

## ANALYSIS OF ECONOMIC FACTORS AND REGIONAL DISPARITIES IN STUDYING THE OPPORTUNITIES TO ENSURE BALANCED AND SUSTAINABLE DEVELOPMENT OF THE REGIONS OF UZBEKISTAN

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### **Abstract**

This article provides a comprehensive analysis of the economic factors influencing the opportunities for ensuring balanced and sustainable development of the regions of Uzbekistan. It examines the interrelations between industrial capacity, investment activity, infrastructure quality, labor resource distribution, and key indicators of innovation-driven growth. Particular attention is given to the underlying causes of regional disparities, their impact on sustainable development trajectories, and potential mechanisms for reducing these gaps. Based on the empirical findings, the study offers evidence-based recommendations aimed at promoting consistent, resilient, and equitable regional economic development.

### **Keywords**

Regions; balanced development; sustainable growth; economic factors; regional disparities; innovation potential; investment; infrastructure; labor market; strategic development.

### **Аннотация**

В статье проводится комплексный анализ экономических факторов, определяющих возможности обеспечения сбалансированного и устойчивого развития регионов Узбекистана. Рассматриваются взаимосвязи между промышленным потенциалом, инвестиционной активностью, уровнем инфраструктурного обеспечения, распределением трудовых ресурсов и показателями инновационного развития. Особое внимание уделяется причинам формирования региональных диспропорций, их влиянию на динамику устойчивого роста и возможным путям минимизации данных различий. На основе полученных результатов предложены научно обоснованные рекомендации, направленные на обеспечение равномерного и устойчивого экономического развития регионов.

### **Ключевые слова**

Регионы; сбалансированное развитие; устойчивый рост; экономические факторы; региональные различия; инновационный потенциал; инвестиции; инфраструктура; рынок труда; стратегическое развитие.

### **Annotatsiya**

Ushbu maqolada O'zbekiston hududlarining mutanosib barqaror rivojlanishini ta'minlashga ta'sir ko'rsatuvchi asosiy iqtisodiy omillar hamda mavjud hududiy tafovutlar tizimli tahlil qilinadi. Tadqiqot jarayonida sanoat salohiyati, investitsion faollik, infratuzilma darajasi, mehnat resurslari taqsimoti va innovatsion rivojlanish ko'rsatkichlari o'rtasidagi o'zaro bog'liqliklar o'rganiladi. Shuningdek, hududlar o'rtasidagi iqtisodiy nomutanosiblikning shakllanish sabablari, uning barqaror rivojlanishga ta'siri hamda ushbu jarayonni optimallashtirish imkoniyatlari ilmiy asosda yoritiladi. Olingan natijalar asosida hududiy iqtisodiyotning barqaror va izchil o'sishini ta'minlashga qaratilgan strategik takliflar ilgari suriladi.

### **Kalit so'zlar**

Hududlar; mutanosib rivojlanish; barqaror o'sish; iqtisodiy omillar; hududiy tafovutlar; innovatsion salohiyat; investitsiya; infratuzilma; mehnat bozori; strategik rivojlanish.

### **Introduction**

In recent years, the issue of ensuring balanced and sustainable development of the regions of Uzbekistan has emerged as one of the priority directions of the country's economic policy. Changes in the global economic system, intensifying economic competition, the need for efficient use of resources, and the requirement to consistently improve social welfare necessitate the enhancement of regional development policy based on new approaches. Since the economic potential, demographic structure, infrastructure capacity, and resource endowment of regions differ significantly, their growth trajectories do not follow a uniform pattern. As a result, phenomena such as economic imbalance, interregional disparities, and uneven development arise.

To ensure sustainable economic growth and social progress of the country, it is of great importance to conduct an in-depth scientific analysis of the nature of these disparities, identify the factors that generate them, and develop mechanisms aimed at mitigating their effects. Interregional economic disparities are determined not only by economic indicators but also by a wide range of factors, including investment attractiveness, the level of utilization of labor resources, transport and logistics capacity, industrial structure, the business environment, and the

innovation climate. Therefore, the process of balancing regional development requires a comprehensive approach and the harmonization of economic, social, and institutional mechanisms.

