methodology is based on qualitative (expert interviews) and quantitative methods (statistical). The quantitative analysis is based on official statistics for the Kaliningrad region for the period from 1991 to 2013. While additional analyses on innovative activity of the companies in the region (based on the data from three sample surveys for the period 2008-2010) and of the largest universities in the region (based on reports on research and innovation activities) were held. Furthermore, the legislation that outlines the conditions of innovation activity in the region was analyzed. Authors traced the historical roots of the formation of scientific and technical potential of the Kaliningrad region in Soviet times in order to assess the degree of embeddedness of the innovation activity.

As noted above, a key methodological issue in the study of RIS is defining the region. Current study suggests using a systematic approach, in the context of which the region can be regarded as the territorial socio-economic system. A system is understood as a set of interrelated and interacting elements, incorporating the characteristics of the internal structure and external relations. Taking the perspective of a systemic approach, region is defined as a complex self-organizing socio-economic system associated with specific spatial boundaries and consisting of complex subsystems, each being a complex system of a lower level. Innovation, in turn, is understood in the broader context as a complex, interactive, nonlinear localized social process. The hierarchical level of consideration of the innovation process in the region is meso level, i.e. administrative-territorial formation.

In order to determine the factors influencing the process of formation of RIS it is advisable to turn to the goals of innovative development, i.e. the ‘goals of influence’ of a particular region. The type of social and economic relations and the level of development of productive forces influence the goal selection. Systematization of strategic objectives of the Russian regions in their transition towards an innovative development path has given the following generalization: *based on a developed innovative culture, which is able to provide a single unifying idea to all stakeholders, to form a long-term multi-level networking between the regional actors (primarily between the subjects of innovative activity), which is efficient enough as to ensure the effectiveness of the innovation process in all areas of the reproductive system of the region.* It should be noted that each subject of the Russian Federation formulates its goals individually, taking into account the specifics of the innovative development of a particular region.

Based on results of the empirical studies conducted by Fagerberg and Srholec (2008), Lee et al. (2000) and

Lewin et al. (2009), we propose to allocate five groups of factors that have an impact on the formation and development of the innovation system in the region and the cluster as its backbone and center of concentration of competitive advantages:

1. *the human resources component of the innovation capacity*: support and development of the education sector, including an increase in the general level of education of the population in the region, labor mobility, the presence of a pool of highly qualified specialists, etc.;
2. *the R&D component*: availability of a formed competence center, the choice and development of a specific set of research areas in the region;
3. *the infrastructure component*: availability of specialized business infrastructure, including the development of the banking, consulting, insurance, accounting and other services that support the development of innovation infrastructure;
4. *the formation of an innovative environment*: highly innovative business activity and the pursuit of knowledge sharing, the atmosphere of innovative entrepreneurship, the ability of informal contacts and exchange of information between employees of different companies, the presence of formed model of the triple helix, involving the interaction of research and the business sector, government and administrative bodies; support for networking;
5. *the economic framework conditions*: a set of economic, political, social, and foreign policy factors, including ensuring a favorable institutional environment, high standard and quality of life, economic stability of the region, the credibility of public authorities.

#### 4. Research Results

Kaliningrad region is the westernmost region of Russia. An exclave geographical location and the absence of significant natural resources (except amber deposits) are crucial determinants for the development of the regional economy, defining the need to develop high-tech sectors. During the Soviet period, the region had a strong scientific and technical complex, especially in the field of ocean research. In the 1990s, the Russian science was hit by the crisis of a sharp reduction in funding, which led to the curtailment of the volume of R&D carried out in the region and reduction of the human resource capacity of science. The transition to a market economy combined with reinforcement of the globalization and regionalization processes impose a number of important issues for the Kaliningrad region that relate to the need of restoration and strengthening of the RIS in order to ensure competitiveness at various hierarchical levels.

