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**MECHANISMS OF DEVELOPMENT OF INNOVATIVE ACTIVITY:  
ADAPTATION OF FOREIGN EXPERIENCE IN KAZAKHSTAN**

**Abstract.** Nowadays, the development of innovation activity is particularly important for the economy of Kazakhstan. The effectiveness of legal acts depends on the development of innovation activity. In article the advanced foreign experience of normative-legal regulation of innovative sphere is considered.

The commercialization of technologies cannot be fully linked to the state budget; it is mainly determined by the demand for research and development from the non-state sector of the economy. The experience of developed countries shows that partnerships between the private and public sectors of the economy are the basis for innovative development. Mutually beneficial cooperation of private commercial and state scientific structures should also become the basis for the development of innovation processes in Kazakhstan. In this regard, it is necessary, by analogy with the measures provided for in the Stevenson-Wydler Act, to give state scientific institutions the right to conclude cooperative agreements on joint research and development with firms.

**Keywords:** innovation, regulatory support, intellectual property, center for engineering and technology transfer, scientific and technical institute.

In today's world innovations do not happen by themselves. On a continuous basis, they are introduced only where there are appropriate conditions for the emergence of ideas and an understanding of their value and significance, to ensure their implementation. The formation of such conditions is meant to be implemented by the state innovation policy as a mechanism to regulate the innovation activity itself. Accordingly, the legal aspects that regulate the development of innovation from the moment an idea emerges to the processes of commercialization of innovation and distribution of the results of innovation activities become particularly important. [1].

Regulatory and legal support for innovation activities in Kazakhstan lags behind the requirements of time. Adopted legislative and regulatory acts aimed at stimulating innovation processes do not produce the expected effect. The current global trends in the development of the innovation sphere require the use of more effective mechanisms for the integration of science and business, cooperation between the public and private sectors in the adoption of innovations and technology transfer.

In the developed countries of the world various schemes of commercialization of intellectual property objects (IPO) have been developed and applied - from the transfer of property rights for the whole IPO created at the expense of budget funds to the private sector (USA) to the system when the state reserves certain property rights and actively promotes commercialization of the results of scientific research and development created at the expense of state financing (Great Britain, Germany, Japan) [2]. Despite the existence of different approaches to involving IPOs created with public funding into economic turnover, all these systems have proved to be quite effective. Nevertheless, the American scheme of involving IPOs in industrial development is recognized by many experts as one of the best examples in international practice.

In 1980, the U.S. Congress, concerned about Japan's increasing competitiveness through two pieces of legislation - the Bayh Dole Act (Pub L. 96-517) and the Stevenson-Wydler Act (Pub L. 96-418) - was forced to take drastic measures to promote the commercialization of R&D results.

The enactment of the Bayh-Dole Act and the Stevenson-Wydler Act has fundamentally changed the innovation landscape in the United States. Whereas before 1981 Universities were granted fewer than 250

patents per year, about 10 years after the Act was adopted, the number of patents increased to 1,600, with about 80% of the research funded by the Government.

Both of these Acts were aimed at encouraging the commercialization of research and development (R&D) activities that were funded or developed by the Government. The Bayh Dole Act falls within the scope of ownership of patented R&D results that have been obtained through Government funding from non-governmental institutions - universities, small firms and non-profit research laboratories. The Stevenson-Wyldler Act refers to proprietary rights in patented R&D results obtained through collaborative research between Government research laboratories and external partners from the Federal Budget without direct funding from an external partner [2].

The adopted laws were based on the premise that simple financing of fundamental research in large amounts would not solve the problem of commercialization of American technology. On the contrary, commercialization of technologies is not a linear process when increasing investments in fundamental research automatically leads to creation of additional applied research and development, to commercialization and introduction of R&D results into the economy. In the 1980s, the problem in the USA was that despite the high level of development of basic science in general, other countries commercialized the results of American research. The second precondition was that the US Government was not the effective owner of IP, which had already been financed and created by it.

Based on the study of the American experience of legal support of innovation activities, we deem it necessary to adopt the Law of the Republic of Kazakhstan "On Technology Transfer".

The Law of the Republic of Kazakhstan "On Technology Transfer" should be aimed at stimulating the process of involving intellectual property objects created at the expense of budgetary funds in the economic turnover.

