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Artificial Intelligence and Sustainable Investments: the Impact on the Green Economy

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Annotation: The article is devoted to the study of the impact of artificial intelligence (AI) on sustainable investments and the green economy. The main directions of AI application in the field of sustainable development are considered, including the optimization of processes in the energy sector, the analysis of environmental and social factors for investors, as well as the development of new technologies that promote environmental balance. Special attention is paid to the role of AI in creating effective investments focused on environmental sustainability and reducing carbon emissions. The article also highlights the importance of forming long-term strategies for businesses and investors aimed at supporting the green economy.

Keywords: artificial intelligence, sustainable investments, green economy, ESG factors, optimization of energy systems, renewable energy sources, environmental risks, sustainable development.

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Introduction The modern world is facing numerous challenges related to the deteriorating state of the environment, climate change and growing social problems. In response to these threats, the concept of a green economy has been actively developing in recent decades, which involves the sustainable use of natural resources, reducing carbon emissions and caring for the future of the planet. Sustainable investments focused on environmental, social and management factors (ESG) are becoming an important aspect of this process, which are becoming increasingly popular among investors and companies around the world.

At the same time, artificial intelligence (AI) is becoming an integral part of many industries, contributing to their transformation and development. The use of AI in the field of sustainable investments and the green economy opens up new opportunities for efficient use of resources, increasing energy efficiency, optimizing processes and minimizing negative impacts on nature. With the help of machine learning technologies and big data analytics, it is possible to predict trends, identify environmental risks and opportunities for a more rational allocation of capital in sustainable and environmentally friendly projects.

Uzbekistan has also seen an active increase in interest in the green economy and sustainable investments in recent years. One of the factors contributing to this process is the use of innovative technologies, including artificial intelligence (AI), which is being actively implemented in various sectors of the economy. This opens up new opportunities for optimizing processes, increasing the efficiency of using natural resources and reducing the negative impact on the environment. Using big data and machine learning, artificial intelligence helps predict trends, identify risks and opportunities for more efficient allocation of capital to projects aimed at developing a sustainable economy.

Presidential Decree No. PP-303 dated August 27, 2024 "On the establishment of the National Investment Fund of the Republic of Uzbekistan" established a fund aimed at attracting investments for the implementation of environmentally friendly projects such as ecosystem restoration, water resources management and the development of green infrastructure. This fund provides investment and financial instruments for companies involved in eco-technologies.

This paper is devoted to the study of how artificial intelligence contributes to the development of sustainable investments and how it affects the processes of transition to a green economy. In particular, the impact of AI on investment decision-making, its role in optimizing energy systems and developing sustainable solutions to combat environmental threats will be considered.

Analysis

Laws and regulations create a legal framework for the sustainable development of Uzbekistan's economy, with an emphasis on attracting environmentally friendly investments and using innovative technologies such as artificial intelligence to effectively manage natural resources and protect the environment.

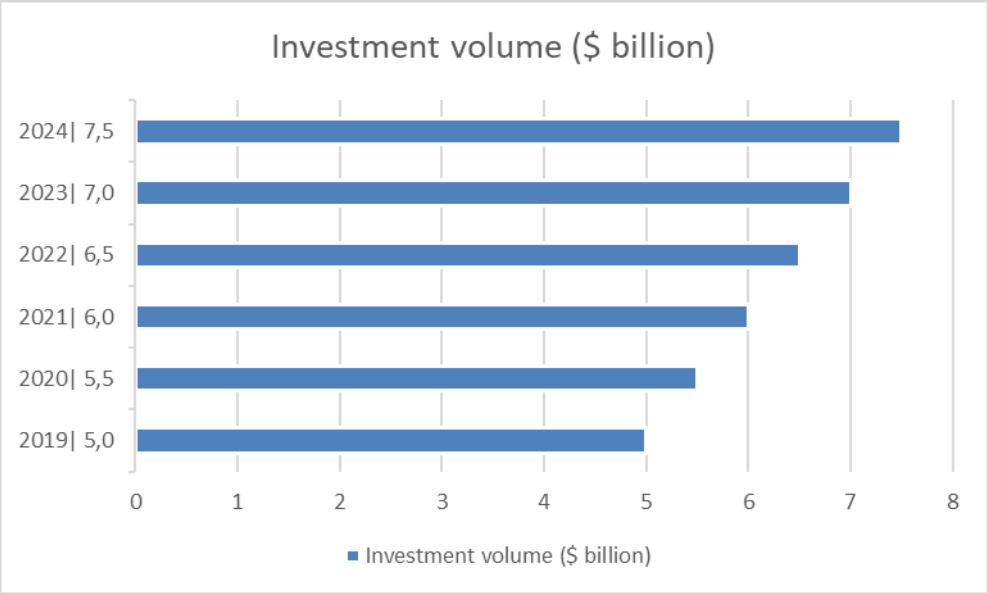
In recent years, Uzbekistan has shown significant growth in attracting investments. The analysis of data for the period from 2019 to 2024 indicates dynamic changes in the country's economy, reflecting increased interest from both internal and external investors. Increased investment contributes to the development of key industries, including the energy sector, infrastructure and technology, as well as stimulates sustainable economic growth. This trend is also confirmed by the development of the legislative framework and the creation of attractive business conditions, which positively affects the long-term prospects for economic stability and innovative development of Uzbekistan.