##### 4.1 The Human Resources Component

The HR component is one of the most important for the formation of an effective RIS. It is based on a network of researchers and a pool of highly skilled professionals involved in the innovation process. Potential of the HR component is supported by the population with a generally high level of educational attainment. Since 1991, in the Kaliningrad region the number of employees in the organizations involved in R&D has been declining. Over the past 12 years, their number has decreased by 30% and reached 1955 people in 2013. This trend is due to several factors: inter-sectoral mobility of researchers; dismissal on grounds of redundancy; reduction of the influx of new personnel; foreign employment contracts or migration, etc. There is an imbalance of the scientific staff, with the predominance of support staff. The share of researchers and technicians who are directly involved in the creation of new technologies, methods and products is relatively small. The region is characterized by the general aging of the scientific staff, threatening the loss of continuity in regional science. The average age of the scientist in the region – 47 years, PhD – 53 years old, and Doctor of Science (i.e. habilitation) – 57 years. The main channel for the inflow and update of the scientific staff is attracting young professionals through a system of post-graduate training, including postgraduate and doctoral studies. There are three educational institutions located in the region that train graduate students and two – doctoral students. However, the key problem in training young professionals is the lack of effective mechanisms for their subsequent consolidation in the scientific field.

Dynamics of employment in organizations engaged in technological innovation can be considered as an indicator of the concentration of skilled professionals in the region involved in the innovation process. For the Kaliningrad region, this figure is unstable. The minimum level accounted for the crisis year 2010 (1584 pers.). By 2012, the value of the index has increased and reached 8617 people, of which 8.7% are concentrated in the two high-tech industries – the “production of medical devices, measurement, monitoring, control and testing of optical instruments” and the “production of electronic components and equipment for radio, television and communication”. However, the proportion of workers employed in organizations engaged in technological

innovation, based on the total employment of the Kaliningrad region is still low – less than 2%.

In general, the region is characterized by a relatively high level of educational attainment of the working population in comparison with the national average. More than 30% of employees have higher education, 28.4% have secondary vocational education, and 20.6% - basic vocational education. There is a clear tendency of increase of these indicators.

#### *4.2 The Research and Development Component*

Development of R&D component of the innovation capacity of the Kaliningrad region is related to the need to form one or more centers of excellence in priority areas, which would determine the competitiveness of the whole innovation system in the region. As potential growth points, accumulating the explicit and implicit knowledge in the region, may be considered:

- academic sector: Institute of Oceanology, with the research fleet (carrying up to 40% of all Russian research in this area); Branch of the Institute of Terrestrial Magnetism, An ornithological station, etc.;
- branches of research institutions: Institute AtlantNIRO – studying fish stocks in the Atlantic and the Baltic Sea and developing technology of processing fish; MariNPO – design of fishing gear; Experimental Design Bureau “Fakel” – agricultural research centers, construction and projection organization, Research Institute of Electric transport and others;
- university research centers (the leading ones: Immanuel Kant Baltic Federal University, Kaliningrad State Technical University, the Baltic Fishing Fleet State Academy), the cumulative number of research areas is about 70;
- design bureaus and research labs at the factories “Yantar”, “Kaliningradgazavtomatika”, food industry enterprises and companies in other economic sectors.

However, at the moment, none of the organizations represented can in full be recognized as a center of competence in the Kaliningrad region able to unite representatives of business and government as to form a “triple helix” mode of cooperation in the framework of Etzkowitz – Leydersdorf’s model (Etzkowitz, 2003; Etzkowitz and Leydersdorf, 1995). Remains controversial the choice of research areas in the region. A number of research organizations follow the continuity in the development of traditional areas of research related to the sea and the fishing industry. In addition, efforts are being made to develop new directions for the region: medical technology, biotechnology, nanotechnology, robotics, ICT, energy and energy efficiency, etc. However, the critical mass of these domains has not yet been achieved due to lack of concentration of companies in the profile.

The total share of domestic expenditure on R&D in gross regional product of the Kaliningrad region ranges from 0.4 to 0.6%. This is significantly lower than the average for the Northwestern Federal District and the national average. The main source of funding for R&D remains the federal budget (over 60%). The share of the business sector is small – about 25%. More than 90% of the domestic spending deal with current costs. The share of capital costs is negligible – about 1%. Lack of funding to purchase new equipment hinders the timely replacement of fixed assets and contributes to its physical and moral obsolescence, which creates significant barriers to the successful development of R&D of the region as a whole.

