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Green Finance as a Tool for Increasing Sustainability and Development of the State

Maksimenko Aleksandr Nikolaevich[1], Kuzubov Alexey Alexeyevich[2], Sapozhnikova Ekaterina Yurievna[3], Malinina Olga Yurievna[4]
Don state Technical University, Russia, Rostov-on-Don
manzel@yandex.ru, alexceyk@gmail.com, sekunovak@mail.ru, olya.rudakowa2011@yandex.ru

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Abstract: Green financing is an important tool of the modern economy aimed at supporting environmentally oriented projects, reducing the negative impact on the environment and implementing sustainable development goals. The article examines the conceptual foundations of green financing, its key instruments and importance for the global economy. Particular attention is paid to the analysis of the state of the green financing market in Russia and the formation of recommendations for its further development. The purpose of the article is to analyze the main concepts and instruments of green financing, assess their role in achieving sustainable development goals, as well as identify key barriers and formulate recommendations for stimulating the development of green financing in Russia, taking into account international experience. The article examines the essence of green finance and its place in the financial system; describes the main instruments of green finance; analyzes the global market of green finance (EU, USA, China) and identifies key aspects of their implementation; determines the state and prospects for the development of the green finance market in Russia; formulates recommendations for stimulating the development of green finance in Russia.

1 INTRODUCTION

Modern global problems related to climate change, ecosystem degradation and depletion of natural resources require new approaches to economic and financial management. In this context, green finance has become an important tool for mobilizing resources for the implementation of environmentally friendly projects that contribute to the achievement of sustainable development goals. They combine financial instruments that support initiatives aimed at reducing negative environmental impacts, increasing energy efficiency, developing renewable energy and reducing greenhouse gas emissions.

The relevance of the study is due to the growing role of green finance in ensuring the transition to a sustainable economy. In the countries of the European Union, the United States and China, green financial mechanisms have become an important element of public policy, contributing to the achievement of climate neutrality, the development of renewable energy and the modernization of infrastructure. At the same time, Russia, which is at the stage of economic growth, has significant potential for integrating green finance into its economic system.

However, the development of green financing in Russia faces numerous problems, including an imperfect regulatory framework, limited economic incentives, low awareness and the lack of transparent mechanisms for financing environmental projects. This necessitates studying the conceptual foundations of green financing, analyzing international experience in its implementation and determining strategic directions for the development of this area in Russia.

[1] https://orcid.org/0000-0003-3734-3085
[2] https://orcid.org/0000-0001-5631-7793
[3] https://orcid.org/0000-0002-9389-4124
[4] https://orcid.org/0000-0002-5352-2350

The topic of green finance is actively studied in the world and domestic scientific literature, with special attention paid to its essence, instruments, impact on achieving sustainable development goals, as well as practical aspects of their implementation. Analysis of recent studies shows the importance of an integrated approach to studying this topic.

Green finance is seen as an integration of financial mechanisms and environmental goals to ensure economic sustainability. According to O. V. Khmyz and O. V. Andreeva (Khmyz, 2023; Andreeva, Chernobai, Sonina, 2023), green finance is not only a financial instrument, but also a mechanism for mobilizing capital to combat climate change and support environmentally oriented initiatives.

The work of the European Commission emphasizes the importance of standardization and transparency in this area, and also emphasizes the role of the EU Taxonomy Regulation in defining environmentally sustainable activities.

Key instruments of green financing are green bonds, green loans, investment funds, ESG (Environmental, Social, Governance) rating systems and carbon pricing mechanisms. According to research by A. V. Marchenko, green bonds are recognized as an effective mechanism for raising funds for the implementation of environmentally oriented projects due to their transparency and high level of trust from investors. China and the EU demonstrate the success of this instrument, which actively use it to finance initiatives for the development of renewable energy and the modernization of infrastructure.

World Bank research highlights the importance of green finance in achieving global climate goals such as reducing greenhouse gas emissions and adapting to climate change. In addition, the International Labour Organization (ILO) highlights that the introduction of green financial mechanisms could create more than 24 million jobs by 2030, promoting innovation and modernization of the economy.

The European Union is a leader in developing a green finance market with its European Green Deal initiative, which includes large-scale renewable energy financing projects, carbon pricing systems, and infrastructure development. The United States is focusing on innovation, attracting direct investment, and incentivizing green investment through tax incentives. China is demonstrating the effectiveness of government regulation with its Emissions Trading System, which is the world's largest in terms of coverage.

