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**WORLD EXPERIENCE OF STATE-PRIVATE PARTNERSHIP  
IN THE INNOVATIVE ACTIVITY AND PRACTICE OF THE  
RUSSIAN FEDERATION AND THE  
REPUBLIC OF KAZAKHSTAN**

This article describes the development of the country's innovative potential and innovations, as well as the role of public-private partnership (PPP) in the field of innovative economic development as a factor of sustainable growth and competitiveness of the national economy in the context of globalization of economic relations. The authors provide an analytical review of the Law «On Public and Private Partnership» of the Republic of Kazakhstan and, in particular, regulation of innovation activity and analysis of innovation costs by sources of financing, as well as the experience of PPP in Kazakhstan and Russia. The paper also presents the international experience in the development of innovative economies in a number of countries such as Austria, Israel, Finland, Canada and others. The constraining factors of the development of cooperation in the sphere of public and private partnership are determined and recommendations are given on the use of its mechanisms in the development of innovative investment in the domestic economy.

**Key words:** public and private partnership (PPP), innovative economy, R&D funding, research and development.

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**Инновациялық қызметтегі мемлекеттік-жеке меншік серіктестігінің  
шетелдік тәжірибесі және Ресей мен Қазақстан Республикасының  
тәжірибесі**

Мақала елдің инновациялық әлеуетін және инновацияларының дамуын, сондай-ақ экономикалық қатынастардың жаһандануы жағдайындағы ұлттық экономиканың тұрақты өсуі мен бәсекеге қабілеттілігінің факторы ретінде экономиканың инновациялық дамуы саласындағы мемлекеттік-жеке меншік әріптестік (МЖӘ) ролін сипаттайды. Ресей мен Қазақстан Республикасының мемлекеттік-жеке меншік серіктестік бойынша тәжірибесі көрсетілген, атап айтқанда Қазақстан Республикасының «Мемлекеттік-жеке меншік әріптестік туралы» заңына аналитикалық шолу жасалды және инновацияларды қаржыландыру көздері бойынша шығындарға талдау жүргізілді. Келесі мемлекеттердің инновациялық экономиканы дамытудың халықаралық тәжірибесіне талдау жасалды: Австрия, Израиль, Финляндия, Канада және т.б. Мемлекеттік-жеке меншік әріптестік саласындағы ынтымақтастықтың дамуын шектеуші факторлар анықталды және отандық экономикаға инновациялық инвестицияларды құю үдерісін дамытудың тетіктерін пайдалану бойынша нұсқау береді.

**Түйін сөздер:** мемлекеттік-жеке меншік әріптестік (МЖӘ), инновациялық ҒЗЖ қаржыландыру, ғылыми зерттеулер және әзірлемелер.

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### **Мировой опыт государственно-частного партнерства в инновационной деятельности и практика России и Республики Казахстан**

В статье исследуется развитие инновационного потенциала страны и инноваций, а также роль государственно-частного партнерства (ГЧП) в области инновационного развития экономики как фактора устойчивого роста и конкурентоспособности национальной экономики в условиях глобализации экономических отношений. Сделан аналитический обзор Закона «О Государственно-частном партнерстве» Республики Казахстан, в частности, регулирования инновационной деятельности и анализа затрат на инновации по источникам финансирования; приведен опыт ГЧП в Республики Казахстан и России. Проведен анализ международного опыта развития инновационной экономики таких стран, как: Австрия, Израиль, Финляндия, Канада и др. Определены сдерживающие факторы развития сотрудничества в сфере государственно-частного партнерства и приводятся рекомендации по использованию его механизмов в развитии процессов инновационного инвестирования в отечественную экономику.

**Ключевые слова:** государственно-частное партнерство (ГЧП), инновационная экономика, финансирование НИР, научные исследования и разработки.

#### **Introduction**

At the present stage of development of the Russian and Kazakh economies, one of the main tasks is the transition to an innovation development model. In his message to the people of Kazakhstan dated January 31, 2017, «The third modernization of Kazakhstan: global competitiveness» by the President N.A. Nazarbayev, he indicates as a priority a radical improvement and expansion of the business environment and the need to transfer a number of state services to business through PPP, which reveals a great potential for the development of entrepreneurship.

In modern terms, the innovation economy is the economy of a society based on knowledge, innovations and benevolent perception of new ideas, machines, systems and technologies, their readiness for practical implementation in various spheres of human activity. It emphasizes the special role of knowledge and innovation, especially scientific knowledge [1].

