ECONOMIC SECURITY OF UZBEKISTAN'S REGIONS: A COMPARATIVE ASSESSMENT OF VULNERABILITIES, RESILIENCE, AND SUSTAINABLE DEVELOPMENT POTENTIAL

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ABSTRACT

Economic security at the regional level is an essential component of national economic stability and sustainable development. In Uzbekistan, regional disparities in economic structure, industrial development, employment, infrastructure, resource endowment, and investment capacity create different levels of economic vulnerability and resilience. This study aims to comparatively assess the economic security of Uzbekistan's regions by examining their economic vulnerabilities, resilience mechanisms, and sustainable development potential. The research employs a multidimensional analytical framework combining comparative analysis, indicator-based assessment, regional typology, and the proposed Regional Economic Security Index (RESI). The analysis identifies resource-dependent regions, densely populated industrial and agricultural regions, emerging industrial regions, and service-oriented economic centers as distinct regional development categories. Official statistical data indicate substantial differences in gross regional product per capita, economic growth, and poverty levels. These disparities demonstrate that economic security cannot be assessed exclusively through aggregate economic output. The study argues that strengthening regional economic security requires economic diversification, employment generation, infrastructure modernization, environmental sustainability, and improved institutional capacity. The findings provide a conceptual foundation for developing differentiated regional economic policies in Uzbekistan.

Keywords: economic security, regional development, economic resilience, regional vulnerabilities, sustainable development, Uzbekistan, economic diversification, Regional Economic Security Index.

INTRODUCTION

Economic security has become an increasingly important component of national development strategies in the context of globalization, geopolitical uncertainty, technological transformation, climate change, and growing competition for strategic resources. Traditionally, economic security has been associated with the protection of national economic interests, financial stability, and access to essential resources. However, contemporary approaches recognize that economic security also depends on the resilience of individual regions, their productive capacity, and their ability to withstand internal and external shocks.

Regional economic security refers to the capacity of a territorial economic system to maintain stable economic activity, ensure the well-being of its population, protect critical resources and infrastructure, and adapt to changing economic conditions. A region with a high level of economic output may nevertheless experience significant vulnerabilities if its economy depends heavily on a limited number of industries, external markets, or natural resources.

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In Uzbekistan, regional economic security is particularly important because the country demonstrates considerable territorial differences in economic specialization, population density, resource endowment, infrastructure, and development opportunities. While some regions possess strong industrial and natural-resource bases, others depend more heavily on agriculture, labor-intensive manufacturing, trade, and services.

Official statistical data demonstrate these differences. In 2025, gross regional product per capita reached approximately 98.4 million soums in Navoi Region, compared with 18.1 million soums in the Republic of Karakalpakstan. This substantial disparity illustrates the uneven distribution of economic production across the country.

Nevertheless, a high level of regional output does not necessarily indicate comprehensive economic security. Regions with substantial industrial production may face risks associated with commodity-price fluctuations, environmental degradation, or capital-intensive production structures. Conversely, regions with lower output per capita may possess considerable resilience through diversified small businesses, agricultural production, labor mobility, and entrepreneurial activity.

The importance of regional resilience is also reflected in Uzbekistan's broader development context. According to the World Bank, although economic growth has supported improvements in living standards, sustained job creation and the development of productive private-sector employment remain important challenges.

Therefore, a comprehensive assessment of regional economic security must consider not only the current economic performance of regions but also their vulnerability to shocks, their capacity to recover, and their potential for sustainable development.

Existing regional development assessments frequently emphasize indicators such as gross regional product, industrial output, investment, and employment. Although these indicators are essential, they do not fully capture the multidimensional nature of economic security.

Three major research problems can be identified:

- Regional economic disparities may generate unequal exposure to economic shocks.
- High economic growth does not necessarily translate into social resilience or environmental sustainability.
- The absence of a comprehensive comparative framework makes it difficult to identify region-specific economic security priorities.

The central research question is: How do the economic vulnerabilities, resilience capacities, and sustainable development potential of Uzbekistan's regions differ, and what policy measures can strengthen their economic security?