Russian researchers, in particular E. V. Strelnikov and G. Yu. Arutyunov (Strelnikov, 2021; Arutyunov, Gorbunova, 2024), emphasize the importance of adapting international experience to national conditions. In their works, they focus on the need to create a regulatory framework that will regulate the functioning of green finance, as well as the importance of educational programs to increase the level of environmental literacy among businesses and the population.

Despite progress in studying the topic, the following aspects remain poorly understood:

- integration of digital technologies in the development of green financial instruments;
- adaptation of green financial instruments to the conditions of sanctions-induced recovery of the Russian economy;
- practical implementation of ESG factors in the activities of Russian companies.

An analysis of recent studies shows the relevance and versatility of the topic of green finance. Their role in achieving sustainable development, modernizing the economy and solving global environmental problems is undeniable. Further research should be aimed at eliminating the identified gaps, adapting international experience and developing practical recommendations for stimulating the development of green finance in Russia. This will facilitate the effective use of financial instruments to achieve environmental goals and ensure sustainable economic growth.

2 MATERIALS AND METHODS

The article uses methods of theoretical generalization, comparative analysis, systematization and expert assessment. The analysis of the regulatory framework, statistical data and publications on the topic of green finance is applied.

3 RESULTS

Green finance is an important element of the modern economy, aimed at financial support of projects and initiatives that promote environmental sustainability and minimize negative impact on the environment. There are various approaches to defining this concept in scientific literature. For example, according to research, green finance is a set of financial flows aimed at implementing environmental projects, including investments in renewable energy, energy-efficient technologies, waste management and other initiatives that ensure sustainable development of

society.

The International Monetary Fund defines green finance as investments that reduce greenhouse gas emissions and other pollutants without significantly reducing production or consumption. The Organisation for Economic Co-operation and Development (OECD) considers green financial flows to be those that support renewable energy projects and innovative green technologies that help reduce carbon footprints and mitigate climate change.

The basic concepts of green finance form the theoretical and practical basis for the development of financial mechanisms aimed at supporting environmentally sustainable projects, reducing negative impacts on the environment and integrating the principles of sustainable development into the financial system.

Key concepts of green finance:

1. Green bonds. Green bonds are the main source of financing for environmental projects. These are debt securities, funds that are issued exclusively for the implementation of projects aimed at reducing the impact on the environment. For example, in 2021, the European Commission announced its intention to issue green bonds in the amount of 250 billion euros, which will be the largest step in supporting environmental initiatives in Europe.

2. Green loans. These financial products are provided by banks to support projects that ensure energy efficiency, the development of renewable energy or a reduction in the cost of environmentally friendly greenhouse gases. Green loans allow businesses and communities to implement development strategies while reducing energy costs.

3. Integration of ESG factors. Modern financial markets increasingly take into account environmental, social and governance (ESG) aspects in the decision-making process. The integration of ESG factors has reduced emissions and stimulates the development of socially responsible businesses.

4. Green investment funds. These funds specialize in supporting environmentally responsible companies and projects. By investing in green funds, investors provide financing to companies implementing environmentally friendly technologies, increasing their competitiveness and reputation in the global market.

5. Carbon pricing. Mechanisms for pricing greenhouse gas emissions, such as emissions taxes or cap-and-trade systems, are key components of the green economy. These instruments incentivize companies to reduce their carbon footprint, facilitating the transition to a low-carbon economy.

Green finance plays a key role in achieving the Sustainable Development Goals aimed at decarbonizing the economy and combating climate change. In international practice, these instruments have proven their effectiveness in mobilizing the financial resources needed to implement large-scale environmental projects. In the context of modern climate challenges, the development of green finance is becoming one of the key priorities for governments, businesses and international organizations.

For Russia, the development of an appropriate regulatory framework that will provide favorable conditions for the development of green finance is of particular importance. Attracting international investment, developing the domestic green bond market and stimulating environmental initiatives can make a significant contribution to economic recovery in the context of sanctions.

This approach allows combining economic growth with environmental sustainability, ensuring long-term sustainable development.

