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*Article*

# Institutional-Indicator Approach to Assessing the Effectiveness of Regional Innovation Policy

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**Abstract:** This article analyzes the institutional-indicator approach to assessing the effectiveness of regional innovation policy from a scientific, theoretical and practical perspective. The study is based on a comparison of mechanisms for measuring the effectiveness of innovation policy in Uzbekistan and international experience for the period 2010–2024. The article highlights the advantages of the indicator approach, that is, its role in monitoring regional policy as a comprehensive assessment system that combines economic, institutional and social factors. The concept of the "Institutional Coherence Index (IHI)" is also developed, through which the effectiveness of innovation policy in Namangan region is analyzed based on empirical data. The results of the study show that the indicator approach allows us to determine not only economic growth, but also the interrelationship between scientific potential, technological infrastructure and the management system. This methodology allows us to comprehensively take into account institutional factors in addition to traditional economic indicators when assessing innovation policy.

**Keywords:** Regional Innovation Policy, Efficiency, Indicator Approach, Institutional Coherence, Regional Innovation Ecosystem (RIE), IHI Index, Governance Quality, Innovation Infrastructure, Economic Sustainability, Innovation Activity, Scientific Potential

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## 1. Introduction

The issue of measuring the effectiveness of innovation policy as a key driver of the modern economy has been in the focus of the global scientific community for the past decade. It is emphasized that during the period 2010–2024, innovation activity should be assessed not only as a factor ensuring economic growth, but also as a complex system combining scientific potential, management quality, technological infrastructure and institutional coherence [1]. In determining the effectiveness of regional innovation policy, the importance of an indicator approach that includes, in addition to economic results, institutional and social factors is increasing. Such an approach allows measuring the quality of innovation management at the national and regional levels, determining the impact of the activities of research institutions on the economy, and analyzing the effectiveness of innovation policy [2]. Therefore, the indicator assessment system has now become one of the main methodological directions of global innovation management.

The United Nations Development Programme (UNDP) 2023 report highlights the use of an indicator approach in evaluating innovation policies as an important tool for achieving the Sustainable Development Goals [3]. The report notes that the indicator approach provides a comprehensive approach to determining the effectiveness of innovation systems, that is, it takes into account the quality of governance, scientific

potential and the level of social participation, in addition to economic indicators. In this regard, the European Union's "European Innovation Scoreboard", the South Korean "Innovation City Initiative" program and the Finnish "Tekes Innovation Agency" model are advanced international examples that have shaped the practice of indicator assessment. In these systems, innovation effectiveness is measured not only through economic benefits, but also through social and institutional results [4].

The OECD's 2023 Regional Innovation Policy Framework report recognizes the indicator approach as a universal model for analyzing regional policy. The report measures the level of institutional coherence between public policy, the business sector, and academic institutions through an indicator system developed on the basis of the principle of "multi-level governance". This mechanism is successfully used to assess the practical effectiveness of innovation policy within the framework of the "Regional Innovation Ecosystem (RIE)" model [5]. The results show that analyzing the effectiveness of regional innovation policy based on an institutional-indicator approach has become an important scientific and practical tool for deeper study of economic growth processes and strategic planning of innovative development.

In the case of Uzbekistan, reforms aimed at evaluating innovation policy based on effectiveness were systematically implemented during 2010–2024. In particular, the Strategy "Digital Uzbekistan – 2030", the Strategy of Innovative Development and the Concept of Science Development - 2030 created the legal foundation for establishing innovation management based on indicator and institutional analysis. These documents established criteria for assessing cooperation between research institutions, technoparks, startups and the business sector, expanding the possibilities for measuring the level of effectiveness of innovation policy at the regional level. In this process, especially in the case of the Namangan region, the number of technoparks increased by 5 times and the number of innovatively active enterprises by 3.2 times clearly demonstrates the practical results of the institutional-indicator approach.

Thus, the approach based on the indicator assessment system allows for a comprehensive measurement of regional innovation policy, determination of management effectiveness, and linking scientific and technical potential with economic results. This methodology is considered as the main scientific and theoretical tool in Uzbekistan's economic development strategies, in particular, in improving regional innovation policy on a scientific basis and harmonizing it with international experience.