The transition from a raw material economy to an innovative development path requires substantial investments for the modernization of the domestic economy. However, due to budget constraints, there is a problem of financial support and development of innovative projects, including because of the imperfection of the mechanism of investment in innovation.

Consequently, there is an objective need for a common effort, in terms of funds, both of the state and of the private sector. The need for PPP in innovation is justified by the fact that innovation activity is not an entrepreneurial activity in its pure

form, and the state should fulfill the dominant role in financing innovative projects at an early stage when «quick money» is required and be a guarantor or provide reliable guarantees to start financing innovative projects.

#### **Introduction Methods**

The authors provide an analytical review of the Law «On Public and Private Partnership» of the Republic of Kazakhstan and, in particular, regulation of innovation activity and analysis of innovation costs by sources of financing, as well as the experience of PPP in Kazakhstan and Russia. The paper also presents the international experience in the development of innovative economies in a number of countries such as Austria, Israel, Finland, Canada and others. The constraining factors of the development of cooperation in the sphere of public and private partnership are determined and recommendations are given on the use of its mechanisms in the development of innovative investment in the domestic economy.

#### **Analysis results and discussion**

The development of innovative potential of regions and innovations as a factor of sustainable growth and competitiveness of the national economy in the context of globalization of economic relations is analyzed in the following works of foreign scientists and economists, like Cooke P., Hagland M., Orman C.

Foreign scientists such as Biermann F., Chan A.P.C., Klijn E.H., Linder S.N., Marques R.C.

made a significant contribution to the study of the development of the concept, theory and methodology of interaction between public and business structures.

The issues of transformation of public-private partnership in the innovative sector of the economy were investigated by the following scientists: Cheung E., Ke, Y., Lam P.T.I.

Despite a wide range of research in the field of innovative economy, many issues of the formation of a national innovation system within the framework of public-private partnership have not yet received their research and remain controversial.

For successful development of innovative economy in Kazakhstan, it is necessary to study the integration of power, education, science and business, which are the main components of partnership in the innovation sector.

The goal of public-private partnership (PPP) in the innovation sphere is the development of scientific and technical potential and the formation of a competitive industry for the functioning of domestic and global markets. Within the framework of this partnership, the roles of participants are distributed as follows: the state establishes «rules of the game» and creates a favorable institutional environment for the activities of all participants and fosters the development of fundamental knowledge (state research centers, academies, techno parks, universities) and provides the necessary database on the developed technologies. Business, in turn, creates a technology based on its own research and development.

In the domestic environment, the main indicators of innovation activity include the share

of the production sector and innovative products in industrial production, as well as the share of total R&D expenditures (research and development) in GDP, data on the structure of exports and imports, per capita income and employment, information On the share of private and public spending on health and education in GDP.

Public-private partnership is one of the main organizational and economic mechanisms for activating innovative activity in the country, attracting long-term investments.

PPP as an instrument for activating and developing innovative activity is widely used by developed countries and proved to be effective in practice. Analysis of 48 projects implemented under the PPP schemes carried out by the United Nations Economic Commission for Europe showed that 80% of such projects were sold below the estimated budget and 60% of the projects were completed earlier than planned, with better service and reduced usage fees. On the other hand, 64% of the projects executed by state bodies were completed later than the planned time [2].

The main direction of PPP in the innovation sphere is state participation in the development of enterprise financing through capital investments; Public-private financing of various innovative programs, state orders for research and development; State support for the creation of institutions of the modern market of innovations.

At present, there are many forms and models of interaction between the state and business. One possible classification of partnerships by form, each of which can consist of several types or types is presented in Table 1.

**Table 1** – Classification of forms and types of PPPs [3]

Forms	Kinds
Concessions	- classical concession - «shadow» concession
Contracts	- for work execution - for management - for the provision of public services - for the supply of products for state needs - for technical assistance
Production Sharing Agreement	
For rent	- traditional lease - leasing
Partnership type «Build – ... – Transfer»	Many kinds: BOT, BOOT, BOO ... BBO, etc
Mixed enterprises	- corporatization - partnerships with equity participation in the capital of state and municipal authorities

In the process of reforming the Russian economy, the forms of PPP indicated in this table, as an alternative to privatization, have been underestimated. However, they affect the basic relations of society and provide a harmonious combination of personal, collective and public interests.

At present, one cannot say unambiguously that some form of PPP is optimal. To choose the form of partnership follows, depending on the specific task being solved and the branch of the economy, the region in which the PPP project will be implemented in the future; Conditions of the project, its participants, the amount of state participation in the project and many other criteria. In addition, the immediate mechanism for implementing the partnership, the types and forms of partnership should vary depending on the specific circumstances.