In order to effectively involve the IPO in industrial development, it seems advisable to establish in Kazakhstan a legal framework for the creation of research and technology implementation centres and joint research centres within each State scientific institution.

The functional responsibilities of the Centers for Research and Technology Introduction should be as follows:

- 1) evaluation of the scientific and technical project in which the state scientific and technical institution is involved for commercial value;
- 2) search and dissemination of information regarding R&D results owned by a state scientific and technical institution that have a high degree of commercialization;
- 3) cooperation and assistance to the Engineering and Technology Transfer Centre (hereinafter - CITT);
- 4) participation in regional, regional programmes designed to facilitate or promote technology transfer for the benefit of local authorities under whose jurisdiction the institution is located.

The staff of such Centres should be made up of researchers in the institution. As the majority of scientific workers are people far from practical economy, it would be expedient to legislate a mandatory organization by CITT management - courses, round tables, where scientists could improve their knowledge and practical skills, share experiences in the field of technology transfer.

The commercialization of technologies cannot be fully linked to the state budget; it is mainly determined by the demand for research and development from the non-state sector of the economy. The experience of developed countries shows that partnerships between the private and public sectors of the economy are the basis for innovative development. Mutually beneficial cooperation of private commercial and state scientific structures should also become the basis for the development of innovation processes in Kazakhstan. In this regard, it is necessary, by analogy with the measures provided for in the Stevenson-Wyldler Act, to give state scientific institutions the right to conclude cooperative agreements on joint research and development with firms. The outcome of joint research would be results of high commercial value. For example, the average cost of a similar collaborative research project in the United States is \$800,000 [3]. Such an agreement carries with it mutually beneficial conditions, both for budget-funded R&D organizations and for firms that have taken part in research. As a result, the government would increase the efficiency of public investment in R&D by engaging the private sector for the subsequent commercialization of research results. In turn, private firms involved in joint R&D could obtain a simple non-exclusive license to the IPO, thereby enabling them to generate greater economic benefits.

In order to motivate employees of scientific institutions in technology transfer, it is advisable to allow public research organizations to license their inventions independently, bypassing higher supervisory authorities, and to retain all income from licenses after payment of at least 15% of this income to federal employees and inventors.

In the Kazakhstan legal system aimed at stimulation of innovation processes, the gap that needs to be filled remains the issue of rights of ownership of research and development results by the University and/or private sector, creating IPO, within the framework of the state order. According to the Kazakhstan legislation, in this case the state would be the owner of an IPO. However, international practice proves that such a scheme for allocating ownership rights to research results is not promising from the perspective of building an effective innovation system.

In our opinion, it is necessary to allow small enterprises and Universities to keep patent rights on IPO, received in the course of performance of the state order on research and development. In this case, as a customer and investor of research and development, the state would assign ownership of the R&D result to innovation enterprises and universities that fulfilled this order. The benefits of such interaction are obvious. From the assignment, the Government would benefit from the creation of new jobs and, as a result, from increased tax revenue due to increased economic activity caused by the commercialization of inventions financed by the Government. Enterprises would receive exclusive licenses to use inventions, which would greatly encourage them to use corporate funds for the commercialization of inventions. Universities, by granting licences to commercial enterprises to use innovations, would receive royalties and licence fees.

All the above measures to facilitate commercialization of R&D results performed at the expense of the budget should be reflected in the Law of the Republic of Kazakhstan "On Technology Transfer".

With regard to improving legal and regulatory support for small innovative businesses in Kazakhstan, the US Federal Small Business Innovation Research (SBIR) Program is of interest. The program is designed to provide start-up capital for small firms engaged in the production of knowledge-intensive products. Inclusion of SBIR in the mechanism of state regulation obliged federal agencies with the total budget for research and development of more than 100 million dollars. USA allocates annually 0.2% of the R&D budget for small innovative businesses, and more than \$20 million for agencies with the scientific budget. Also, government increase annual allocations to support small science-intensive business R&D [4, p. 99].

The adoption of the SBIR program has had a positive impact on small innovative firms. According to a study by the US National Institute of Health, more than 90% of the businesses surveyed were highly appreciative of the government support provided through SBIR, and 64% of the respondents said that without SBIR the project would not have been possible. Since the SBIR was launched, the program's budget in 1983 has been about 45 million dollars. It has grown to \$2.01 billion by 2004. Together with SBIR, the government has invested more than \$17.5 billion in small enterprise research.

