THE IMPACT OF IMPLEMENTING GREEN ECONOMY PRINCIPLES ON REGIONAL ECONOMIC GROWTH IN SAMARKAND REGION

Azizbek Lapasov

Master's Student, Samarkand Branch of Tashkent State University of Economics

Abstract: This article provides a comprehensive analysis of the implementation of green economy principles in the Samarkand region and their impact on regional economic growth. The study examines practical initiatives in areas such as the use of renewable energy sources, waste management, ecological tourism, and green transport. The influence of green economy measures on regional economic indicators is assessed using statistical and systematic approaches. Based on international experience, the article presents proposals and recommendations for promoting the green economy in the Samarkand region. The findings of the research serve as a foundation for evidence-based decision-making in the development of regional growth strategies.

Keywords: green economy, regional development, renewable energy, waste management, ecological tourism, green transport, Samarkand region, sustainability.

Introduction

In recent years, the term *green economy* has been widely used as one of the key directions of the global sustainable development agenda. The intensification of global environmental problems, the scarcity of natural resources, climate change, and the growing human impact on the biosphere have necessitated the management of the economy based on ecological criteria. In this approach, economic growth is not solely measured by increases in gross domestic product or industrial output, but rather by the rational use of resources, reduction of waste, improvement of energy efficiency, and promotion of social equity.

Uzbekistan is no exception to these global transformations. The country has implemented a series of legal and institutional measures to integrate green economy principles as an essential part of national policy. Notably, the adoption of the "Environmental Protection Strategy of the Republic of Uzbekistan for 2019–2030" and the "Concept for Transition to a Green Economy," both initiated by the President in 2019, marked significant steps in this direction.

However, the regional implementation of green economy principles and their impact on local economic growth remain insufficiently studied. In particular, analyzing this process in the Samarkand region—characterized by rich natural resources and strong potential in tourism, agriculture, and industry—holds special importance.

This article provides a systematic analysis of the state of green economy implementation in the Samarkand region, its direct and indirect effects on regional economic growth, and the associated challenges and opportunities. The aim of the study is to assess the mechanisms for applying the green economy concept in practice and to identify its role in regional economic development.

Principles of Green Economy and Their Practical Relevance

The green economy is defined by the United Nations Environment Programme (UNEP) as an economy that ensures human well-being and social equity while significantly

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reducing environmental risks and resource scarcities. Unlike the traditional "profit-driven production" model, the green economy emphasizes harmony with nature, the restoration of resources, and long-term sustainability.

At the core of the green economy lies the efficient use of resources. This includes policies that enable the sustainable use of essential natural assets such as land, water, air, forests, and mineral resources without depletion. For example, drip irrigation technologies can reduce water consumption by 40–60%, while the construction of energy-efficient buildings helps lower electricity use and CO_2 emissions.

One of the main priorities of the green economy is the development of renewable energy sources. The production of energy from solar, wind, biogas, and hydropower sources is not only environmentally clean but also economically viable in the long run. The Samarkand region, with its high solar radiation levels, is considered a promising location for solar energy development.

Within a green economy framework, industrial enterprises are expected to adopt environmentally friendly technologies by recycling waste, reducing the use of hazardous substances, and implementing filtration systems. These practices are supported by mechanisms such as eco-certification, green labeling, and sustainable production standards.

In the transport sector, motor vehicles account for approximately 25–30% of greenhouse gas emissions. The green economy approach advocates for the introduction of electric vehicles, construction of bicycle lanes, and development of public transport systems. In Samarkand city, the emergence of electric buses and bicycle rental services illustrates positive progress in this area.

The green economy also emphasizes investment in human capital. By developing "green jobs" — such as alternative energy engineers, waste recycling technicians, and environmental auditors — new employment opportunities are created. This not only reduces unemployment but also contributes to social stability.

The Samarkand region is among the most promising areas for implementing green economy principles due to its favorable geographic location, rich natural resources, abundant sunlight, and strong economic potential. In recent years, a number of initiatives have been launched at the regional level to promote ecological sustainability. Below are some of the main areas of these initiatives:

Due to its climatic conditions, the Samarkand region experiences on average 280–300 sunny days per year, creating ideal conditions for the use of solar energy. In recent years, projects for the installation of small- and medium-scale solar panels have been initiated in the region. For example, local farms have begun powering irrigation pumps with solar energy, thereby reducing energy consumption. In addition, small solar stations have been installed in some healthcare and educational institutions.

Ecotourism, one of the key sectors of the green economy, is entering a new phase in the Samarkand region. Districts such as Urgut, Nurobod, and Toyloq, with their natural landscapes, mountainous terrain, and historical sites, are well-suited for ecotourism development. Local communities are establishing eco-guesthouses and agro-ecotourism

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routes. This not only provides environmentally friendly leisure opportunities but also contributes to local employment.

Pilot projects for the separate collection and recycling of solid household waste have been launched in Samarkand city. A modern waste landfill has recently been constructed in the regional center, integrating a waste separation system for plastic, paper, and glass. In addition, small enterprises producing secondary raw materials (plastic granules, recycled paper) from waste are operating in the area. These initiatives help reduce waste volumes and create new jobs.

