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CONTENTS

The development potential of ecotourism and sustainable tourism practices in the kashkadarya region.....	6
Khushvakhtov Ramziddin	
How transport access affects housing prices.....	9
Mannonov Shahzod Istam Ugli, Ibragimov Xasan Usmonjon Ugli	
Prospects and effectiveness of implementing mobile marketing technologies in higher education institutions.....	18
Murod Batirovich Khidoyatov	
Factors influencing the development of the food processing industry: an economic analysis.....	23
Urolova Sevara Bekhzod kizi	
Ensuring cybersecurity in commercial banks of Uzbekistan.....	29
Erdashov Alimjan Baxramovich	
University students' adoption of cashless payments in uzbekistan: behavior, trust, and challenges.....	33
Khikmatullaev Ismoilkhuja Khusan ugli, Asep Miftahuddin	
The effects of inflation rate and investment rate toward unemployment in Uzbekistan.....	43
Ruziev Bekmurod Urol ugli, Dr.Susanti Kurniawati	
The importance of using e-commerce systems in enhancing the financial potential of joint-stock companies.....	47
Vakhobov Shokhjahan Valiyevich	
Integration of optoinformatic systems and artificial intelligence for automatic quality control of video equipment.....	50
Allamuratov Timur Koshmurat uli	
The role and importance of commercial banks in the development of the capital market.....	53
Aybek Kayipbergenov, Baymuratova Zina Akilbekovna	
Global trends in mobile payment adoption: a systematic literature review with insights for indonesia.....	57
Mukhitdinov Islomjon Jakhongir ugli, Dr. Maya Sari, S.E., M.M.	
Decision-making algorithms in higher education management: application of artificial intelligence systems in indonesia.....	65
Sattikulov Mukhammadkhon, Budhi Pamungkas Gautama	
Innovation financing mechanisms for enterprises in uzbekistan: current state, systematic analysis, and strategic development directions.....	72
Sukhrob Turanov	
The role of the islamic financial system in financing infrastructure projects.....	81
Mamadiyarova Aziza Nuriddin kizi, Dr. Denny Andriana	
Statistical analysis of total population income in the republic of Uzbekistan.....	85
Akbarova Barno Shuxratovna, Chintemirova Diyora Shuxrat kizi	
Strengthening the financial resource base of commercial banks in the context of digitalization.....	89
Dilnoza Khaitboyeva	
Using examples of folklore to effectively organize the process of teaching english to children through digital learning tools.....	94
Boqijonova Nargiza Jumanazar kizi, Rajabboyeva Gulchexra Foziljon kizi	
Standard methodology of throwing techniques in judo and their effectiveness.....	97
Tangriyev Abdulkarim Tivoshevich	
Improving marketing management at the enterprise.....	101
Musayeva Shoirazimovna	
The financial-theoretical frameworks of the anti-monopoly regulation in the digital economy.....	106
Djalilova Dilnoza Raxmatovna	

Modern approaches to deposit turnover and operations in commercial banks	110
Olimov Abror Axadjon o'g'li	
The Role of Innovation Policy in Advancing Uzbekistan's Textile Industry: Empirical Evidence and Strategic Forecasting.....	115
Ravshan I. Nurimbetov, Khojakbar M. Karimov	
Aformalized model of backward throwing technique: a methodological approach for judo	121
Tangriyev Abdullo Tovooshevich	
The Role of External Audits in Strengthening Corporate Governance: A Case Study of Aloqabank	126
Rustamov Muhammadyusuf Madaminjon ugli, Indah Fitriani, SE., Dr. Aristanti Widyaningsih, S.Pd.,	
Comparison of mental disorders in parents of children with developmental defects with mental disorders in parents of healthy children without defects	132
Yadgarova Nargiza Fahritdinovna, Mirzaliyeva Surmaniso Alisher kizi	
inflation and the Financing of Education in Uzbekistan: A Mediation Analysis of Macroeconomic and Social Channels	138
Toshpulatov Jakhongir Dilmurod ugli, Dr Arief Ramdhany	
Quantitative Analysis of Financial Statement Fraud in Uzbek Banks: Patterns, Red Flags, and Risk Indicators	145
Ismatullaev Javokhir Jahongir ugli, Toni Heryana, Elis Mediawati	
Dynamics and analysis of value added tax revenues in the state budget of uzbekistan	152
Ergashev Ilkhomjon Obodovich	
The role of green bonds in the stock market as a sustainable financial instrument	157
Khushvakov Islombek Mukhammadi ogli	

THE ROLE OF GREEN BONDS IN THE STOCK MARKET AS A SUSTAINABLE FINANCIAL INSTRUMENT



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Abstract: This article analyzes the assessment of green bonds as a sustainable financial instrument and their role in the stock market. The role of these bonds in financing environmental projects through financial markets, in particular stock markets, in the process of transition to a green economy is revealed. The article studies investment activity related to green bonds in international and domestic stock markets, investor needs and decision-making processes based on ESG (Environmental, Social, Governance) criteria. A detailed analysis of this financial instrument in the market is also conducted based on its liquidity level, risk and return indicators. Based on the results of the study, theoretical and practical recommendations are developed on the opportunities and existing problems of green bonds in ensuring sustainable development.

