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World experience in effective state programming of innovation development and the possibility of its adaptation in Kazakhstan

In the article typology, system factors and macrostructural dominants of modern state programming of innovative development in leading countries are considered. World experience shows that the program-target method is applied in the European Union, USA, Japan for the solution of strategic tasks of development, when it is necessary to concentrate resources to achieve specific goals. Based on the analysis of the world experience in the programmatic and objective regulation of innovation processes, an assessment of its effectiveness will be made, a tool range, a functional nature and macrostructural priorities identified. In addition, the article explores the institutional and economic specification of state programming of innovative development, identifies its components, and generates elements of the national innovation system, country-specific «innovation nodes», the limits of innovation adaptability, and the criteria for the effectiveness of innovative development. Taking into account foreign experience and from the position of strategic growth in the Kazakhstan economy, the accumulative picture of macroeconomic priorities in the main innovation development is revealed.

Keywords: state program, state programming, innovative development, national innovation system, state innovation policy.

The new state management, existing in different countries under different names (entrepreneurial government, managerism, new public administration), presupposes a very definite set of components, with varying completeness realized in individual countries during the reform of public administration [1].

The phenomenon of NPM arose within the broader movement for a «reinventing government», which began in the late 1970s in economically developed countries. According to many experts, this movement is one of the most significant changes in the philosophy of public administration, a kind of «paradigm shift» in public administration that occurred over the last century [2].

World experience shows that it is the program-target method that is used in the countries of the European Union, the USA, and Japan to solve strategic development problems, when it is necessary to concentrate resources to achieve specific goals. In the USA, approximately 50 % of government spending is carried out according to the program-target method, in France - up to 80 % [3].

Analyzing the elements of state programming, it is worth noting the specifics of programs for the development of innovations. After all, the evaluation of the effectiveness of innovative development programs has a number of features that are associated with specific features of innovation:

– support for innovation is multifaceted, its object can be the development of venture financing, the creation of technology parks, the formation of innovative clusters, the development of exports of high-tech products, etc. Several dozens of indicators have been developed in practice to serve as target indicators of programs. Therefore, the difficulty is in choosing the right indicators and evaluation criteria for a particular state program event;

– despite the active development of state programs in the field of innovation, there is no single definition of the term «innovation». This reduces the objectivity of the assessment;

– innovative projects are unique, experimental, and sometimes random, which makes the rigid goal setting inapplicable. In these conditions, it may be difficult to assess whether the results are consistent with the goals;

– a significant distribution of the effect over time. The effect of implementing a project to create an object of innovative infrastructure may appear in a decade after the establishment of the facility. When assessing state programs in the field of innovation development, the need to evaluate the long-term effects from their implementation, the method of studying the history of projects «historicaltracing» increases.

– in the course of innovation activity, several types of effects are formed that need to be taken into account when assessing the effectiveness of government programs: economic (including budget and commercial), social, scientific and technical, and environmental. At the heart of innovation activity lies the interac-

tion between the subjects of innovation systems, in this connection it is important to assess the effect for each participant of the program. There are difficulties in assessing the synergetic effect of their interaction.

The problem of new state management in the sphere of innovative development is relevant in the entire world economy. However, in the conditions of our country, it should be noted that it differs from the implementation of state programs and projects in developed countries. Diversification forms of business, wide development of NIOKR, long practice of using the program-target method and stable social guarantees allow developed countries to detail program-target management on current projects and objects, to systematize innovative effects in the internal and external environment. In our conditions, innovative development follows the new industrialization of the economy and therefore has an «auxiliary» character. Additional problems include the unresolved issue of the real structure of the national innovation system in the country, the institutional incompleteness of the issue of adaptive capabilities of domestic innovations in the external environment, and the low capacity of domestic business.

Analysis of significant publications. Preliminary scientific research on the subject area of this article can be conditionally divided into several blocks. The first block includes fundamental studies devoted to the general theoretical, methodological and applied foundations of both state management and the parameters of innovation in the works of foreign researchers A. Smith, J. Schumpeter, P. Drucker, N.D. Kondrateva, B. Santo, G. Becker and others. The second block of scientific research in this subject area is directly related to the issues of state programming of innovative development. This is the subject of the works of N. Manning, N. Parison, D. Okimoto, D. Sadler, G.P. Hatry, J. Blondal, J.K.Kristensen, C. Vanderwil, T. Nakahara, P.M. Sende, M.Carstedt and others. Studies of the condition of state programming of innovations in transformational economies are presented in the works by Stefanin A.L., Tambovtseva V.L., R.A. Kochkarova, G.G. Balaian, L.I. Yakobson et al. A review of previous scientific research shows that with the scientific interest in the state management of innovation processes, the analysis of the specification of state innovation development programs, as well as the modernization of programs in projects within the transformational economy, has not been properly reflected as an independent subject of scientific and practical research . In particular, the subject boundaries of the model of rational state programming of the national innovation system have not yet been determined, nor has the comparative factor algorithm of cluster and multiplication effects been revealed in the implementation of innovative development programs.

Main results of the study.

The program-target method of planning and management has been used for many years in most developed countries of the world and has already established itself as an effective tool for implementing state economic and social policies. The program-target management method in a broad sense is the development and deepening of an integrated approach to solving management problems. Its merits include the following:

– financial resources are distributed not by types of costs, but by programs or strategic goals.

– programs are formulated on the basis of common goals and strategic priorities.

– the program-target budget takes into account the long-term consequences of the decisions made, allows you to compare different ways of achieving the goals set, to choose the optimal solutions, taking into consideration the possibility of implementing different development scenarios.

– program managers have the right to independently decide on the best way to solve them within the limits of the funds allocated for this purpose. At the same time, their responsibility for the final result is strengthened and takes a specific character.

– the draft budget of the target program is presented in such a way that it makes it possible to clearly follow plans and priorities for the planned period, expressed in both financial indicators and social efficiency indicators.

The basic concept of the program-target method is the concept of a «program». Each program includes: goals and objectives of the program, services provided by the program, and a group of consumers of these services, the activities necessary to achieve the goals and objectives, indicators of program performance, the resources necessary to implement the program, the risks associated with the program [4].

