

## APPROACHES TO THE FORMATION OF A MECHANISM FOR MANAGING INNOVATION PROCESSES IN A REGION

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### Approaches to the Formation of a Mechanism for Managing Innovation Processes in a Region

The article considers the development of the theoretical and methodological bases to form a mechanism for managing innovation processes in a region. It is indicated that the formation of this mechanism through crisis tendencies in the development of the economy of Ukraine, the disproportion in the state of regions and the complexity of the functioning of the market environment are acquiring special relevance today. A conceptual scheme of the mechanism for managing innovation processes in a region is developed and defined as a single system, an interconnected set of organizational, technical, financial, economic forms, methods, and means of influencing innovation processes that are used at different levels of government in order to achieve stabilization and increase the pace of development and competitiveness of regions. The possibility for applying various approaches to the formation of a mechanism for managing innovation processes, namely: system, differentiated, program- and goal-oriented, project, logistic, cluster, situational, and process one, is considered.

**Keywords:** innovation process, region, management approach, mechanism for managing innovation processes in a region.

**Fig.:** 1. **Bibl.:** 12.

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### Мігай Н. Б. Підходи до формування механізму управління інноваційними процесами в регіоні

Статтю присвячено розробці теоретико-методологічних основ формування механізму управління інноваційними процесами в регіоні. Вказано, що особливій актуальності сьогодні набуває формування зазначеного механізму через кризові тенденції в розвитку економіки України, диспропорційність стану регіонів і складність функціонування ринкового середовища. Розроблено концептуальну схему механізму управління інноваційними процесами в регіоні та визначено його як єдину систему, взаємопов'язану сукупність організаційних, технічних, фінансових, економічних форм, методів і засобів впливу на інноваційні процеси, які застосовуються на різних рівнях управління з метою досягнення стабілізації та нарощування темпів регіонального розвитку та конкурентоспроможності. Розглянуто можливість застосування різних підходів до формування механізму управління інноваційними процесами, а саме: системного, диференційованого, програмно-цільового, проектного, логістичного, кластерного, ситуаційного та процесного. Обґрунтовано складові забезпечення реалізації механізму. За результатами проведеного дослідження зроблено висновки, що формування механізму управління інноваційними процесами в регіоні можливе за умови фінансової та організаційної підтримки державою регіональних ініціатив. Це надасть можливість підвищити рівень інноваційного потенціалу регіону та створити конкурентні переваги, сформувавши відповідну інноваційну інфраструктуру, налагодити процеси комерціалізації науково-технічних розробок, забезпечити освоєння сучасних технологій виробництва та підвищити рівень життя населення.

**Ключові слова:** інноваційний процес, регіон, підхід до управління, механізм управління інноваційними процесами в регіоні.

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### Мігай Н. Б. Подходы к формированию механизма управления инновационными процессами в регионе

Статья посвящена разработке теоретико-методологических основ формирования механизма управления инновационными процессами в регионе. Указано, что особую актуальность сегодня приобретает формирование указанного механизма через кризисные тенденции в развитии экономики Украины, диспропорциональность состояния регионов и сложность функционирования рыночной среды. Разработана концептуальная схема механизма управления инновационными процессами в регионе, и он определен как единая система, взаимосвязанная совокупность организационных, технических, финансовых, экономических форм, методов и средств воздействия на инновационные процессы, которые применяются на разных уровнях управления с целью достижения стабилизации и наращивания темпов регионального развития и конкурентоспособности. Рассмотрена возможность применения различных подходов к формированию механизма управления инновационными процессами, а именно: системного, дифференцированного, программно-целевого, проектного, логистического, кластерного, ситуационного и процессного. Обоснованы составляющие обеспечения реализации механизма. По результатам проведенного исследования сделаны выводы, что формирование механизма управления инновационными процессами в регионе возможно при условии финансовой и организационной поддержки государством региональных инициатив. Это позволит повысить уровень инновационного потенциала региона и создать конкурентные преимущества, сформировать соответствующую инновационную инфраструктуру, наладить процессы коммерциализации научно-технических разработок, обеспечить освоение современных технологий производства и повысить уровень жизни населения.

**Ключевые слова:** инновационный процесс, регион, подход к управлению, механизм управления инновационными процессами в регионе.