In our opinion, it is expedient to adopt a special Program of small science intensive business development and the Law of the Republic of Kazakhstan "On state support of small innovative entrepreneurship". The Program should become an instrument of state support for small innovative entrepreneurship, similar to the American practice of supporting small knowledge-intensive business. In order to implement this Program, it would be advisable to establish a Small Innovative Entrepreneurship Support Fund (hereinafter, the Fund). The Fund's responsibilities will include the following:

- accumulation of monetary funds allocated by the Ministries to support small innovative businesses;
- the organization of competitions on selection of perspective innovative projects, proceeding from requirements of the Ministries of RK and carrying out of examination on commercial value;
- according to the results of the expertise, provision of financial support in the form of grants to the subjects of small innovative business for the implementation of a potentially profitable innovative project.

Financial support to innovation projects under the Small Science-Intensive Business Development Program should be carried out in three stages. The first stage, the maximum term which is 6 months, should estimate perspective of innovation and possibility of realization of this project. At the given stage on the works corresponding to this stage it can be allocated to 20 thousand dollars. The transition to the next phase is largely determined by the performance of the previous phase. The second stage includes project development and implementation. The work at this stage should lead to the creation of a prototype product, product, technology and, even more importantly, to show the benefits of innovation. The

maximum grant amount at this stage is up to \$250,000, and the duration of the stage is 3 years. The last stage of the Program is a transfer of research results from laboratory practice to market environment, and if they are in demand, the Program ends with large-scale production of innovation. At this stage the Fund should depart from financing of the innovative project and the enterprise should independently take care of attraction of investments.

The aim of the Program is to involve small firms in innovation activities.

The direction of the Program shall correspond to the following objectives:

- to stimulate the growth of innovation in knowledge-intensive industries;
- to harness the potential of small businesses to perform R&D in line with the public interest;
- increasing the interest of small businesses in commercialization of R&D results performed with the state support.

All ministries of the Republic of Kazakhstan, including the Fund for the Support of Small Innovative Enterprises, should become responsible bodies for the Program implementation. The Ministries are responsible for allocating 2% of their R&D budget to form the Fund's budget and carrying out orders for research projects in accordance with their needs for the allocated amount.

The Law, in turn, should define the goals and objectives of the Program, the bodies responsible for the implementation of the Program and their competences.

At present, the scientific and technological potential of Kazakhstan is characterized by a low level of involvement of creative people in research and development. The circumstance that has led to a shortage of human resources in science and technology is the relatively low wages in this area compared to other sectors of the economy and the declining prestige of the profession. In our opinion, it is impossible to increase the attractiveness of the profession of a researcher without solving such an important task as improving the legislative framework regulating the raising of the status, social guarantees and increasing the income level of researchers.

It would be advisable to add a new paragraph providing for an increase in the salary of a researcher to Article 26 "Financial support of science and scientific and technical activity" of the Law of the Republic of Kazakhstan "On Science", or a new article "State support of scientific personnel" should be added to this Law. According to this paragraph, the minimum wage for scientific personnel should correspond to the average wage in the financial sector of the economy.

Most young specialists are people who have difficulties with housing. Renting an apartment in large cities of Kazakhstan is approximately the same as renting a similar apartment in cities of industrialized countries. As science occupations require home comfort, emotional calmness and concentration of attention on the investigated problem, instead of constant search of habitation, it will be expedient from the side of the state to provide young employees in need of habitation who are occupied in research institutes, higher educational institutions, scientific centers, etc. The measure on maintenance of young employees with housing should be reflected in new article of the Law of the Republic of Kazakhstan "On science" - "State support of scientific personnel".