The global green finance market is demonstrating dynamic growth, which is due to the relevance of climate challenges and the need to implement sustainable development principles. In 2022, the volume of green bond issues reached USD 620 billion, which is 25% more than in the previous year. The European Union is a leader in the implementation of green financial instruments thanks to the European Green Deal initiative, which provides for achieving climate neutrality by 2050. The United States, China and Japan are also making a significant contribution to the development of green finance, actively implementing projects to decarbonize the economy and develop renewable energy.

A special place in the structure of the global green finance market is occupied by corporate green bonds, which make up more than 40% of the total market. Such well-known transnational companies as Apple, Google and Tesla use these instruments to finance projects to improve energy efficiency, develop renewable energy sources and reduce their carbon footprint. An important role in supporting the development of the market is also played by international financial institutions, in particular the International Monetary Fund, the World Bank and the G20 initiative, which are actively working to standardize green financial instruments and create favorable conditions for attracting investment.

The Russian green finance market is in its infancy, but its development is an important element for achieving climate goals and sustainable economic development in the context of sanctions. The main financial instruments used in Russia are green bonds, green loans and state programs to support

environmental initiatives.

As of early December 2022, Russia has issued green bonds worth $2.6 billion, which were used to finance renewable energy projects.

Programs to promote the development of green finance are being implemented at the state level. In particular, the Energy Efficiency Fund provides financial support for the modernization of the housing sector, and the "green tariff" mechanism stimulates the development of renewable energy sources. Despite this, the market faces a number of challenges, including an imperfect regulatory framework, insufficient awareness of the population and investors about the possibilities of green financing, as well as limited access to environmental information about projects.

To overcome existing barriers, a comprehensive state policy is needed that provides for improving the legislative framework, creating incentives for the development of green financing and attracting international investment. Promising areas may include:

- standardization of green financial instruments at the national level;
- development of a green bond market with the participation of the state, local authorities and the private sector;
- implementation of a carbon pricing system to encourage enterprises to reduce greenhouse gas emissions;
- increasing the financial literacy of the population regarding green finance.

Thus, the green financing market in Russia has significant growth potential. Its development will contribute not only to achieving environmental goals, but also to stimulating economic growth and improving the quality of life of the population. A comprehensive approach to implementing policies in this area can ensure sustainable development and integration of Russia into the global environmental economy.

The development of the green finance market, despite its significant potential, faces a number of significant barriers that slow down the integration of environmentally friendly financial instruments into the national and global economy. The main problems include regulatory, economic, information and communication and social factors.

1. Regulatory barriers. The imperfection of legislative support remains one of the main obstacles to the development of green finance in Russia. The lack of national standards for green bonds, loans and other financial instruments makes it difficult to identify them and causes mistrust among investors. International initiatives, such as the ICMA Green Bond Principles, ensure transparency and accountability in the use of green finance, but such mechanisms are only beginning to be implemented in Russia.

There is also the problem of limited financial incentives. Tax incentives for environmental projects, such as reduced taxes on the profits of enterprises investing in renewable energy or subsidies for projects to reduce greenhouse gas emissions, have not yet become a systemic practice. However, such incentives could significantly increase the attractiveness of environmentally friendly projects for business.

2. Economic barriers. Financing green projects is often associated with high costs and long payback periods. This creates high investment risks that financial institutions are not always willing to take on. This is especially true for innovative renewable energy projects, which require significant initial capital investments and have an uncertain economic impact.

In addition, limited access to finance for small and medium-sized enterprises (SMEs) makes it difficult for them to participate in green initiatives. Banks favor large corporate clients due to their higher creditworthiness, leaving SMEs without the right to access the necessary capital.

3. Information and communication barriers. The lack of transparent and accessible information on green financial instruments creates another serious problem. Investors and businesses often do not have access to data on the economic and environmental performance of green projects, which hinders their willingness to participate in relevant financial transactions.

In Russia, there are no national information platforms that would integrate data on environmental initiatives and green financing opportunities. For example, in developed countries, platforms such as the Climate Bonds Initiative are an important source of data for investors and contribute to market growth.

4. Social barriers. Low environmental awareness among the population and businesses is another factor hindering the development of green financing. Many enterprises do not consider environmentally oriented investments a priority due to a lack of understanding of their strategic advantages.

There is also a shortage of specialists with knowledge and skills in the field of green financing. The lack of sufficient training among financiers, economists and government managers complicates the process of developing and implementing relevant mechanisms.