Key words: green bonds, green economy, capital market, stock market, Eurobonds, coupon rate, yield, underwriter, financial risk, environmental protection, ecological investments, sustainable development.

INTRODUCTION

In recent years, as environmental issues have become increasingly pressing on a global scale, matters such as environmental protection, climate change mitigation, and sustainable development have come to the forefront of the financial sector's agenda. In response to these challenges, financial instruments have also had to evolve and adapt. One such innovative approach is the emergence of "green bonds". The funds raised through these bonds are directed toward environmentally friendly, energy-efficient projects that have a positive impact on the climate. Green bonds have not only opened new investment opportunities for participants in financial markets but have also been recognized as a financial mechanism contributing to sustainable development.

According to data from the World Bank at the end of 2024, the global issuance of green bonds exceeded \$650 billion.[8] This figure represents nearly a twofold increase compared to 2020. Leading issuers include countries such as the United States, China, Germany, France, and the Netherlands. A significant portion of these funds has been allocated to renewable energy sources (such as solar and wind power plants), energy efficiency projects, pollution reduction programs, and the development of green transport infrastructure. Specifically, the World Bank's report highlights that during 2023–2024, 31% of funds raised through green bonds were spent on renewable energy, 24% on energy efficiency, and 18% on environmental protection initiatives.

The issuance of green bonds holds significance not only from an environmental standpoint but also plays an increasingly important role in financial markets. These instruments are drawing growing interest from investors in the stock market. Investors are aiming not only to generate financial returns but also to invest in line with social responsibility principles. In particular, with the growing popularity of investment strategies based on ESG (Environmental, Social, Governance) criteria, the liquidity and demand for green bonds in the market are steadily increasing.

LITERATURE REVIEW

Attracting financial resources through green bonds is considered an important tool for ensuring environmental sustainability. In this regard, one of the prominent foreign economists, Flammer Caroline in her scientific work titled "Green Bonds: Effectiveness and Implications for Public Policy" has deeply analyzed the social and economic impacts of green bonds. The study discusses the allocation of investment flows toward environmental projects, the growing market demand, and evaluation systems based on ESG criteria [1].

The profitability of green bonds is determined by several factors. In particular, the ecological benefits of the underlying project, the credit rating of the issuer, and government guarantees play a significant role. Karpf Andreas and Mandel Antoine in their work "The Changing Value of Green Bonds: Evidence from Market Segmentation and Aggregate Demand" demonstrated through economic modeling the differences between green bonds and traditional bonds, highlighting market segmentation and variations in investor behavior [2].

In recent years, many central banks have included the promotion of green financing in their strategic agendas. In the study titled "Climate Risks and Financial Stability" conducted by Battiston Stefano and colleagues, the authors analyze the growing attention of central banks and financial institutions to green assets and how climate risks have become a key consideration in their decision-making processes. This academic approach serves to understand the global socio-political context driving the green bond market [3].

Large pension funds, sovereign wealth funds, and insurance companies are becoming major players in the green bond market. In the article "Financing the Response to Climate Change: The Pricing and Ownership of U.S. Green Bonds" authored by Baker Malcolm, Bergstresser Daniel, and Serafeim George, a detailed analysis is provided on who is purchasing green bonds, how they are priced, and the dynamics of demand. The role of institutional investors in fostering long-term sustainable investment is particularly emphasized in the study [4].

RESEARCH METHODOLOGY

During the conduct of this research, methods and techniques such as induction, deduction, logical inference, analysis and synthesis of understanding of economic processes, and comparison of statistical data were used. Data on green bond issuance and trading were collected and analyzed from reliable sources, including the World Bank website, the website of the Ministry of Economy and Finance of the Republic of Uzbekistan, and the official websites of banks. The study employed both theoretical and empirical methods. The theoretical component included the analysis and synthesis of scientific literature, a review of contemporary research on the topic, and a comparative analysis of existing concepts.

Analysis and results. In October 2023, Uzbekistan issued its inaugural Green Bond, demonstrating the country's commitment to achieving the United Nations' 2030 Agenda for Sustainable Development through innovative sustainable financing instruments. This report outlines the allocation of funds raised through the bond issuance and highlights the impact of funded projects across various sectors.

SDG bond issuance.