An analysis of investment growth in Uzbekistan from 2019 to 2024 shows dynamic changes.

Total investment volume:

- Since 2017, $188 billion of investments have been attracted to the Uzbek economy, of which $87 billion were foreign investments.
- In 2024, the volume of investments exceeded $36 billion, which is 30% more than in the previous year.

Chart of changes in investment volume for the period 2019-2024



Investment structure:

- In the first 9 months of 2024, 343.1 trillion soums ($27.2 billion) of investments in fixed assets were disbursed, which is 131% more than in the same period of 2023.
- Of this amount, 75.2% (258 trillion soums) was financed from borrowed funds, and 24.8% (85.1 trillion soums) from the own funds of enterprises, organizations and the population.

Foreign direct investment:

- In 2023, the volume of foreign direct investment amounted to $2.2 billion, which is 16% less than $2.6 billion in 2022.

Dynamics by quarter:

- In the first quarter of 2024, the volume of investments in fixed assets amounted to 107.1 trillion soums, which is 174.5% more than in the first quarter of 2023.

RESULT AND DISCUSSION

In recent decades, the global economy has faced the need to move towards more sustainable development models. One of these areas is the green economy, which aims to minimize the negative impact on the environment, as well as to ensure sustainable development through the use of renewable energy sources, reducing carbon emissions and effective resource management. In this context, an important question arises: how can artificial intelligence (AI) influence the development of a green economy and sustainable investments?

AI is a field of science and technology that uses algorithms and models to solve complex problems, including big data processing, decision making, and process optimization. It can be used to improve processes related to the environment, production and energy systems, as well as financial markets. This article examines the impact of AI on sustainable investments and the green economy, as well as the role it can play in their transformation.

Artificial intelligence in the field of sustainable investments One of the main factors contributing to sustainable investments is the ability to make informed decisions based on a large amount of data. AI provides investors with tools to analyze information about the impact of companies and projects on the environment, their social and economic aspects. For example, machine learning

algorithms can estimate the carbon footprint of organizations, their participation in renewable energy projects and social initiatives, which helps investors make more informed decisions.

AI can also help create more effective investment strategies focused on long-term sustainability. Through the analysis of data such as energy trends, innovative technologies and environmental risks, and can predict potential risks and opportunities for sustainable investments. This allows investors to reduce financial losses and minimize environmental risks, while simultaneously supporting projects that contribute to the development of a green economy.

Innovations in the field of energy and the environment using AI

One of the most striking applications of AI in the green economy is energy. AI can help optimize energy production and distribution, especially from renewable sources. Algorithms can predict energy consumption, which makes it possible to manage resource allocation more efficiently and reduce energy losses. For example, AI systems can predict the consumption of solar and wind energy, which makes it possible to use these renewable sources more efficiently and reduce dependence on fossil energy sources.

In addition, AI is being used to develop "smart" networks that are able to integrate various energy sources and balance them in real time, which increases the overall efficiency and sustainability of energy systems. AI systems can also improve waste management processes, increase the energy efficiency of buildings and industries, and optimize water resources.

Sustainable investments and their relationship to environmental, social and governance factors (ESG)

In recent years, there has been a significant increase in interest in investments focused on ESG factors (environmental, social and managerial). AI plays an important role in ensuring transparency and accuracy in assessing these factors. For example, AI can process data on a company's environmental impact, its social responsibility, and the quality of corporate governance. These data are the basis for decision-making in the framework of ESG investment.

Using AI systems, investors can conduct a deeper analysis and monitoring of ESG factors, which makes it possible to increase the effectiveness of sustainable investments and minimize risks associated with environmental and social aspects.

The impact of AI on company policies and strategies

For many companies seeking to meet the requirements of sustainability and be more environmentally oriented, AI provides new opportunities for developing effective strategies. Algorithms can help analyze market needs, identify new opportunities for sustainable growth, and create more environmentally friendly products and services.

As a result, it becomes easier for companies to integrate the principles of the green economy into their business processes, which contributes to the creation of long-term and sustainable values. In addition, it helps to increase the degree of accountability and transparency, which in turn improves the company's reputation in international markets.

Conclusion

Various legislative initiatives and measures aimed at improving the investment climate and promoting sustainable development have become an important step for Uzbekistan towards a green economy. In recent years, laws and programs have been adopted aimed at attracting environmentally oriented investments, supporting green technologies and developing renewable energy sources. In particular, considerable attention is being paid to stimulating investments in projects that contribute to reducing carbon emissions, improving energy efficiency and introducing environmentally friendly technologies.

Artificial intelligence has a significant impact on the development of a green economy and sustainable investments. Thanks to And possible more accurate and efficient management of natural resources, optimization of energy systems and increased resilience to environmental risks. In turn, it opens up new horizons for investors to analyze and make informed decisions based on environmental, social and economic factors. Thus, AI is becoming an important tool contributing not only to economic but also to environmental development, playing a key role in shaping sustainable investment strategies and in the transition to a more environmentally sustainable economy.

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