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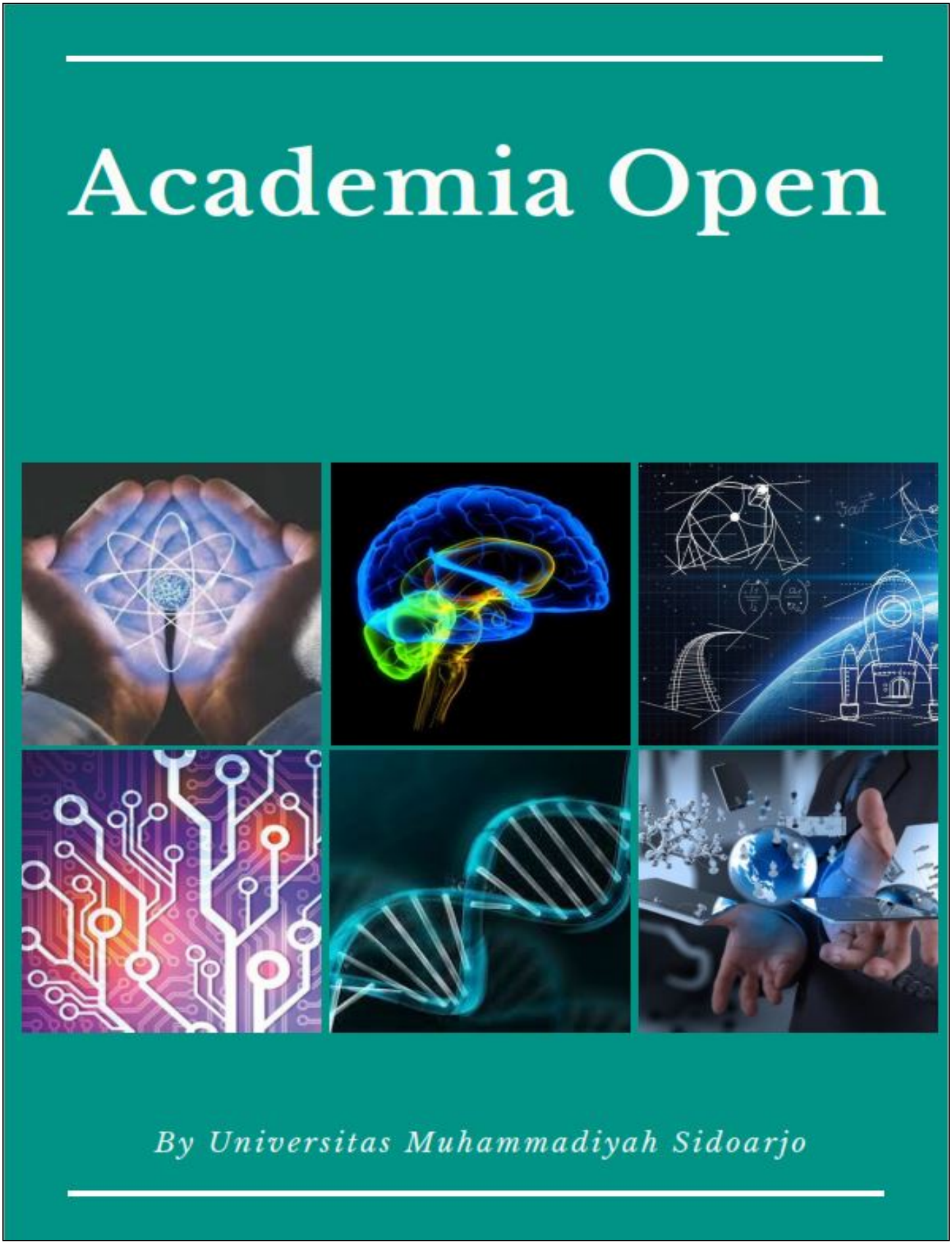

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Key Indicators Driving Innovative Growth in the Green Economy

