

State support for innovation policy: timeline

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Abstract. In countries with economy in transition significant importance in conducting an active innovation policy is attached to a state with a leading role in innovation and novelty generation given to science and entrepreneurs. To implement the state innovation policy building up of a concept of innovative development of the country, the definition of state supportive measures, support for importance of innovation for the society and economy is required. This article describes priorities, development of goals and objectives of programming documents adopted in the Republic of Kazakhstan concerning the question of innovative development of the economy. Mission of the state is considered through the prism of creating a favorable climate for the realization of innovative activities in the country. It is stressed that innovation policy is an important part of the national strategy of competitive economy.

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Introduction

At the present stage intensity of innovation activities is one of the key factors of industrial and technological growth of the national economy. World experience shows that successful implementation of the state innovation policy requires a structured, disciplined approach. Active innovation in all spheres of activity brings new benefits, offers new opportunities for strengthening competitive positions of the country. When elaborating the innovative policy government of the country faces many challenges which require making decisions based on a clear vision of innovation development of the country on short-, medium - and long-term. In Kazakhstan, a significant part of innovation activities is stimulated directly by the state and the majority of research work is carried out in public institutions. The share of private sector in research and development work is just over a third.

Research methods

The research used methods of system analysis in combination with methods of statistical analysis. Also regulatory documents and statutes of the Republic of Kazakhstan were used. Methodological foundation of research consists of methodological principles, theories and conclusions, contained in the fundamental works of domestic and foreign authors on innovation policy instruments research.

Main part of research

Since Schumpeter's theory of innovation over the past half a century evolution of the theory of innovation is characterized by significant progress [1]. If Schumpeter's classical model proved the central

role of the entrepreneur - innovator as the creator of new combinations of inputs, new markets and technology for the first time, the modern interpretation of the theory of innovation is seen in condition of uncertainty, including fierce competition, close ties between the level of economic (innovation) development and phenomena, acceleration of the rate of change in the external environment, growth of risks, enhancement of the state's role in stimulating innovation. The latter line has been developed in the work of Douglass North [2]. In the works of the English scientist Christopher Freeman progressive innovation development is considered from the perspective of the institutional approach, the need to form a "national innovation system" [3]. This trend representatives' approach is based on the understanding that business units involved in the innovation process are in fact elements of the system which is called "innovation". Such systems based on institutional factors operate at the national level, including various industries, companies and regions, institutions and infrastructure. Scope of innovation activities is now a key factor of the macroeconomic development. Therefore special emphasis is laid to development of recommendations in the field of public policy that support innovation activities and formation of an effective national innovation system. In turn, Malerba F. linked modern development of innovations to the formation of a scientific approach to knowledge management as a key factor of competitiveness of firms, regions and countries. He thought that such interest in knowledge management is due to the fact that innovation is becoming a precondition for all spheres of activity [4]. Sokolova E.V. in her work "The impact of public policy on innovation of markets: problem statement" stresses

that the need to develop and form innovative markets along with the need to stimulate innovation of commodity markets is essential background for the state innovation policy [5]. In turn, the programming documents of the EU emphasize that any public policy should be innovative, i.e. it should be aimed at creating incentives of national companies to innovation activities. In this context the question of the allocation of two forms under the state regulation of markets (innovation and commodity) is posed. In this regard, one can define two main areas: government intervention and creation of an institutional and infrastructure environment, promotion of innovation activities through partial funding and grants [6]. Promising direction for further development of innovation activities is to use the cluster approach, the use of this method is primarily directed at finding a solution to the question of economic diversification, creating products with high value added [7]. A large number of statutory acts related to issues of industrial-innovative development of the economy was taken in Kazakhstan over the last decade, also the issues of formation science and technology policy, creation of the technology market in the context of globalization, the main elements of the national innovation system were investigated in details.

At the present stage Kazakhstan faces the choice of what kind of a state to become: raw materials or high-tech state. Understanding that achieving the desired result is not only possible through the petroleum conjuncture promotes the adoption of programs of industrial-innovative development of the economy of the country in the medium and long term at the government level. As a priority for the next few decades the innovative development of the economy is based on solving a complex of regulatory and socio-economic issues. The Concept of innovation, approved at a meeting of the Government of the Republic of Kazakhstan in 1999, became one of the first documents [8]. In accordance with the Concept, the government developed a program of the innovative development of Kazakhstan for a long period in 2001 (hereinafter - the Program) [9].

The main purpose of the Program is to create necessary conditions and a favorable environment for the development of the economy of the country through the use of achievements of science and technology, the formation of a balanced industrial infrastructure and the gradual replacement of the raw materials part in the gross national product of the country with high-tech export products.