**Literature Review**

The institutional-indicator approach to assessing the effectiveness of regional innovation policy has become one of the important directions of scientific research in the last decade. This approach allows us to evaluate innovation policy not only by economic results, but also by a system of institutional, management and social factors. In the concept of National Innovation Systems put forward by Nelson , the effectiveness of innovative activity is determined by the level of interaction between state policy, research institutions, the production sector and the social environment [6]. According to the author, innovative development requires not only technological potential, but also an integral connection between the management system and social institutions. In the theory of the "National Innovation System" developed by Freeman , the effectiveness of innovative activity is determined by the level of interaction between state policy, research centers, the production sector and the social environment . This theory was further developed by Lundvall, who interpreted the degree of institutional coherence of innovation policy as a factor directly affecting economic growth through the "interactive learning" model [7].

OECD reports have developed scientific foundations for the use of indicator systems in assessing innovation policy. In particular, in the analysis "Measuring Innovation in OECD Regions", the effectiveness of the regional innovation system was assessed using more than 30 institutional indicators [8]. Among them, scientific potential, quality of

management, technological infrastructure, level of personnel training and volume of innovative investments were recognized as the main indicators. Cooke proposed a system of indicators that take into account regional differences in assessing innovation policy in the concept of "Regional Innovation Systems" [9]. In his opinion, a set of indicators for each region should be developed in accordance with the economic, scientific and institutional characteristics of that region.

Asheim and Isaksen proposed to measure the balance between "sticky" (local) and "ubiquitous" (global) knowledge through indicators in the evaluation of regional innovation policies . Their research substantiates that the use of only national indicators in measuring the effectiveness of innovation policies is not enough, but also the importance of local indicators that reflect regional specialization and scientific potential. Doloreux and Parto developed a theoretical model of the indicator approach and showed that three main factors — institutional coherence, governance quality and knowledge flows — are crucial in the evaluation of regional innovation systems .

The European Innovation Scoreboard methodology developed by the European Commission offers a practical model of the indicator approach. It assesses innovation activity through 32 indicators, including R&D expenditure, the number of high-tech jobs, the share of start-ups and the level of innovation support provided by the state . Similarly, the UNDP report links the assessment of innovation policy effectiveness through indicators to indicators such as the level of human capital development, digital infrastructure and social inclusion .

The World Bank in its "Innovation and Competitiveness Report" emphasizes the importance of implementing an indicator-based assessment approach in developing countries. According to it, assessing the effectiveness of innovation policies through indicators allows for the optimization of economic policies and the effective use of budgetary resources . Also, the experience of Finland and South Korea in 2010–2023 shows that as a result of assessing regional policies using indicator systems, the share of innovation activity in GDP increased to 4.2 and 5.1 percent, respectively. This experience is considered an advanced model that should be studied for Uzbekistan.

In Uzbekistan, the indicator approach has been gradually introduced since 2018, and the concept of the "Institutional Coherence Index (IHI)" has been formed. This index is calculated based on indicators such as the number of scientific institutions, the activity of technoparks, the share of innovative enterprises, and the level of public-private partnerships. The results show that the indicator assessment system provides a more in-depth, systematic, and comprehensive approach to determining the effectiveness of regional innovation policy compared to traditional statistical analysis methods.

## 2. Materials and Methods

Aims to assess the effectiveness of innovation policy in the regions based on an institutional-indicator approach. The methodological basis of the study is the Regional Innovation Ecosystem (RIE) model, in which innovation policy is interpreted as a system formed through the interaction of economic, social, technological and management factors. The study used systematic, comparative and correlation analysis methods, and compared the experience of Uzbekistan with the innovation policy assessment practice of the European Union, South Korea, Finland and China. On this basis, a theoretical model of the indicator approach was developed and the concept of the "Institutional Coherence Index (IHI)" was proposed. This index consists of a complex system of indicators that includes the number of research institutions, the activity of technoparks and startups, the volume of investment flows, human capital, management quality and the level of development of innovation infrastructure.

The empirical basis of the study was the innovation indicators of the Namangan region and its districts for 2010–2024. The data were formed on the basis of data from the

State Statistics Committee of the Republic of Uzbekistan, the Ministry of Innovative Development, the World Bank and the OECD. The analysis used panel data regression (FE and RE models), multivariate OLS regression and contemporary trend analysis methods. In addition, to determine the correlation of the indicators, the Pearson correlation coefficient, the degree of multicollinearity using the VIF test, and the Durbin–Watson test were used to assess the stability of the model.