For example, in the road infrastructure, we consider the use of lifecycle contracts (CCC) to be rational. Here, the share of risk for the state is minimal, since it will only pay for the service when the road with the required parameters becomes available for use.

In the oil and gas sector, both in Russia and in the world market, production sharing agreements are actively used, whereby the parties achieve the desired result and can dispose of the asset at their own discretion.

At present, JSC «Kazakhstan Center for Public-Private Partnership» was established in Kazakhstan, whose activities are focused on carrying out studies, examinations and assessments of the implementation of investment projects in the field of PPP. It can also be noted that with the direct participation of this center in Kazakhstan, for the first time, a draft law «On public-private partnership» was developed. In particular, the results and discussion of public-private partnership in the Republic of Kazakhstan until 2015 was regulated mainly by Law No. 167-III «On Concessions» of 7 July 2006 [4], and only in 2015 the Basic Law No. 379-V «On public-private partnership» of October 31, 2015 [5], which defines the legal conditions for public-private partnership, its methods of implementation and regulates public relations arising in the process of preparing and implementing a public-private partnership project, And termination of the contract of public-private partnership. Features of the legal regulation of public-private partnership in innovation and special economic zones are discussed in Chapter 7 of the Law on Public-Private Partnership.

Article 55 of the law on public-private partnership addresses the main tasks, questions of

evaluation (reassessment) of exclusive rights to the results of intellectual activity in public-private partnerships in innovations.

Thus, proceeding from the provisions of the law «On public-private partnership» of October 31, 2015, it follows that public-private partnership in innovation is aimed at achieving the following objectives:

1) Development of new technologies, technological processes, technical regulations and their improvement;

2) The manufacture of a prototype, experimental design, testing (including pilot trials), research (including laboratory research);

3) The organization of small-scale production (pilot production) and the implementation of scientific and technical projects (including the creation of start-up companies).

Today in the international experience there are positive changes in the development of PPP in the innovation sector. They offer a number of successful projects, which include: The program of joint research centers in Australia; The program of competent centers in Austria; The Dutch program on Leading Institutes of Technology; Spanish Technology Center Support Program; National centers of technological research and innovation in France and others.

Also, within the framework of PPP financing of innovation activities, it is worth mentioning «Venture financing». Venture financing is carried out by risk capital funds by providing cash resources on an interest-free basis without guarantees of their return.

The activity of venture funds on the financing of innovative projects has a number of characteristic features that distinguishes them from traditional investment funds:

- risk-investors are ready to lose their capital (do not require collateral guarantees to return the funds provided);

- risk capital is granted for a long term (5-7 years) without the right to withdraw it;

- risk capital is placed only in the form of share capital.

The risk of venture investors is great, but in case of success, it is compensated by excess profits. Statistics show that in 15% of cases venture capital is completely lost, in 25% risk companies suffer losses for a longer period than planned, in 30% they receive moderate profits and in 30% excess profits (excess of risk capital in 30-200 times). Risk mitigation in the implementation of venture financing can be achieved with careful selection

of projects, as well as by concurrently investing in several innovative projects that are at different stages of implementation.

Taking into account that venture financing is also one of the forms of private capital investments, it is rather interesting to look at the experience of Finland in the share capital of newly created small high-tech promising companies focused on the development and production of science-intensive products. There, the state promotes the development of innovations through the Finnish Fund of Inventions, which actively participates in the formation of an innovative system. The Fund provides business consulting and financial assistance to young high-tech companies for the development of innovations, as well as evaluates new products, conducts patent searches and further commercializes products. If the project is implemented, the fund gets its share of profit, otherwise – subsidies written off at a loss. Currently, the world practice successfully operates venture funds, such as SBIC – in the US and YOZMA – in Israel.

In addition, Finland, for example, mobilizes about 6 billion euros per year (almost 1% of the total expenditure on R & D) within the PPP model for research and development, with 70% of this amount coming from private business and 30% from state budget. In Finland, 23 technological centers and a techno park are supported by budgetary funds, each of which is designed to serve 225 thousand

people. With such intensive state support of Finnish technology parks, as well as the involvement of technology leaders, including the Nokia concern, the country's innovation policy has become a model for imitation on an international scale [6].

In Kazakhstan, at the moment, PPP in innovation is not developed at a high level, as there are no specific projects that could lead to the example. Basically, the partnership between the state and private business entities is limited in the framework of contractual projects within the framework of R&D funding. However, it should be noted a successful example of PPP in the field of transport infrastructure of Kazakhstan. This is the railway line «Shar-Ust-Kamenogorsk station»; Power transmission line «North Kazakhstan – Aktobe region» (December 28, 2005); International Airport in Aktau (December 10, 2007) [7]. Nevertheless, if this system of state support works with state support in the construction of logistics lines, then it can be confidently said that, based on the new law, it is also possible to successfully implement PPP in the field of innovation.