State programming is the primary regulator of the parameters of innovative development of the domestic economy. Aggregate evaluation of the effectiveness of state programs of innovative development reveals both positive results of the innovation segment of the economy and reproduced anomies and factors of the compression of innovations. In this regard, the qualitative revision of existing approaches to program-target planning and state programming, as well as a general increase in the efficiency of the implementation of state programs in the sphere of the development of the national innovation system, becomes especially topical.

The countries implementing this approach include Canada, Japan, South Korea, Austria, Germany, France, Finland, the USA, Turkey, Thailand, Hungary, Bulgaria, etc. [5-8].

The first countries that focused on effective management were the USA (in the mid-fifties of the last century), Sweden (from the beginning of the 1910s) and Great Britain (since the beginning of the I980s). In 1990-2000 almost all developed countries created and introduced into the practice of executive power to some extent the individual elements of the results management.

Analyzing the elements of state programming, it is worth noting the specifics of programs for the development of innovations.

For effective innovative development of the country, first of all, it is necessary to analyze foreign experience with a view to its possible adaptation in the framework of domestic state programs. This analytical discourse should be built in the following coordinates:

Firstly, the definition of global trends in terms of financing innovative development within the framework of national programs. This will allow rationalizing domestic state programs in terms of budget design;

Secondly, the allocation of basic innovative angles in a particular country, which will allow in the domestic environment to identify adequate innovations that provide strategic and multiplicative effects.

Thirdly, the synthesis of country experience in its accumulated form, as ideologems for the strategic plan for the development of our economy.

Thus, the core of state innovation development programs is the system of their financing. After all, it is financing that determines the possible range of innovative abilities.

Financing of scientific programs by the state, or innovative ability, plays a decisive role in determining the circle of countries leading in the world economic process. Innovations allow creating advantages in the most competitive sectors of the economy. Their effective use is for the country the most important instrument for realizing the most important tasks of social and economic development: ensuring national security, protecting the environment, raising the level and quality of life of the population.

High-tech countries such as the USA, Japan, the UK, Germany, Singapore, China are constantly increasing their investment in NIOKR, while innovative financing in innovation countries is a program of national importance.

In the USA, the active participation of the state in investing in NIOKR is based on the triune of the following postulates:

– scientific knowledge is the key to the future;

– technology is the engine of socio-economic development;

– responsibility of the government is to promote scince and technology [9].

Thus, financing of innovative development of the USA is the most wide and diversified. For all economies, this option seems to be a leader.

Noteworthy is the organization of innovation and its financing in Japan, which ranks second in the world after the USA in terms of the level of development of science and technology.

The Law on Science and Technology (1995) established fundamental provisions proceeding from the fact that stimulating science and technology is the main direction of Japan's movement in the 21st century. In development of the law and with the purpose of carrying out a comprehensive and systematic policy of stimulating science and technology in Japan, the General Plan for Science and Technology was adopted, the priorities of which are:

– implementation of research works and their improvement within the NIOKR system;

– development and improvement of NIOKR infrastructure;

– stimulation of various forms of financing;

– an increase in the number of research projects in private universities, the corporate sector;

– stimulation of international scientific and technological cooperation;

– promoting the development of NIOKR in various regions of the country;

– Encouraging interest in science and technology [10].

At present, Japan's innovation policy is formed and carried out in accordance with the State Financial Plan for Science and Technology, which provides:

– increase in public funding for NIOKR from 0.7 to 1.0 % of VVP;

– preparation of 30 Nobel laureates for 50 years;

– support of NIOKR in healthcare, information technology, environmental protection, nanotechnology;

– increasing support for young scientists;

– to enhance the competitiveness of industrial technologies through cooperation between corporations, the government and the academic sector;

– reforming the education system in the field of science and technology [11].

Thus, financing of innovative development in Japan is dominated by FPG, and state programs stimulate and coordinate innovation. This financing option can be described as «anchor».

Financing of innovative development in the European Union, which is a competitor to the United States and Japan in this field of activity, occurs within the framework of the framework programs of technological research. The European Union considers the priority areas of research as:

– life sciences, including genetics;

– biotechnology in healthcare;

– fight against serious diseases (3.4 billion euros);

– nanotechnology, «intelligent» multifunctional materials, new devices and production processes (1.3 billion euros);

– aeronautics and space (1.1 billion euros), sustainable development of the ecological system (2.1 billion euros);

– development of a number of topics on the issues of international cooperation in the field of technology and scientific cooperation [12].

Significant monetary resources of the euro are allocated for financing of information society technologies. This financing option can be described as a variant of «joint innovation design».

So, from the positions of the avant-garde of innovative development (USA, Japan and the European Union), we have identified the basic financing mechanisms. Based on the analysis of the role of innovative financing in ensuring the competitiveness and technological security of the state, the following conclusions can be drawn:

1. Innovative development of society becomes a task of national importance, in the solution of which the investment component is given the highest priority.

2. The role of economically developed countries is to regulate, stimulate and coordinate the funding of science and technology for all participants in the innovation process.

3. Providing state support and stimulating innovative financing allowed countries such as the USA and Japan to ensure competitiveness in the leading industries and take the leading positions in the world market. For example, in the aviation and rocket and space industry, the USA share now stands at 40 %, Japan - 20 %, while the UK share is 9 %, Germany - 7 %; in the telecommunications and navigation sectors, the USA share in the world market reached 20 %, Japan - 17 %, Germany - 7 %, Great Britain - 6 %; in scientific instrument making, the USA share is 27.5 %, Japan - 17.5 % Germany 14 %, Great Britain - 6 % [13].

4. In order to ensure the technological safety of the state, special attention is paid to financing high-tech areas, such as nanotechnology, genetic engineering, information technology, and biotechnology. So, for example, in the USA a special program «National initiative in the field of nanotechnologies» is developed. It provides for the coordination of efforts of a number of agencies interested in accelerating the development of various areas of nanotechnology. Among them are the National Science Foundation, the Ministry of Defense, the National Aeronautics and Space Administration, and so on. [14].

At the same time, it is necessary to find out innovative nodes that provide high competitiveness and strategic growth opportunities.

In this aspect, the absolute leader is the USA, since the entire economy of the 21st century in them is aimed at innovative breakthroughs. The USA innovation development model is a model for the formation of an open information society driven by market forces. In the 1970s, a special information program was launched in the USA to popularize the latest technologies with the help of the National Center for Scientific and Technical Information and a consortium of federal laboratories, which include about 300 state scientific departments. These funds contain records of scientific works of 200 federal organizations, 3/4 of the data falls on the Ministries of Defense, Energy and NASA. The National Center annually cooperates with 100,000 industrial firms and scientific organizations of the USA [15].