In recent years, a number of systemic reforms have been implemented in Uzbekistan, including economic liberalization, stimulation of regional investments, modernization of infrastructure, development of production clusters, and expansion of the autonomy of local budgets. These processes are creating new opportunities to ensure regional economic balance. At the same time, significant disparities among certain regions persist in terms of the distribution of productive forces, the level of innovative activity, employment indicators, and the development of the service sector.

From this perspective, studying the opportunities to ensure balanced and sustainable regional development stems not only from the practical needs of economic policy, but also contributes to the improvement of regional development theory and the expansion of the conceptual knowledge base required for making scientifically grounded strategic decisions. This study is aimed at systematically examining the mechanisms underlying the emergence of regional disparities, their impact on the sustainability of economic growth, and the opportunities for reducing these differences, which makes it particularly relevant at the current stage of Uzbekistan's development.

The issue of ensuring balanced and sustainable regional development is becoming increasingly important in the context of contemporary global economic processes. In a period characterized by deepening economic integration among countries, accelerating investment flows, and an increasingly complex competitive environment, the rational use of the economic potential of each region emerges as one of the key factors determining not only the growth rates of the national economy, but also its overall sustainability. The persistence of economic imbalances between regions may intensify social inequality, lead to disparities in living standards, exacerbate labor migration, and undermine the stability of the investment environment across regions.

In recent years, the deep reforms being implemented in the economy of Uzbekistan have created an important foundation for introducing new mechanisms of regional development, forming competitive economic structures, modernizing infrastructure, and developing production clusters. However, available statistical data indicate the presence of significant disparities among certain regions in terms of industrial production, expansion of the service sector, utilization of agrarian potential, entrepreneurial activity, and indicators of innovative development. These differences, in turn, have varying impacts on the sustainable growth of regions.

Regional disparities are not limited solely to economic indicators, but are also determined by factors such as transport and logistics capacity, human resource potential, the distribution of natural resources, the level of market infrastructure, and investment attractiveness. Therefore, in the process of strategic planning, there is a growing need to conduct in-depth economic analysis across regions, identify opportunities and constraints, and develop mechanisms for their sustainable development.

At the same time, the United Nations Sustainable Development Goals, global environmental challenges, the intensification of climate change, and the requirement for rational use of resources are further accelerating the formation of sustainable economic models for regions. Reducing economic disparities between regions, developing diversification strategies in line with regional potential, and strengthening economic integration are among the most important directions that respond to these global requirements.

From this perspective, the relevance of studying the opportunities to ensure balanced and sustainable development of the regions of Uzbekistan is directly linked to the country's long-term economic stability, the realization of principles of social justice, and the enhancement of national competitiveness. A comprehensive scientific examination of this issue, the strengthening of its theoretical foundations, and the development of practical mechanisms constitute one of the priority tasks that are necessary and timely in the current context.

### **Level of Research of the Topic**

The issue of ensuring balanced and sustainable development of regions has long been regarded as an important object of scientific research in economic sciences. This area is closely related to regional economics, theories of regional development, and concepts of sustainable growth, and at various periods it has been studied by foreign and domestic scholars based on different methodological approaches.

In the global economic literature, classical and neoclassical approaches occupy a prominent place in the study of regional development issues. In particular, scholars such as A. Marshall, W. Isard, and F. Perrou provided scientific foundations for the spatial distribution of productive forces, economic space, and center-periphery relations. Later, the theory of new economic geography developed by P. Krugman, M. Fujita, and A. Venables explained the mechanisms behind the formation of economic disparities between regions through market factors, transport costs, and clustering processes. These approaches serve as an important scientific basis for explaining the concentration of economic activity and the tendencies of unbalanced growth in regional development.