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Abstract

General Background: Addressing the global imperative of harmonizing economic growth with environmental sustainability, the concept of a green economy has gained international traction. **Specific Background:** Rooted in ecological economics, the green economy emphasizes resource efficiency, renewable energy, and social equity, offering a strategic framework for sustainable development. **Knowledge Gap:** Despite the global momentum, emerging economies like Uzbekistan face challenges in implementing green transitions due to limited institutional capacity, financing constraints, and insufficient innovation infrastructure. **Aims:** This study investigates the indicators, policies, and practices driving innovative green economic development, with a focus on Uzbekistan's transition strategies and international benchmarks. **Results:** The findings underscore the positive economic impact of green policies, including potential job creation (up to 270,000 green jobs by 2050), renewable energy investments exceeding $5 billion, and advancements in waste management, transportation, and agriculture. **Novelty:** The paper presents a comprehensive model integrating global best practices with national-specific strategies, supported by the World Bank-funded iCRAFT project. **Implications:** The results inform policy on fostering low-carbon growth, enhancing green innovation, and ensuring equitable access to green development benefits. Uzbekistan's evolving framework positions it to become a regional leader in sustainable economic transformation.
Highlight :

- Policy Integration – Strategic planning and government support are vital to transitioning into a green economy.
- Innovation Impact – Green technologies like smart grids and fintech drive sustainable growth.
- Job Creation – Green sectors are projected to generate over 270,000 jobs in Uzbekistan by 2050.

Keywords : Green Economy, Sustainability, Innovation, Renewable Energy, Uzbekista

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Introduction

A green economy seeks to mitigate environmental hazards and deterioration while attaining sustainable development without compromising the environment. It is intimately connected to ecological economics, however is predominantly employed as a political phrase. The UNEP Green Economy Report 2011 asserts that a green economy must be both efficient and egalitarian. Equity necessitates the acknowledgement of both global and national equity aspects, particularly in facilitating a fair transition to a low-carbon, resource-efficient, and socially inclusive economy. The distinguishing feature of such an economy, as opposed to economic regimes[1],[2], is the direct assessment of natural capital and environmental services as economically significant, together with the comprehensive accounting of the total costs imposed on society via ecosystems. The expenses are consistently attributed to the entity responsible for or negligent regarding the asset and are recorded as its liabilities. A green economy is a central theme. The green sticker and eco-label practices have arisen as indications of environmental sustainability and eco-friendliness in customer perception. Numerous industries are commencing the adoption of these standards to advance sustainable practices in a globalising market. Environmental standards, akin to sustainability standards, are explicit regulations that ensure the products acquired do not adversely affect the environment or the individuals involved in their production. The quantity of these standards has recently augmented, and they can now facilitate the establishment of a new, more sustainable economy. They concentrate on economic areas including forestry, agriculture, mining, and fisheries; on environmental considerations such as safeguarding water resources and biodiversity or mitigating greenhouse gas emissions; and on promoting social protection and workers' rights. The textbook "Green Economy" by A.V. Vakhabov and Sh. Kh. Khajibakiyev examines the creation of the "Green Economy" idea, its evolutionary stages, the necessity for transitioning to a green economy, as well as its components, principles, and indicators. The financing of the transition to a "green economy," the sustainable development of "green energy," environmental policy, and the economic mechanisms for implementation, as well as the priority areas for this transition and foreign experiences, models, and the specifics of the goals, objectives, stages of development, and priority areas of Uzbekistan's strategy for transitioning to a "green economy" are delineated[3],[4]. The extensive and sophisticated experience of promoting "green growth" globally is utilised to examine the economic potential in executing the strategy for transitioning to a "green economy" in Uzbekistan. The article "The History of the Development and Formation of the Green Economy" by Bobojonova M.J. and Toshev M.H. elucidates the concept and historical evolution of the green economy [5]. The green economy concept was initially introduced in 1989 by Pearce, Markandya, and Barbier, who characterised it as “economic activity aimed at enhancing human well-being while conserving natural resources and ecosystems.” The United Nations Environment Program (UNEP) defines the green economy as “an economy that substantially mitigates environmental risks and degradation while enhancing human well-being and ensuring social equity.” The primary focus is on the efficient utilisation of resources, the advancement of renewable energy sources, and the reduction and control of waste.

