

THE KALININGRAD REGION

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ON THE PROGRAMME OF RESEARCH DEVELOPMENT IN THE EXCLAVE REGION

This article focuses on the development of research in the exclave region. The authors offer a programme of research development in the Kaliningrad region. The article describes the principal lines of implementation of priorities of modernization and technological upgrade of regional industries.

Key words: programming, exclave region, research, specific features, regional level.

Development programming for regional economies and individual industries is a mechanism of active state regulation of socioeconomic processes. The development of regional target programmes is based on certain scientific concepts and theories underlying the explanation of specific features of economic complex functioning at the regional level¹.

As to exclave territories, the Kaliningrad region belongs to, programming is of special importance: programming makes it possible to give an integral assessment of the condition and potential of a certain industry against the background of high concentration on a small isolated territory, as well as to formulate scientifically based propositions and solutions regarding the optimisation of socioeconomic processes. It concerns the level and features of regional research activity and its potential, i. e. the role of scientific and technical achievements in the development of the territory in view of numerous contradictions of spatial organisation of economy.

The western-most region of Russia — the Kaliningrad region — is a unique example in terms of the functions of research, which relates to the specific geographical position of the region.

The objectives, which emerged in the region after the collapse of the USSR, aimed at the assessment of real and potential problems, challenges and threats to economic development were not accomplished rapidly and

¹ According to a decree of the Government of the Russian Federation of December 25, 2004 № 842 (amended and restated), regional development target programmes are a complex of research and development, industrial, socioeconomic, organisational and other measures coordinated in terms of resources, personnel and implementation periods ensuring effective solutions to the problems of state, economic, environmental, social, and cultural development of the Russian Federation.

efficiently². In the 1990s, the region faced a steep decrease in economic development rates and industrial output³. That period required substantial investment in structural and technological modernisation of regional economy in line with new geopolitical conditions. In the region, the disintegration of system of research support for industries based on the principles of centralised planning resulted in the inertial research activity, i.e. a dramatic decrease in financing of research and development and implementation of research results into industrial processes, as well as the reduction in the number of employees involved in research and development at various organisations.

In order to keep functioning, a part of research institutions of the Kaliningrad regions changed their profile and got involved in implementing the projects of the Baltic States, as well as the programmes the north-western federal district and the federal centre.

One should emphasise that an important factor facilitating the relative revitalisation of research activity in the exclave region, which also mitigated the negative impact of dramatic reduction in state financing of science in the years of market reforms, was international cooperation. It developed on the basis of special territorial position of the Kaliningrad region and was supported by the opportunities of regional research institutions to attract additional grant financing.

In the early 2000s, which were marked, first of all, by the stabilisation of political situation in the country, new trends in economic development emerged in the region: an increase in industrial output, retail turnover, and investment in basic stock. At the same time, regional research activity underwent certain changes, which are best described on the basis of statistical data.

The number of research and development organisations in the region was decreasing throughout the 2000s and amounted to 11 in 2009. The reduction in the number of research and development organisations related to the federal initiative aimed at the optimisation of research organisation network. Reforms were conducted through the enlargement or liquidation of organisations, which almost terminated their research activity.

The number of employees involved in technological design and research at industrial enterprises decreased under the influence of such factor as low demand for research results from the real sector of economy. Another reason was the poor financial performance of industrial production and the inappropriateness of research results for commercial use [5].

As to the specialists constituting the core of region's intellectual potential and being the most important resource for ensuring the functioning of research, technological, and innovative spheres, the following facts are

² The rupture of traditional economic ties between the enterprises of the real sector of economy, the emergence of state border barriers and cargo transit problems resulted in that the Kaliningrad region, unlike the other Russian regions, found itself in more difficult conditions for the production of competitive goods on its territory.

³ The situation was critical in the priority areas – the engineering, fishing and food industries.

worth noting. The number of employees involved in research in the Kaliningrad region was reducing over the period under consideration: if, in 2000, it amounted to 2533 people, in 2009, it reduced to 1799 people⁴.