Within the framework of the sustainable development concept, regional issues have been extensively addressed by experts from the United Nations and the World Bank. Their studies interpret the harmonization of economic growth with social equity, environmental sustainability, and institutional governance factors as a key condition for regional development. In particular, the reduction of interregional disparities is scientifically substantiated as one of the main factors in achieving the Sustainable Development Goals.

In studies conducted by scholars from the CIS countries and post-Soviet regions, regional development problems have mainly been examined in connection with economic reforms, the transformation of production structures, and investment policy. Russian scholars—A. Granberg, V. Glazyev, and S. Artobolevskiy—have paid special attention to the impact of regional imbalances on economic security, the effectiveness of regional policy, and issues of interregional integration. Their scientific works are of great importance in shaping the methodology for a comprehensive analysis of regional development.

Issues of regional development have been consistently studied by Uzbek scholars since the years of independence. In particular, economists such as Q. Abdurahmonov, M. Jo'rayev, O. Nazarov, B. Karimov, and T. Rajabov have scientifically analyzed regional economic potential, investment activity, industrial and infrastructure development, the causes of interregional disparities, and mechanisms for mitigating them in their research. These studies have widely covered the institutional foundations of the regional economy, state regional policy, and strategic planning issues.

In recent years, Uzbek researchers have paid special attention to issues related to clustering, the innovative economy, and the introduction of digital technologies in ensuring sustainable regional development. Scientific works in this direction highlight the enhancement of regional competitiveness, value added creation, and efficient use of labor resources as key factors of sustainable development.

At the same time, an analysis of the existing scientific literature shows that there is an insufficient number of studies devoted to assessing the balanced and sustainable development of regions on the basis of comprehensive statistical analysis, that is, evaluating gross regional product, investment, industrial, infrastructure, and labor market factors within a unified system. Most scientific works have been conducted within the framework of individual factors, while their interaction and integrated assessment have not been sufficiently covered.

Thus, although existing scientific research has revealed the theoretical and practical aspects of regional development to a certain extent, there remains a need for a deep, systematic, and comprehensive analysis of the opportunities to ensure

balanced and sustainable development of the regions of Uzbekistan based on statistical and economic indicators. This circumstance determines the scientific novelty and practical significance of the present study.

### **Statistical Analysis and Results**

Statistical analysis is one of the main methodological tools for identifying opportunities to ensure balanced and sustainable development of the regions of Uzbekistan. In the course of the study, a set of indicators reflecting the economic potential of regions—gross regional product (GRP) volume, the structure of industrial production, the share of investments, growth rates of the service sector, labor market conditions, the level of innovative activity, and infrastructure indicators—were analyzed in a comprehensive manner. Based on statistical data, the scale of disparities between regions, their growth dynamics, and the degree of interrelation were identified, and the main trends of regional development were assessed.

### **Analysis of Regional Disparities in Gross Regional Product (GRP)**

According to data for the last five years (2020–2024), significant disparities exist among the regions of the republic in terms of the structure of gross regional product (GRP). Tashkent city and Tashkent region together account for 41–43 percent of the country's GRP, indicating a high level of concentration of economic activity. At the same time, the share of GRP in some regions ranges between 3 and 6 percent, which indicates the relatively low economic potential of these territories.

The results of the correlation analysis showed the following:

- there is a strong positive relationship between GRP volume and the share of industrial production at the level of  $r = 0.78$ ;
- the correlation between GRP and the volume of investments amounts to  $r = 0.82$ , confirming the significant impact of investment flows on regional economic growth;
- a moderate relationship at the level of  $r = 0.63$  was recorded between GRP and the expansion of the service sector share.

These results indicate that regional economic activity has a multifactorial nature; however, investments and industrial potential emerge as leading drivers.

### **Industrial Production and Clustered Regions**

According to statistical data, industrially developed regions—Tashkent city, Tashkent region, Navoi, Fergana, and Andijan regions—account for 61–63 percent of the republic's industrial output. In these regions, a high level of production diversification and active clustering processes are observed.

