

SECTION 1

STRATEGIES OF UKRAINE'S INNOVATIVE ECONOMIC DEVELOPMENT AND DRIVERS FOR INCREASING COMPETITIVENESS

Levchenko O.,

Doctor of Economics,
professor, vice-rector for scientific work,

Tkachuk O.,

Candidate of Sciences (Economics), Associate Professor,
Department of Economics, Management and Commercial Activity,

Tsarenko I.,

Candidate of Sciences (Economics), Assistant Professor,
Department of Economics, Management and Commercial Activity,
Central Ukrainian National Technical University

STRATEGIC PRIORITIES OF INNOVATIVE DEVELOPMENT OF UKRAINE IN THE CONTEXT OF the GLOBAL WORLD Tendencies

Abstract. The article is devoted to the substantiation of priorities of innovative development of Ukraine in the conditions of globalization. The global world tendencies of innovative development of the world countries in the modern conditions are systematized. The tendencies in the development of the network economy and different forms of the horizontal integration (the forming of innovative-integrated structures and innovative ecosystems) were characterized. The directions and models of interaction of the participants of the innovation process in the framework of the concept "Quadruple Helix" were determined. The main consequences of the fourth industrial revolution "Industry 4.0" were presented, related to the emergence and rapid spread of the latest production technologies and information exchange. The possibilities of ensuring rational and efficient using of resources and the spread of a human-centered approach, which are based on smart technologies were explored. The comparative analysis of indicators of innovation and competitiveness of Ukraine in the measurement of the international comparisons was carried out. The strategic priorities of the sustainable growth of the national economy on the basis of innovations were grounded.

Key words: strategic priority, innovative development, innovative-integrated structure, innovation ecosystem, concept "Quadruple Helix", competitiveness, globalization.

Introduction. In the context of the European integration policy, which was chosen by Ukraine, the strategic priorities of the state's innovation development should be formed on the basis of the modern world tendencies to the related to the intensification of globalization processes while simultaneously by decentralizing power and governance, the rapid development of the network economy, innovative ecosystems, the introduction of unprecedented new technologies in all spheres of

the economy and public life. The prioritization of these priorities should be preceded by the thorough analysis of the current state of the levels of innovation development and competitiveness of Ukraine in the international arena, strengths and weaknesses, key drivers of strategic growth, existing models of interaction between the participants in the innovation process.

At the present stage in Ukraine there are a number of significant issues that restrain the possibilities of accelerating innovation development. In particular, the destabilization of the military-political situation in the country, the financial and economic crisis, negative demographic and migration tendencies, the prevalence of low-tech products in the economic structure. The mentioned issues the search for the effective ways to the overcome destructive phenomena, to exit from the crisis socio-economic situation and further accelerated growth on the innovative basis.

The various aspects of the providing innovative development in the conditions of globalization are the subject of the considerable attention from the domestic scientists such as L. Fedulova [4], S. Davymuka [3], I. Ladyhina [8], A. Levchenko [1], N. Sytnyk [6] et al. At the same time, the scientific substantiation requires the question of the adaptation of the domestic economy to the global tendencies and trends, the introduction of modern methods, levers and instruments for the regulation and stimulation of the innovation activity, enhancement of Ukraine's competitiveness at the world level.

The purpose of the research is to substantiate the strategic priorities of the accelerated innovation development of Ukraine on the basis of the analysis of the world trends and drivers of the socio-economic growth, comparative evaluation of key indicators of competitiveness and innovation.

Presenting main material. The following can be attributed to the key contemporary world trends of innovation development that can provide the long-term competitive advantages in the globalized space (Figure 1).