Today, the trend towards dramatic reduction in the number of research personnel has turned down. Both internal and external to science factors influenced the trend. The internal factors are the decrease in scholars leaving science for other professional activities, their adaptation to new socioeconomic conditions, new opportunities for secondary employment, etc. The most important external factors are the deceleration of processes of human resources distribution across the spheres of economic activity, relative stabilisation of regional labour market, support for research by non-governmental foundations, etc [5].

Here, special attention should be paid to PhD studies. Certain revitalisation is apparent over the period under consideration. Since 2000, four education institutions, including the Immanuel Kant Baltic Federal University, have been offering PhD studies in the Kaliningrad region. The dynamics of basic indicators is shown in the figure.

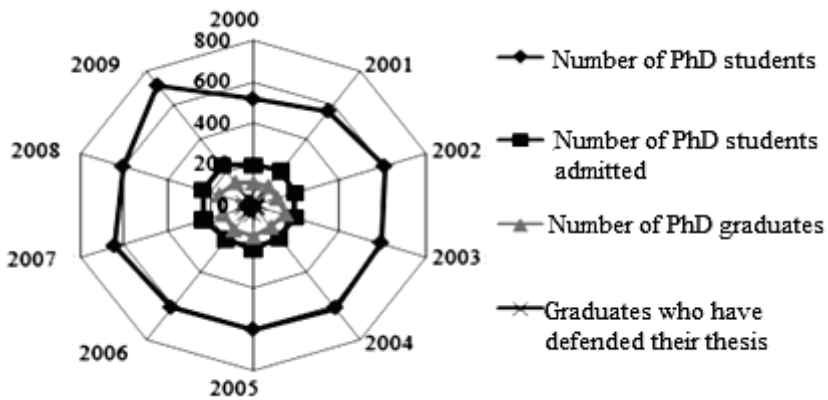


Fig. The characteristics of PhD training in the Kaliningrad region in 2000—2009, people⁵

Over 2000—2009, the number of PhD students was increasing in the region and amounted to 717 people in 2009. The admission and graduation trends were opposite with the prevalence of the growth trend. As to the distribution of PhD students by fields of study, in 2009, the leading fields were technical (27.8%), economic (13.0%), pedagogical (9.2%), and biological (10.0%) sciences.

⁴ The process of reduction in the number of research and development employees affected all categories of research personnel – researchers, technical specialists, maintenance staff, and other employees. Over 2002-2009, the number of researchers and technical specialists decreased in the Kaliningrad region by 33.7%.

⁵ Calculated on the basis of: *Nauchnye issledovaniya i innovacii Kaliningradskoj oblasti v 2009 godu: analiticheskaja zapiska*. 2010. Territorial'nyj organ Federal'noj sluzhby gosudarstvennoj statistiki po Kaliningradskoj oblasti. Kaliningrad.

Over the last 15 years, fee-paying forms of PhD studies have been developing, which is a reaction to the insufficient financing of education and research. After universities had been granted permission to admit and train PhD students and defend theses on fee-paying basis, these organisations got interested in admitting a more substantial number of PhD students. Whether this trend resulted in a more intensive development of research in the regions is a complex issues still open for discussion.

At the same time, one cannot but admit that research conducted by university teachers is, to a great extent, a 'hobby'. It results from the substantial teaching load, which leave little room for research. The situation is aggravated by the inadequate level of remuneration of academic staff and, as a result, the need for secondary employment.

Of special importance for the development of research, as well as any other field of human activity, is financing. In the Kaliningrad region, internal operating expenditure on research and development amounted to 952.4 mln roubles in 2009 (a 580.9 mln increase in comparison to 2002). At the same times, the share of internal expenditure on research and development within gross domestic product amounted to 0.7—0.9%, while in 2009, it reduced to 0.4%.