Total amount raised (net proceeds): UZS 4,25 trillion

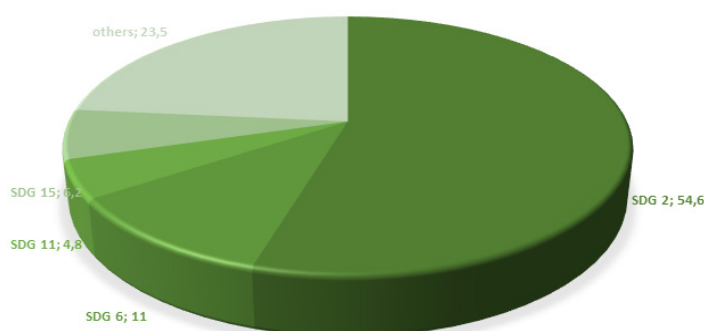
Bond tenor: 3 years

Coupon rate: 16,25%

Issue date: October 12, 2023

The allocated net proceeds from the October 2023 Green Bond have been applied for refinancing the programs and project portfolios across multiple sectors, under implementation from 2021 to 2023, and in alignment with specific SDGs. Zero Hunger (SDG 2) – Sustainable Water Supply and Wastewater Management and Flood Defense Systems: Percentage of total allocation: 54,6%.

Allocation of net proceeds (%) by SDGs [5]



The main projects and programs are as follows: construction and reconstruction of irrigation facilities and melioration facilities; subsidies for implementing water-saving technologies in agriculture; and subsidies to cover the cost of implementing drip irrigation systems.

Clean Water and Sanitation (SDG 6) - Sustainable Water Supply and Wastewater Management and Flood Defense Systems: The share of total allocated funds is 11.0%. Key projects and programs: construction and reconstruction of drinking water and sewage facilities; and subsidies to cover the costs of drilling wells to extract groundwater for irrigation of residential plots.

Sustainable Cities and Communities (SDG 11) is dedicated to preventing and controlling pollution. Percentage of total allocation is 4,8%. Key projects and programs: purchase of special vehicles for organization of sanitation works and maintenance of cleanliness of settlements.

Life on Land (SDG 15) - Sustainable Management of Living Natural Resources and Land Use (Terrestrial and Aquatic). Percentage of total allocation is 6,2%.

Key projects and programs: establishment of protective forests (encirclement) to prevent desertification and sand migration, water and soil erosion, as well as to improve the ecological environment in desert and mountain areas; and funding of expenses related to purchase and planting of seedlings within the nationwide project "Yashil Makon" (Green Nation). The allocated net proceeds from the October 2023 Green Bond have been applied to three eligible expenditure categories under implementation from 2021 to 2023, with the category of Sustainable Water Supply and Waste-Water Management and Flood Defense Systems having received 65,5% of the total net proceeds.

Analysis of Green Bonds Issued by Local Issuers [6, 7]

Name of the issuer	Market segment	Nominal value	Amount	Coupon interest rate	Date of issue	Extinguishing period
"Uzbek Mortgage Refinancing Company" JSC	Bond market	UZS 1 million	UZS 50 mlrd	18%	16.09.2024	18.09.2029
Uzbek Industrial and Construction Bank	Bond market	not disclosed	\$ 100 million	not disclosed	04.08.2023	03.08.2028

As a significant milestone for Uzbekistan's sustainable finance sector, the Mortgage Refinancing Company successfully issued the country's first green bonds on the Tashkent Stock Exchange, with the support of the AIFC Green Finance Centre. The total issuance amounted to 50 billion UZS (approximately USD 4 million) and marks an important step in Uzbekistan's commitment to environmental sustainability and green financing.

The issuance followed the latest amendments to Uzbekistan's securities issuance and registration regulations, introduced in June 2024, aimed at facilitating sustainable finance initiatives. The proceeds from these green bonds will be used to finance and refinance green loans offered by commercial banks, with a primary focus on construction and renovation projects that utilize energy-efficient materials. This initiative is expected to significantly contribute to Uzbekistan's environmental goals by enhancing energy efficiency in the construction sector.

The AIFC Green Finance Centre conducted an external review, confirming that the bonds comply with the Green Bond Principles established by the International Capital Market Association (ICMA). The investment advisor for this green bond issuance was Alkes Research, a local partner of the AIFC Green Finance Centre. Alkes Research signed a Referral Program with AIFC GFC to promote green, social, and sustainable finance among potential issuers in Central Asia and Eastern Europe, aiming to expand the regional market for sustainable financial instruments.

In addition, the Asian Infrastructure Investment Bank (AIIB) has invested in the green eurobonds issued by Uz sanoatqurilishbank. This was reported by the international credit institution's press service via "Spot". The five-year eurobond issuance also included participation from the International Finance Corporation (IFC), the German Development Finance Institution (DEG), and the Austrian Development Bank (OeEB). The total amount of the issuance reached USD 100 million, of which USD 25 million was invested by AIIB.

