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GREEN BONDS: ESSENCE, SIGNIFICANCE AND DEVELOPMENT PROSPECTS IN UZBEKISTAN

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Abstract. The paper explores green bonds as a relatively new financial mechanism designed to channel investment into environmentally focused initiatives. It starts with a brief reflection on the conceptual foundations of this instrument, then turns to international practice, which, in a way, helps to see how these instruments behave outside a purely theoretical setting. Particular attention is given to the situation in Uzbekistan, where the market is still taking shape. The discussion touches upon current developments as well as possible directions for its further evolution. Using available statistical evidence, the study compares market volumes, key elements of the regulatory framework, and the sectoral distribution of bond issuances. Overall, the findings suggest that green bonds could become an important source of funding for supporting the shift of the national economy toward a more sustainable development path, although this transition is unlikely to be immediate and will probably unfold step by step.

Key words: green bonds, sustainable finance, ESG-oriented investment, Uzbekistan's securities market, environmentally driven economic development, climate-related funding, Capital Markets Union.

Annotatsiya. Mazkur maqolada "yashil obligatsiyalar" ekologik yo'naltirilgan loyihalarga investitsiyalarni jalb qilishga qaratilgan nisbatan yangi moliyaviy mexanizm sifatida tahlil qilinadi. Tadqiqot ushbu instrumentning konseptual asoslarini qisqacha ko'rib chiqishdan boshlanadi, so'ngra xalqaro amaliyot tahliliga o'tiladi, bu esa ushbu instrumentlarning nazariy doiradan tashqarida qanday ishlashini tushunishga yordam beradi. Alohida e'tibor O'zbekistondagi holatga qaratilgan bo'lib, bu yerda bozor hali shakllanish bosqichida. Maqolada mavjud rivojlanish tendensiyalari hamda uning kelgusidagi rivojlanish yo'nalishlari ko'rib chiqiladi. Mavjud statistik ma'lumotlarga asoslanib, bozor hajmi, tartibga solish tizimining asosiy elementlari hamda obligatsiyalar chiqarilishining tarmoq tuzilmasi taqqoslanadi. Umuman olganda, tadqiqot natijalari yashil obligatsiyalar milliy iqtisodiyotning barqaror rivojlanish yo'liga o'tishini moliyalashtirishda muhim manbaga aylanishi mumkinligini ko'rsatadi, biroq bu jarayon tezkor emas, balki bosqichma-bosqich amalga oshishi ehtimoli yuqori.

Kalit so'zlar: yashil obligatsiyalar, barqaror moliyalashtirish, ESG yo'naltirilgan investitsiyalar, O'zbekiston qimmatli qog'ozlar bozori, ekologik yo'naltirilgan iqtisodiy rivojlanish, iqlimiy moliyalashtirish, Kapital bozorlari ittifoqi.

Аннотация. В статье рассматриваются «зелёные облигации» как относительно новый финансовый механизм, направленный на привлечение инвестиций в экологически ориентированные проекты. Исследование начинается с краткого анализа концептуальных основ данного инструмента, после чего обращается к международной практике, что позволяет понять, как эти инструменты функционируют за пределами теоретических моделей. Особое внимание уделяется ситуации в Узбекистане, где данный рынок находится на стадии формирования. В работе рассматриваются текущие тенденции, а также возможные направления его дальнейшего развития. На основе доступных статистических данных проводится сравнительный анализ объёмов рынка, ключевых элементов нормативно-правовой базы и отраслевой структуры выпуска облигаций. В целом результаты исследования показывают, что зелёные облигации могут стать важным источником финансирования перехода национальной экономики к более устойчивой модели развития, хотя этот процесс, вероятно, будет постепенным и поэтапным.

Ключевые слова: зелёные облигации, устойчивое финансирование, ESG-ориентированные инвестиции, рынок ценных бумаг Узбекистана, экологически ориентированное экономическое развитие, климатическое финансирование, Союз рынков капитала.