At the same time, the main source of financing of regional science is still the state budget. If, in 2008, the share of federal budget within the total expenditure on research and development in the region amounted to (including funding by public sector organisations) 71.5%, in 2009, it amounted to 79.4%.

Over the last years, research institutions have, to a degree, changed their profile. Under the new economic conditions, the share of development within research and development activities has increased. In 2009, this type of activity accounted to 51.1% or 486.6 mln roubles.

Today, Kaliningrad enterprises purchase a substantial amount of innovations abroad. In 2009, total annual payments within agreements of commercial technological exchange between Kaliningrad enterprises and international partners amounted to 358.8 mln roubles, which is twice as much as export revenue.

These data reflect the existing need of economic entities for research support for production. However, often, the technologies purchased are not advanced. Although Kaliningrad enterprises can generate additional benefits, this situation creates negative conditions for the development of regional economy, since the technologies purchase soon become outdated. At the same time, some research institutions of the region sell their research results to international companies. Individual attempts at the transition to innovative development of regional economy have been made over the years; however, they lacked systemic character.

All in all, the organisation of research activity at the regional level has other problems that require a comprehensive study. In such situation, *programming becomes an effective mechanism* facilitating the elimination of existing problems in the development of research activity.

An important step is the formulation of a programme, which would give a comprehensive idea of conditions necessary for unlocking the research and innovative potential of the economic development of exclave region. The structure of the programme of research activity development includes seven sections.

The first section focuses on the targets and objectives of the programme. The target of the programme of research activity development in the Kaliningrad region is to ensure the balanced economic development of the exclave region through creating conditions for the dynamic functioning of research activity, increase in the level of innovations and competitiveness of regional enterprises and industries.

The second section is dedicated to the features of research activity development in the region. Information on priority strategic fields of development is given in the third section.

The major fields of implementation of modernization priorities and technical renovation of the exclave region's industries

Agro-industrial complex:

- elaboration of theoretical background of the dynamic development of rural areas, rural employment and improving standards of life;
- improving the institutional infrastructure which aims at information support and consulting for businesses in the area, development of experimental facilities, promotion of scientific and technological products in the regional market;
- participation in the development and implementation of regional legislation, improving the program on the development of agro-industrial complex in the Kaliningrad region;
- academic assistance to the development of various forms of cooperation and integration of agricultural, processing and service enterprises, farms;
- development of systems for the reproduction of soil fertility, creation of a favorable environment to prevent all types of land degradation;
- Improvement, development and implementation of resource-efficient, environmentally safe and cost-effective technologies in agricultural production in the exclave region;
- compiling academic advice on the development of cattle farming, including a rationale for the system of cattle feeding and crop production;
- Promotion of a highly mechanized systems for processing and storage of agricultural products; Research on the prevention and treatment of diseases of farm animals, etc.

Fishing industry:

- Introduction of advanced science, stimulation of investment and innovative activity of national and foreign producers, the development of small enterprises;
- The development of high-tech enterprises in the industry with effective use of advanced achievements in fishery, raising quality and assortment of fish production, expansion and integration of fishery and fish-processing sectors;
- long-term and short-term forecasting of the industry development on a comprehensive study of its capacity building and availability of the regional resources;

- Promoting the economic entities in the implementation of advanced technologies for the fishing and fish-processing, etc.

Machine-building industry:

- Coordination of sectoral research institutions, located in the region;
 - Participation in the development and implementation of regional legislation, programs of the development of machine-building complex of the Kaliningrad region, which determines the priority directions of scientific and technological development of engineering, strategic objectives for the production of competitive high-tech engineering products to meet modern market demands and are prospective accession of the RF into the World Trade Organization;

- overcoming the technological gap between the regional machine-building sector and the leading ones of the Russian regions and foreign countries using innovation and industry diversification;

- elaboration of modern methodology of high-precision processing of construction materials to improve the quality of parts surfaces, the mechanization and automation of assembly processes, monitoring the parts in the manufacture and operation processes;

- integration of the efforts of regional research sector in personnel training to improve the intellectual capacity of machine-building industry and ensuring its innovative development;

- meeting the demands of Russian and foreign consumers in modern equipment and machinery production which matches a prospective international requirements for economic and environmental efficiency, etc.