The USA economy used a mechanism for the commercialization of scientific and technical products that was owned by the state or purchased for budgetary means of transferring new technology from laboratories to the industrial sector, also including secondary use.

However, for our economy, the most popular is the experience of countries whose innovative mechanism was built on the basis of the industrial dominant. In this aspect, the USA experience seems to us to be

avant-garde, but not yet acceptable. From the point of view of strategic development, the experience of Germany is of interest in this respect.

In Germany, the highest indicator of the share of employment in the intensive sectors of the economy, as well as the share of surplus gross value. Thus, the share of employed in intensive and high technology in Germany is 27.7 % of the total number of employees in production, and the share of the surplus value of these branches in the entire production sector in Germany is 25.9 % [10]. State economic policy is based on the realization that it is public investment in scientific research that stimulates the active involvement of private investments in this sphere. It should be noted that the basis of the economic mechanism of the state scientific policy is a combination of competitive budgetary financing of innovative projects, individual researchers and infrastructure with various methods of indirect stimulation of scientific activity. Among the latter, it is necessary to identify tax mechanisms, depreciation and credit policies, effective protection of copyright, stimulation of the development of small and medium-sized businesses on an innovative trajectory. It is the experience of innovative development in the sphere of small and medium-sized business that is relevant for us in the practical aspect.

In Germany, small business is one of the most actively and steadily developing sectors of the economy. Most of the innovative developments in Germany are conducted at small enterprises. The share of small and medium-sized businesses in the total number of registered taxpayers in Germany is 99.6 %, accounting for 75 % of patents issued in the country. About 32 thousand German small and medium-sized enterprises specialize in investing in research and development. About 110,000 small and medium-sized companies are engaged in the commercialization of the results of these studies.

What are the institutional aspects of supporting this process? Three institutional channels are of interest here: federal programs of innovation activity, the creation of a federal innovation infrastructure and the activities of the Chamber of Commerce and Industry.

Thus, at the federal and regional levels, more than 500 programs are being implemented that promote investment and innovation activity. The most well-known program in the field of stimulating innovative development is the special government program «General concept of scientific and technical policy for small and medium-sized firms», which provides financing for risky activities, improving the conditions for technology transfer, providing scientific personnel [16].

At the Office of the Federal Chancellor of Germany, a Council for Innovation and Growth was established, which includes experts from the fields of science, economics and politics. The main task of the council is to improve the framework conditions for promoting scientific research in the field of high technology and innovation among small and medium-sized enterprises. Within the framework of the program «New Impulses for Innovation and Growth», networks of cooperation of small and medium-sized enterprises are organized in the following sectors: production technologies, materials technologies , healthcare and medical technology, information technology, microsystems, energy technologies, environmental protection technologies, transport technologies, optical technologies ologii, biotechnology, security, technology, entertainment technology, services, technology, nanotechnology [9].

The federal infrastructure supporting small and medium-sized enterprises includes 374 centers for the diffusion of new technologies, 15 information centers and 115 export support centers. Approximately 25 % of small enterprises are actively involved in the production of export products. In Germany, there are more than 180 incubators and technoparks interacting with universities, research centers and large industrial companies [9].

Thus, in order to activate the innovative activity of small and medium-sized businesses in Kazakhstan, the experience of Germany can be taken into service. What innovative nodes in the world economy are also of interest?

In our opinion, in the country aspect, the following picture is formed. So, an innovative hub in the development of Japan is the creation of technology parks. In the 1980s. management has launched a global program for the production of technopolis as a balanced, organic combination of high-tech industry, science and spacious living areas. Firms operating in high-tech industries were allowed to write off in the first year up to 30 % of the cost of equipment and up to 15 % of the cost of buildings and structures, and the state paid one-third of the costs of scientific research by small firms and laboratories [17].

The diversity and flexibility of the policy of benefits for participants of production entities on the example considered is the main tool of the mechanism for improving innovation in the country.

France carries out a whole complex of activities aimed at the development of the point-clusters (budgetary financing of scientific research conducted in the past, creating a specialized structure of governance,

etc.), formed by the territorial and territorial principles. In this case, the listener represents a historically formed group of enterprises with modern technologies and industrial applications around which scientific research infrastructural organizations that promote and innovate development are grouped [17].

French innovative clusters can be conditionally divided into the following groups: «poles of competitiveness»; innovation centers and science parks; technopolises and technological parks; (Labex). French innovation policy is aimed at stimulating private investment in science, improving the interaction between all key players in the innovation process within the poles of competitiveness and supporting the development of small and medium-sized enterprises (PME) [17].

In Finland, the basis for innovative growth is also cluster development and the formation of technology parks. The impetus for development in telecommunications was the reduction of state control over the market and increased competition. The development of the cluster of communication and information technology was promoted by the research system. The cluster has become a key element of the innovation system, which includes a large network of firms and corporate cooperation in the field of training and research. A distinctive feature of the development of the structure of the Finnish economy is the low share of foreign technologies and investments, as well as the existence of domestic demand for high quality products.

Technoparks are formed not only in industrially developed departments, but also where the economy had a mono-product orientation, while high technology products accounted for less than 2-3 % of VRP. Over the past decades, NIOKR investment in Finland has increased at an accelerated pace than in the rest of the Organization for Economic Cooperation and Development. The average annual increase was about 10 %. The share of expenditure on research and development in the gross domestic product increased from 1.2 to 4 % from 1982 to 2012. In Finland, two thirds of NIOKR is paid by enterprises at their own expense [18].

Indian innovation development in general is based on information technology parks. Since the mid 80-ies in India are created technoparks. At present, the government has created several dozens of such parks, which were oriented, first of all, for export. The founders of technoparks are given serious customs and tax benefits, inexpensive offices. However, the two largest Indian IT-park were organized not by STEP agency, but by state administrations. The scientific and production territorial complex in Kerala, opened 17 years ago, currently employs 120 companies and 16,000 employees, and also includes a business incubator for start-ups and 2 universities focusing on technical education [19].