According to official statistics of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan, the share of innovative products in GDP in 2015 was 0.92%. However, in Kazakhstan, the bulk of the financing of research and development is carried out by the state, which can be traced to the costs of innovation by sources of financing in Table 2.

**Table 2** – Costs for innovation by sources of financing, million tenge

	2015	2014	2013	2012	2011	2010
Own means of enterprises	277 117,5	259 812,2	285 044,4	3 867,6	114 565,8	219 441,9
Republican budget	32 194,2	37 591,1	17 465,6	4 976,9	12 873,1	5 516,6
of them						
Development institutions	3 871,6	3 113,5	-	983,8	12 390,8	2 949,7
Innovative grants	2 521,0	1 485,9	2 821,0	547,2	228,9	808,9
Local budget	2 321,0	2 114,1	3 743,4	97,6	6 613,4	44,2
Foreign investments	974,2	3 537,2	856,8	302,4	40 060,7	1,7
Venture capital funds	-	-	-	60,3	6,1	-
Other assets	350 365,4	135 434,4	124 883,6	-	-	-
of them						
Bank loans	55 224,6	112 501,2	50 895,9	-	-	-
Loans and loans on preferential terms	55 224,6	34 201,7	13 327,5	31,0	8 481,0	5 369,5
Loans of non-bank legal entities	1 225,9	13 239,2	6 441,1	-	-	-
The Republic of Kazakhstan	662 972,3	438 489,2	431 993,8	9 335,9	194 990,9	235 501,7

Note: developed by the author on the basis of the annual statistical bulletin of the Committee on Statistics of the National Economy of the Republic of Kazakhstan [8].

The table shows that in the Republic of Kazakhstan, the dominant position in the implementation of scientific research and innovative projects (about 47% of R & D funding) belongs to the company's own funds and the state budget. According to the Committee on Statistics of the Republic of Kazakhstan, in 2012 out of 21,452 enterprises participating in the analysis, 1215 – had innovations, as a result of which the innovation activity was only 5.7%. However, do not forget that most organizations that are engaged in research work (universities and research institutes) are also funded from the state budget. But in recent years it can be seen that the private sector has gradually become a more active participant in the innovation system. Therefore, in order to reduce the imbalance in the sources of investment in the innovation sphere, to overcome the asymmetry between the needs of the innovative economy and the possibilities for financing them, it is necessary to combine funds and skills. For example, in Canada in 2011, the private sector was the largest source of R & D financing, where the business sector financed \$ 13.9 billion, which is 0.81% of GDP. In Canada, the Federal Government is the second largest source of R & D funding, in 2011 its funding amounted to \$ 6.0 billion, or 0.35% of GDP, followed by the higher education sector at \$ 5.4 billion, which is 0.31% of GDP [9]. Thus, in the Republic of Kazakhstan there is a need to adopt systems of measures aimed at increasing the motivation of private entrepreneurs to participate in the innovation process.

In Russia today, most of the research and development is funded by the state, more than 60% of the expenditures for these purposes fall to the share of the federal and regional budgets. While in foreign countries, the bulk of allocations for research and development comes from the private sector, primarily industrial companies (over 60%).

This shows that in our country the state occupies a dominant position in the implementation of scientific and innovative projects, and private business remains «in the shadow.» Accordingly, in order to eliminate imbalances in the sources of investment in the innovation sphere, to overcome the asymmetry between the needs of the innovative economy and the possibilities for financing them, consolidation of public and private efforts, that is, through public-private partnership, is necessary.

However, at the present stage, business reluctantly takes up financing innovative projects, because there are a number of unresolved problems:

- the imperfection of the legislative framework for the implementation of innovation activities, as well as the lack of measures for its state support;

- low information transparency of the innovation sphere, namely, the lack of information on new developments and capital investment objects that yield high profits;

- low demand for scientific and technical products, which is due to the high cost of innovation, various risks and a long payback period;

- low level of protection of intellectual property rights;

- Ineffectiveness of mechanisms for transferring knowledge and new technologies to the domestic and world markets;

- the existence of corruption, which puts a heavy financial burden on many innovative firms;

- high level of inflation, as a result of which new innovative projects are at high risk;

- difficulties in obtaining affordable loans and other negotiable

### Means and others

In our opinion, in order to solve the above problems, first of all, it is necessary to create legislative initiatives, in particular, the adoption of a federal law on innovation that will contain the basic concepts, rights and obligations of each participant in the transaction; Institutes of management and control; Criteria for assessing the effectiveness of projects being implemented.