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### **ИННОВАЦИЯЛЫҚ ҚЫЗМЕТТІ ДАМУ ТУРАЛЫ МЕМЛЕКЕТТІК МЕХАНИЗМДЕРІ: ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ ШЕТЕЛ ТӘЖІРИБЕСІН БІРДЕУ**

**Аннотация.** Қазіргі таңда озық мемлекеттердің экономикалық дамуы инновацияларға арқа сүйейді. Сол инновациялар Қазақстанда да экономикалық дамудың басты қозғаушы күші болмақ. Инновациялар бос орынның үстінде пайда болмайды, олардың пайда болуына қолайлы орта жасалуы қажет. Инновациялардың қарқынды түрде пайда болуына қолайлы орта тұғызатын бірден-бір басты механизмнің бірі нормативтік-құқықтық қамтамасыз ету болып табылады. Берілген мақалада Қазақстан Республикасындағы инновациялық саланы нормативтік-құқықтық қамтамасыз ету механизмін жетілдіру мәселелері қарастырылады.

Технологияларды коммерцияландыру мемлекеттік бюджетпен толық байланысты бола алмайды, негізінен ол экономиканың мемлекеттік емес секторы тарапынан зерттеулер мен әзірлемелерге деген сұраныспен айқындалады. Дамыған елдердің тәжірибесі көрсеткендей, экономиканың жеке және мемлекеттік секторларының серіктестігі инновациялық дамудың негізі болып табылады. Жеке коммерциялық және



мемлекеттік ғылыми құрылымдардың өзара тиімді кооперациясы Қазақстанда да инновациялық процестерді дамытудың негізі болуға тиіс. Осыған байланысты Стивенсон-Уайдлер Заңында көзделген шараларға ұқсас мемлекеттік ғылыми мекемелерге фирмалармен бірлескен ҒЗТҚЖ жүргізуге кооперативтік келісімдер жасау құқығын беру қажет.

Бірлескен зерттеулердің қорытындысы үлкен коммерциялық құндылығы бар нәтижелер болар еді. Мысалы, АҚШ-та ұқсас бірлескен зерттеулер жобасының орташа құны 800 мың АҚШ долларын құрайды. АҚШ-тың [3]. Мұндай келісім ҒЗТҚЖ-ны бюджет есебінен жүзеге асыратын ғылыми ұйымдар үшін де, зерттеулер жүргізуге қатысқан фирмалар үшін де өзара тиімді шарттарды өзіне алып келеді. Келісім нәтижесінде мемлекет зерттеу нәтижелерін кейіннен коммерцияландыру үшін жеке секторды тарту арқылы ҒЗТҚЖ-ға мемлекеттік инвестициялардың тиімділігін арттыруға қол жеткізер еді. Өз кезегінде, бірлескен ҒЗТҚЖ-ға қатысқан жеке фирмалар ИЫҰ-ға жай ерекше емес лицензия ала алады, осылайша үлкен экономикалық пайда алу мүмкіндігіне ие болады.

Ғылыми мекемелердің қызметкерлерін технологиялар трансфертінде уәждеу мақсатында Жоғары тұрған жетекшілік ететін инстанцияларды айналып өтіп, мемлекеттік ғылыми-зерттеу ұйымдарына өз өнертабыстарын дербес лицензиялауға және федералдық қызметкерлер мен өнертапқыштарға осы кірістердің кемінде 15% төленгеннен кейін лицензиядан барлық кірістерді ұстап тұруға рұқсат еткен жөн.

Инновациялық үдерістерді ынталандыруға бағытталған қазақстандық құқықтық жүйеде толымды талап ететін бос орын мемлекеттік тапсырыс шеңберінде ҒЗТҚЖ нәтижелерін университеттің және/немесе ИЫҰ құратын жеке сектордың иелену құқығына қатысты мәселе қалады. Қазақстандық заңнама бойынша бұл жағдайда ИЫҰ иесі мемлекет болып табылады. Алайда, халықаралық тәжірибе тиімді инновациялық жүйені құру тұрғысынан зерттеу нәтижелерін иеленуге құқықтарды бөлудің осындай схемасының перспективалығын дәлелдейді.

Біздің ойымызша, шағын кәсіпорындар мен университеттерге ҒЗТҚЖ-ға мемлекеттік тапсырысты орындау барысында алынған ИЫҰ-ға патенттік құқықтарды сақтауға рұқсат ету қажет. Бұл жағдайда, ғылыми зерттеулер мен әзірлемелердің тапсырыс берушісі және инвесторы бола отырып, мемлекет инновациялық кәсіпорындар мен университеттерге осы тапсырысты орындаған ҒЗТҚЖ нәтижесін иеленуге меншік құқығын берер еді. Мұндай өзара іс-қимылдың тиімділігі айқын. Құқықты қайта табыстаудан Үкімет жана жұмыс орындарын құрудан және нәтижесінде үкімет қаржыландырған өнертабыстарды коммерцияландырудан туындаған экономикалық белсенділіктің өсуінен салық түсімдерінің ұлғаюынан пайда алар еді.