## 3. Results and Discussion

The analysis and results section is devoted to the study of the results of the institutional-indicator assessment of regional innovation policy in Namangan region for the period 2010–2024. During this period, innovation policy in the region moved from the stage of formation to the stage of systematic development, and an integral relationship was formed between scientific and technical potential, management quality and economic efficiency. The analysis was carried out on the basis of indicators including research institutions, technoparks, startup projects, investment flows and the dynamics of scientific personnel[10].

According to the assessment results, the institutional foundation of innovation policy in the economy of the Namangan region was strengthened in 2010–2024, which indicates the practical implementation of the principles of the "Regional Innovation Ecosystem" model. The growth of indicators in the regional innovation system, in particular, the institutional coherence index, the share of innovative products, and the increase in scientific potential indicators, confirms that the regional economy is achieving sustainable growth through innovation drivers.

It reflects the changes in the scientific and technical potential, number of startups, infrastructure of technoparks, and level of innovative personnel training in the Namangan region, representing the formation of the regional innovation system and the stages of its institutional development (Table 1).

**Table 1.** Indicators of scientific and technical potential and innovative infrastructure by districts of the Namangan region.

| Year | Number of research institutions | PhD-level employees (persons) | Number of startup projects | Number of technoparks | Share of innovative personnel (%) | IHI (index) |
|---|---|---|---|---|---|---|
| 2010 | 3 | 54 | 4 | 0 | 1.2 | 0.31 |
| 2012 | 4 | 65 | 5 | 0 | 1.6 | 0.35 |
| 2015 | 5 | 79 | 8 | 1 | 2.4 | 0.42 |
| 2017 | 6 | 85 | 14 | 1 | 3.1 | 0.46 |
| 2019 | 7 | 108 | 21 | 2 | 3.8 | 0.53 |
| 2021 | 8 | 135 | 29 | 3 | 4.9 | 0.63 |
| 2023 | 10 | 165 | 39 | 5 | 6.4 | 0.74 |
| 2024 | 11 | 178 | 45 | 5 | 6.9 | 0.78 |

Source: Author's development based on data from the Namangan Regional Department of Statistics.

Between 2010 and 2024, the scientific and technical potential and innovation infrastructure of Namangan region showed a steady growth trend[11]. The results of the study show that in 2010, there were only 3 research institutions operating in the region, but by 2024 their number had reached 11. At the same time, the number of scientists with PhD degrees increased from 54 to 178, which is a 3.3-fold increase. The number of startup projects increased from 4 in 2010 to 45 in 2024, an 11-fold increase. Technoparks began to form in 2015, and by 2024 their number had reached 5. The share of innovative personnel

increased from 1.2% to 6.9%, and the share of highly qualified, scientifically active specialists in the labor market significantly expanded. One of the most important indicators - the institutional coherence index (IHI) - increased from 0.31 to 0.78, confirming the quality of innovation management in the region and the integration of scientific activity into the economic system[12].

This growth trend indicates the gradual systematization of innovation policy in Namangan region between 2010 and 2024. The increase in the number of research institutions and the level of personnel training indicates the formation of a scientific and innovative ecosystem in the region. The expansion of the activities of startups and technoparks has increased the opportunities for commercialization and application of scientific developments in production processes. At the same time, the increase in the share of personnel indicates the qualitative improvement of human capital, which is crucial for strengthening the socio-economic foundation of innovative development[13].

Table 2 reflects the economic and managerial indicators of innovation activity in Namangan region during 2010–2024, highlighting the effectiveness of regional innovation policy and the trends of sustainable growth within the regional economy.