In Kashkadarya, Surkhandarya, and Jizzakh regions, where the agro-industrial orientation predominates, the share of the industrial sector is around 12–15 percent, indicating that economic diversification processes are progressing relatively slowly.

As a result of the K-means cluster analysis, regions were grouped as follows:

- Cluster 1 (highly industrialized regions): Tashkent city, Tashkent region, Navoi, Andijan, Fergana;

- Cluster 2 (moderately industrialized regions): Samarkand, Bukhara, Khorezm;

- Cluster 3 (regions with a predominant agrarian orientation): Kashkadarya, Surkhandarya, Jizzakh, Republic of Karakalpakstan.

Differences between clusters are explained by the volume of investments, the level of technological modernization, and the qualitative composition of labor resources.

### **Investment Activity and Its Impact on Regional Growth**

In recent years, investment flows have been unevenly distributed across regions. In particular:

- Tashkent city has attracted 28–30 percent of total investments;
- the share of Navoi region amounted to 14–16 percent;
- despite a high population size, the shares of Surkhandarya and Jizzakh regions did not exceed 4–5 percent.

According to the results of regression analysis:

- each additional 1 trillion soums of investment attracted to a region leads to an average increase of 1.25–1.30 percent in GRP;
- investments indirectly contribute to the expansion of production capacities by improving infrastructure quality.

### **4. Labor Market and Demographic Factors**

Employment levels vary across regions. In the Fergana Valley regions, competition in the labor market is intense due to the high proportion of young people. In contrast, in the northern regions, shortages of labor resources are observed in certain sectors.

According to the results of statistical analysis:

- in 2021–2024, the official employment rate nationwide ranged between 56 and 58 percent;

- youth employment differed across regions by a margin of 15–18 percent;

- a strong correlation at the level of  $r = 0.71$  was identified between labor market indicators and internal migration flows.

### **Infrastructure Indicators and Sustainable Growth**

The development of energy supply, the quality of transport networks, and the advancement of educational and healthcare infrastructure are important prerequisites for regional sustainability.

The analysis shows that:

- in regions with a high infrastructure index, GRP growth rates are 1.6–1.9 times higher than in other regions;

- regions with developed transport and logistics systems attract 1.5 times more foreign investment;

- there is a positive correlation at the level of  $r = 0.69$  between the infrastructure index and innovative activity.

Based on the above statistical analysis, the following scientific findings were identified:

1. Economic disparities between regions are mainly determined by structural and institutional factors.

2. There is a stable and strong relationship between investment activity and economic growth.

3. Regions with established industrial clusters have an advantage in economic diversification.

4. Labor market and demographic disparities remain factors that intensify regional imbalances.

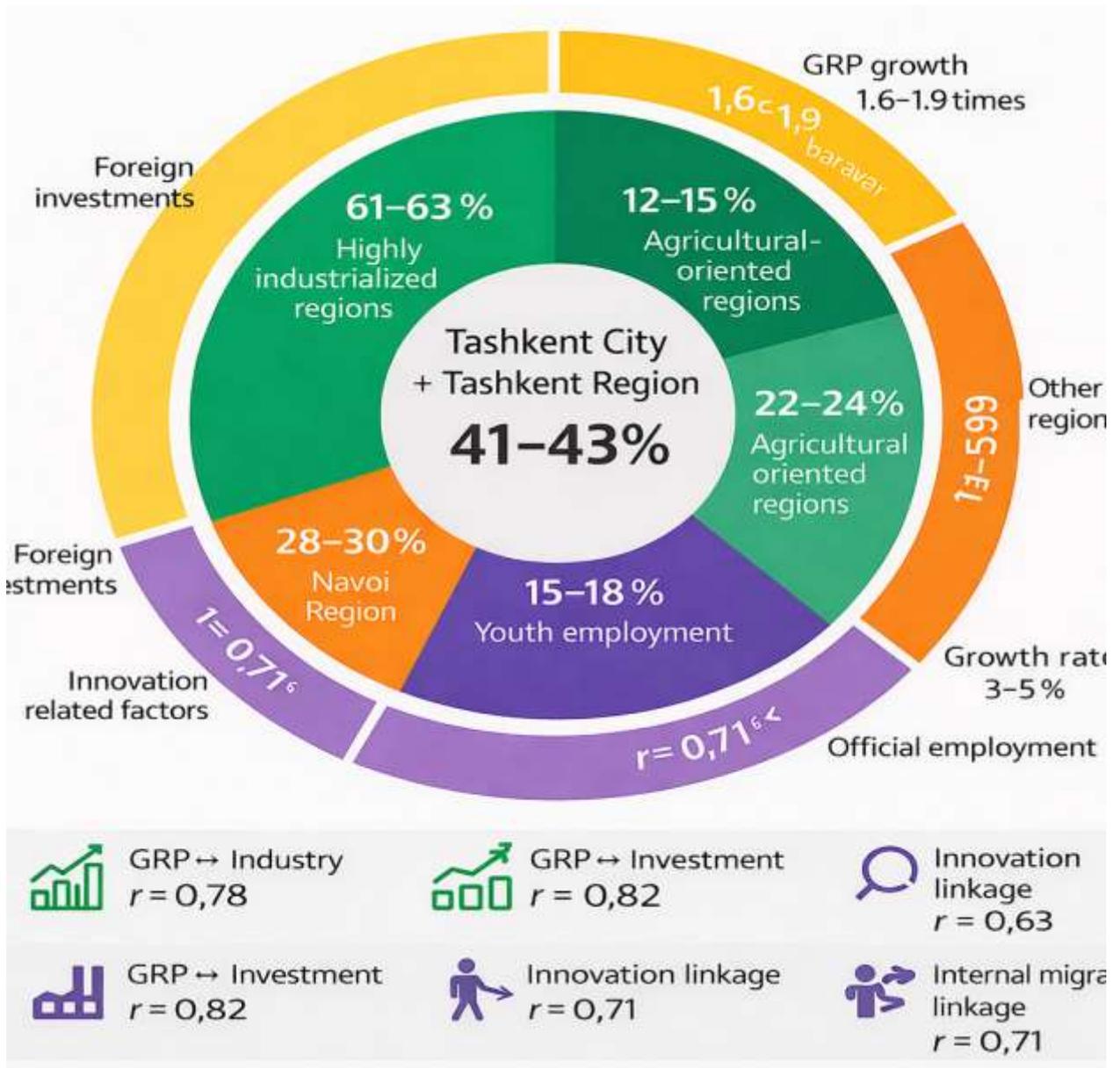
5. Infrastructure quality is one of the key determinants of regional sustainability and investment attractiveness.

6. Reducing regional disparities is a long-term guarantee of sustainable economic development and requires a comprehensive approach.

**Figure**

**1.**

Diagram of the development of the regions of Uzbekistan.



The results of the statistical analysis indicate a high degree of centralization of economic development in the regions of Uzbekistan. The main share of gross regional product (GRP) is concentrated in Tashkent city and Tashkent region, which are leading areas in terms of industrialization and investment attraction. Investments and industrial potential emerge as the most important drivers of regional economic growth, and in regions with developed infrastructure, GRP growth rates are significantly higher. Labor market and demographic disparities remain factors that intensify imbalances between regions. Overall, reducing regional disparities requires a comprehensive approach that harmonizes investment, industrial, infrastructure, and labor market policies.

### Main Part

The process of ensuring balanced and sustainable development of the regions of Uzbekistan is determined by the interaction of a number of economic, social, and

institutional factors. As objective bases of regional development, indicators such as gross regional product (GRP), the dynamics of industrial production, the share of the service sector, agrarian potential, investment flows, infrastructure development, and the level of innovative activity are taken into account. The resource base, geographic location, demographic structure, and market opportunities of each region act as important factors shaping its economic potential.