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**Introduction.** The current stage of development of the Ukrainian economy is characterized by dynamism, variability, complexity of the functioning of the market environment, disproportion in the development of regions, as well as crisis trends, which were observed over a long period of time. In terms of the Global Competitiveness Index, in particular the innovation sub-index, in 2017 Ukraine ranked 61<sup>st</sup> among 137 countries studied, having fallen by 9 positions compared to 2016 [11].

Ensuring the growth of efficiency of economic processes at the regional level and the competitiveness of the country as a whole is impossible without innovation. Under modern conditions the formation of competitive advantages of innovation development occurs mainly at the regional level, since economic potential is associated with a certain territory, and it is necessary to take into account features of each region. The practice of the functioning of innovation systems abroad and the study of the specifics of managing innovation processes at the regional level suggests that the country's innovation system does not emerge as a spontaneous phenomenon but is the result of a long management impact on the main indicators of innovation activity made by public authorities with participation of private capital.

The development of innovation processes in a region is possible upon condition of creating an effective management mechanism with the use of various approaches, methods and tools. Therefore, at the present stage, solving the problem of managing innovation processes at the regional level is becoming most significant. It is especially important to take into account that regions are developing unevenly, with a considerable disproportion, and therefore the mechanism cannot be the same for all regions but should take into account the features and level of innovation processes of each region.

In recent years, domestic and foreign scientists have paid considerable attention to studying and developing the theoretical foundations to build mechanisms for managing innovation processes both at the country and regional level. In particular, O. I. Datsii argues that it is necessary to improve the mechanism for implementing methods to realize innovative capacity, which should be accompanied by effective mechanisms of state support, financial and legislative incentives [2]. O. A. Butenko proposes to develop a strategy for the preservation and development of the scientific and technical, and innovative capacity of the country based on government regulation, stimulation and combination of administrative and market regulators [1]. O. B. Zhikhор notes that there are two possible ways to build and implement an organizational and economic mechanism for implementing the innovation development policy of a region: enhancing the introduction of

innovative elements in managing regional development and ensuring the development of regions through the spread of innovation and effective use of a region's innovative capacity [3]. A. G. Lotarev proposes a methodology for "designing an innovation activity practicing which makes it possible to form an appropriate organizational and economic management mechanism" [8]. V. V. Komirna and I. P. Hanzhela consider the possibility of developing a regional policy on the formation of innovative capacity, as an interconnected, interacting set of processes, methods and instruments of influence on the formation of capacity of a certain territory in order to ensure the achievement of competitiveness of the region [6]. However, a large circle of problems has not been sufficiently investigated yet. In particular, there is no effective mechanism for managing innovation processes in regions, taking into account the specifics and level of their development.

In this regard, **the aim of the article** is theoretical and methodological substantiation of the mechanism for managing innovation processes in a region and definition of the components for ensuring its implementation.

We consider the mechanism for managing innovation processes in a region as a single system, an interconnected set of organizational, technical, financial, economic forms, methods and means to influence innovation processes applied at various levels of management in order to achieve stability and increase the rate of regional development and competitiveness. A conceptual scheme of the mechanism for managing innovation processes in a region is presented in Figure 1.

The necessary requirement is that the mechanism should be flexible and allow to adapt to the changing conditions of the market environment; act in accordance with the chosen management approach which most adequately reflects the nature and characteristics of the region; ensure the continuity of innovation processes and the mutually agreed action of participants in its implementation, as well as the efficiency and transparency of using financial resources allocated to implement innovation projects in the region.

To form a mechanism for managing innovation processes, one of the approaches described below can be used.

Management of innovation processes in a region can be based on a systems approach implying the formation of a specific management model that takes into account the large number of economically independent business entities that form the innovation environment in a particular region and government bodies represented by municipal authorities. When elaborating the economic mechanism for managing innovation processes in a region on the basis of a systematic approach, the following aspects should be taken into account: it is mandatory to regulate the relationship of the subjects of innovation activity