To overcome these problems, it is necessary to implement a comprehensive approach, including:

- improving the regulatory framework: developing national standards for green bonds and other instruments harmonized with international norms;
- introducing economic incentives: providing tax breaks, grants and subsidies for green projects;
- creating information platforms: introducing national resources for aggregating data on green financial instruments and environmental initiatives;
- raising the level of environmental awareness: introducing educational programs and trainings to improve literacy in the field of sustainable development and green finance.

Overcoming these barriers is a strategically important task for the formation of a competitive green financing market. This will not only accelerate the implementation of environmental initiatives, but will also facilitate the integration of Russia into the global system of sustainable development, ensuring economic growth and improving the quality of life of the population.

Green bonds are a modern financial instrument that attracts capital to finance projects aimed at ensuring environmental sustainability and adaptation to climate change. A distinctive feature of these bonds is the targeted use of the funds raised exclusively for the implementation of environmental initiatives, such as the development of renewable energy sources, energy efficiency, reduction of greenhouse gas emissions, conservation of biodiversity, water management and other measures that promote sustainable development.

At the international level, the functioning of green bonds is regulated by the Green Bond Principles (GBP), developed by the International Capital Markets Association (ICMA). GBP include the following main principles:

1. Use of proceeds: Bonds are issued exclusively to finance projects that meet environmental criteria.
2. Project evaluation and selection: The issuer must establish clear procedures for the evaluation and selection of environmental projects.
3. Revenue management: Proceeds from the issuance of green bonds must be separated from other financial flows and directed to specific purposes.
4. Reporting: Regularly informing investors about the use of funds and the achievement of environmental goals.

Green bonds have a number of benefits for different stakeholder groups:

1. For investors: the opportunity to diversify the portfolio in accordance with the principles of ESG investing, as well as increased resilience to climate risks.
2. For issuers: increased trust and reputation among investors, access to a wider range of environmentally conscious investors.
3. For society: reduced burden on the environment, support for innovation in the field of sustainable development and infrastructure modernization.

To stimulate the development of the green bond market in Russia, it is necessary to:

- implement national standards for green bonds harmonized with international standards;
- provide tax incentives to issuers and investors;
- provide training and advanced training for financiers and business representatives in the field of green finance.

Green bonds are essential for financing environmentally oriented initiatives and ensuring growth. Their development in Russia is important, as it ensures the mobilization of capital for a progressive economy, adaptation to climate challenges and the beginning of a global environmental catastrophe. An effective policy for stimulating the green bond market can serve to achieve climate goals and ensure economic growth.

Green finance is the basis for the global transition to a sustainable economy. Leading economies of the world, such as the European Union (EU), the United States and China, are actively implementing "green" financial mechanisms aimed at reducing environmental impact, supporting decarbonization and achieving climate goals.

The European Union is a world leader in the implementation of green financial complexes, thanks to the European Green Deal program. Adopted in 2019, this initiative aims to achieve climate neutrality by 2050, providing for large-scale reforms in energy, transport, agriculture and other sectors. One of the main financial instruments is green bonds, which facilitate targeted financing of environmental projects.

In 2021, the EU announced the issuance of green bonds worth €250 billion for the NextGenerationEU recovery fund. These funds are used to finance large-scale projects such as the development of renewable energy, energy efficiency and labor modernization. The EU also adopted the EU Taxonomy Regulation, which sets clear criteria for classifying economic activity as environmentally sustainable. This is an agreement on transparency, ensuring trust and attracting private capital.

In the US, green finance dominates the political and investment discourse. The government is actively

using green finance instruments to support climate initiatives, in particular through federal programs and state-level projects.

One of the most striking examples is the Green New Deal initiative, which provides for significant investments in the development of renewable energy, the electrification of transport and the creation of jobs in the green economy sector. California is one of the leading states in the implementation of green bonds, directing the funds raised to the modernization of transport infrastructure, water purification systems and the development of renewable energy sources.

In addition, leading financial institutions such as Bank of America and Goldman Sachs are creating specialized investment funds to finance environmentally sustainable projects. An important element of the US strategy is the introduction of carbon pricing mechanisms that incentivize enterprises to reduce greenhouse gas emissions.