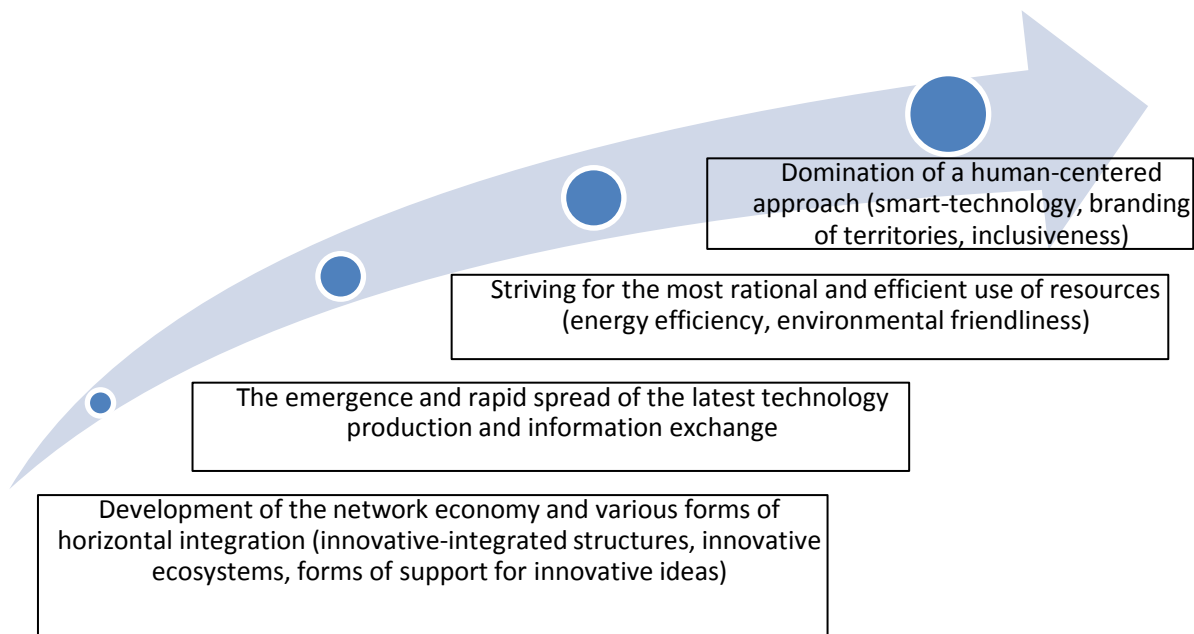


Figure 1 – Modern world trends of innovative development

Source: formed by the authors

According to the first trend, it should be noted that the desire for various forms of integration of participants in the innovation process is due to the possibility of achieving significant synergistic effect from joint coordinated actions, pooling of resources, knowledge, effort and experience. The main factors of their forming are legislative, normative, research, personnel, financial, material and resource, technological, infrastructure, informational and communicative.

The most common types of innovative-integrated structures in the world include innovative clusters, scientific and technical alliances, technology parks, technopolises, business incubators, innovation centers, venture companies, technology transfer centers, regional business support funds, spinach-companies, spinoff-companies, areas of development of new and high technology, regions of science and technology. The common peculiarities of all innovative-integrated structures are that they unite by concentrating on a specific territory, enterprises, institutions or organizations with a view to the transferring new ideas or developments into the direct process of their transformation into the new

knowledge-based types of goods or services and the introduction of high technologies [1].

The innovation ecosystem is a synergy of the state, entrepreneurial and research environment with using the organizational, normative, educational, methodological and financial resources, and the implementation of the mechanism for transferring knowledge in order to the transform into the innovative products [2].

The innovative ecosystem can be represented as a set of organizational, structural and functional components (institutions) and their interactions, which are involved in the process of creating and applying scientific knowledge and technologies that determine the legal, economic, organizational and social conditions of the innovation process and ensure the development of innovation activity as a level enterprises, and at the level of the region and the country as a whole on the principles of self-organization [3].

The following technologies are important for the effective action of the innovation ecosystem: business incubation; project financing; horizontal links between participants in the innovation process; infrastructure of technology parks and innovative clusters; building public relations and reputation; creative management [4].

At the present stage, in the area of integration of the participants in the innovation process, there is a gradual transition from the concept of "Triple Helix" (active interaction in the system "business – education – state") to the concept "Quadruple Helix", which additionally includes a component of civil society. Such a transformation allows the forming of effective territorial innovation ecosystems, raising the degree of community involvement in the innovation process: design for users - design with users - design by users (Figure 2).

It corresponds to the goals of decentralization of all management processes, the application of the differentiated approach to the socio-economic development

of territories, taking into account their specific needs and opportunities.