Assigned goals and objectives essentially correspond with the course of the country to diversification of its economy.

Goals and objectives of the innovation development of the republic, declared in the Program, have been designed for the long term, implementation of the Program has been planned for the period from 2001 to 2015.

Initial conditions for large-scale modernization differed sharply both sectorally and territorially. The gap between the courses in terms of technological and innovative potential was substantial. According to statistics, in the production sector for the period 1990 to 1999 there was a steady decline in the share of processing industries in the total gross production by 3-6 times. This took place during the oil and gas industries, ferrous and nonferrous metallurgy sustained growth. In 1999 with the total export volume of about 6.6 billion U.S. dollars (29% of GDP), more than 60% were irreplaceable raw materials, including ferrous and nonferrous metals - 23.9%, fuel and petroleum products - 35.4% as well as products of inorganic chemistry - 6.4% [10]. During this period, the world market prices for hydrocarbons experienced highly volatile market conditions, but were not high enough. Relatively high level of hydrocarbon prices had macroeconomic effects, which was expressed in the fact that large amount of hard currency income from the export of raw materials led to the growth of the national currency. In these circumstances domestic producers generally are not able to compete with increasing imports.

For a radical breakthrough of the situation and the country's ranking upgrade as a competitive economy, move away from dependence on raw materials and active dissemination of innovative projects became the principal provisions of the Program. On the one hand, goals of creating the necessary conditions and a favorable environment for the development of the economy through the use of science and technology were announced in the Program. On the other hand - the Program's objectives demanded a serious adaptation of the legal and economic base, but the first one was not created, the second one was characterized by a predominance of the share of primary industries in a structure of the total industrial output. The need for "the formation of non-commodity sectors of the economy" was proclaimed one of the key objectives of the Program to overcome the raw material orientation. During the time that has elapsed since the adoption of the Program, to be exact in 2000, and up to the present day radical breakthrough in the ratio share of processing industries in relation to production was not achieved. So, according to JSC "Kazakhstan Industry Development Institute" in 2013 in total industry share of manufacturing industries was 32.1%, and mining - 60.5%. Increase in growth of individual manufacturing industries in 2012 compared to 2008

was due to the production of coke and derivative products, engineering and chemical industries. And to a small extent due to industries such as pharmaceutical and light industry [10]. Declining share of the metallurgical industry in total industrial output, as the analysis shows, is a steady trend. This is due to the depletion of profitable ore reserves of nonferrous and ferrous metals. This trend is already was evident in 2000, and with extra acute appeared in 2012. Nevertheless, the industry structure still has a large proportion of energy-intensive materials. Slight increase in manufacturing industries which was observed in some years with respect to mining by 0.8%, do not provide a sufficient basis for the formation of a sustainable trend.

Substantially the Program is based on the right goals and objectives which are consistent with international approaches, the basic directions and mechanisms of implementation are also set in the Program. However, this Program was not implemented to the end.

Let us consider the stages of innovative development of the country.

The first phase (2000-2005). Development of innovative economy has been associated with the following tasks:

1. Ensuring the prioritized scientific, technical and technological development;
2. Formation of non-commodity sectors of the economy;
3. Formation of the system of state support for innovation activities and pre-emptive development of production business operations;
4. Technological modernization of industry and creation of export oriented science absorbing industries;
5. Formation of innovation activities infrastructure;
6. Involvement of small businesses subjects in the innovative sphere;
7. Staffing innovation activities;
8. Establishment of a statutory framework for the development of innovation activities, providing prioritized ranking of innovative economic development;
9. Development of international scientific and technological cooperation.

The system nature of the problems at the macro- and sectoral level, which in this and especially in the preceding period were typical for the national economy, affected the implementation of the tasks set in the initial stage. As it was noted later on in the Program of forced industrial and innovative development [11] measures for diversification and innovation development in terms of ensuring prioritized technical, scientific and technological

development were not fully implemented. In 2003 the Strategy of Industrial and Innovation Development until 2015 (hereinafter - the Strategy) was adopted.

Essentially, at this stage the government announced the creation of equal terms for subjects of innovation activities in obtaining state support. The necessary infrastructure - industrial parks, business incubators were created, but these measures were not correlated with the preparation of highly qualified personnel for innovation activities. In particular, in the National Report on the development of the higher education system of the Republic of Kazakhstan (2002) it was noted that "the system of higher education today does not provide forward-looking education, training specialists with a focus on *technological progress* and multiskilled workers, able to quickly change the profession. Spectrum of fundamental and applied research, especially in *the areas of engineering* and their use in scientific methodology, practical realization of the educational process, further implementation of the results in the production is underdeveloped [12].