Methodology

A green economy aims to alleviate environmental risks and degradation while achieving sustainable development without jeopardising the environment. It is closely linked to ecological economics, although is primarily used as a political term. The UNEP Green Economy Report 2011 contends that a green economy must be efficient and equitable. Equity requires the recognition of both global and national dimensions, especially in promoting a just transition to a low-carbon, resource-efficient, and socially inclusive economy. The defining characteristic of this economy, in contrast to economic regimes, is the direct valuation of natural capital and environmental services as economically relevant, alongside the thorough accounting of the overall societal expenses incurred through ecosystems. Expenses are continuously assigned to the entity accountable for or careless concerning the asset and are documented as its obligations. The green economy is an important theme. The green sticker and eco-label methods have emerged as indicators of environmental sustainability and eco-friendliness in consumer perception. Various industries are initiating the implementation of these standards to promote sustainable practices in a globalised economy. Environmental standards, similar to sustainability standards, are specific requirements that guarantee the items procured do not negatively impact the environment or the humans engaged in their creation. The number of these standards has recently increased, enabling the creation of a new, more sustainable economy. They focus on economic sectors such as forestry, agriculture, mining, and fisheries; on environmental issues like preserving water resources and biodiversity or reducing greenhouse gas emissions; and on advancing social protection and labour rights. The textbook "Green Economy" by A.V. Vakhabov and Sh. Kh. Khajibakiyev explores the genesis of the "Green Economy" concept, its evolutionary phases, the imperative for transitioning to a green economy, along with its components, principles, and metrics. The funding for the transition to a "green economy," the sustainable advancement of "green energy," environmental policy, and the economic mechanisms for execution, along with the priority sectors for this transition and international experiences, models, and the particulars of the goals, objectives, phases of development, and priority sectors of Uzbekistan's strategy for transitioning to a "green economy" are outlined [6]. The comprehensive and advanced expertise of promoting "green growth" worldwide is employed to assess the economic potential of implementing the strategy for transitioning to a "green economy" in Uzbekistan. The paper "The History of the Development and Formation of the Green Economy" by Bobojonova M.J. and Toshev M.H. clarifies the concept and historical progression of the green economy[7],[8]. The concept of the green economy was first established in 1989 by Pearce, Markandya, and Barbier, who defined it as “economic

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activity aimed at enhancing human well-being while conserving natural resources and ecosystems.” The United Nations Environment Program (UNEP) characterises the green economy as “an economy that significantly reduces environmental risks and degradation while improving human well-being and ensuring social equity.” The main emphasis is on the effective use of resources, the promotion of renewable energy sources, and the minimisation and management of waste.

Result

The Republic has passed a resolution for the implementation of the project "Innovative Carbon Resources for Energy Reforms" in collaboration with the World Bank [9]. To fulfil the objectives outlined in the program for transitioning to a "green economy" and achieving "green growth" by 2030, while promoting low-carbon development of the national economy, particularly in the industrial sector, the project "Innovative Carbon Resources for Energy Reforms" (iCRAFT) will be executed in Uzbekistan[10]. The World Bank will allocate money totalling 46.25 million US dollars for this purpose. The study indicates that the findings of the conducted research reveal that the establishment of a "Green Economy" include the following domains: The analysis indicates that nations are transitioning to a "Green Economy." The global economic landscape necessitates a robust accounting infrastructure, which is essential. Development of renewable energy sources; Enhancement of the waste management system; Advancement of water resources management; Promotion of clean, sustainable transportation; Expansion of organic farming in agriculture; Augmentation of energy efficiency in housing and communal services; Improvement of ecosystem preservation and management efficiency; Development of markets for the creation and sale of green technologies. Experts have quantified the total supplementary annual advantages resulting from the shift to a "green economy" in each of these domains [11]. The anticipated advantages in the renewable energy sector surpass $5 billion. The "greening" initiative will concurrently provide supplementary "green" employment opportunities. Estimates suggest that 175,000 extra jobs might be generated in the renewable energy sector by 2020 and around 270,000 jobs by 2050. Table 1 illustrates that the global green economy index indicator system consolidates essential quantitative and qualitative measures employed to evaluate environmental and innovation performance.