- Identify the principal economic vulnerabilities of Uzbekistan's regions.
- Compare regional economic resilience based on economic diversification, employment, and productive capacity.
- Assess the sustainable development potential of different regional economic structures.
- Develop a conceptual Regional Economic Security Index.
- Propose differentiated policy recommendations for improving regional economic security.

The research is based on the following hypothesis: Regions with more diversified economic structures, stronger employment opportunities, higher infrastructure quality, and better resource-management capacity demonstrate greater economic resilience and stronger long-term economic security than regions that depend heavily on a limited number of economic activities.

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A complementary hypothesis is that regional economic security is determined not only by the level of economic development but also by the ability of regional economies to adapt to external shocks and generate inclusive, sustainable growth.

METHODS

Research design

The study employs a comparative regional analysis based on a multidimensional conceptual framework. The research combines comparative analysis, indicator-based assessment, regional typology, and composite-index methodology.

Comparative analysis examines differences in regional economic performance, vulnerability, and development potential. Indicator-based assessment uses economic, social, infrastructural, and environmental indicators to assess regional security. Regional typology groups regions according to their dominant economic structures and corresponding vulnerabilities. Composite-index methodology proposes an integrated framework for calculating a Regional Economic Security Index.

The analytical unit is the region. The study covers the Republic of Karakalpakstan, twelve regions of Uzbekistan, and Tashkent city.

Data sources

The empirical framework is based on publicly available statistical information from the National Statistics Committee of Uzbekistan, including its Statistical Integrated Automated System (SIAT), regional statistical publications, and official socioeconomic reports.

The main indicators include gross regional product (GRP) per capita, real GRP growth rate, industrial and agricultural output, employment and unemployment indicators, poverty rate, investment activity, small-business development, infrastructure availability, and environmental and resource-management indicators.

The National Statistics Committee's regional statistical yearbook provides information on GRP, population, employment, income, living standards, industrial production, agriculture, transport, and services, making it an appropriate foundation for regional comparisons.

Regional Economic Security Index

To assess economic security comprehensively, the study proposes a Regional Economic Security Index (RESI). The index consists of five dimensions:

Dimension	Main indicators	Analytical purpose
Economic stability	GRP growth, GRP per capita, inflation exposure	Measures economic performance and stability
Structural resilience	Sectoral diversification, industrial diversity, small-business activity	Measures dependence on individual sectors
Social resilience	Employment, poverty, income stability	Measures population-level economic security
Infrastructure resilience	Transport, energy, water, digital connectivity	Measures the ability to maintain economic activity
Sustainable development	Resource efficiency, environmental pressure, renewable energy potential	Measures long-term development capacity

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Each dimension is normalized to a scale ranging from 0 to 1. For positive indicators, where a higher value indicates stronger security:

$$Z_{ij} = (X_{ij} - X_j\min) / (X_j\max - X_j\min)$$

For negative indicators, where a higher value indicates greater vulnerability:

$$Z_{ij} = (X_j\max - X_{ij}) / (X_j\max - X_j\min)$$

Where X_{ij} represents the value of indicator j in region i; Z_{ij} represents the normalized value; and X_j max and $X_j$min represent the maximum and minimum values across regions.

The composite index is calculated as:

$$RESI_i = \Sigma_{k=1}^{5} w_k D_{ik}$$

Where D_{ik} represents the normalized value of dimension k for region i; w_k represents the weight assigned to each dimension; and the sum of weights equals 1. For an initial assessment, equal weights of 0.20 can be assigned to each dimension. This approach avoids introducing subjective differences in importance before empirical validation.

The resulting index ranges from 0 to 1, with higher values indicating stronger economic security.

Analytical limitations

The proposed index is a methodological framework rather than a completed statistical ranking. A fully calculated RESI requires a consistent regional dataset, appropriate normalization, and validation of indicator weights. The comparative findings presented below are therefore based on documented statistical differences and structural analysis. They should not be interpreted as precise numerical RESI scores.

RESULTS

The comparative assessment indicates that Uzbekistan's regions differ considerably in economic scale, productivity, and development structure. Official statistics for 2025 show that Tashkent city, Tashkent Region, and Navoi Region accounted for particularly large shares of national economic production. Meanwhile, several regions demonstrated relatively high growth rates despite their smaller economic scale.

Table 1 presents selected regional indicators.