State on the first stage acted as the main initiator of innovative development of the country. The statement of the famous American scientist Richard Hell, who noted that one of the important features of the economy in transition at all times was the fact that innovations were carried out either directly by the State or with its giving in this context is very interesting [13]. Many highly industrialized countries of Europe and America followed this way. So, at the beginning of the 90s the U.S. Congress declared the task, including the definition of a clear and comprehensive set of generalized priorities and objectives of research and structural design work.

Finalizing the first phase, we define the basic provisions of the innovation policy of this period:

- the problem of the first stage of the program was solved - a legislative and regulatory framework for the implementation of regional and sectoral innovation sub-programs and projects was developed;
- a policy of cooperation with the private sector in the development the strategic directions of industrial development was proclaimed in the Strategy of Industrial and Innovation Development, adopted in 2003. This refers to the implementation of the statute which says that state with a market economy should in the first place build partnership with the private sector in the implementation of structural changes on the path of radical innovation and industrial transformation of the economy;
- the task of creation and development of small innovative enterprises in basic industries, agriculture, transport and communications, which requires the development of an implementation strategy, formalization of the main courses on which

one could judge the potential value and the ultimate success of innovative projects financed by the means of the state budget;

- more than 100 industrial (sectoral) sub-programs and innovative development projects were developed. They were poorly coordinated by central and local executive bodies with entrepreneurs and business environment despite indications of specific performers and deadlines, expected volume and sources of funding;

- innovative infrastructure was created.

The second stage (2006-2011). State policy developed in accordance with the principle of respect for national interests in the implementation of innovation. New Law “State support of innovation activities” was adopted in 2006 [14]. In general state policy in the sphere of innovation was focused on respect for equality of innovation activities subjects in obtaining state support, transparency of public support for innovation activities. Fostering scientific research was to provide innovative grants for development of projects in priority areas that were supposed to ensure in the first place compliance of national interests. The Program “30 corporate leaders of Kazakhstan” [15] was adopted by the Decree of the Government of the Republic of Kazakhstan in 2007, according to which JSC “Kazyna” was defined as the operator.

Passports and schedules of preparation and implementation of breakthrough projects in the regions indicating deadlines and placing them on an electronic map were drawn up in order to develop the General Plan for the implementation of “breakthrough” projects. Furthermore, the Action Plan for 2008-2010 on co-financing of breakthrough projects by domestic institutions was approved by the Decree of the Government of the Republic of Kazakhstan for the purpose of sustainable growth and diversification of the economy of the Republic of Kazakhstan.

Since 2010, system of providing innovative grants started its work, so that it was already recorded in 2011 that the number of applicants increased in 2 times. In general, it was received significantly more applications (65 billion) on the total amount of allocated funds (7.5 billion) [16]. The statement saying that one of the sources of funding science and technology and innovation activities from the state budget along with the basic, program and special purpose funding is giving innovation grants was fixed in the Law of the Republic of Kazakhstan “Science” and in the Program for the development of the innovations and promotion of the technological modernization of the Republic of Kazakhstan for 2010-2014 [17].

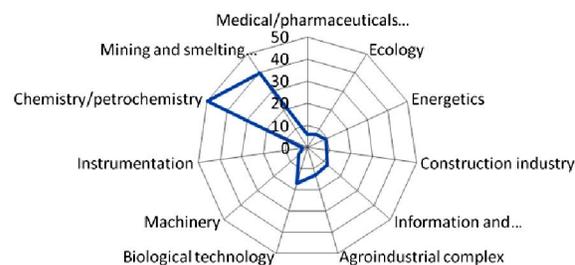


Diagram 1. Statistics of supported projects broken down by fields

Implementation of the state innovation policy is closely linked to increased partnership between the state and the private sector in technology research and its commercialization. In the formation of a constant supply of new technology and innovations it was intended to increase participation of regions by creating regional innovation systems, which were announced in the state program of forced industrial and innovative development of Kazakhstan for 2010-2014 (hereinafter – SP FIID) [11]. It was about creating a full-length regional innovation systems (RIS), the main task of which is to focus on attracting the scientific potential, major entrepreneurs in the formation of an innovative environment. And on this basis focus has to be on solving problems of local businesses, small businesses, scientists and inventors. In implementing this provision Program of the development of the patent system of the Republic of Kazakhstan for 2007-2011 was designed to implement this statement, it also drew attention to the development of proposals for the regulation of technology transfer [18].