The Korean model of innovative development is of special interest for the economy of Kazakhstan. This is due to similar initial conditions-the lack of innovative structures in countries and the scientific and technical gap. Thus, in the mid-20th century, research activities were heavily dependent on technology imports and the copying of technological solutions produced in developed countries.

Then, the scientific and technical policy of the Republic of South Korea was reformatted to continue the growth of the share of high-tech industries and increase the efficiency of the Korean manufacturing complex. One of its main areas was the preparation of high-quality scientific engineers by improving the system of higher education, increasing participation in foreign educational programs and creating conditions for the return of scientific personnel from abroad. To this end, the Korean government has used mainly direct tools to promote research and industrial development, in particular: tax incentives, tax exemptions, public research programs, research grants, training programs for personnel. However, since 2000, the government has reoriented to the mutual use of direct and indirect means of support, such as: the creation of clusters, incubators and networks to promote innovation, and the improvement of internal service development (infra-service) - organization of technology intermediaries, intensification of technology certification programs, structure on copyright protection [20].

Thus, the new concept of industrial policy is directed not only to forming the basis for progressive structural changes in the country's economy, but also to removing the deep «gaps» of industrialization that restrain such. This, first of all, is about the territorial disintegration of the industrial complex and the fragmentation of the national economy.

Thus, certain elements of Korean innovation activity can be updated in our environment. In particular, this refers to the abandonment of sectoral priorities and the transition to inter-sectoral strategies, interregional innovation activation, the mechanism of outsourcing in the transfer of technology, etc.

In general, the analysis of foreign experience of innovative development of the industrial sector made it possible to reveal its modern functional nature, which is based on the following grounds:

– high-tech industrial complex is considered as the core and basis of industry and the point of growth of the country's economy;

– an increase in the innovative dynamism of the industrial sector did not take place without the support of public authorities and authorities;

– financing of innovation activities is carried out in the form of direct investment, tax incentives, grants and other subsidies (Japan, China), public procurement and orders (the USA);

– ensuring effective interaction between industrial enterprises, scientific and educational institutions (the USA, Japan);

– creation of technopolises, production clusters and technoparks as the basis for accelerating innovation processes.

At the same time, innovativedevelopment of the industrial basis of the economy takes place in various institutional and economic forms, such as:

– information programs of technological development;

– state programs of innovative activity of small and medium business,– participation of chambers of commerce and industry;

– formation and development of innovative infrastructure;

– activation of clusters.

These are the directions that are relevant for the innovative development of our economy in the industrial sphere.

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At the same time, from the position of strategic growth in the Kazakhstan economy, it is important to keep in mind the following accumulative picture of macroeconomic priorities in the main innovation development:

1. The state programming of financial and technical support of innovative enterprises that carry out research and development NIOKR on the subject of governmental organizations (The USA, Japan, India, and China).

2. Direct financing (subsidies, loans), which reach 50 % of the cost of creating new products and technologies (France, the USA and others).

3. Provision of loans, including gratuitous loans to cover 50 % of the costs of innovation (Germany).

4. Targeted subsidies to research and development (in virtually all developed countries).

5. Establishment funds of implementation innovation taking into account possible commercial risks (EU).

6. Reduction of state duties for individual inventors and presentation of tax incentives (Germany, the USA, Japan, etc.), as well as the creation of a special infrastructure for their support and economic insurance (Japan).

7. Reduction of the level of taxation for enterprises operating in the innovation sphere, including exclusion from taxation of NIOKR expenses, tax holidays, preferential taxation of universities and research institutes and NII (the USA, Great Britain, India, China, Japan).

8. Legislative protection of intellectual property and copyrights (in all developed countries), government programs to reduce risks and recover damages (the USA, Japan).

9. Creation of a network of venture capital funds used to implement innovative projects by enterprises (in all developed countries).

10. Establishment of a network of scientific parks, business incubators and technological development zones (in all developed and developing countries).

11. Creation of state organizations (corporations, agencies) providing comprehensive scientific, technical, financial and industrial support to innovative MSP (The USA, Japan, India, China, etc.).

These are applied macro-structural guidelines that constitute the basis of modern innovation policy and state programming. At the same time, it should be kept in mind that the evaluation of the effectiveness of innovative development programs has a number of features that are associated with specific features of innovation.

Firstly, support for innovation is multifaceted, its object can be the development of venture financing, the creation of technology parks, the formation of innovative clusters, the development of exports of high-tech products, etc. Several dozens of indicators have been developed in practice to serve as target indicators of programs. Therefore, the difficulty is in choosing the right indicators and evaluation criteria for a particular state program event.

Secondly, despite the active development of state programs in the field of innovation, there is no single definition of the term «innovation». This reduces the objectivity of the assessment;

Thirdly, innovative projects are unique, experimental, and sometimes random, which makes hard target setting inapplicable. In these conditions, it may be difficult to assess whether the results are consistent with the goals;

Fourthly, a significant distribution of the effect over time. The effect of implementing a project to create an object of innovative infrastructure may appear in a decade after the establishment of the facility. When assessing state programs in the field of innovation development, the need to evaluate the long-term effects from their implementation, the method of studying the history of projects (historical tracing) increases.

Fifthly, in the course of innovation activity, several types of effects are formed, which must be taken into account when assessing the effectiveness of government programs: economic (including budget and commercial), social, scientific, technical, environmental. Therefore, there are difficulties in assessing the synergetic effect of their interaction.

The first macro-structural project for the implementation of innovative development in Kazakhstan can be considered the implementation of the State Program for Forced Industrial-Innovative Development for 2010-2014. A special feature of the implementation of this program is its industrial orientation and parallel innovative support of the macrostructure. In this aspect, the parameters of the effectiveness of innovation development in our country are incomparable with the world level.

However, from the perspective of forced industrial development, the following specifics can be noted:

– for the cultivation of innovative elements in the economy, analysis of state programming with basic criteria bases (chain: resources - immediate results - final results - impact) is needed;

– it is necessary to provide an assessment of quantitative indicators (absolute, structural and relative). Following the global algorithm of innovation analysis, it is possible to provide a general composition of innovative elements in the structure of the economy and to identify possible factors of sustainability and animation.