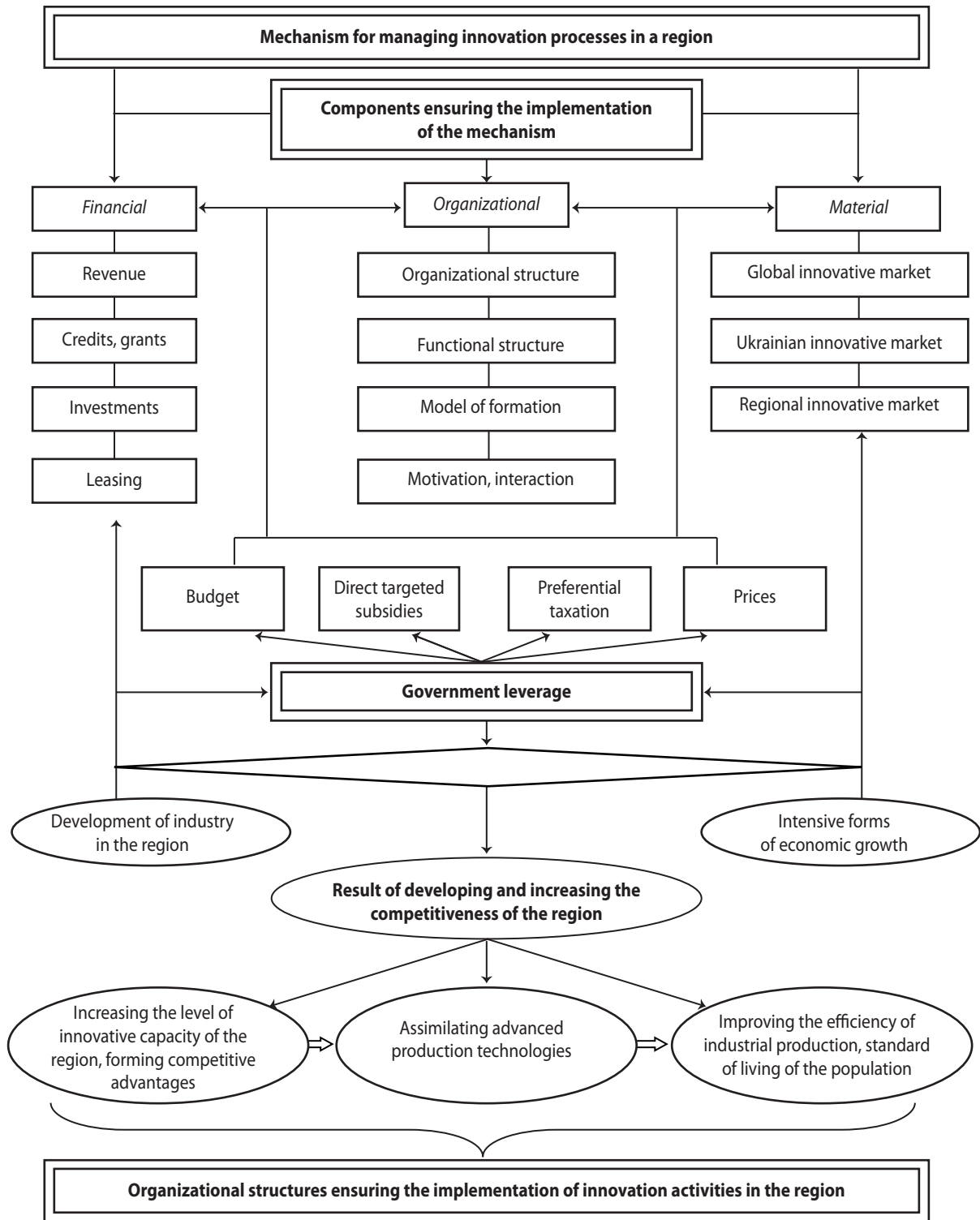


Fig. 1. Conceptual scheme of the mechanism for managing innovation processes in a region

Source: developed by the authors

among themselves and with the external environment; manage changes in the innovation environment; manage the formation and development of the regional innovation system. It is necessary to apply a systems approach when the state of the innovative market is quite dynamic, if there is an active competitive environment for creating innovations.

A differentiated approach, which is in applying various methods and tools classified according to the level of development of the innovative capacity and the sectoral specialization of a region, can be used as well.

At the same time, public administration, with the corresponding implementation of stimulating and regulatory func-

tions by state authorities, and financial regulation of the distribution of funds are presented as separate blocks.

The specified approach to managing innovation processes is described in detail in the work of M. V. Ustynova and A. I. Solodkyi [12].

Another tool that can be applied in forming an effective mechanism for managing innovation processes is the program- and goal-oriented approach. Its main feature is the ability to set a goal, form several variants of interrelated programs and concentrate resources to solve problems based on the programs formed while ensuring the gradual sustainable development of the region.