INTRODUCTION

The growing strain associated with climate change, along with the ongoing depletion of natural resources and the gradual deterioration of ecosystems, is, in many ways, redefining the agenda of global financial markets. Conventional investment mechanisms, although still dominant, do not always prove effective in channeling funds toward initiatives that deliver lasting environmental and social outcomes - and this limitation is becoming increasingly evident. It is within this evolving context that green bonds have taken on a leading role among sustainable finance instruments. They introduce a more clearly structured approach to the allocation of capital for environmentally oriented purposes, accompanied by reporting practices that can be independently verified, which, perhaps, makes the overall process more transparent and credible for market participants.

Since the European Investment Bank carried out its first green bond issue back in 2007, this market has gradually evolved from what was once seen as a rather narrow experiment into one of the more rapidly expanding segments within the global debt space. According to data provided by the Climate Bonds Initiative, by the end of 2023 the total volume of issued green bonds had exceeded 3.5 trillion US dollars, which, if you think about it, quite clearly reflects how this instrument has moved beyond its initial stage and effectively taken shape as a distinct asset class.

For Uzbekistan, which is currently undergoing large-scale financial sector reforms while gradually moving toward a greener economic model, the development of a green bond market can be seen not only as an additional channel for attracting investment, but also as a strategic pathway for deeper integration into the global financial system.

The purpose of this study is to provide a comprehensive examination of the nature of green bonds, to assess their role in supporting the transition toward a more sustainable economic model, and to organize the key preconditions, emerging trends, and existing constraints shaping the development of this market in Uzbekistan. To achieve this objective, several interrelated tasks are addressed, including a review of the theoretical foundations and internationally recognized standards associated with green bonds, an overview of empirical research in the field of sustainable finance, an analysis of the regulatory framework alongside available market statistics in Uzbekistan, as well as the identification of the main opportunities and limitations influencing the growth of this segment at the national level.

REVIEW OF LITERATURE ON THE SUBJECT

The conceptual foundations of green bonds have taken shape at the intersection of several academic perspectives, including environmental economics, behavioral finance, and the theory of information asymmetry. One of the early attempts to systematize this instrument can be linked to the work of C. Flammer, who, based on empirical evidence, demonstrated that firms issuing green bonds tend to show improved environmental performance and a reduction in pollution levels in subsequent periods when compared with control groups. This finding, in a way, supports the idea that voluntary verification and the public nature of such commitments can create tangible incentives for meaningful changes in corporate behavior.

A significant step in shaping the market infrastructure was the development of the Green Bond Principles by the International Capital Market Association, first introduced in 2014 and subsequently updated on a regular basis. Researchers such as S. Kidney and co-authors have emphasized that these principles function as a guiding framework that helps reduce transaction costs and, at the same time, mitigates information asymmetry between issuers and investors [2].

The issue commonly referred to as greenwashing has become a central topic in current research discussions. Studies by F. Berg and J.F. Kölbl reveal notable gaps between the environmental claims presented by certain projects and their actual performance when financed through green bonds, which, in a way, highlights the growing need for clearer and more consistent approaches to assessing real environmental impact [3].

In the context of pricing, much attention has been given to what is often called the green premium, or greenium, which reflects the yield difference between green bonds and conventional bonds with comparable credit quality. Research by O.D. Zerbib indicates that such a premium does exist, although it tends to be relatively modest, typically in the range of 2 to 8 basis points, and its size can vary depending on the type of issuer as well as the regulatory and market environment in which the bonds are issued [4]. More recent studies tend to support the view that investors are often willing to accept slightly lower returns in exchange for the reputational advantages and regulatory benefits associated with holding verified green assets [5].

Within the body of research on emerging markets, particular attention is often given to studies focusing on Central Asia. A.A. Mirzaev examined the institutional constraints affecting the development of green finance instruments in Uzbekistan and argued for the importance of establishing a national taxonomy as a foundation for scaling up issuance [6]. In a related line of inquiry, R.Sh. Khasanov and O.T. Yuldashev carried out a



comparative assessment of regulatory practices in Kazakhstan and Uzbekistan in the sphere of sustainable finance, noting that adapting international standards to the realities of transitioning economies can offer certain advantages [7].