So, to assess the primary level, let us consider what resources were presented in the framework of state programs for innovative development. This is, first of all, the institutional base. For the modernization of the economy and the possibility of scientific and technological breakthroughs in the RK, the following policy documents were adopted: since the beginning of the 2000s, in Kazakhstan, 25 state programs and strategies were implemented, one of which was designed for the future until 2030, five - for 10-15 years, the rest - for a period of less than 10 years. The need to form a new development model that calls for a transition from a commodity orientation to a service-technological economy has been substantiated since the late 1990s, when the initial version of the concept of innovative development of the republic was put forward. In its final form, it manifested itself in the form of the Strategy for Industrial and Innovative Development of the Republic of Kazakhstan, designed for 2003-2015 [21].

Along with the legislative base, the innovation impulse was laid in industrialization programs, which are industrial aggregates for innovation. In this spectrum of implementation of industrial projects represents a resource base for innovative development.

What are the results of state programming from this position?

In the accumulated form, the applied effectiveness of industrial development is expressed in the results of the state program on accelerated industrial-innovative development. The development and launch of the state program on accelerated industrial and innovative development for 2010-2014 (hereinafter referred to as GPFIIR) became the country's response to the challenges created by the economic crisis. This program laid the foundation for further industrial growth and is considered one of the examples of state system approaches for the development of its own industrial base. The main goal of the program was to ensure sustainable and balanced growth of the economy through diversification and increase of its competitiveness. The basis of the forced industrialization of the republic is the implementation of large investment projects in export-oriented traditional sectors of the economy, calculation of the multiplier effect from the introduction of new opportunities for small and medium-sized businesses through the growth of Kazakhstan content, the inclusion in subsequent production cycles and processing of products. In the state program as a basis for implementing a new strategy for the development of the economy, 13 sectoral and 10 fundamental programs were developed and adopted, including the development of Kazakhstan content, tariff policy, competition, trade, innovation, mineral resources, attracting investments, developing the electric power industry and technical regulation. There are also incentive measures for attracting investments in the form of exemption from payment of customs duties on equipment imports, tax preferences within the framework of free economic zones (SEZ). In-

novative grants for the transfer of new technologies, development and experimental development, etc. have been introduced. Five design bureaus have been created: transport engineering, oil and gas, mining and metallurgical equipment, agricultural machinery and instrument making. The program «Productivity -2020» has been adopted with the support of system-forming and other operating enterprises, as well as the development of new productions. All this encompasses a complex of state measures that allow initiating fundamentally new modernization processes in priority sectors and other important spheres of the economy and bringing the country to a new level of competitiveness. As a result, the share of manufacturing in the VVP structure by 2020 will reach 13 % with a set of new business initiatives to modernize existing and support new ones working in the development of high technology. This will ensure the conditions for freedom of entrepreneurship; diversify the structure and content of public institutions. The latter should stimulate the private sector and improve the competitive advantage; to achieve the greatest added value in competitive production; take measures to stimulate the creation of high technology and high-technology export-oriented industries; diversify the country's export potential in favor of goods and services with high added value; to activate the transition to world quality standards, etc. [22].

In general, the program of industrial-innovative development led to the following positive production results:

– institutionalization of the industrial policy base. Normative and legal acts were adopted, various tools for supporting industrial development and new policies were tested. In particular, these are mechanisms for attracting PII and supporting exports. A system of institutes for industrial development has been created;

– diversification of Kazakhstan's industry: non-primary exports, investments in the non-primary sector. In particular, the production of more than 150 new products has been mastered. These are high-tech products of machine building, pharmaceuticals, and the chemical industry;

– expansion of the industrial trajectory of the economy of Kazakhstan. About 500 new productions were introduced within the framework of the Industrialization Map, whose share in the manufacturing industry was 9.4 %;

– positive dynamics in the labor market: Employment in the industry for these 4 years increased by 9 % and exceeded 1 million people. In the framework of the industrialization map, 60.000 new jobs were created in the manufacturing industry;

– growth in labor productivity;

– growth of investments. Over $ 90 billion of foreign direct investment was attracted, which is more than 40 % of the total volume of PII attracted during the years of independence.

During the implementation of the GPFIIR, lessons were learned that should be taken into account in the second phase of the program in 2015-2019:

– a wide range of industries does not allow efficient distribution of state support;

– poor-quality monitoring of program implementation;

– insufficiently fast interaction of state, local executive bodies and development institutions, which leads to significant time costs;

– insufficiently effective system of financing and investment. In particular, the depressed state of the capital market in Kazakhstan, characterized by low liquidity, which does not allow sufficient coverage of the needs for investment capital for the purposes of innovative development.

Thus, the implementation of the industrial potential within the program in the strategic and macrostructural aspects should lead to a developed innovative mechanism. Unlike the developed countries, where innovations were built into the economic mechanism throughout the century, the innovative movement in Kazakhstan is specified by the following circumstances:

– understanding of the mechanism of catch-up development, a serious lag in scientific and technological development;

– the scale of the domestic market in the context of global competition;

– mainly industrial parameters of the domestic economy, which complicates the post-industrial prospects of domestic innovation.

Therefore, the innovative component of GPFIIR was aimed primarily at creating tools for government incentives for innovation and identifying the leading areas for its investment. In this aspect, GPFIIR has laid the modern industrial basis for an innovative economy in Kazakhstan. To assess the parameters of innovation development, incorporated and implemented in the framework of the state program, it should be kept in mind that the evaluation of results and effectiveness will also have specificity. Unlike the world performance indicators, the state program does not lay down direct effects from innovation, because the innovativeness of the economy is still being formed.

In other words, innovative activity has not yet become the basis of the country's socio-economic development: no significant technological breakthroughs or signs of intensive mass development of research and development results are observed in the domestic economy. Low innovation activity is characteristic for all types of economic activity, as well as for all types of innovation.

This assessment is based on two circumstances: the basic reasons for the inhibition of innovation in the domestic economy and the miscalculations of the implementation of GPFIIR.

Macroeconomic reasons for the slowdown of the general mechanism of innovative development in the country are: high monopolization of the market, unfair competition; low level of payment for scientific research; weak competitiveness of the sphere of distribution of financial resources and scientific and technical environment; lack of integrated, systematic innovation management, as a consequence of the «brain drain», a negligible share of venture capital, the lack of commercialization of innovation; bureaucracy in state structures; low patent activity on the part of scientists, inventors and rationalizers [23].