**Түйін сөздер:** инновация, нормативтік қамтамасыз ету, зияткерлік меншік, инженерлік-технологиялық трансферт орталығы, ғылыми-техникалық институт.

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## **МЕХАНИЗМЫ РАЗВИТИЯ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ: АДАПТАЦИЯ ЗАРУБЕЖНОГО ОПЫТА В РЕСПУБЛИКЕ КАЗАХСТАН**

**Аннотация.** В настоящее время экономическое развитие передовых государств опирается на инновации. Эти нововведения станут движущей силой экономического развития в Казахстане. Инновации не появляются над свободным пространством и должны быть предназначены для создания благоприятной среды. Одним из основных механизмов, создающих благоприятную среду для появления инноваций, является нормативно-правовая поддержка. Данная статья посвящена вопросам совершенствования правовой базы для инноваций в Республике Казахстан.

Коммерциализация технологий не может быть всецело связана с государственным бюджетом, в основном она определяется спросом на исследования и разработки со стороны негосударственного сектора экономики. Как свидетельствует опыт развитых стран, партнерство частного и государственного секторов экономики является основой инновационного развития. Взаимовыгодное кооперирование частных коммерческих и государственных научных структур также должно стать основой развития инновационных процессов и в Казахстане. В связи с этим необходимо по аналогии с мерами, предусмотренными в законе Стивенсона-Уайдлера, предоставить государственным научным учреждениям право заключения кооперативных соглашений на проведение совместных НИОКР с фирмами.

Итогом совместных исследований были бы результаты, имеющие большую коммерческую ценность. К примеру, средняя стоимость проекта аналогичных совместных исследований в США составляет 800 тыс. долл. США [3]. Такое соглашение несет в себе взаимовыгодные условия как для научных организаций, осуществляющих НИОКР за счет бюджета, так и для фирм, перенявших участие в проведении исследований. В результате соглашения государство добилось бы повышения эффективности государственных инвестиций в НИОКР посредством привлечения частного сектора для последующей коммерциализации результатов

исследований. В свою очередь, частные фирмы, участвовавшие в совместном НИОКР, могли бы получать простую неисключительную лицензию на ОИС, тем самым иметь возможность извлечь большую экономическую выгоду.

В целях мотивирования сотрудников научных учреждений в трансфере технологий целесообразно разрешить государственным научно-исследовательским организациям, минуя вышестоящие курирующие инстанции, самостоятельно лицензировать свои изобретения и удерживать все доходы от лицензий после уплаты минимум 15% этих доходов федеральным сотрудникам и изобретателям.

В казахстанской правовой системе, направленной на стимулирование инновационных процессов, пробелом, требующим восполнения, остается вопрос относительно прав владения результатами НИОКР Университетом и/или частным сектором, создающим ОИС, в рамках государственного заказа. По казахстанскому законодательству в данном случае владельцем ОИС являлось бы государство. Однако международная практика доказывает неперспективность такой схемы распределения прав на владение результатом исследований с точки зрения построения эффективной инновационной системы.

На наш взгляд, необходимо разрешить малым предприятиям и университетам сохранять патентные права на ОИС, полученные в ходе выполнения государственного заказа на НИОКР. В данном случае, являясь заказчиком и инвестором научных исследований и разработок, государство переуступило бы право собственности на владение результатом НИОКР, исполнявшим данный заказ организациям – инновационным предприятиям и университетам. Выгодность такого взаимодействия очевидна. От переуступки права Правительство получало бы прибыль от создания новых рабочих мест и, в результате, от увеличения поступлений налогов из-за роста экономической активности, вызванной коммерциализацией изобретений, создание которых было финансировано Правительством.

**Ключевые слова:** инновации, нормативно-правовое обеспечение, объект интеллектуальной собственности, центр инжиниринга и трансфера технологий, научно-технического учреждения.

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