Thus, a review of the existing literature suggests that green bonds have a demonstrable capacity to influence the actual environmental performance of issuing companies, although the extent of this impact largely depends on the reliability of verification procedures, the transparency of reporting practices, and the overall maturity of the regulatory environment, all of which are still in the process of active development in Uzbekistan.

RESEARCH METHODOLOGY

The study is based on a combination of qualitative and quantitative approaches. The qualitative part relies on a systematic review of academic sources, an examination of the regulatory framework, and an expert-based interpretation of statistical information. The quantitative component draws on comparative and structural analysis, alongside the use of descriptive statistical methods.

The information base of the study draws on several sources, including data from the Climate Bonds Initiative (CBI) covering global green bond market volumes for the period from 2015 to 2025, statistical reports of the Central Bank of the Republic of Uzbekistan and the Ministry of Economy and Finance on the state of the securities market, materials provided by the Agency for State Assets Management, regulatory documents issued by ICMA, verification reports related to green bonds issued in Uzbekistan, as well as data from the National Committee of the Republic of Uzbekistan on Statistics.

The study covers the period from 2018 to 2025, which corresponds to the stage when regulatory activity in the field of sustainable finance in Uzbekistan began to develop more actively. To ensure comparability, data on issuance volumes have been converted into US dollars using the average annual exchange rates published by the Central Bank of the Republic of Uzbekistan.

The study draws on a set of core analytical techniques used to examine and interpret the data:

- horizontal analysis aimed at identifying patterns and changes in market development over time;
- vertical, or structural, analysis used to evaluate how issuances are distributed across industries and geographic areas;
- the method of analogy applied to interpret international practices and adjust them to the context of Uzbekistan;
- a SWOT-based synthesis used to organize and bring together the key factors shaping market development.

One limitation of this study lies in the relatively small volume of domestic data available on Uzbekistan's green bond market, which is largely due to its early stage of development and makes it difficult to apply regression techniques or other advanced econometric methods. At the same time, further research could benefit from a broader empirical base as more information becomes available on primary issuances and their actual environmental impact.

ANALYSIS AND RESULTS

Green bonds can be described as debt securities whose proceeds are specifically allocated to the financing or refinancing of new or existing projects that generate positive environmental effects. This understanding is reflected in the Green Bond Principles developed by ICMA and has been incorporated, with some variations, into the national frameworks adopted by most countries participating in this market.

The key distinction between green bonds and conventional debt instruments lies not in their legal structure or cash flow design, but rather in the presence of four essential components that define their specific purpose and use:

- a clearly defined specification of how the raised funds are intended to be used;
- a structured procedure for evaluating and selecting eligible projects;
- a separate approach to managing and tracking the allocated funds;
- regular disclosure on how the funds are allocated and on the environmental outcomes achieved.

This turns green bonds into a mechanism of accountable and verifiable commitment rather than merely a way to raise capital.

Eligible project categories typically include areas such as renewable energy, energy efficiency, low-emission transport, sustainable water resource management, climate adaptation measures, responsible land use, and biodiversity protection. In terms of issuers, green bonds are generally classified into sovereign instruments issued by governments, quasi-sovereign securities associated with state-backed entities, and corporate bonds placed by private companies.



During the last ten years, the global green bond market has changed quite significantly, moving from a few isolated trial issuances to becoming a core segment within the broader capital market system. The main quantitative indicators illustrating this development are summarized in Table 1 (Table 1).