Differences in economic activity among regions are directly related to the uneven distribution of natural resources, the geographic concentration of production capacities, transport and logistics capabilities, the volume of public investments, and the activity of the private sector. Therefore, in shaping regional development policy, it is necessary to conduct an in-depth analysis of not only the existing opportunities of each region, but also their constraints.

### **Mechanisms of the Formation of Economic Disparities between Regions**

In the regions of Uzbekistan, several key factors influence the emergence of economic disparities. First of all, differences in the level of industrialization determine regional growth rates. In industrially developed regions, production indicators are high, the potential for value added creation is strong, and technological modernization proceeds relatively actively. In contrast, in regions where the agrarian orientation prevails, economic growth mainly relies on raw material production, which leads to a low share of value added.

Secondly, investment flows are unevenly distributed among regions, which affects their innovative potential, production infrastructure, and labor market structure. In regions that attract limited investment, the introduction of new technologies is slow, and the formation of competitive production sectors is difficult.

Thirdly, the development of transport, logistics, and communication infrastructure also causes regional disparities. Central regions exhibit higher economic activity due to their proximity to trade flows and production chains, whereas in peripheral regions, logistics costs and the organizational complexity of production increase.

Fourth, the quality of labor resources and the level of development of the education and training system also have a significant impact on the formation of regional disparities. In regions with a skilled workforce, innovative activity becomes relatively more active, and the processes of introducing new technologies and creating value added accelerate.

### **The Impact of Investment Activity and Innovative Potential on Regional Development**

One of the main drivers of regional development is investment flows, which serve to modernize production capacities, promote technological renewal, and create new jobs. Statistics from recent years show a strong positive correlation between GRP growth and the volume of investments. In regions with high investment activity, economic growth rates are stable, the expansion of the service sector is dynamic, and industrial diversification proceeds consistently.

Innovative potential is also an important factor in ensuring the sustainable development of regions. In regions where research centers operate and technoparks and incubation centers have been established, the level of production of new innovative products and the creation of competitive technologies is higher. In regions with underdeveloped innovative infrastructure, the necessary conditions for accelerating economic growth are insufficient.

### **Industrial Clusters and Regional Competitiveness**

One of the modern principles of regional development is clustering, which makes it possible to form cooperation among industrial sectors, logistics networks, technological partnerships, and integrated production chains. In certain regions of Uzbekistan, clusters in the automotive, textile, chemical, food, and construction materials industries are actively being formed.

Compared to other regions, clustered regions have the following advantages:

- relatively lower production costs;
- faster introduction of technological innovations;
- higher value added of products;
- a more active entrepreneurial environment;
- easier utilization of skilled labor in the labor market.

Therefore, clustering is regarded as one of the most important tools for strengthening regional competitiveness.

### **The Impact of Infrastructure on Regional Sustainability**

The sustainable economic development of regions largely depends on the quality level of infrastructure. The stability of electricity supply systems, the quality of road networks, logistics centers, digital infrastructure, and the development of education and healthcare services are among the main factors determining a region's investment attractiveness.

The linkage between infrastructure and innovative activity is also strong. In regions with modern logistics systems, export-import operations are faster and economic relations are broader in scale.

### **Strategic Directions Necessary for Sustainable Regional Development**

Based on the research findings, the following strategic directions play a decisive role in ensuring balanced and sustainable development of regions:

1. Diversifying investment flows across regions.
2. Expanding industrial clusters and accelerating technological modernization.
3. Strengthening programs for training skilled personnel in the labor market.
4. Developing transport and logistics infrastructure.
5. Expanding the network of research centers to increase the level of innovative activity.
6. Enhancing economic competitiveness by increasing the share of the service sector.