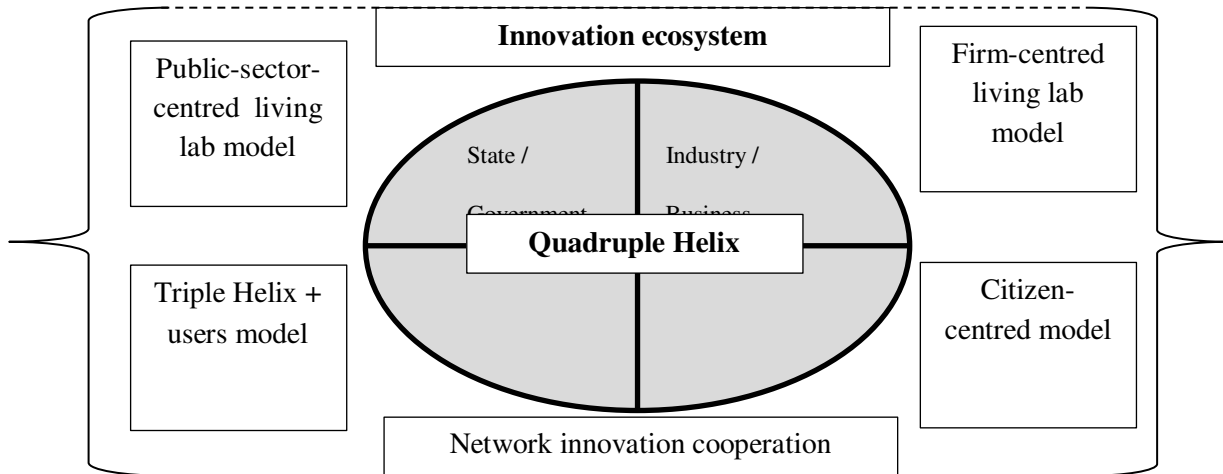


Figure 1 – Quadruple Helix: the role in the formation of an innovative ecosystem and patterns of engagement of participants

Source: formed by the authors according to [5]

The extended classification of participants in the innovation process, for example, in supporting start-up projects includes the following institutions: startup companies at different stages of the life cycle and prospective members start-ups, government, central and local governments, investors (private and public capital, business angels, venture capital companies, investment funds, crowdfunding platform), competence centers (universities, research institutes, high-tech companies), experts (professional consultants, technical and business experts, mentors, lawyers, trainers), the coordinating bodies (governmental committees, working groups, professional associations and unions), the agents of change (bloggers, journalists, famous politicians, businessmen, public figures, social groups), infrastructure managers (business incubators, business accelerators, technology parks, innovation centers, etc.) [6].

One of the important aspects is the potential interoperability within the model «Quadruple Helix» to bridge the innovations gaps between civil society and innovation. According to the estimations of the foreign scientists, the following can be distinguished: technological innovation gap (the insufficient capability of firms to translate their technological know-how into successful business cases with significant commercial and societal impacts); trust gap/moral gap (citizens do

not necessarily trust the breakthrough technologies developed by firms and public research organizations or that they can consider these technologies and the use of them unethical or unecological); public sector innovation gap (the insufficient capability of local, regional and national authorities to involve citizens into the development of public services and organizations) [5].

The Deployment of the world processes, called the fourth industrial revolution "Industry 4.0", can be characterized by the following manifestations:

- the transition from information technology (IT) to data technologies (DT);
- creation of systems of artificial intelligence, blockade, technologies of processing large data;
- robotics, robotic processes of production and services;
- implementation of the concept of "Internet of Things" and others.

As a result, on the one hand, it creates significant opportunities for the release of a person from heavy routine work, accelerates the exchange of information, significantly accelerates the pace of a number of functions and tasks. This is consistent with the Global Sustainable Development Goals by 2030 with regard to:

- development of high-quality, reliable, sustainable and accessible infrastructure based on the use of innovative technologies;
- promoting the accelerated development of high and medium-high-tech sectors of the processing industry based on the use of the "education - science - production" chains and the cluster approach, the development of the innovation ecosystem, the development of information and telecommunication technologies, etc.;
- creation of a financial and institutional system (innovation infrastructure) that will ensure the development of scientific research and scientific and technological (experimental) developments [7].