The application of project-oriented management, which at the regional level provides for the implementation of individual projects to which the principles and methods of project management are applied, is quite relevant under modern conditions. There are a lot of directions for applying the project-oriented approach in management nowadays; they cover almost all spheres of life, including management of innovation processes. The project-oriented approach is advisable to apply in case when the objectives of a project and the final result, resources, and timing are clearly defined. The advantages of this approach are the possibility for providing some freedom in choosing priorities for the development of a territory and implementing projects on the principles of public-private partnership.

The peculiarity of applying the logistic approach in resource management is in changing the priorities of economic activity. The main role in this case is played not by the product but by the process in the form of a flow (material, informational, innovative one, etc.). Management of flows, their transformation and integration is a new form of management, which outstrips the traditional ones both in terms of the level of creative potential and the efficiency of final results.

Optimization of flows in the economy became possible only due to the reorientation from quantitative criteria for evaluating economic activities to qualitative ones [5].

The use of the logistics concept in the formation and application of the mechanism for managing innovation processes in a region makes it possible to present an innovation process as a supply chain in which all elements interact, starting from the stage of innovation development to the realization of the finished innovative product to the consumer. In this case, logistics ensures the creation of a new product with minimal costs and of high quality. At the same time, innovation activity within an innovation process is carried out in a comprehensive manner and based on the effective integration of logistics chains and systems.

It should also be noted that a prerequisite for the success of applying the logistic approach to the regulation of innovation processes in the region is the compliance with a number of requirements, namely: systematization of management decisions made by various actors within a single logistics system; ability to adapt to changing market conditions; provision of resources at all stages of the innovation flow; search for reserves of optimization of economic flows at all stages of an innovation process.

Under modern conditions, of particular importance is the cluster approach to the management of innovation processes,

which involves the creation of innovative territorial associations of enterprises and organizations. It can be considered an effective tool for innovation development.

The economic growth based on cluster initiatives in developed countries demonstrates its effectiveness and possibility of forming a single chain "state – science – production". Ye. S. Kutsenko notes that the active role of the state in forming clusters is explained by the need to attract qualified personnel and organizations specializing in an activity that is important for the region or the country, as well as the dependence of the innovation activity of enterprises on the development level of fundamental science, which is the responsibility of the state – the share of public sector expense on R & D in developed countries of Europe is about 40 % [7].

Today, the overwhelming majority of countries support clustering at the state level through the implementation of cluster policy, which comprises joint activities of public control and administration authorities, institutions and organizations of the scientific, industrial, public and other sectors aimed at creating conditions for the formation of new clusters in the economy.

State cluster policy can be based on such basic models as:

- catalytic policy, which provides for limited state funding of an innovative cluster project;
- extended support policy. With this model, the state acts not only as the initiator of the formation of a cluster but also finances the development of the innovation infrastructure of the region, invests in the development of fundamental and applied science in the cluster;
- directive cluster policy, which implies a radical reform of the economy through the mechanism of its clustering, implementation of investment and innovation development programs;
- policy of cluster protectionism. When implementing this model of cluster policy, the state constantly provides the financial architecture of the cluster, influences management decisions and has the right to control the development and functioning of the cluster [10].

It is important to note that it is more expedient to apply a situational approach to managing innovation processes in combination with a process approach that comprises a number of universal management processes (planning, organization, motivation, control, as well as related control and decision-making processes). This will allow ensuring both phased work and integrated performance of functional tasks, to form integration links between the subjects of innovation activity and of government regulation, as well as subjects coordinating the infrastructure of innovation activity (higher education institutions, financial entities, consulting firms, etc.)

According to the author, for Ukraine it is very important to eliminate disproportions in the development of regions, and therefore the most expedient would be to apply measures of expanded support for innovative processes. This will make it possible to activate public-private partnerships and establish close relations with research organizations, increase the level of investment attractiveness of regions and ensure their social and economic development.



The possibility of the functioning of the mechanism for managing innovation processes in a region and its reliability is determined by the presence of an appropriate support for its implementation:

- 1) Government leverage on innovation activity: preferential taxation of subjects of innovation activity; direct targeted subsidies and financing of innovative projects, support for enterprises realizing innovative products.