2011 was “a pilot” year for the state forced industrial and innovative program. One of the main tasks of this period was to support new business initiatives, to modernize existing enterprises and to strengthen human resource capacity of industrial enterprises, to form new management models and mechanisms in the interaction between science and technology and to improve the system of public support for innovation activations. These principles formed the basis of new management models and mechanisms in the field of science and technology, and have focused on enhancing the role of the state in promoting innovation and economic diversification.

Industrialization Map of Kazakhstan became an effective mechanism for the implementation of SP FIID. At the heart of the creation of this Map lays the joint work of government and business in developing effective investment decisions. This is achieved by strengthening the relationship of the private sector with infrastructure development and resource potential of the country. At this stage the difficulties

that accompanied the implementation of SP FIID were related to funding of working capital of the development institutions. Situation when projects, approved at the state level, could not be realized due to lack of necessary working capital could be observed. Several projects required parallel government support in terms of technical regulation, the conditions of access to foreign markets, etc.

Analysis of innovative development of Kazakhstan's economy shows the main results of the second stage:

1. Clear prioritization of industrial and innovation policies in the state program of forced industrial and innovative development of Kazakhstan for 2010-2014.

2. Modernization of economy of the Republic of Kazakhstan by the selection of innovative projects for inclusion in the list of "breakthrough" projects.

3. Signing the Memorandum of Understanding and Cooperation between the Government of the Republic of Kazakhstan, national business associations and the heads of the leading business and financial structures of the Republic of Kazakhstan in order to modernize the economy.

4. Development of the system of technology transfer by accessing the domestic private capital to the world market of high-tech developments. Assistance to entrepreneurs in buying both domestic and foreign patents and licenses, as well as state support for the promotion and commercialization of technological developments through Kazakhstan network technology transfer.

5. Activation of policy on development and promotion of Kazakh goods export to foreign markets.

6. Creating favorable conditions for attracting investment, domestic and foreign companies in special economic and industrial areas, technological cluster, encouraging the formation of regional innovation systems in the provinces and cities of the country [19].

The third phase (2012 – till present). The adoption of the new Law "State support of industrial innovation activities" was defined as the realization of one of the most important government tasks [20]. The main purpose of this Law is to increase the competitiveness of the national economy by stimulating the development of priority sectors of the economy. The state's role in the process of regulation and management of innovative activity in this period changed dramatically in comparison to the previous stages. At this stage the state support is taking concrete shape in the regulation of science - technology – production system. State support is expressed in clear formalization of implementation

mechanisms. These years particular attention is drawn to approval of rules which allow to combine the interests of the state in creation of competitive economy with the interests of participants of innovation activities. So, government measures are particularly important when developing rules: provision of innovative grants for the purchase of technology, industrial research, support for the production of high-tech products at the initial stage of development, patenting in foreign countries and (or) regional patent organizations; examination of local content; approval of single card of priority goods and services; development of a list of activities for the production of high-tech products, rules of functioning of industrial design bureaus, list of domestic processed goods and services, which partially compensated for the costs of their promotion on foreign markets; the definition of conditions and mechanisms of lending to industrial innovation subjects through financial institutions; methodology of technological forecasting and etc.

The third stage can be regarded as a turning point in changing role of the state. As the analysis of the dynamics of innovation development in the past decade shows, it is the state that is capable of laying the foundation for innovative economic development in a globalized economy and the national economic system which is poorly adapted to the outside environment.

According to the statistics and the Concept of innovation development of Kazakhstan till 2013, level of innovation activity in 2012 compared to 2011 decreased to 4.3% versus 5.7% respectively [21]. Based on the analysis given above, we can conclude that today the state implemented much of what was planned before, except for the diversification program. There was not a chance to provide a fundamental breakthrough in the ratio of processing and extractive industries in the gross domestic product as yet. Advancing innovation in the country depends not only on the implementation of large-scale global projects. We should keep in mind that today innovation should be primarily focused on the consumer.

Conclusion

1. Model of innovative development of the economy, adopted in Kazakhstan, is based on state support for innovation activities and insufficient intensity of inclusion of business, research organizations and entrepreneurs in this process. Today it does not possible to fully realize the main directions of innovation policy. Approaches such as promoting the practice of financing business angels, the development of venture capital funds that can be used in Kazakhstan are used in world practice, along with state support. Although not a very long history of the

development of entrepreneurship in the country, at the present stage their role in promoting innovation should be strengthened.

2. In elaboration of innovative development programs, there should be paid attention to the elaboration of special regulatory measures of the state for development of demand for innovations, for example, through public procurement.

3. Innovation is new knowledge. Educational environment should promote a spread of new “culture” of innovation; design of a new formation of researchers, scientists and developers of new ideas; formation of innovation development priorities on the basis of technological forecasting.

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