These are problems of socio-economic basis that generated the idea of economic diversification on an innovative basis within the framework of state development programs.But the implementation of the GPFIIR itself created additional problems for innovative development. Thus, failure to meet the target indicators for the implementation of the GPFIIR sectoral programs is due to the fact that there was an extremely high number of indicators with disparate directions that made it impossible to concentrate efforts on specific priorities for the development of industries. The desire for universal innovation, embedded in the program, turned out to be an impossibility of quality monitoring of actions, the absence of real breakthrough projects. After all, the planned innovation component in each industry has its negative consequence of the uncertainty of the financial costs for innovation, the lack of professional staff and competencies for modernization. In the methodical aspect, the following mistakes were made for the implementation of GPFIIR: reducing the possible effects: unsatisfactory analysis of the external environment and foreign experience, fuzzy identification of the target audience (beneficiaries) of the program; vagueness of settlement indicators of cost of realization. It is also necessary to take into account the time lag for obtaining innovative results.

This is the overall assessment of the GPFIIR program in terms of the effectiveness of its industrial and innovative component.

The dominants of the State Program for Industrial and Innovative Development of Kazakhstan (hereinafter GPIIIR) for 2015-2019 are the following: increasing the importance of resources; globalization and changing the trajectory of production; strengthening the role of developing countries' markets; restrictions of an international character; the competition of countries in the development of production and its location; the growth of the importance of modern postindustrial services; the growth of the role of entrepreneurship; the third industrial revolution.

In the forecasting model of state programming of industrial and economic development of Kazakhstan, the following composition of weak and strong sides, as well as the resulting opportunities and threats to its development, is formed.

Strengths: resource base for innovative development; political and economic stability; institutionalization of existing industrial policy; supportive business environment.

Weaknesses that require growth: insufficient investment activity of the manufacturing industry; limited qualified personnel; barriers to access to world markets; problematic nodes of infrastructure (transport and logistics, energy and water supply); the shortage of small and medium-sized businesses and the dominance of state-owned enterprises; insufficiently high competitiveness of innovations (Kazakhstan occupies only 45th place in terms of competitiveness of the innovation system).

The opportunities for innovative development can be such areas as: improving the complexity of resource extraction; growth in demand for manufacturing equipment by manufacturing enterprises; access to the market of the Eurasian Economic Union; increase productivity through modern management technologies, and create domestic demand through increased public procurement.

Threats to innovative development can be: the situation in the global industrial market, price volatility, structural reformatting; low competitiveness of domestic enterprises; risk of structural inhibition of the economy and competition in the world and in the domestic market [24].

In general, the industrial and innovative development of Kazakhstan depends on two strategic factors: the situation with the global resource market and the level of integration within the region. The conjuncture of the world market influences the activity of the main enterprises of Kazakhstan's raw materials sector. Integration level for export and distribution channels.

Conclusions of the study. The analysis of foreign experience of innovative development of the industrial sector made it possible to reveal its modern functional nature, which is based on the following grounds. Firstly, a high-tech industrial complex is seen as the core and basis of industry and the point of growth of the country's economy. Secondly, the increase in the innovative dynamism of the industrial sector did not take place without the support of government. Thirdly, the financing of innovation activities is carried out in the form of direct investment, tax incentives, grants and other subsidies (Japan, China), public procurement and orders (the USA). Fourthly, ensuring effective interaction between industrial enterprises, scientific and educational institutions (the USA, Japan). Fifthly, the creation of technopolis, production clusters and technology parks as the basis for accelerating innovation processes. At the same time, the innovative development of the industrial basis of the economy takes place in various institutional and economic forms, such as: information programs for technological development, state programs for innovative activity of small and medium-sized businesses, the participation of chambers of commerce and industry, the formation and development of innovation infrastructure, the activation of clusters. the accumulation pattern of macroeconomic priorities in the mainstream innovative development is relevant for the innovative development Our economy, both in terms of industry and in terms of strategic growth.

References

1 Тамбовцев В.Л. Государство как инициатор развития гражданского общества / В.Л. Тамбовцев // Общественные науки и современность. — 2007. — № 2. — С. 69–77.

2 Тушов А.А. Целевая программа в системе государственного управления экономикой / А.А. Тушов // Экономика и управление. — 2012. — № 3(88). — С. 151–154.

3 Хатри Г.П. Мониторинг результативности в общественном секторе: пер. с англ. / Г.П. Хатри. — М.: Фонд «Институт экономики города», 2005. — 276 с.

4 Филиппова М.Ф. Сущность программно-целевого планирования и управления социально-экономическим развитием // Государственное и муниципальное управление в XXI веке: теория, методология, практика. — 2011. — № 2. — С. 58–63.

5 Балдина Н.П. Роль государства в становлении инновационной экономики (международные права) / Н.П. Балдина // Инновационная модель бизнеса: мотивация использования инноваций и экономического роста. — Новосибирск, 2012. — С. 187–201.

6 Вермель М.В. Основы типичной организации национальной инновационной экономической системы на примере развитых стран / М.В. Вермель // Креативная экономика. — 2013. — № 5. — С. 22–34.

7 Глазев С.Ю. Инновационное развитие экономики: международный опыт и проблемы России / С.Ю. Глазев, С.С. Губанов, И.А. Погосов и др.; отв. ред. А.А. Масленников. Ин-т Европы Рос. акад. наук. — СПб.: Нестор-История, 2012. — 351 с.

8 Ганиева А.А. Эффективность государственного управления в контексте проектного подхода. [Электронный ресурс]. — Режим доступа: www.rusrand.ru.

9 Административная реформа и проблемы государственного управления / Авт. колл.: К.И. Головщинский, А.С. Данилов, Н.Е. Дмитриева, В.Ф. Елисеенко, А.Б. Жулин, М.В. Кирсанов, А.В. Клименко, В.А. Королев, М.В. Паршин, И.К. Суворова. — М.: Высш. шк. экономики, 2008. — 276 с.

10 Малютин Д.Л. Традиции и национальность: анализ и оценка формирования инновационной среды в Японии / Д.Л. Малютин // Креативная экономика. — 2013. — № 5. — С. 65–69.

11 Мировой опыт инновационной политики: очерки. Вып. 2 / Под ред. С.В. Вольфсон. — Томск: Томский гос. ун-т, 2013. — 288 с.

12 Москвин В. Планирование реализации проектов на 30-й период // Инвестиции в России. — 2003. — № 2. — С. 42.