Name	Type	Percentage%	Definition
Entrepreneurship and climate change indicators			
Heads of State and Government	quality	20	Atrof muhit va rivojlanish muammolarini ha etishda rahbarlar tashabbusi
Media Coverage	quality	10	Yashil iqtisodiyotning OAV da ijobiy yoritilishi
International Forum	quality	20	Xalqaro forumlarda milliy manfaatlar va yo‘nalishlar holati
Environmental Change Index	quantity	50	Atrof muhitning o‘zgarishini tavsiflovchi ko‘rsatkichlar
Efficiency			
Buildings	quantity	20	Bin ova inshootlarning LEED (Leadership in Energy and Environmental Design) sertifikatiga egaligi
Energy	quantity	20	Tiklanadigan energiyaning jami iste’moldagi ulushi
Tourism	quality	20	Yashil turizm bo‘yicha mamlakat reytingi
Transport	quantity	20	Avtomobillar chiqarayotgan CO2 miqdori
Resource efficiency	quantity	20	Chiqindilarni qayta ishlash darajasi
Markets and investments			
Investment attractiveness	quantity	25	Investment attractiveness of the renewable energy sector
Green innovation	quantity	25	Business environment for green innovation
Corporate sustainability	quality	25	Transition of three large companies to sustainability

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Support for green investments	quality	25	State policy to support green investments
Environment			
Agriculture	quantity	17	Assessment of agricultural efficiency measures
Clean Air	quantity	17	Share of population breathing polluted air and cooking with wood
Water	quantity	17	Extent of wastewater treatment from households and industries before it is released into the environment
Biodiversity and Habitat	quantity	17	Protection of land and sea areas, conservation and protection of endangered species
Fisheries	quantity	17	Practical indicators of fishing
Forestry	quantity	17	Forest area lost since 200 years

Table 1. *Global green economy index indicator system*

Discussion

The results of this study reveal that the green economy plays a critical role in driving innovative development, particularly in countries seeking to balance economic growth with environmental sustainability [12]. Uzbekistan's current efforts, such as the iCRAFT project supported by the World Bank and the commitment to achieving "green growth" by 2030, reflect a national recognition of the urgent need for sustainable transformation. However, the discussion must go beyond individual projects to analyze the broader structural, economic, and social implications [13]. A key finding is that the green economy not only contributes to reducing carbon emissions but also generates significant economic benefits, such as the creation of an estimated 175,000 green jobs by 2020 and up to 270,000 by 2050. This highlights the potential of green sectors like renewable energy, organic agriculture, and eco-friendly transport to become engines of employment and innovation. However, realizing these benefits requires overcoming substantial barriers, including insufficient technological capacity, lack of skilled human resources, and limited access to green finance. The comparison with leading green economies such as Germany, Sweden, South Korea, and China provides valuable insights. These countries demonstrate that strong government policies, public-private partnerships, investment in research and development, and clear regulatory frameworks are crucial for scaling up green innovation [14]. Uzbekistan must prioritize strengthening institutional support mechanisms, creating incentives for private-sector engagement, and investing in educational programs to build a workforce capable of sustaining green industries. Importantly, the discussion also underscores the need for inclusive development. As the country moves forward, policymakers must ensure that the green transition benefits all sectors of society, including rural communities and vulnerable populations [15]. By addressing both the environmental and social dimensions, Uzbekistan can position itself as a regional leader in sustainable economic development and set a model for other emerging economies.

Conclusion

The results of this study showed that the green economy is one of the important factors of innovative development, which serves to ensure a balance between environmental sustainability and economic growth. Although today the trend of transition to a green economy is gaining momentum globally, Uzbekistan is still at the initial stage of this process. However, our country has great potential for the development of solar and wind energy, waste recycling, and ecological innovations. It should be noted that the main aspects of the green economy, international experiences, and opportunities in the conditions of Uzbekistan were studied. In particular, the experience of developing a green economy in countries such as Germany, Sweden, South Korea, and China was analyzed, and their success factors were identified. These experiences show that the introduction of innovative technologies, strengthening state support mechanisms, and stimulating the private sector are of great importance for the development of a green economy.

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