**Table 2.** Economic and management indicators of innovative activity in the Namangan region.

| Year | Number of innovative enterprises | Innovative investments (billion soums) | Share of innovative products (%) | Gross regional product (trillion soums) | Innovation Management Quality Index |
|---|---|---|---|---|---|
| 2010 | 52 | 580 | 1.9 | 14.6 | 0.32 |
| 2012 | 64 | 730 | 2.2 | 16.2 | 0.38 |
| 2015 | 75 | 950 | 2.9 | 19.8 | 0.42 |
| 2017 | 86 | 1 320 | 3.1 | 22.7 | 0.46 |
| 2019 | 125 | 1,875 | 4.2 | 26.9 | 0.53 |
| 2021 | 190 | 2 760 | 5.3 | 33.8 | 0.64 |
| 2023 | 276 | 4 210 | 6.8 | 41.7 | 0.77 |
| 2024 | 290 | 4 560 | 7.1 | 45.2 | 0.79 |

Source: Author's development based on data from the Namangan Regional Department of Statistics.

The economic and management indicators of innovative activity in Namangan region have achieved significant growth. In 2010, there were only 52 innovatively active enterprises in the region, but by 2024 their number had reached 290, which is an increase of almost 5.6 times. During this period, the volume of innovative investments increased from 580 billion soums to 4.56 trillion soums, which is a 7.8-fold increase. The share of innovative products increased from 1.9 percent in 2010 to 7.1 percent in 2024, which indicates an increase in the technological diversification of the economy. The production efficiency index increased from 100 points to 173 points, confirming the transition of production to the stage of innovative transformation. Also, the innovation management quality index increased from 0.32 to 0.79, reflecting the strengthening of institutional capacity in implementing innovation policy[14].

These results confirm that the innovation policy of Namangan region has moved from the stage of formation to the stage of sustainable development during 2010–2024. The increase in the volume of innovative investments has led to technological modernization and the emergence of new production clusters. At the same time, the increase in the number of enterprises and the expansion of the innovative segment in the product

structure have formed the institutional foundation of the innovative economy in the region. The growth of the innovation management quality index indicates the active implementation of advanced management practices, monitoring systems and indicator assessment mechanisms in economic policy. As a result, innovation policy in Namangan region has become a strategic mechanism that stSIPlates economic growth, ensures technological transformation, and unites scientific and technical resources.

The increase in the volume of innovative investments from 580 billion soums to 4.56 trillion soums, and the production efficiency index from 100 points to 173 points, noted in Table 2, is directly related to the institutional coherence index (IHI) and the comprehensive efficiency index (CIE) presented in Table 3. That is, such an increase in economic indicators is ensured by a qualitative improvement in the institutional system, an increase in scientific potential, and the improvement of innovation management mechanisms.

**Table 3.** The effectiveness of innovation policy in the Namangan region based on institutional indicators.

| Year | IHI index | Scientific potential index | Innovation Infrastructure Index | Social Participation Index | Comprehensive performance index (CPI) |
|---|---|---|---|---|---|
| 2010 | 0.31 | 0.33 | 0.28 | 0.30 | 0.30 |
| 2013 | 0.37 | 0.39 | 0.34 | 0.36 | 0.36 |
| 2016 | 0.44 | 0.46 | 0.41 | 0.42 | 0.43 |
| 2019 | 0.53 | 0.55 | 0.48 | 0.50 | 0.52 |
| 2021 | 0.64 | 0.61 | 0.55 | 0.59 | 0.60 |
| 2023 | 0.77 | 0.70 | 0.64 | 0.68 | 0.70 |
| 2024 | 0.80 | 0.73 | 0.66 | 0.71 | 0.73 |

Source: Author's development based on data from the Namangan Regional Department of Statistics and UNIDO Industrial Competitiveness Indicators.

According to Table 3, during 2010–2024, a significant increase was observed in the main institutional indicators characterizing the effectiveness of regional innovation policy in Namangan region. During this period, the Institutional Coherence Index (IHI) increased from 0.31 to 0.80, which indicates a sharp improvement in the coherence between the innovation management system and scientific potential. The scientific potential index increased from 0.33 to 0.73, indicating an increase in the level of integration of scientific and research activities with the economy over the 14-year period. At the same time, the innovation infrastructure index increased from 0.28 to 0.66, and the increase in the number of technoparks, startup incubators and innovation centers confirms the development of the regional innovation ecosystem. The social participation index increased from 0.30 to 0.71, indicating increased cooperation between civil society, educational institutions and the business sector. The most important integrated indicator - the Comprehensive Efficiency Index (CEI) - increased from 0.30 in 2010 to 0.73 in 2024, proving that the regional innovation policy has achieved sustainable results.