Transport and logistics:

- improvement in the priority fields of regional transport development programme in view of the industry's specific features and its competitive advantages pertaining to the region's geographic position;

- creation of conditions for coordinated development of different means of transport aimed at the exploitation of their specific advantages;

- justification of the population's need for transport services, development of proposals on the increase in transport safety, availability, and quality;

- improvement of customs technologies and a significant reduction in the time of international cargo processing;

- study into the possibility of using satellite navigation systems in managing the transport and logistics industry;

- monitoring of the functioning and development of regional transport and logistics industry (including the improvement of statistical monitoring);

- development of scientifically based mechanisms of minimising the adverse effect of the transport and logistics industry on the environment and living conditions.

Energy complex:

- creation of conditions for advanced innovative development of the industry, also through the involvement of research teams into the formation and implementation of the long-term regional energy security programme, development of proposals on the implementation of energy efficient technologies on the basis of the Strategy for energy development in the

Kaliningrad region until 2031, as well as production of recommendations on the increase in efficiency of power transmission systems.

Raw material industry:

- development of a modern methodology for the exploration and monitoring of mineral deposits, increase in the level of extraction;
- development of new systems of advanced processing of fossils, coal washing and moulding;
- development of highly efficient and environmentally friendly systems of oil and gas field exploration, extraction and transportation of hydrocarbon materials, modern technologies for manufacturing of new types of products for the balanced development of regional economy, etc.

Construction and utilities:

- development of new construction technologies and tailored materials;
- improvement of technologies of infrastructure facility construction;
- effective solutions to the problems of waste utilisation, reuse and recycling of secondary resources, etc.

Chemical and petrochemical industry:

- ensuring maximum energy and resource supply;
- reduction in the adverse effect on the environment;
- encouraging of application of modern chemical materials ensuring a high level of produce and operations in such fields as construction and utilities;
- ensuring of technological process safety, etc;

Healthcare:

- participation in the development and implementation of regional legal framework for the programme of healthcare improvement in the Kaliningrad region;
- concentration of regional resources in priority and innovative fields of development of medical science;
- planning of research in accordance with the list of priority fields characterised by timeliness, high practical potential and competitiveness;
- development of basic research programmes aimed at the expansion of knowledge on nature and human being, aetiology, patho- and morphogenesis of most wide spread diseases, which will be carried out on the basis of interdepartmental cooperation of research teams;
- basic and applied biomedical research;
- formulation of scientifically based medical service standards;
- development of new effective methods for the prevention, diagnostics, and treatment of diseases and rehabilitation of patients on the basis of pharmaceutical, biotechnological and nanotechnological advances, justification of the scope of their application, algorithms of implementation and control over their use;
- formulation of proposals on the establishment of a system of implementing research results in healthcare practice through different forms of public-private partnership, etc.

Education:

- improvement of educational standards on the basis of research results;



- improvement of teaching methodologies;
- implementation of innovative forms and methods for assessing the quality of educational processes;
- integration of Internet technologies into education, etc.

The main target and objectives of the programme are achieved through the implementation of a system of programme initiatives presented in section four. Section five provides information on resources required for programme implementation. Section six describes the mechanism of programme management and control over its implementation. Expected results are outlined in the seventh section.

The development of financial and credit mechanisms for the support for science facilitates the increase in demand for research results from economic entities, attraction of non-budget sources of research financing, mobilisation of regional research potential for the production of competitive high-technology produce and industrial development.

The implementation of the programme is expected to create favourable economic, organisational, legal and other conditions for the increase in efficacy of the functioning of regional research activity, research support for industries and development of innovative activity in the Kaliningrad region in view of the specific features of regional economy's functioning.

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