China is one of the most active participants in the green finance market, ranking first in terms of green bond issuance. In 2022, China's green bond issuance exceeded US$90 billion, indicating a high level of activity in the sector. Key financing areas include renewable energy development, low-emission transport, water management, and urban infrastructure upgrades.

China's green finance strategy is based on the implementation of the 14th Five-Year Plan, which aims to achieve peak emissions by 2030 and climate neutrality by 2060. In addition, China is actively developing the Emissions Trading System, which covers more than 2,200 companies and provides financial incentives for reducing emissions in the industrial sector.

Looking at the experience of the EU, US and China, we can highlight several common features:

- targeted financing: green bonds are a key tool for raising funds for large-scale projects;
- regulatory support: governments are actively creating a regulatory framework to ensure market transparency and reduce investment risks;
- attracting private capital: corporations and financial institutions play an important role in implementing green financing, adapting ESG principles to their activities.

At the same time, each country demonstrates specific approaches: the EU focuses on standardization and transparency, the US on innovation and market incentives, and China combines large-scale government programs with market regulation instruments.

The experience of the EU, US and China in implementing green financing emphasizes the importance of an integrated approach to implementing environmental initiatives. For Russia, this experience is a valuable example in developing its own strategies aimed at mobilizing capital for environmental projects, creating a regulatory framework and attracting international investment. Adapting the best practices of these countries can ensure Russia's effective transition to a sustainable economy and the implementation of climate goals.

Green finance acts as a catalyst for the development of a green economy, contributing to the creation of new jobs, increased investment activity and the introduction of innovative technologies. According to the International Labor Organization (ILO), the implementation of a green economy can create more than 24 million new jobs by 2030.

Green investments contribute to the modernization of industry, increasing its competitiveness. For example, enterprises that integrate ESG factors (environmental, social, governance aspects) into their activities demonstrate higher long-term profitability and resilience to economic risks.

One of the important aspects of green finance is its impact on social justice. The implementation of environmentally oriented projects allows for access to clean energy, high-quality water and environmentally friendly infrastructure for various groups of the population. This helps reduce poverty, improve living conditions and develop communities. For example, investments in sustainable urban infrastructure, such as energy-efficient buildings, public transport development and the introduction of waste management systems, directly improve the quality of life of the population. Such initiatives are actively supported through green bonds in the EU and the USA.

Green finance is of strategic importance for achieving sustainable development goals, financial support for environmentally oriented initiatives, stimulating economic growth, promoting social justice and improving the quality of life of the population. Its development requires concerted efforts of governments, international organizations and the private sector. Expanding the green finance market and integrating ESG principles are necessary conditions for ensuring a sustainable global economy.

The development of green finance is one of the strategic areas for achieving sustainable economic growth and environmental modernization of the Russian economy. Successful integration of green finance mechanisms requires a systemic approach that includes regulatory, economic, educational, institutional measures and the use of international

experience (Fig. 1).