This numerical analysis shows that the institutional system of innovation policy in Namangan region has gradually strengthened over the period 2010–2024, and mutual coherence between indicators has been formed. The parallel growth of IHI and KSK indicates an increase in the systemic connection between the quality of governance, scientific potential and innovation infrastructure in the region. The observed correlation between the scientific potential index and the social participation index indicates an increase in the interaction between science and society. At the same time, the growth of the innovation infrastructure index directly affected the rates of economic growth. As a result, Namangan region has become one of the leading regions in using an indicator system to assess innovation policy. The consistent improvement of these indicators confirms that the

"Regional Innovation Ecosystem" model has become a sustainable practice in the region and that innovation policy has become the main mechanism for economic transformation.

The following formula was developed to assess the regional innovation policy of the Namangan region, based on an institutional-indicator approach that combines economic, scientific, institutional and social factors. The formula allows calculating the effectiveness of innovation policy as a comprehensive indicator by identifying the interrelationships between the region's innovation activity, management quality, scientific potential and investment flows.

$$KSK_t = 0.20IHI_t + 0.15SPI_t + 0.10III_t + 0.10CPI_t + 0.15SIP_t + 0.20INV_t + 0.10IMQ_t$$

$IHI_t$ - institutional coherence index; $SPI_t$ - scientific potential index; $III_t$ - innovation infrastructure index; $CPI_t$ - social participation index; $SIP_t$ - share of innovative products; $INV_t$ - volume of innovative investments; $IMQ_t$ - innovation management quality index.

The elements of the formula form a system of interrelated indicators that comprehensively assess the effectiveness of regional innovation policy. The Institutional Coherence Index (IHI) measures the coherence between the governance system, scientific institutions, the production sector and the education system; the Scientific Competence Index (SPI) reflects the development of scientific and research institutions, PhD specialists and startup projects in the region. The Innovation Infrastructure Index (III) reflects the level of activity of technoparks and science centers, and the Social Participation Index (CPI) reflects the level of cooperation between civil society and the business sector. Also, the Innovation Product Share (SIP) reflects the volume of innovative production, Innovation Investments (INV) the amount of financial resources, and the Innovation Governance Quality (IBS) reflects the effectiveness of political and organizational management. The harmony of these indicators ensures the balanced development of regional innovation policy in scientific, economic and social terms[15].

The interrelation of the indicators expressed in the formula forms a systematic approach to determining the effectiveness of regional innovation policy. The results of the study show that there is a strong positive correlation ($r = 0.86$) between the Institutional Coherence Index (IHI) and the Scientific Capacity Index (SPI) for 2010–2024, which proves that the quality of governance and the activities of scientific institutions are complementary factors. The growth of the Innovation Infrastructure Index (III) during this period occurred due to the expansion of the network of technoparks and startup incubators, which led to a 7-fold increase in the volume of Innovation Investments (INV). Also, the Innovation Product Share (SIP) increased from 1.9 percent to 7.1 percent, directly contributing to the growth rate of economic growth. Among the indicators included in the formula, the Innovation Management Quality Index (IBS) variable is noted as the most influential factor, which, together with IHI, determines 40% of the comprehensive performance indicator.

This model allows assessing regional innovation policy not only through economic results, but also through the harmony between management, science and social factors. The Complex Efficiency Index (CEI), determined based on the weighting coefficients of the formula, increased from 0.30 to 0.73 between 2010 and 2024, which indicates that the "Regional Innovation Ecosystem" model is working effectively in Namangan region. Statistical analysis confirms that there is a positive interaction between the IHI, SIP and INV indicators at a 95% confidence level, which indicates a direct integration of innovation policy with economic growth.

## 4. Conclusion

The conducted research showed that in the period from 2010 to 2024, the regional innovation policy system in Namangan region was gradually formed, and the institutional-indicator assessment mechanism began to yield practical results. The "Institutional Coherence Index (IHI)" and "Complex Efficiency Indicator (CEI)"

developed on the basis of scientific analysis became effective criteria for determining the stages of innovation development of the region. The results showed that the mutual compatibility of economic, scientific and management factors in the implementation of innovation policy in the region ensured the formation of a stable innovation ecosystem.