13 Хромов Г.С. Текущее состояние научно-технических систем промышленно развитых стран // Научные исследования. — М., 2013. — С. 32–56.

14 Черкасов М.Н. Анализ мирового опыта по изучению научно-технической и инновационной деятельности / М.Н. Черкасов // Альманах современной науки и образования. — 2013. — № 1. — С. 161–165.

15 Патрих Е. Инновационная деятельность в Германии / Е. Патрих, В.В. Яшин // Проблемы теории и практики управления. — 2009. — № 1. — С. 62, 63.

16 Роль инноваций в развитии современных технологий // Экономика и управление в зарубежных странах. Информационный бюллетень. — 2011. — № 2.

17 Мовчан И. Французские направления конкурентоспособности как эффективный механизм передачи технологий / И. Мовчан, И. Смуров, Ф. Бертран. [Электронный ресурс]. — Режим доступа: http://dialog.extech.ru/kongress2/present.php?mplevel=3.

18 Innovationcreates success and growth. [Электронный ресурс]. — Режим доступа: www.tekes.fi/eng/impact.html.

19 Greenhalgh C.H. Innovation, intellectual property, and economic growth. — Oxford: Princeton Univ. Press, 2010. — 366 p.

20 Абдурасулова Д. Промышленная политика Южной Кореи / Д. Абдурасулова. [Электронный ресурс]. — Режим доступа: http://institutiones.com.

21 Стратегия индустриально-инновационного развития Республики Казахстан на 2003-2015 гг. — Астана, 2003.

22 Государственная программа форсированного индустриально-инновационного развития Республики Казахстан на 2010-2014 гг. — Астана, 2010. — 62 с.

23 Нурланова Н.К. Методика оценки экономического и инновационного потенциалов регионов Казахстана / Н.К. Нурланова. — Алматы: ИЭ КН МОН РК, 2014. — 108 с.

24 Государственная программа индустриально-инновационного развития Республики Казахстан на 2015-2019 гг. — Астана, 2014. —70 с.

Е.А. Гордеева

Инновациялық дамудың тиімді мемлекеттік бағдарламаларының әлемдік тәжірибесі және оның Қазақстанда бейімделу мүмкіндіктері

Мақалада жетекші мемлекеттердегі инновациялық дамудың қазіргі мемлекеттің бағдарламауының түрлері, жүйелік факторлары және макроқұрылымдық доминанттары қарастырылды. Әлемдік тәжірибе көрсеткендей, нақты мақсаттарға қолжеткізу үшін ресурстарды шоғырландыру қажет болғанда, стратегиялық даму міндеттерін шешу үшін Еуропалық одақ, АҚШ және Жапония елдерінде қолданылатын бағдарлама-мақсатты әдіс екенін көрсетті. Инновациялық үрдістерді бағдарламалық-мақсатты реттеудің әлемдік тәжірибені талдау негізінде оның тиімділігі бағаланған, құрал диапазоны, функционалдық табиғаты және макроқұрылымдық басымдылықтар анықталды. Сонымен бірге мақалада инновациялық дамудың мемлекеттік бағдарламалаудың институционалдық-экономикалық ерекшелігі зерттелді, оның құрамдас бөлшектері, ұлттық инновациялық жүйе элементтері, мемлекеттік «инновациялық тораптар», инновацияның бейімділік шегі, инновациялық даму тиімділігінің көрсеткіштері айқындалды. Инновациялық дамудың мемлекеттік бағдарламаларының тиімділігін жиынтық бағалау экономиканың инновациялық сегментінің оң нәтижелерін және жаңартылған аномиялар мен инновацияларды қысу факторларын көрсетті. Осыған байланысты бағдарламалық-мақсатты жоспарлау мен мемлекеттік бағдарламалауға қолданыстағы тәсілдерді сапалы түрде қайта қарау аса өзекті болды. Шетелдік тәжірибені ескеріп, қазақстандық экономиканың стратегиялық даму тұрғысынан магистралды инновациялық дамуда макроэкономикалық басымдылықтардың аккумуляциялық сипаты келтірілді.

Кілт сөздер: мемлекеттік бағдарлама, мемлекеттік бағдарламалау, инновациялық даму, ұлттық инновациялық жүйе, мемлекеттік инновациялық саясат.

Е.А. Гордеева

Мировой опыт эффективного государственного программирования инновационного развития и возможности его адаптации в Казахстане

В статье рассматриваются типология, системные факторы и макроструктурные доминанты современного государственного программирования инновационного развития в ведущих странах. Мировой опыт свидетельствует, что именно программно-целевой метод применяется в странах Европейского союза, США, Японии для решения стратегических задач развития, когда необходимо сконцентрировать ресурсы для достижения конкретных целей. На основе анализа мирового опыта программно-целевого регулирования инновационных процессов дана оценка его эффективности, выявлены инструментарный диапазон, функциональная природа и макроструктурные приоритеты. Кроме того, в статье исследуется институционально-экономическая спецификация государственного программирования инновационного развития, выделяются его компоненты, генерирование элементов национальной инновационной системы, страновые «инновационные узлы», пределы адаптивности инноваций, критерии эффективности инновационного развития. Агрегированная оценка эффективности государственных программ инновационного развития выявляет как позитивные результирующие инновационного сегмента экономики, так и воспроизводящиеся аномии и факторы сжатия нововведений. В этой связи особую актуальность приобретает качественный пересмотр сложившихся подходов к программно-целевому планированию и государственному программированию. С учетом зарубежного опыта и с позиции стратегического роста в казахстанской экономике раскрывается аккумуляционная картина макроэкономических приоритетов в магистральном инновационном развитии.

Ключевые слова: государственная программа, государственное программирование, инновационное развитие, национальная инновационная система, государственная инновационная политика.

References

1 Tambovtsev, V.L. (2007). Hosudarstvo kak initsiator razvitiia hrazhdanskoho obshchestva [The state as the initiator of the development of civil society]. *Obshchestvennye nauki i sovremennost – Social Sciences and Modernity, 2,* 69–77 [in Russian].

2 Tushov, A.A. (2012). Tselevye prohrammy v sisteme hosudarstvennoho rehulirovaniia ekonomikoi [Target programs in the system of state regulation of the economy]. *Ekonomika i upravlenie – Economics and management, 3(88),* 151–154 [in Russian].