In recent years, particular attention has been paid to the introduction of environmentally friendly transport in Samarkand city. Since 2022, electric buses have been integrated into the city's public transport system. This not only helps reduce air pollution but also contributes to the modernization of the city's transportation infrastructure. Future plans include the expansion of electric bicycle networks and the development of city-wide bike lanes.

The Link Between the Green Economy and Regional Economic Growth

The implementation of green economy principles contributes not only to environmental sustainability but also serves as a new driver of regional economic growth. In the Samarkand region, initiatives focused on renewable energy, waste management, and ecological tourism are having a tangible impact on the region's overall economic potential.

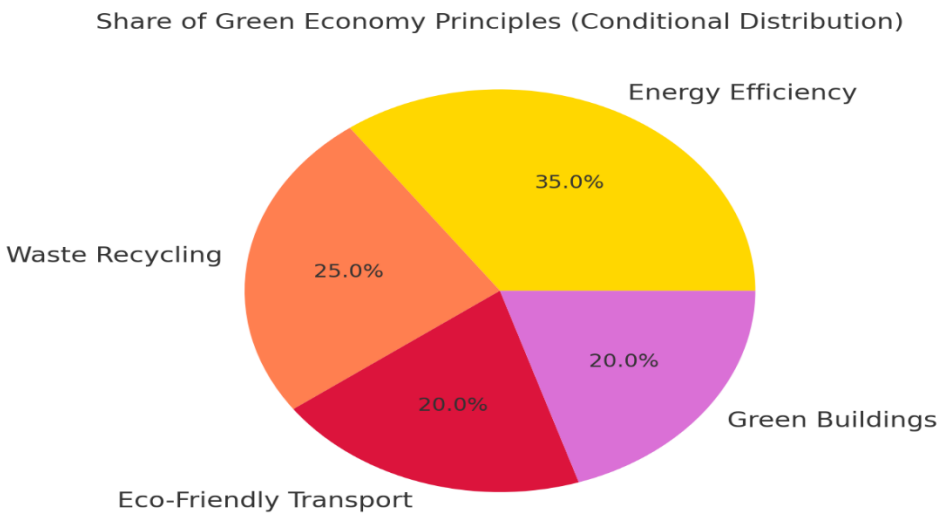

Figure 1. Proportional Distribution of Green Economy Principles (Based on Conditional Estimates)

This pie chart illustrates the estimated proportional distribution of green economy practices implemented in the Samarkand region. Based on available data from 2020 to 2023, the following sectors have emerged as top priorities:

- Energy Efficiency (35%) – Over 500 facilities across the region have been equipped with solar panels, resulting in energy cost savings of nearly 12 billion UZS.

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- Waste Recycling (25%) – More than 15,000 tons of waste have been recycled, creating over 130 new jobs.
- Eco-Friendly Transport (20%) – With the introduction of 20 electric buses in Samarkand city, annual CO_2 emissions have been reduced by 2,500 tons.
- Green Buildings (20%) – Eleven schools have been renovated using energy-saving technologies, achieving a 30% reduction in electricity consumption.

The diagram provides a clear picture of how green economic activities are distributed at the regional level and highlights the sectors receiving the most investment. It also enables the assessment of which green initiatives are being prioritized in practice across the Samarkand region.

Green economy projects are directly influencing the structural composition of the region's gross domestic product (GDP). For instance, electricity produced from renewable sources is driving growth in the regional energy sector. Additionally, the recycled secondary materials are being reintroduced into the local production cycle, helping reduce resource costs for manufacturers.

New jobs are being created in green sectors such as solar panel installation, waste recycling, eco-tourism services, and the production of green building materials. This contributes to one of the key factors of social stability — employment. In particular, the development of green jobs in rural areas promotes socio-economic equity.

Revenue from the export of environmental services and products, income from tourism, and taxes and fees from enterprises operating on green technology foundations are becoming vital sources for the local budget. As the electric bus network in Samarkand expands, passenger volumes grow in parallel with the introduction of new tariff policies, thereby generating additional fiscal revenue.

Political stability and institutional reforms in the green economy sector are making the Samarkand region more attractive to both domestic and foreign investors. Opportunities for investment are increasing through mechanisms such as green bonds, environmental certification systems, and international grant programs. This, in turn, leads to the creation of new production capacities and stabilizes macroeconomic growth rates.

Conclusion

This article examined the processes of implementing green economy principles in the Samarkand region and their impact on regional economic growth using a comprehensive approach. The analysis reveals that the ecological initiatives launched in the fields of renewable energy, ecological tourism, waste management, and green transport are becoming not only tools for environmental protection but also key contributors to economic stability.

The direct impact of green economy sectors on economic growth can be observed through the following dimensions:

- Creation of new jobs and increased employment;
- Growth in local budget revenues;

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- Expansion of export potential through the production of competitive green products;
- Enhanced investment attractiveness of the region.

The experiences of countries such as China, Germany, and South Korea, discussed in the article, served as valuable references for developing practical recommendations for the Samarkand region. Specifically, institutional foundations of the green economy can be strengthened through the introduction of green credit systems, environmental audits, incentive-based tariff mechanisms for small producers, and support for ecological startups.

In conclusion, the widespread implementation of the green economy in the Samarkand region offers an opportunity to harmonize economic growth with environmental safety, social inclusiveness, and long-term sustainability. This, in turn, aligns with Uzbekistan's national "green growth" strategy and can propel the region to a new stage of development.

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