Region	GRP per capita (million UZS)	Poverty rate (%)
Navoi	98.4	4.2
Tashkent city	80.3	3.5
Tashkent Region	40.5	5.3
Bukhara	28.7	6.0
Andijan	21.4	6.1
Samarkand	20.2	6.1
Karakalpakstan	18.1	6.6
Surkhandarya	15.8	6.1

Source: National Statistics Committee of Uzbekistan, 2025 socioeconomic statistics. GRP per capita figures refer to January–September 2025; poverty figures refer to 2025.

The data reveal several important findings. First, economic production per capita is substantially higher in Navoi Region and Tashkent city than in many other regions. This reflects differences in industrial specialization, capital intensity, productivity, and the concentration of economic activity.

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Second, regional poverty rates do not move proportionally with GRP per capita. For example, Navoi Region and Tashkent city have relatively high economic output and low poverty rates, while Karakalpakstan and several southern regions continue to face comparatively greater development challenges.

Third, lower-output regions may still possess significant economic growth potential. Improvements in infrastructure, investment conditions, labor productivity, and industrial specialization can increase their contribution to national economic development.

These findings suggest that regional economic security should be assessed through both economic performance and the distribution of development opportunities.

Comparative assessment of regional vulnerabilities

Regional vulnerabilities arise from the interaction of economic specialization, resource availability, environmental conditions, labor-market characteristics, and infrastructure development. The regions can be classified into four analytical groups.

Regional group	Regions	Major vulnerabilities	Resilience and development potential
Resource-intensive regions	Navoi, Bukhara, Kashkadarya	Commodity-price exposure, resource dependence, environmental pressure	Mineral resources, energy production, industrial investment
Densely populated industrial and agricultural regions	Andijan, Fergana, Namangan, Samarkand	Employment pressure, land constraints, infrastructure demand	Manufacturing, entrepreneurship, human capital
Emerging industrial and agricultural regions	Jizzakh, Syrdarya, Khorezm	Infrastructure gaps, market-access constraints, limited diversification	Industrial expansion, agro-processing, logistics
Environmentally and geographically vulnerable regions	Karakalpakstan, Surkhandarya	Water scarcity, environmental degradation, climate exposure	Renewable energy, ecological restoration, sustainable agriculture

Source: Author's analytical classification based on regional economic structures and development characteristics. Categories are not mutually exclusive.

Resource-intensive regions

Navoi, Bukhara, and Kashkadarya have important mineral, energy, and industrial resources. Their economic structures provide opportunities for industrial growth, export earnings, and investment attraction. However, dependence on resource-intensive production may expose these regions to international commodity-price fluctuations and external demand shocks. Another vulnerability is the environmental cost of resource extraction and energy-intensive industrial production. Economic security

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in these regions therefore depends on the development of downstream manufacturing, resource-efficient technologies, and industries that generate higher domestic value added.

Densely populated industrial and agricultural regions

Andijan, Fergana, Namangan, and Samarkand possess considerable labor resources, established manufacturing activities, and entrepreneurial potential. These regions can benefit from labor-intensive industrial development, small-business expansion, and the growth of domestic consumer markets. Nevertheless, population density can increase pressure on employment, infrastructure, water resources, and public services. Their economic security depends on improving labor productivity, expanding formal employment, strengthening industrial clusters, and developing skills aligned with modern manufacturing and services.

Emerging industrial and agricultural regions

Jizzakh, Syrdarya, and Khorezm possess opportunities to strengthen their economic positions through industrial diversification, agro-processing, logistics, and investment attraction. The principal challenges include infrastructure constraints, uneven access to markets, and the need to increase the productivity of existing industries. The development of industrial zones and transport infrastructure can strengthen resilience by increasing regional connectivity and reducing dependence on traditional economic activities.

Environmentally and geographically vulnerable regions

Karakalpakstan and Surkhandarya face particular challenges associated with environmental conditions, water availability, and the sustainability of agricultural production. Karakalpakstan is especially exposed to the long-term consequences of the Aral Sea environmental crisis. Water scarcity and land degradation may undermine agricultural productivity, public health, and household income. In these regions, economic security must incorporate environmental security. Investment in water-efficient agriculture, renewable energy, ecological restoration, and alternative employment opportunities is essential for sustainable development.