On the other hand, there is a need to address the socio-economic problems associated with the transformation of the labor market (the lack of demand for

specialists in a number of occupations and specialties, the emergence of radically new types of employment, distance employment, social tension in society, etc.).

The expansion of the integration links of the participants of the innovation process in conjunction with the achievements of the fourth industrial revolution interdepends on the actualization of the two following global trends, which consist in the need for rational use of all types of resources and development of a human-centered approach. The concept of the "Smart Approach", which proved its effectiveness in many developed countries of the world, can contribute to solving these problems. For example, "Smart city" contains six main components (Table 1).

Table 1 – Constituents of the concept «Smart city»

<i>Component</i>	<i>Characteristics</i>
"Intelligent environment" (natural resources)	energy efficiency, renewable energy sources, environmental protection, resource saving
"Smart People" (social and human capital)	skilled users of information and communication technologies (ICT), accessible learning, participation in public life, entrepreneurship
"Intelligent mobility" (transport and ICT)	integration of the transport system, environmental modes of transport
"Smart way of life" (quality of life)	good consumption, comfortable planning, social interaction, healthy lifestyle
"Smart Economy" (Competitiveness)	productivity, new products, services, business models, international cooperation, flexibility
"Intelligent management" (participation)	citizens' involvement services, open in decision-making, convenient data

Source: formed by the authors according to [8]

Consequently, modern global trends can provide significant opportunities for accelerated innovation in the development of the domestic economy, with the adaptation and implementation of best practices and approaches, and contain a number of threats in case of continuing the trend of lagging in many areas of the economy and society, the prevalence of extensive approach to use resources, domination of low-tech structure of the economy.

The analysis of indicators of innovativeness and competitiveness of Ukraine in the measurement of international comparisons are summarized in the Table 2.

Table 2 – Value of GDP per capita, indexes of the Global Competitiveness, Global Innovation, Human Capital and Human Development for 50 countries of the world, 2017-2018

№	Country	PPP	GCI	GII	HCI	HDI	№	Country	PPP	GCI	GII	HCI	HDI
1	Austria	47290,0	76,3	51,32	73,29	0,908	26	Netherlands	48345,7	82,4	63,32	73,07	0,931
2	Australia	55707,3	78,9	51,98	71,56	0,939	27	Germany	44549,7	82,8	58,03	74,30	0,936
3	Azerbaijan	4140,7	60,0	30,20	-	0,757	28	New Zealand	41593,1	77,5	51,29	74,14	0,917
4	Argentina	14466,6	57,5	30,65	64,34	0,825	29	Norway	74940,6	78,2	52,63	77,12	0,953
5	Armenia	3861,0	59,9	32,81	64,46	0,755	30	Poland	13822,6	68,2	41,67	69,61	0,865
6	Belgium	43582,2	76,6	50,50	72,46	0,916	31	Portugal	21161,3	70,2	45,71	65,70	0,847
7	Bulgaria	8064,0	63,6	42,65	68,49	0,813	32	Russia	10608,2	65,6	37,90	72,16	0,816
8	Brazil	9894,9	59,5	33,44	59,73	0,759	33	Romania	10757,0	63,5	37,59	66,12	0,811
9	United Kingdom	39734,6	82,0	60,13	71,31	0,922	34	Serbia	5899,0	60,9	35,46	62,50	0,787
10	Greece	18637,3	62,1	38,93	64,68	0,870	35	Singapore	57713,3	83,5	59,83	73,28	0,932
11	Denmark	56444,1	80,6	58,39	74,40	0,929	36	Slovakia	17664,3	66,8	42,88	67,14	0,855
12	Estonia	19840,1	70,8	50,51	73,13	0,871	37	Slovenia	23654,4	69,6	46,87	73,33	0,896
13	Israel	40258,4	76,6	56,79	71,75	0,903	38	United States	59501,1	85,6	59,81	74,84	0,924
14	India	1982,7	62,0	35,18	55,29	0,640	39	Turkey	10512,0	61,6	37,42	60,33	0,791
15	Ireland	70638,3	75,7	57,19	71,67	0,938	40	Hungary	15531,2	64,3	44,94	66,40	0,838
16	Spain	28358,8	74,2	48,68	65,60	0,891	41	Ukraine	2582,8	57,0	38,52	71,27	0,751
17	Italy	31984,0	70,8	46,32	67,23	0,880	42	Philippines	2976,3	62,1	31,56	64,36	0,699
18	Jordan	5677,6	59,3	30,77	58,13	0,735	43	Finland	46016,7	80,3	59,63	77,07	0,920
19	Kazakhstan	8840,9	61,8	31,42	69,78	0,800	44	France	39869,1	78,0	54,36	69,94	0,901
20	Canada	45077,4	79,9	52,98	73,06	0,926	45	Croatia	13138,3	60,1	40,73	66,81	0,831
21	China	8643,1	72,6	53,06	67,72	0,752	46	Czech Republic	20152,4	71,2	48,75	71,41	0,888
22	Colombia	6272,8	61,6	33,78	61,80	0,747	47	Chile	15070,4	70,3	37,79	64,22	0,843
23	Korea	29891,3	78,8	56,63	69,88	0,903	48	Switzerland	80590,9	82,6	68,40	76,48	0,944
24	Mexico	9304,2	64,6	35,34	61,25	0,774	49	Sweden	53217,6	81,7	63,08	73,95	0,933
25	Moldova	2279,7	55,5	37,63	62,29	0,700	50	Japan	38439,5	82,5	54,95	72,05	0,909