In addition, for the effective functioning of PPPs in the innovation sphere, institutional changes are also required in the innovation policy management system. Currently, the management of the innovation process is spread across various sectors and departments: the Ministry of Education and Science (fundamental science, a number of applied researches, partly the commercialization of knowledge), the Ministry of Economic Development (commercialization of technology, the creation of innovation infrastructure), etc. As a result, The opportunity to avoid responsibility for the final result, as a consequence, corruption is born. At the same time, the lack of coordination leads to a loss of synergistic effect.

Therefore, we consider it expedient to create a single innovation management body, which will include representatives of the state and business, which are respected in society and in the business environment.

For example, in Israel, the research activities of universities, research centers, different departments, industries and small enterprises are coordinated at the national level. In Russia, however, a special service under the Ministry of Economic Development can act as this body.

In addition to addressing issues of a regulatory and institutional nature, it is important to create economic incentives to attract investors to the field of scientific research and research. In the financial sphere, one of the main methods of attracting

the private sector to the innovation sphere is the development and adoption of balanced measures of tax incentives for innovation. Table 3 shows the amount of tax credits for R & D provided by the state to private businesses in developed countries.

**Table 3** – Tax incentives for R & D in major developed countries [10]

Country	Ratio of tax deductions to expenses for R & D	The maximum amount of tax deductions
Japan	Large companies – 8-10%; Small and medium – 12%	Large companies – 30% of the amount of tax payments; Small and medium – up to 100% of tax payments
USA	3-5% of the total amount, 20% – for expenses exceeding the norm	25% of the amount of tax payments
Canada	20% of the total amount	absent
United Kingdom	8,4% of the total amount	absent
France	10% of the total amount	16 million euros
China	15% of the total amount	absent

The leaders in the amount of tax deductions are Japan (30% of the amount of tax payments) and the United States (25% of the amount of tax payments), and in respect of tax deductions for R & D expenditures, Canada (20% of the total) and China (15% of the total amount). Thus, the state in developed countries stimulates the innovative activity of private business (especially in the development of science-intensive products) with various benefits and preferences in the form of deferrals, tax credits, accelerated depreciation.

In the public-private partnership scheme, the private sector plays a big role. That is, he should be interested in developing and implementing innovations in his company. In order to determine the degree of application of innovations in the enterprise, the intellectual potential index [11] is used, which is calculated as follows:

$$I = \frac{S_{via}}{Q}, \quad (1)$$

Where I is the intellectual potential of the enterprise;

$S_{via}$  is a value of intangible assets;

Q is the volume of production.

Public-private partnership in the innovation sector allows solving a number of problems and has the following advantages [12-15]:

- PPP provides a greater return on the financing of scientific research, and business entities are interested in successfully solving the issues of further commercialization of their results;

- PPP promotes private sector expertise and creates a competitive environment for open and transparent tenders in the implementation of innovative projects;

- PPP allocates responsibility between partners: the state sets the project objectives in terms of public interests, determines the cost and quality of the parameters, monitors implementation of projects, and the private partner takes on operational activities at different stages of the project development, financing, construction and operation, practical implementation of services and products.

Undoubtedly, the PPP mechanism opens up new opportunities for the innovation sector and stimulates demand for innovations in the business sector. Nevertheless, it is necessary to note the negative features of PPP development in the innovation sphere: the state, actively interfering in the innovation process stage, which traditionally was considered exclusively private, and trying to initiate active business participation in the innovation system, thereby increasing the probability of crowding out and replacing private sector money [16-21].

Significant problems of PPP development tools in the innovation sphere, in particular, in relation to Kazakhstan, can also be attributed unequal power relations of the members of the partnership. This trend is contrary to the basic principles of PPP, for which it is formed. The essence of the principle of equal rights and economic responsibility is that all participants in the PPP have equal rights in some

options for the effective achievement of goals and objectives. Each participant must assume full responsibility to the Kazakhstani society for its obligations.

### Conclusion

Proceeding from the foregoing, it can be stated that the introduction of innovations and new technologies into the domestic economy is

a very labor-intensive process that requires the integration and common efforts of the authorities, education, science and business, which can increase the competitiveness of the national economy. However, due to the lack of sufficient experience of joint activities in Kazakhstan, the organization of effective partnerships in innovation between the public and private sectors, it is necessary to create the necessary conditions for the intensive development of smart products.

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