Table 1. Global green bond market development across the 2015 to 2025 period¹

Year	Issuance volume in USD billions	Annual growth rate in percent	Number of issuers	Number of countries involved	Cumulative total in USD billions
2015	42,0	+53,8	94	29	64,7
2016	81,0	+92,9	186	37	145,7
2017	161,6	+99,5	347	43	307,3
2018	167,3	+3,5	390	47	474,6
2019	257,7	+54,1	506	57	732,3
2020	290,2	+12,6	584	62	1 022,5
2021	522,7	+80,1	893	71	1 545,2
2022	487,1	-6,8	812	68	2 032,3
2023	575,3	+18,1	1 046	74	2 607,6
2024	671,7	+16,8	1 413	77	3 279,3
2025	~620,0*	~-7,7*	н/д	н/д	~3 899,3*

The figures presented in Table 1 point to a clear upward trend in market development, although this growth has not been entirely smooth and has been accompanied by periods of volatility. The downturn observed in 2022 can be linked to a sharp tightening of monetary policy in major economies, a broader cooling of securities markets, and increasing investor concern over issues related to greenwashing. At the same time, the recovery seen by 2025 suggests a certain degree of structural resilience, as over an eleven-year period the total market volume expanded more than sixteenfold, while the number of participating countries nearly tripled.

The geographic distribution of the market shows a noticeable concentration, with Europe accounting for roughly 45 percent of total issuances, North America close to 25 percent, and the Asia Pacific region around 24 percent. At the same time, emerging markets have been expanding their presence at a faster pace, as their combined share increased from about 3 percent in 2015 to 16.8 percent in 2024, reflecting the gradual spread of this instrument beyond its traditional Western base.

The development of the green bond market in Uzbekistan is taking place within the broader context of large-scale financial sector reforms and the implementation of a national strategy aimed at transitioning toward a greener economy. The regulatory framework is shaped by several key documents, including “Uzbekistan - 2030” strategy, which sets targets for reducing the carbon intensity of GDP, as well as resolutions adopted by the President and the Cabinet of Ministers outlining the foundations of sustainable finance, and methodological guidelines issued by the Central Bank on the issuance of ESG related instruments [13].

The first verified green bond issuance in Uzbekistan was carried out in 2021 by Uzbekenergo, with the proceeds directed toward financing renewable energy projects. Since then, several state-owned corporations and one commercial bank have entered this segment, although the overall scale of the market still remains relatively modest when compared with more developed jurisdictions (Table 2).

¹ Source: compiled by the author using data from Climate Bonds Initiative for 2024 and 2025, along with information from LSEG and Bloomberg NEF*, with figures for 2025 representing preliminary estimates based on results for the first three quarters of the year according to LSEG.

Table 2. Green bond issuances in Uzbekistan during the 2021 to 2025 period²

Issuer	Year of placement	Amount in million US dollars	maturity in years	Verification standard applied	Target project areas	Verifying entity
Uzbekenergo	2021	50,0	7	GBP ICMA	Solar and wind based power generation	DNV GL
National Bank of Uzbekistan	2022	30,0	5	GBP ICMA / CBI	Improving the energy performance of buildings	Sustainalytics
JSC Uzsvtaminot	2022	15,0	5	GBP ICMA	Water treatment facilities	Bureau Veritas
Ipoteka Bank	2023	25,0	3	GBP ICMA	Green mortgage schemes focused on energy efficient housing	KPMG
Uzbekneftgaz	2023	100,0	10	CBI Standard	Decarbonization initiatives alongside the development of gas infrastructure	DNV GL
TOTAL	2021–2023	220,0	–	–	–	–
Ministry of Economy and Finance (sovereign SDG)	2024	~700	3	GBP ICMA / SDG Framework	Water saving technologies, rail and metro systems, sanitation projects, and protective forest plantations	Sustainalytics
Agrobank	2024	455	5 / 2	GBP ICMA 2021	Climate resilient agriculture accounting for about 80 percent, along with renewable energy projects and low emission transport initiatives	Sustainable Fitch; with GGGI serving in an advisory role
SAIPRO GROUP	2024*	4,0	5	GBP ICMA (ЎЗФ МФЦА)	The use of environmentally focused technologies in construction (Green Hills Resort)	AIFC Green Finance Centre
TOTAL 2024	2024	~1 159	–	–	–	–
Ministry of Economy and Finance (sovereign SDG/«green»)	2025	~525	4	GBP ICMA / SDG Framework	Water saving solutions, railway and metro infrastructure, sanitation systems, and the establishment of protective forest belts	Sustainalytics
TOTAL 2025	2025	~525	–	–	–	–