These eurobonds represent Uz sanoatqurilishbank's first green bonds, with the raised capital intended to fund projects that support a green economy and sustainable development. Specifically, the proceeds will be allocated to enhancing energy efficiency, reducing greenhouse gas emissions, and protecting water resources.

Furthermore, the funds are also intended to support women-led initiatives and the development of small and medium-sized enterprises (SMEs).

Notably, Uz sanoat qurilish banki had previously accessed international capital markets in 2019, placing eurobonds on the London Stock Exchange. That issuance raised USD 300 million, marking the first-ever entry of Uzbekistan's banking sector into international capital markets.

Against the backdrop of rapid economic development, the increasing demand for goods and services has led to an ecological crisis throughout the world. Especially in China, where production rates are high, environmental pollution has become evident. As a solution, China was one of the first to support the Green Economy. As a result of the development of the green economy, great attention has been paid to green bonds, and the volume of issuance of these financial assets is increasing year by year.

Key indicators of the Chinese green bond market [9, 10, 11, 12]

Period	Green bond issuance (billion \$)	Number of bonds issued (units)	Global share	Annual growth (%)	Main sectors
2020	121.3	315	12	-	Energy
2021	140.0	380	14	+15.4	Industry, construction
2022	166.6	445	16	+18.9	Transport, electricity
2023	210.1	510	18	+26.1	Renewable energy
2024	245.0	580	20	+16.6	Technology, energy

In 2020, China became the second-largest issuer of green bonds in the world (after the United States). Projects aimed at reducing greenhouse gases became the main focus. From 2022 to 2023, domestic market regulation strengthened: China tightened the “greenness” criteria for green bonds. Data for 2024 is not yet complete, but according to forecasts from CBI and Asia Securities Industry, green bond issuance in China is expected to be around \$240–250 billion this year.

Between 2020 and 2024, China's green bond market grew rapidly. During this period, not only the volume of issuance but also the number of bonds issued significantly increased. In 2020, despite the global pandemic, China issued \$121.3 billion in green bonds. This indicates the presence of stable financial infrastructure and the government's focus on green finance.

In 2021, following the official announcement of the “carbon-neutral” strategy, green bond issuance reached \$140 billion, and the number of bonds issued increased to 380. In 2022, these figures grew further, reaching \$166.6 billion and 445 bonds, respectively. This growth was mainly due to financing aimed at modernizing energy and transport infrastructure.

By 2023, the issuance volume had reached \$210.1 billion. The strengthening of ESG (Environmental, Social, Governance) requirements and growing investor interest in environmental responsibility contributed to this growth. Finally, for 2024, estimated figures show the issuance of \$245 billion in bonds and 580 bonds issued, indicating that growth in this direction is still ongoing. Official reports will be published at the beginning of 2025.

This table clearly shows that China's green financing strategy is well-planned and expanding step by step. This also indicates that green bonds are increasingly becoming a more relevant investment instrument on a global scale.

Conclusion and suggestions. Based on the analysis of the processes related to the role of green bonds as a sustainable financial instrument in the stock market, the following conclusions and sectoral recommendations were formulated:

Firstly, the growth of the green bond market and the investment flows directed towards environmentally responsible projects by leading countries such as China, the United States, and Europe indicate the global significance of this financial instrument. The rapid expansion of China's green bond market confirms its commitment to implementing its “carbon neutrality” strategy.

Secondly, green bonds play an important role not only in financing environmental projects and programs but also in stabilizing economic development. They contribute to energy efficiency, clean energy development, and ensuring environmental safety.

Thirdly, the strengthening of ESG (Environmental, Social, and Governance) requirements and the growing interest of investors in environmental responsibility increase the demand for green bonds. This leads to further market expansion and the diversification of investment opportunities.

Fourthly, in 2023, Uzbekistan issued its first green bond, demonstrating its strong commitment to sustainable development. The funds raised through this bond were directed toward financing energy efficiency and environmental projects.

We believe that by learning from the experiences of China, the U.S., and Europe, Uzbekistan and other developing countries should develop specific regulations and incentive mechanisms to issue green bonds and make them more attractive.

By further strengthening ESG standards and requirements, it is necessary to expand opportunities for investors to participate in environmentally responsible projects, which in turn will increase the demand for green bonds.

Supporting technological innovations aimed at financing energy efficiency and renewable energy sources through green bonds will help attract more investments into this sector.

To expand the green bond market, it is essential to foster international cooperation. This will create opportunities for countries to share experiences and jointly finance projects focused on sustainable development.

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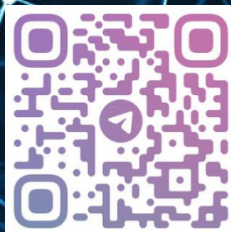
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