Regional economic resilience

Economic resilience refers to the ability of a regional economy to withstand, adapt to, and recover from economic shocks. Three mechanisms are particularly important.

Economic diversification. Regions with several productive sectors are generally less exposed to disruptions in a single industry.

Institutional and infrastructural capacity. Reliable transport, energy, water, and digital infrastructure enable businesses to maintain operations during economic disruptions.

The analysis suggests that resilience is not necessarily proportional to regional economic size. For example, a large industrial region may have substantial production capacity but remain vulnerable to a decline in demand for its principal products. A region with a smaller economy may demonstrate greater adaptability if its businesses operate across multiple sectors. Therefore, regional economic resilience should be evaluated through the structure of production, rather than the absolute volume of output alone.

Sustainable development potential

Sustainable development potential represents a region's ability to generate long-term economic growth while maintaining social well-being and environmental sustainability. The assessment identifies several important development opportunities.

Region	Priority development opportunity	Expected economic security contribution

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Navoi	Advanced manufacturing and resource-efficient technologies	Reduced dependence on raw-material production
Tashkent city	Digital economy, finance, innovation, and services	Higher productivity and knowledge-based growth
Tashkent Region	Industrial modernization and logistics	Stronger supply-chain resilience
Andijan and Fergana	Automotive components, textiles, and export-oriented manufacturing	Employment growth and diversification
Samarkand	Tourism, food processing, and modern services	Broader income sources
Bukhara	Tourism, energy, and industrial diversification	Greater resilience to sector-specific shocks
Jizzakh and Syrdarya	Industrial clusters and agricultural processing	Expanded productive capacity
Khorezm	Agro-processing and sustainable tourism	Diversification of regional income
Kashkadarya	Energy transition and downstream manufacturing	Reduced resource dependence
Karakalpakstan	Renewable energy, ecological restoration, and water-efficient agriculture	Improved environmental and economic resilience
Surkhandarya	Sustainable agriculture, logistics, and food processing	Higher productivity and market access
Namangan	Textiles, manufacturing, and entrepreneurship	Employment expansion and industrial resilience

The table illustrates that economic security strategies should reflect the specific characteristics of each region. A uniform development policy may be less effective than a differentiated approach that considers regional comparative advantages, vulnerabilities, and development constraints.

CONCLUSION

This study examined the economic security of Uzbekistan's regions through a comparative assessment of economic vulnerabilities, resilience, and sustainable development potential.

The analysis demonstrates that regional economic security is multidimensional and cannot be determined exclusively by economic output or growth rates.

The main conclusions are as follows.

1. Uzbekistan's regions demonstrate considerable differences in economic productivity, industrial specialization, and social development. These disparities create different levels of exposure to economic shocks and influence the capacity of regions to maintain stable economic activity.

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2. Resource-intensive regions possess substantial productive and investment potential but may face vulnerabilities associated with commodity-price fluctuations, resource dependence, and environmental pressure.

3. Densely populated industrial and agricultural regions can strengthen their economic security through higher labor productivity, industrial modernization, and the development of formal employment.

4. Emerging industrial regions possess opportunities to improve resilience through infrastructure development, investment attraction, and economic diversification.

5. Environmentally vulnerable regions require development strategies that integrate economic growth with environmental restoration, water management, and climate adaptation.

The study also proposes a Regional Economic Security Index that combines economic stability, structural resilience, social resilience, infrastructure resilience, and sustainable development. This framework provides a foundation for a more comprehensive empirical assessment of regional economic security.

The findings support the central hypothesis that economic diversification, employment opportunities, infrastructure quality, and resource-management capacity are important determinants of regional economic resilience. However, the hypothesis requires further empirical testing through the calculation of regional index values and statistical analysis.

From a policy perspective, Uzbekistan should adopt a differentiated approach to regional economic development. Instead of applying identical policy measures across all territories, regional development strategies should reflect the specific economic structures, vulnerabilities, and comparative advantages of individual regions.

Ultimately, strengthening the economic security of Uzbekistan's regions is essential for reducing territorial disparities, improving national economic resilience, and achieving sustainable and inclusive economic growth.

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