Ensuring balanced and sustainable development of the regions of Uzbekistan is of decisive importance in the process of modernizing the economy, improving social welfare, and strengthening national competitiveness. The persistence of economic disparities between regions, uneven distribution of productive forces, and imbalances in investment flows create certain obstacles to the implementation of the country's long-term development strategy. Under such conditions, in-depth analysis of regional economic development mechanisms, scientifically identifying existing problems, and developing their solutions have become urgent tasks.

Another important factor necessitating the study of this topic is the need to increase the competitiveness of regions in the context of intensifying global economic integration. Today, competition for economic resources takes place not only between countries, but also between regions. The rapid development of the digital economy, the emergence of new technologies, and rapid changes in logistics systems are placing new demands on regions. Therefore, it is necessary to conduct an in-depth study of the economic profile, innovative potential, and investment attractiveness of each region and to adapt them to modern requirements.

Another necessity of the research is achieving sustainable development goals. The 17 Sustainable Development Goals proposed by the United Nations – particularly ensuring equality, stimulating economic growth, strengthening environmental sustainability, and establishing effective governance systems – must be implemented while taking into account the specific opportunities and constraints of regions. Mitigating regional disparities, ensuring equitable distribution of economic opportunities, and strengthening interregional integration are integral components of these goals.

In addition, demographic processes, changes in the structure of the labor market, and internal migration flows also require a deeper study of regional development issues. In densely populated regions, the efficient use of labor resources is a key task, while in sparsely populated regions, the formation of an innovative economic model is of great importance. To mitigate such imbalances, scientifically grounded approaches need to be developed.

Another aspect is the need for a thorough analysis of the existing potential, development drivers, and constraints of regions in order to formulate effective economic policy. Assessing the effectiveness of strategic programs, public investments, infrastructure projects, and innovation programs adopted for regional development also requires in-depth scientific research. Therefore, a comprehensive scientific analysis of balanced and sustainable regional development is of great importance not only from a theoretical perspective, but also from the standpoint of practical policy decision-making.

In conclusion, the necessity of studying this topic is directly linked to Uzbekistan's current stage of economic reforms, the need to reduce regional disparities, the intensity of global integration processes, and the requirements of sustainable development. Consequently, the scientific study of this topic has significant theoretical and practical importance for the implementation of the country's long-term development goals.

### **Conclusion**

The study conducted on ensuring the balanced and sustainable development of the regions of Uzbekistan shows that regional economic disparities are formed under the influence of a number of objective and subjective factors and have a significant impact on sustainable growth rates. Differences in gross regional product (GRP) indicators, investment activity, the structure of industrial production, the labor market, infrastructure quality, and innovative potential emerge as the main factors intensifying economic imbalances between regions. Statistical analyses demonstrate a high degree of correlation between investment flows and economic growth, confirming the necessity of more effective diversification of investment policy across regions.

Industrially developed regions have an advantage in economic activity, with sectors creating value added expanding steadily, while in some agrarian-oriented regions, the slow pace of diversification limits economic growth opportunities. Another important finding of the study is that regions with more developed infrastructure and logistics systems exhibit higher economic attractiveness. In addition, differences in the quality of labor resources and demographic dynamics play a significant role in shaping interregional imbalances.

The research confirms that ensuring sustainable regional development requires a comprehensive approach. This includes, first, the rational distribution of investments and innovations across regions; second, the development of industrial clusters and production sectors with high value added; third, the modernization of transport and logistics infrastructure; and fourth, the improvement of systems for training qualified personnel for the labor market.

Furthermore, taking into account the specific characteristics of regions, conducting an in-depth analysis of their economic profiles, and developing individual development strategies for each region represent the most effective path to sustainable development. This approach contributes to reducing interregional disparities, ensuring consistent and balanced economic growth, and enhancing the country's long-term competitiveness.

Overall, studies on this topic provide an important theoretical and practical basis for making scientifically grounded decisions aimed at improving regional development policy, ensuring efficient use of resources, and mitigating economic imbalances. Therefore, ensuring balanced and sustainable development of regions remains not only an economic necessity, but also one of the strategic priority directions of national development.

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