Note:

PPP – GDP per capita, US dollars, 2018;

GCI – The Global Competitiveness Index (maximum value = 100), 2018;

GII – Global Innovation Index (maximum value = 100), 2018;

HCI – Human Capital Index (maximum value = 100), 2017;

HDI – Human Development Index (maximum value = 100), 2018.

Source: compiled by the authors according to the international statistics [9; 10; 11; 12].

From the data presented, we can see that the most significant level of lag in Ukraine from developed countries of the world is based on GDP per capita, which was only \$ 2582.8. USA (Figure 3), while in Switzerland - \$ 80590.9. US, Germany - 44549,7 USD USA, France - \$ 39869.1 US, UK - \$ 39734.6 United States, Czech Republic - \$ 202.4 USA, Poland - \$ 13822.6 USA.

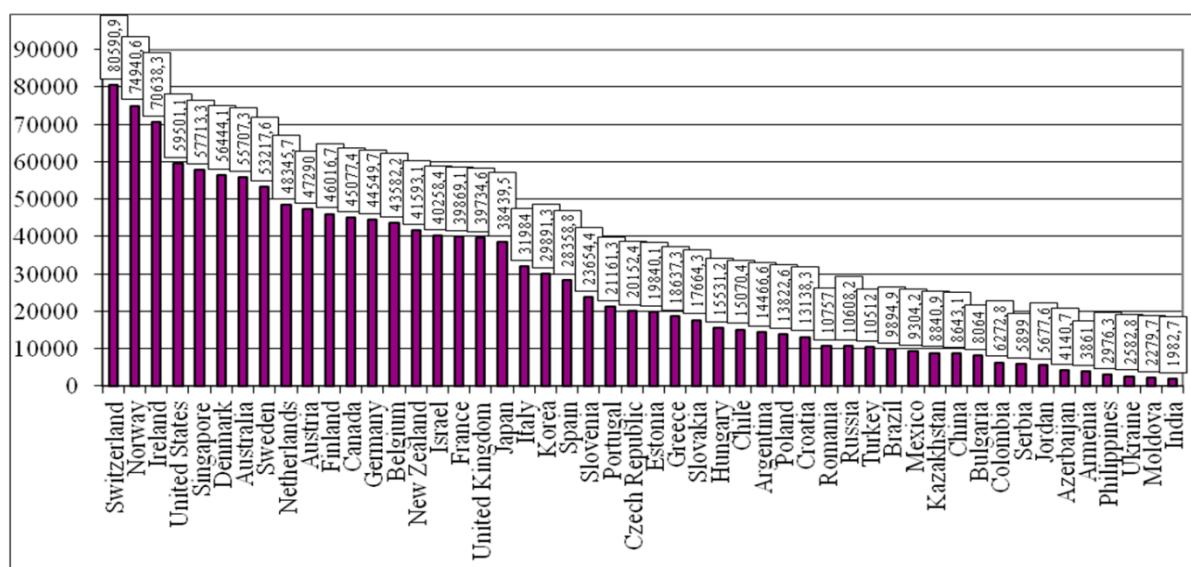


Figure 3. Ranking of 50 countries by volume of GDP per capita, in 2018

Source: formed by the authors according to the international statistics [9].