Regulatory support, including a set of normative legal acts necessary for a proper functioning of the mechanism and its components. In our opinion, it is necessary to form a legal framework for the organizational and economic mechanism to increase the effectiveness of the scientific and technical capacity at three levels: state legislation; laws adopted by state actors; normative legal acts issued by local governments, as well as a system of local acts of an individual nature (administrative acts of participants in the implementation of the mechanism for managing innovation processes in a region, regulatory agreements based on the norms of international law, civil and labor law of Ukraine).

- 2) **Organizational support** provides for the establishment of close cooperation with the functioning organizations and creation of certain structures that will carry out actions to initiate, develop and implement a mechanism for managing innovation processes. They include organizations that create knowledge about new products and services – institutions of higher education, research institutes, etc.; organizations that manufacture innovative products and exploit them (enterprises, business incubators, consulting and marketing firms; organizations that finance innovation activities – innovative and investment funds, venture business, crowdfunding platforms. A special role is played by the model of formation, organizational and the functional structure of these entities, as well as internal mechanisms for ensuring stimulation and interaction of research teams in enterprises.
- 3) **Material support** is an aggregate of all material and technical resources necessary for the implementation of innovation activities and plays an important role in the reproduction and development of a region's innovative capacity. The state of the material and technical base of the regions in general is unsatisfactory and mostly requires modernization and renovation. In particular, the depreciation of fixed assets of such traditional Ukrainian industries as heavy engineering, petrochemical industry, thermal power generation, coal industry is approaching a critical point and threatens not only the existence of enterprises engaged and regional development, but also the ecological situation and the health and life of the population [4].
- 4) **Financial support under modern economic conditions** provides for using schemes of multi-channel financing of expenses necessary for organizing and conducting research activities, i.e., the opportunities to attract both internal and external sources of financial resources should be used. The internal sources

include: availability of working capital; revenues from the sale of scientific and technical products, leasing, rental of premises, etc. The external ones – credit resources of financial institutions, forfeiting, franchising, state budget funds, investment resources of national and foreign investors, participation in grants, etc. According to the results of the survey on innovation activities in Ukraine for the period 2014–2016, one of the main obstacles to the introduction of innovations by enterprises is the limited sources of financial support for R & D. Thus, for 9.7 % of non-innovative enterprises, the impossibility to introduce innovations is due to the lack of own funds, for 9 % – the high costs of innovation, for 6.5 % – difficulties in receiving assistance from the state, or lack of loans. In addition, one of the problems is that 83 % of the surveyed Russian companies believe that there are no compelling reasons for introducing innovations due to low demand for innovative products, negative experience from innovations, lack of government support, and underdevelopment of the national innovative market [9].

The modern innovative market has a number of features. Thus, firms entering the market with new products have to work under conditions of uncertainty and with unfamiliar consumers and at the first stage face such problems as a small number of producers and buyers of new products, limited pricing policy. It is quite difficult to work in the market without external state support, assistance in transferring an innovative product, and accompanying its commercialization. That is why the establishment of an effective mechanism for managing innovation processes will contribute to the formation and development of a regional market for innovative products, and the possibility of entering the national and global ones.

Despite the fact that over the years of independence Ukraine adopted a large number of laws and normative legal acts intended to regulate relations between subjects of innovation activity, promote the formation of regional innovation systems, ensure economic growth on an intensive basis, today there is neither favorable economic environment nor effective government financial support. Enterprises in a difficult economic situation are constantly forced to look for ways to survive rather than develop. Thus, the results of studying innovation activities in Ukraine demonstrate that, according to the Bloomberg Innovation Index, our country fell by 4 positions in 2018 and ranks 46<sup>th</sup> among 50 countries studied, being one of the three outsiders in terms of high-tech density [11]. The totality of the established institutions, such as the Ukrainian State Innovation Company, technology parks, innovation-active enterprises, special investment regime zones, cannot ensure the effective functioning of the regional economy in particular and the country as a whole without systematic state support and control.

**Conclusion.** Based on the mentioned above, the intensification of efforts to unite the components that ensure the functioning of the mechanism for managing innovation processes in a region through the use of a situational approach in combination with a process approach will allow increasing the level of innovative capacity of a region and creating competitive ad-

vantages; forming an appropriate innovation infrastructure, organize the processes of commercialization of research results; ensuring the development of modern production technologies and improving the standard of living of the population. On the part of the state, there should be an increase in funding and organizational support for regional initiatives to develop the innovative capacity of business entities, form managerial influences on the innovation activities of regional enterprises with regard to their sectoral affiliation and level of development.

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