#### *4.3 The Infrastructure Component*

Formation of the key objects of innovative infrastructure in the Kaliningrad region occurs on the basis of higher educational institutions. The largest center of innovative infrastructure is the Immanuel Kant Baltic Federal University. Its Innovation Park is a distributed network of laboratories operating within the priority, but new directions for the region: nanotechnology, biomedical research, telecommunications and mathematical modeling, etc. In 2012, it was awarded the status of a single center for collective use (SCCU). Over three years’ period, the Innopark collaborators created seven know-how. The university is a co-founder of several small innovative enterprises, the applied impact of which is yet difficult to assess.

In the Baltic Fishing Fleet State Academy since 1994 has the Foundation for Assistance to Small Innovative Enterprises in Science and Technology. There are four small innovative enterprises engaged in R&D in the field of natural sciences and engineering. As well as a number of programs to promote the development of small enterprises in scientific and technical sphere (“Start”, “UMNIK”, etc.). In Kaliningrad State Technical University in 2011 was created the Office of innovation and development projects of the university, under which the industrial park and the Student Design Bureau are functioning, as well as activities are performed to create small innovative enterprises.

It should be noted that in general the formation of innovative infrastructure in the region is in its infancy. There

is no systematic approach to its development at the regional level, and a clear lack of funding. Competition between the leading institutions of higher education and the lack of complementarity in the choice of the priority areas of research does not allow to establish close cooperation links for joint implementation of large innovative projects that will be in demand not only in the region, but also abroad. The sector of specialized business services is also underdeveloped, which restrains the increase in the number of start-ups.

A solution to this problem could be the creation and development of so-called regional centers of innovation-based growth, located in scientific, technical and industrial parks. By 2020, under the program of “new industrialization” it is planned to create five of such parks, “Hrabrovo”, “Soviet”, “Constantinovka”, “Chernyahovsk”, and the industrial zone “Pravdinskaya”. Other projects are: establishment of an industrial park with marine transport terminal for the organization of biochemical and nanotech production and IT Park “Kaliningrad” near the city of Kaliningrad; development of “Technopolis GS”, specializing in the production of micro- and nano-electronics in the Gusev municipal district; creation of the industrial zone “Gurievskaya” and a high-tech technopark “Amber” in Gurievsk municipal district. However, full implementation of these projects requires significant investment and will take many years.

#### *4.4 Innovative Environment*

The share of innovation-active firms in the Kaliningrad region is unstable. In 2006, their share was 14.1%, while in 2012 – 5.1%, which is below the national average. The average value for 7 years – 6.7%. The minimum value was accounted in 2010 – 3%. Predominant importance in the structure of innovation activity are technological innovations. In general, they are implemented by almost 4% of all organizations in the region. Among small enterprises, this is somewhat less – about 3%. Since 2006, there have been changes in the structure of innovation. Under the pressure of the economic crisis in the end of 2010, two main areas remained stable: “purchase of machinery and equipment” and “purchase of software”. Much less common became the R&D of new products, services and methods of production; purchase of new technologies; education and training of staff. No interest in marketing research detected.

The share of innovative products in the total volume of production companies in the region is less than 0.5%. The volume of innovative products and services in the period from 2006 to 2012 decreased by 89%. Minimum is accounted for 2010, which equaled 222.6 mln.rubles (approx. 5,5 mln.USD). Typically, about 90% of the innovative products of the Kaliningrad region belong to the group of “newly introduced or exposed to significant technological change”. Only a small proportion of innovations are improvements. Along with the fall in production of technological innovations have fallen sharply the associated ongoing costs. Currently, the business community is ready to support only those developments that are of high level of commercialization.

Imbalance remains in the volume of created and used advanced production technologies that exhibits low interest of regional business entities in the products produced by local specialized organizations involved in R&D. Annual number of used advanced manufacturing technologies is hundreds of times greater than the number of produced. During the last seven years, the most used advanced manufacturing technologies were in three areas: “production, processing and assembly”, “design and engineering”, and “communication and management”.

Due to the low susceptibility of the domestic market to innovations generated within the region, research organizations are trying to find partners abroad. The Kaliningrad region is characterized by a surplus of export – import of technologies. In 2012, it amounted to 11.4 mln. USD, and has a tendency for growth. Exported are the patent licenses for inventions, industrial designs, engineering services, scientific research and developments. The major beneficiary areas on the technology export agreements are: textile manufacture; processing of wood and products of wood and cork, except furniture; research and development, education. Import of technology, on the other hand, is characteristic for the areas: non-metallic mineral products; manufacture of medical tools, precision equipment, tools for control, management and testing; construction; research and development.