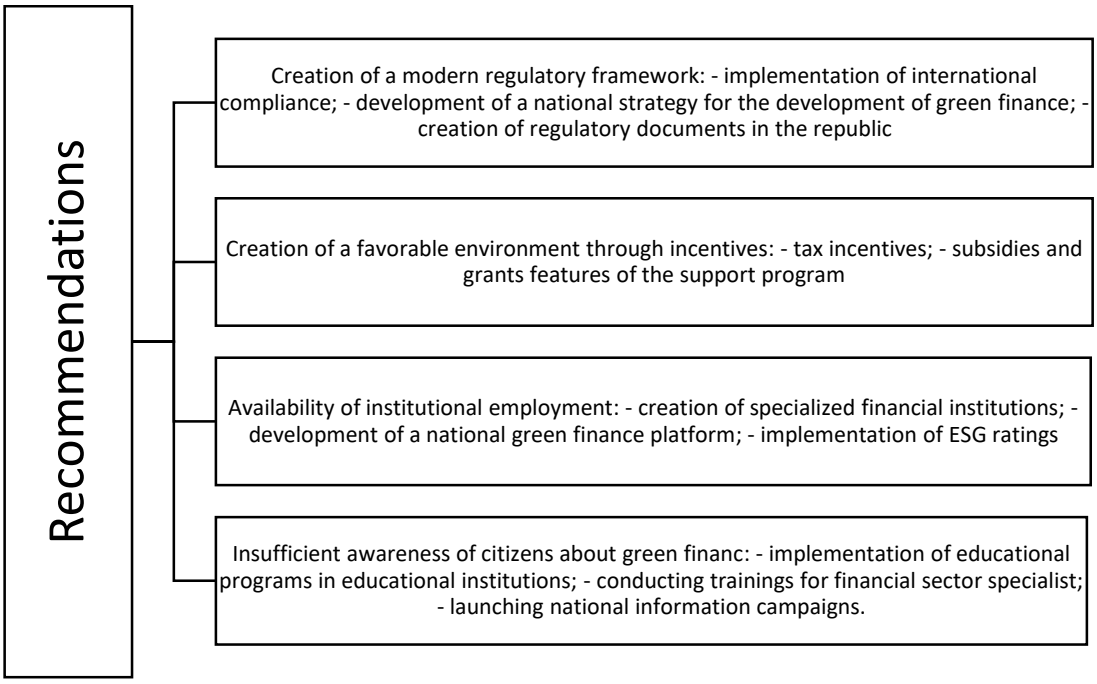

Figure 1: Recommendations for the systemic economic development of green finance for the Russian economy.

The creation of a modern regulatory framework is a basic prerequisite for the development of green finance in Russia. The main steps in this direction are:

- implementation of international standards. Russia should harmonize national legislation with the best world practice. This will ensure transparency and accountability of green financial instruments;

- development of a national strategy for the development of green finance. This strategy should define priorities, incentive mechanisms and long-term goals for the green finance market;

- creation of requirements for regulatory reporting. For issuers of green bonds, it is necessary to introduce a mandatory reporting system on the use of funds and the environmental results of the implemented projects.

To increase the attractiveness of green financial instruments, it is necessary to create a favorable environment through economic incentives:

- tax incentives. The government can introduce tax incentives for businesses investing in green projects, such as a reduction in profit tax or an exemption from tax on income received from green bonds;

- subsidies and grants. Direct financing of environmentally oriented initiatives through government subsidies and grants will help reduce the financial burden on businesses;

- government support programs. For example, programs such as "Energy Development" can be supplemented with new mechanisms for financing renewable energy projects and industrial modernization.

The effective functioning of the green finance market depends on the availability of institutional infrastructure:

- creation of specialized financial institutions. For example, a Green Bank that will specialize in financing environmental projects;

- development of a national green finance platform. This could be a digital portal that will provide access to information on environmentally oriented projects, issuer reporting and impact assessment;

- implementation of ESG ratings. The introduction of a system for assessing the environmental, social and management sustainability of companies will help attract investors.

Insufficient awareness of citizens, businesses and government agencies about green finance is a significant barrier to their development. It is necessary to:

- implement educational programs in educational institutions. University programs should include courses on environmental economics, ESG factors and green finance;

- conduct trainings for financial sector specialists. This will allow banks, investment companies and government agencies to effectively implement green financial mechanisms;

- launch national information campaigns. They will help to increase the level of environmental awareness of the population and popularize green financial instruments.

The implementation of these recommendations will allow Russia to create a favorable environment for the development of green financing, integrate into the global financial market and attract resources for the implementation of environmentally oriented initiatives. A comprehensive approach, including the harmonization of regulation, economic incentives, institutional support and educational programs, is the key to the effective functioning of green financing as an important element of sustainable development. This will not only contribute to the achievement of climate goals, but will also ensure the long-term competitiveness of the Russian economy.

4 CONCLUSIONS

Green finance is an important tool for ensuring the transition to sustainable development and the implementation of global climate and environmental goals. It allows mobilizing financial resources to support environmentally oriented projects, stimulate economic growth through the introduction of innovative technologies and promote social justice.

World experience, in particular examples of the implementation of green finance in the European Union, the USA and China, demonstrates the importance of an integrated approach to the development of this area, including regulatory support, economic incentives, attracting the private sector and international investment.

In Russia, the green finance market is at the formation stage, but has significant potential for growth. The main barriers to its development are the imperfection of the regulatory framework, limited economic incentives, insufficient level of environmental awareness and the lack of institutional infrastructure.

To overcome these challenges, it is necessary to introduce modern standards, develop a national strategy for the development of green finance, create tax incentives and financial incentives for business, as well as form a transparent reporting system.

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