3 Khatri, G.P. (2005). *Monitorinh rezultativnosti v obshchestvennom sektore [Performance monitoring in the public sector]*. Moscow: Fond «Institut ekonomiki horoda» [in Russian].

4 Filippova, M.F. (2011). Sushchnost prohrammno-tselevoho planirovaniia i upravleniia sotsialno-ekonomicheskim razvitiem [Essence of program-targeted planning and management of socio-economic development]. *Hosudarstvennoe i munitsipalnoe upravlenie v XXI veke – State and municipal governance in the 21st century, 2,* 58–63 [in Russian].

5 Baldina, N.P. (2012). Rol hosudarstva v stanovlenii innovatsionnoi ekonomiki (mezhdunarodnye sravneniia) [The role of the state in the formation of an innovative economy (international comparisons)]. *Innovatsionnaia model biznesa: motivatsiia ispolzovaniia innovatsii i ekonomicheskoho rosta – Innovative business model: motivation to use innovation and economic growth,* 187–201. Novosibirsk [in Russian].

6 Vermel, M.V. (2013). Osnovy tipichnoi orhanizatsii natsionalnoi innovatsionnoi ekonomicheskoi sistemy na primere razvitykh stran [The main types of organization of the national innovation economic system on the example of developed countries]. *Kreativnaia ekonomika – Journal of Creative Economy, 5,* 22–34 [in Russian].

7 Glazev, S.Yu., Gubanov, S.S., Pogosov, I.A., & et al. (2012). Innovatsionnoe razvitie ekonomiki: mezhdunarodnyi opyt i problemy Rossii [Innovative development of the economy: international experience and problems of Russia]. A.A. Maslennikov (Ed.). Internet of Europe Ros. acad. sciences. Saint Petersburg: Nestor-History [in Russian].

8 Ganieva, A.A. Effektivnost hosudarstvennoho upravleniia v kontekste proektnoho podkhoda [The effectiveness of public administration in the context of the project approach]. *rusrand.ru.* Retrieved from www.rusrand.ru [in Russian].

9 Golovshchinsky, K.I., Danilov, A.S., Dmitrieva, N.E., Eliseenko, V.F., Zhulin, A.B., Kirsanov, M.V., Klimenko, A.V., Korolev, V.A., Parshin, M.V., & Suvorova, I.K. (2008). *Administrativnaia reforma i problemy hosudarstvennoho upravleniia [Administrative Reform and Public Administration Problems]*. Moscow: Vysshaia shkola ekonomiki [in Russian].

10 Malyutin, D.L. (2013). Traditsii i ratsionalnost: analiz i otsenka formirovaniia innovatsionnoi sredy v Yaponii [Traditions and rationality: analysis and assessment of the formation of innovation environment in Japan]. *Kreativnaia ekonomika – Creative economics, 5,* 65–69 [in Russian].

11 Volfson, S.V. (Eds.). (2013). *Mirovoi opyt innovatsionnoi politiki [World experience of innovation policy]*. Issue. 2. Tomsk: Tomskii hosudarstvennyi universitet [in Russian].

12 Moskvin, V. (2003). Planirovaniie realizatsii proektov na 30-letnii period [Planning of the implementation of projects for a 30-year period]. *Investitsii v Rossii – Investments in Russia, No. 2,* 42 [in Russian].

13 Khromov, G.S. (2013). Tekushchee sostoianie nauchno-tekhnicheskikh sistem promyshlenno razvitykh stran [Current state of scientific and technical systems of industrially developed countries]. *Nauchnye issledovaniia – Scientific research,* 32–56. Moscow [in Russian].

14 Cherkasov, M.N. (2013). Analiz mirovoho opyta po stimulirovaniiu nauchno tekhnicheskoi i innovatsionnoi deiatelnosti [Analysis of world experience in stimulating scientific, technical and innovative activity]. *Almanakh sovremennoi nauki i obrazovaniia – Almanac of modern science and education, 1,* 161–165 [in Russian].

15 Patrikh, E., & Yashin, V. (2009). Innovatsionnaia deiatelnost v Hermanii [Innovative activity in Germany]. *Problemy teorii i praktiki upravleniia – Problems of theory and practice of management, 1,* 62, 63 [in Russian].

16 Rol innovatsii v razvitii sovremennykh tekhnolohii [The role of innovations in the development of modern technologies]. *Ekonomika i upravlenie v zarubezhnykh stranakh. Informatsionnyi Biulleten – Economics and management in foreign countries. Information Bulletin, 2* [in Russian].

17 Movchan, I., Smurov, I., & Bertrand, F. Frantsuzskie tsentry konkurentosposobnosti kak effektivnyi mekhanizm peredachi tekhnolohii [French Competitiveness Centers as an Effective Mechanism of Technology Transfer]. *dialog.extech.ru.* Retrieved from http: //dialog.extech.ru/kongress2/present.php? Mplevel = 3 [in Russian].

18 Innovationcreates success and growth. *tekes.fi.* Retrieved from www.tekes.fi/eng/impact.html.

19 Greenhalgh, C.H. (2010). Innovation, intellectual property, and economic growth. Oxford: Princeton University Press.

20 Abdurasulova, D. Promyshlennaia politika Yuzhnoi Korei [Industrial Policy of South Korea]. *institutiones.com.* Retrieved from http://institutiones.com [in Russian].

21 Stratehiia industrialno-innovatsionnoho razvitiia Respubliki Kazakhstan na 2003-2015 hody. [Strategy of industrial and innovative development of the Republic of Kazakhstan for 2003-2015]. (2003). Astana [in Russian].

22 Hosudarstvennaia prohramma forsirovannoho industrialno-innovatsionnoho razvitiia Respubliki Kazakhstan na 2010-2014 hody [State program of accelerated industrial and innovative development of the Republic of Kazakhstan for 2010-2014]. (2010). Astana [in Russian].

23 Nurlanova, N.K. (2014). Metodika otsenki ekonomicheskoho i innovatsionnoho potentsialov rehionov Kazakhstana [Methodology for assessing the economic and innovative potential of the regions of Kazakhstan]. Almaty: IE KN MON RK [in Russian].

24 Hosudarstvennaia prohramma industrialno-innovatsionnoho razvitiia Respubliki Kazakhstan na 2015-2019 hody [State program of industrial and innovative development of the Republic of Kazakhstan for 2015-2019]. (2014). Astana [in Russian].