#### *4.5 Economic Framework Conditions*

Quality of the economic framework conditions in the region can be characterized through the rating of the most significant external and internal factors that impede innovation activity in Kaliningrad region. These factors are present in table 3, which summarizes the results of a sample survey of the management of regional companies.

Table 3. Factors impeding innovation activity of the regional businesses

Factors-barriers	Group of factors	Rank	Gap between the number of companies, which declared a factor is significant, and those who did not
Lack of own funds	Economic	1	6,7
High cost of novations	Economic	2	7,8
Lack of financial support from the state	Economic	3	3,9
High economic risks	Economic	4	2,8
Low innovation capacity of the organization	Internal	5	1,7
Lack of qualified staff	Internal	6	1,1
Uncertainty of economic benefits from the use of intellectual property	Other	7	2,0
Lack of legislative and legal documents, regulating and stimulating innovative activity	Other	8	1,6
Underdeveloped innovation infrastructure	Other	9	1,6
Low demand for new goods, works, services	Economic	10	1,0
Lack of information on new technologies	Internal	11	0,7
Lack of information on sales markets	Internal	12	0,7
Underdeveloped cooperative ties	Internal	13	0,6

Source: Primary data.

The main constraints for the companies are lack of own funds, high cost of novations and lack of financial support from the state. Lack of economic benefits from the use of intellectual property also prevents the development of the innovation sphere in the region. High risks of doing innovation activity without proper government guarantees deter companies from innovation.

#### 4. Conclusion

Component analysis of the innovation potential of the Kaliningrad region revealed particular barriers to building an efficient RIS in each of the components (table 4).

Table 4. Factors-barriers to the formation of regional innovation system in Kaliningrad region

Components of innovation potential	Factors-barriers
Human resources	In the field of science: insufficient critical mass of experts in priority, but new areas for the regional development; no mechanism to secure young people into science; insufficient mobility of scientific personnel; weak continuity between generations, that limits the transfer of tacit knowledge through learning;
Research and development	In the business sphere: lack of qualified professionals; weak links with educational institutions, which does not fully compensate for the need in personnel. inadequate funding of regional science, including by the business sector; no effective system of R&D commercialization in the region; weak links of the research sector with business and regional authorities (on behalf of the latter is observed a declining demand for R&Ds of specialized organizations in the region); failure to comply with the principles of continuity and complementarity of competences in the selection of priority research areas for the region; lack of a single recognized competence center; often the level of newly generated knowledge within the framework of research projects does not reach the point where it can be commercialized
Infrastructure	poor development of specialized business infrastructure, including the banking sector, consulting, insurance, accounting and other services; weak records by the authorities of the real business needs when planning centers of innovation growth; lack of funding for the renovation and modernization of inefficient, often outdated innovation infrastructure



Innovative environment	low innovation activity of the business sector; absence of formed cooperative ties between all the participants of the innovation process in the framework of the triple helix; lack of interest on the part of business in innovation because of the high risk of operational costs and uncertainty of economic results; underestimation of partnership networks between companies (strong dependence of business ties on family ties or friendship); absence of a single unifying idea – brand that would form a regional cluster; inability to gain benefits from the combination of cooperative ties at the local level and competitive ties at the global level
Economic framework conditions	strong dependence of the regional economy on foreign political situation and national foreign policy; institutional and tariff barriers; maintenance of an atmosphere of distrust in public authorities on behalf of business; strong polarization of the territorial space of the region (the regional center diverts resources from the periphery, especially labor, which leads to a rapid reduction of the population in rural areas); low resource potential of the region; predominance of assembly plants industry structure with low share of gross value added; lack of legislative and legal documents, regulating and stimulating innovation

Thus, we can conclude that at this point Kaliningrad has no regional innovation system formed. RIS elements are scattered, there is no stable networked relationship between them. Achievement of the goals set in the strategic documents for the development of the region in the long term up to 2020, requires reorientation of the economic policy from solving the problem and overcoming the negative effects of the exclave location of the region (including through the use of the Special Economic Zone – SEZ regime) to the modernization of innovative infrastructure and management systems of socio-economic processes.

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