According to indicators of the global competitiveness index and global innovation index, the situation in the countries of the world is as follows (Figure 4). The index of global competitiveness of Ukraine in 2018 amounted to 57.0 points from the maximum possible 100 points (83-rd place from 140 countries of the world). At the same time in the section of the components of this index, the following values were fixed: I. Enabling Environment (1. Institutions – 46 points / 110 place; 2. Infrastructure – 70 points / 57 place; 3. ICT adoption – 51 points / 77 place; 4. Macroeconomic stability – 56 points / 131 place); II. Human Capital (5. Health – 72 points / 94 place; 6. Skills – 69 points / 46 place); III. Markets (7. Product market – 55 points / 73 place; 8. Labour market – 59 points / 66 place; 9. Financial system – 49 points / 117 place; 10. Market size – 63 points / 47 place); IV. Innovation Ecosystem (11. Business dynamism – 55 points / 86 place; 12. Innovation capability – 39 points / 58 place).

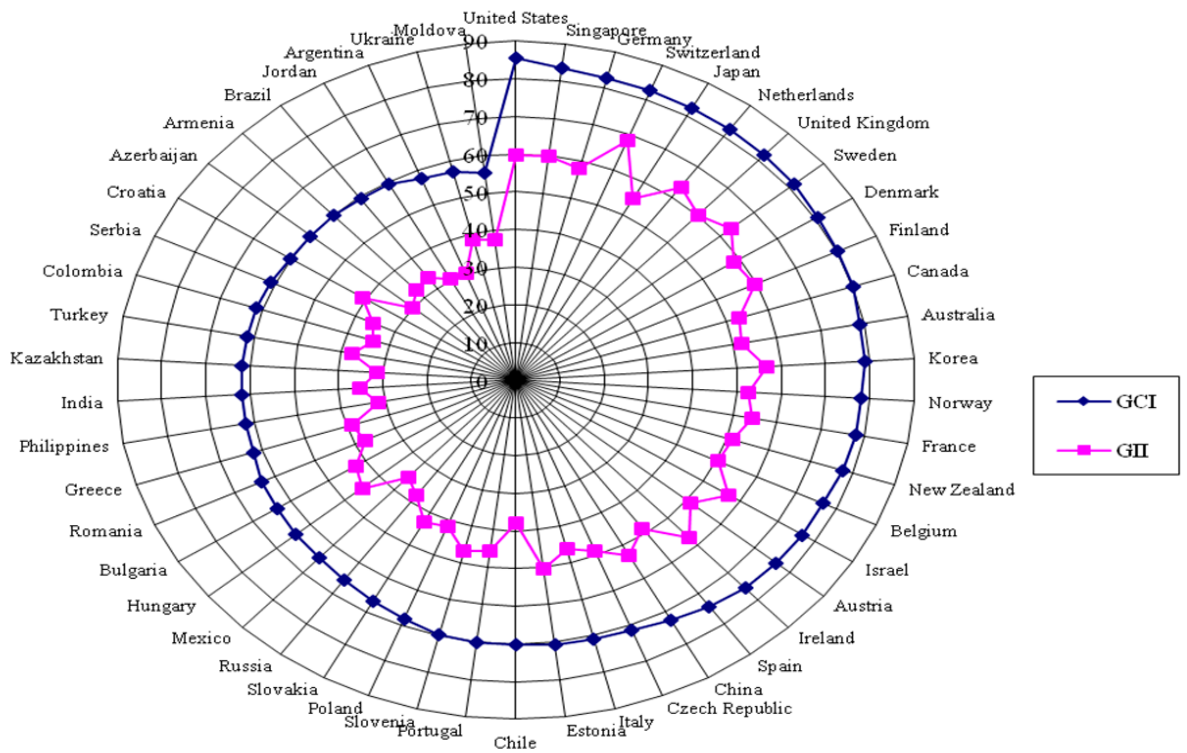


Figure 4 – The rating of 50 countries of the world by The Global Competitiveness Index and value of Global Innovation Index, 2018