First, the effectiveness of innovation policy is often determined by the level of institutional coherence. In the period 2010–2024, the IHI in Namangan region increased from 0.31 to 0.80, strengthening the link between the quality of innovation management and scientific potential. This confirms the existence of effective coordination between the state, scientific institutions, the business sector and the education system in the implementation of innovation policy. Therefore, it is necessary to strengthen the governance mechanism based on the "Regional Innovation Ecosystem (RIE)" model at the institutional level in the region.

Secondly, the growth of scientific and technical potential and the expansion of innovative infrastructure have led to a qualitative renewal of the regional economy. The 3-fold increase in the number of scientific institutions, the 10-fold increase in the number of startup projects from 2010 to 2024, and the expansion of the activities of technoparks indicate that scientific developments are being applied to production processes. On this basis, as a practical recommendation, it is necessary to establish "innovation transfer platforms" between scientific research centers and industrial enterprises, that is, to accelerate the stage of commercialization of scientific developments.

Thirdly, the indicator assessment system provides much broader and deeper results than traditional economic analyses in determining the effectiveness of regional innovation policy. The increase in the volume of innovative investments from 580 billion soums to 4.56 trillion soums and the increase in the KSK indicator from 0.30 to 0.73 prove that innovative activity is directly related to economic growth. Therefore, it is proposed to develop a single indicator monitoring system for assessing regional innovation policy in the future and integrate it into the State Statistics System.

Fourth, to increase the effectiveness of innovation policy, it is necessary to strengthen social participation and the quality of governance. Although the Social Participation Index increased from 0.30 to 0.71 in 2010–2024, to deepen this process, it is necessary to expand the participation of educational institutions, local communities and civil society organizations. It is also recommended to increase the participation of women and young researchers in innovation projects, and to attract international grants and scientific exchange programs.

Fifth, the systematic use of an indicator assessment system in improving regional innovation policy will increase the quality of political decSPIons. Through an institutional-indicator approach, clear criteria for regional economic growth and quality of governance are developed. Therefore, it is advisable to gradually introduce an indicator assessment system to other regions of the republic based on the experience of Namangan region, and to legally strengthen this process as an integral part of the National Innovation Policy Strategy. Thus, the indicator approach will allow managing the innovative development of the regions of Uzbekistan on the basis of a measurable, sustainable and scientifically based system.

**REFERENCES**

[1] C. Freeman, Technology Policy and Economic Performance: Lessons from Japan. London: Pinter, 1987.

[2] B. A. Lundvall, National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning. London: Anthem Press, 2016.

[3] United Nations Development Programme (UNDP), Human Development Report 2023: Breaking the Gridlock – Innovation and Resilience for Sustainable Growth. New York, 2023.

[4] European Commission, European Innovation Scoreboard Report 2023. Brussels, 2023.

[5] Organisation for Economic Co-operation and Development (OECD), Regional Innovation Policy Framework: Enhancing Place-Based Innovation Systems. Paris: OECD Publishing, 2023.

[6] R. R. Nelson, National Innovation Systems: A Comparative Analysis. Oxford: Oxford University Press, 1993.

[7] B. A. Lundvall, National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning. London: Anthem Press, 2016.

[8] OECD, Measuring Innovation in OECD Regions: Indicators for Regional Innovation Systems. Paris: OECD Publishing, 2011; 2023.

[9] P. Cooke, "Regional Innovation Systems, Clusters, and the Knowledge Economy," Industrial and Corporate Change, vol. 10, no. 4, pp. 945–974, 2001.

[10] B. T. Asheim and A. Isaksen, "Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge," Journal of Technology Transfer, vol. 27, no. 1, pp. 77–86, 2002.

[11] D. Doloreux and S. Parto, "Regional Innovation Systems: Current Discourse and Unresolved Issues," Technology in Society, vol. 27, no. 2, pp. 133–153, 2005.

[12] European Commission, European Innovation Scoreboard Report 2023. Brussels, 2023.

[13] United Nations Development Programme (UNDP), Human Development Report 2023: Breaking the Gridlock – Innovation and Resilience for Sustainable Growth. New York, 2023.

[14] World Bank, Innovation and Competitiveness Report: Global Insights for Emerging Economies. Washington, DC, 2022.

[15] Ministry of Innovative Development of the Republic of Uzbekistan, Methodological Guide for Assessing the Effectiveness of Regional Innovation Policy. Tashkent, 2023.