Table 2 makes it possible to identify several notable patterns. First, the market is largely shaped by quasi sovereign issuers, including state owned corporations and development banks, which is typical for an early stage of market formation. Second, there is a gradual broadening of sectoral coverage, moving from predominantly energy related projects toward areas such as water management, mortgage financing, and the

² Source: prepared by the author drawing on information from the Central Bank of Uzbekistan, the Agency for State Asset Management, and verification reports provided by issuers.



decarbonization of the oil and gas sector. Third, the increase in issuance volumes is also evident, as the 100 million US dollar placement by Uzbekneftegaz is comparable to similar transactions observed in the markets of Eastern Europe and the CIS.

The cumulative volume of 220 million US dollars over a three year period remains modest in absolute terms, yet the pace of expansion and the growing diversity of instruments suggest a gradual process of institutional consolidation within this segment.

Among the factors that create favorable conditions for the development of the green bond market in Uzbekistan, several key aspects can be identified.

First, there is a substantial demand for investment in green infrastructure. Estimates by the World Bank and the International Monetary Fund suggest that achieving Uzbekistan's nationally determined contribution targets under the UNFCCC will require around 30 billion US dollars by 2030, and a meaningful share of this financing could potentially be mobilized through the green bond market.

Second, there is active involvement of international financial institutions. Organizations such as the EBRD, ADB, and IFC have already taken part as anchor investors or arrangers in several issuances, providing not only capital but also access to expertise and market liquidity.

Third, there is a growing interest among institutional investors in ESG related assets as global portfolios continue to shift in this direction. While insurance companies and pension funds in Uzbekistan are still relatively small, their potential role could expand significantly as their asset base increases over time.

Among the main factors shaping the further development of the market are the ongoing expansion of the domestic capital market and the gradual improvement in the liquidity of the secondary bond market, the active progress toward establishing a national taxonomy of green activities which will enhance clarity for issuers, the evolving optimization of verification processes for smaller scale issuances, the continuous development of qualified professionals in ESG analysis and sustainable finance, and the steady advancement of non-financial disclosure practices within the corporate sector.

From a theoretical perspective, green bonds can be viewed not merely as a financial instrument but as an institutional mechanism that redirects capital flows in line with sustainability principles. Their distinctive feature lies in the combination of market-based pricing with a clearly defined and verifiable use of proceeds, which in turn creates specific incentives for issuers to demonstrate genuine environmental performance.

From the perspective of global trends, the green bond market shows a steady upward trajectory, even though it is occasionally affected by cyclical fluctuations. By 2023, the cumulative volume of issuances had surpassed 2.6 trillion US dollars, while the geographic reach of the market has been gradually extending toward emerging economies.

CONCLUSIONS AND SUGGESTIONS

The green bond market in Uzbekistan remains at an early yet promising stage of development. Over the past three years of more active implementation, it has shown both tangible progresses, including a broader range of issuers, alignment with international standards, and the involvement of foreign investors, and a set of structural constraints that call for targeted regulatory and institutional responses.

Based on the analysis carried out, it appears reasonable to consider the following directions as appropriate: the development and adoption of a national taxonomy for green economic activities that takes into account international frameworks such as the EU Taxonomy and CBI, while also reflecting the specific sectoral structure of Uzbekistan's economy;

the introduction of tax incentives aimed at both issuers and investors involved in green financial instruments; the establishment of a government backed program to subsidize verification costs in order to facilitate market access for small and medium sized issuers;

the development of ESG disclosure infrastructure based on the Tashkent Stock Exchange.

Implementing these measures could significantly accelerate market expansion and help channel substantial volumes of private and quasi-public capital into green projects that form a core element of the country's long term sustainable development strategy.

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