Source: formed by the authors according to the international statistics [9; 11].

The global innovation index of Ukraine in 2018 was 38.52 points, the index of human capital (2017) - 71.27, and the index of human development (2018) - 0.751.

Thus, the analysis of world trends of innovation development and the level of innovation and competitiveness of the Ukrainian economy make it possible to formulate the following strategic priorities of sustainable growth:

- development of modern reliable and accessible infrastructure, including information and communication, road transport, energy and innovation infrastructure, in order to increase the efficiency of business activity and quality of life of the population;

- creating the system of incentives for improving resource efficiency, wider use of clean and environmentally sound technologies and industrial processes;
- dissemination of various forms of state participation in the implementation of infrastructure projects, ensuring flexible tariff policy for creating attractive business and investors;
- creation of conditions for the development of innovative medium and small businesses;
- the application of a smart approach to the organization of logistics, communications, transport;
- development of relations of public-private partnership between state authorities, local self-government, business structures, educational, scientific institutions, public and international organizations;
- stimulating the development of social responsibility of business; intensifying the provision of information and consulting services on issues of production and export of high-tech products;
- formation and systematic updating of the database of potential foreign and domestic investors, wide informing about possible ways of attracting investment of business circles;
- promotion of the creation of powerful research centers based on institutions of higher education, the activities of which are aimed at the development of modern information and communication technologies, robotics, technologies of 3D printing, artificial intelligence, energy saving technologies, etc.;
- study of the possibilities of forming in the region of innovation-integrated structures of different types;
- assistance in the formation of a positive image of the territory (branding) by holding specialized exhibitions, fairs, excursions, festivals, conferences, disputes, concerts, various thematic events;
- promotion of development and systematic monitoring of accessibility of infrastructure for people with disabilities, their involvement in public life;

- promoting the integration of regional innovation systems into a globalized world economic space;
- studying the possibilities of activating cooperation on research and development issues by local scientific and educational institutions on request of state and private customers;
- creation of remote innovative work places for people with disabilities; promoting the integration of regional innovation systems into a globalized world economic space;
- assistance in setting up an outsourcing system for personnel to carry out scientific research and development;
- assistance in organizing works on renewable energy, energy modernization of buildings and premises;
- attraction of qualified scientific workers to carry out researches on questions of evaluation, audit, monitoring;
- organization of research on ecologization of socio-economic development of territories;
- creating a favorable innovation environment;
- training of project managers;
- creation of coworking centers and start-up centers in the settlements for the work of talented youth;
- the organization of regular contests and startups for the development of innovations and the creation of funds for their financing by state authorities and local self-government bodies;
- creation of real mechanisms of commercialization of knowledge;
- popularization of innovations among the population;
- creation of support and support programs for startups.

Conclusions. Consequently, the formation of strategic priorities of Ukraine's innovative economic development should take place taking into account both global trends (innovation-integration processes, the fourth industrial revolution, resource efficiency, human-oriented approach) and the level of innovation

development and competitiveness of the country on the international area. The issues of creation of innovation-integrated structures and innovative ecosystems, organization of mutually beneficial interaction of all participants of the innovation process with the application of the provisions of the concept of "Quadruple Helix", smart-approach to the management of the development of territories, modern information and communication technologies, support of innovative ideas become extremely important under the present conditions. and creation of conditions for their further commercialization (start-ups, ventures, etc.), development of innovation infrastructure, formation of social responsibility business, environmentalization of socio-economic development, preservation and increase of human capital, creation of mechanisms for the transfer of modern knowledge.

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