

DOI: 10.26794/2587-5671-2026-30-2-172-184
UDC 336.63(045)
JEL H23

Financial Mechanisms to Support the Transition to a Circular Economy

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ABSTRACT

The relevance of the study is determined by the need to transform financial mechanisms to ensure the transition to a circular economy in the context of the instability of the current technogenic development model. The existing gap between the financial sector and the real economy, as well as short-term market benchmarks and difficulties in monetizing externalities, which limits the financing available for sustainable development projects. The aim of the study is to develop theoretical, methodological, and practical recommendations for transforming of financial mechanisms to ensure an effective transition to a circular economy. The research methods used include the systems approach, scientific abstraction, comparative analysis, the classification method, the analysis of statistical data, and the analysis of practical cases. Research results: theoretical approaches to sustainable finance have been systematized. The author's classification of financial instruments for the circular economy has been developed. The compliance of the partner financial system with the open-book principle necessary for the formation of effective circular ecosystems has been substantiated. The potential of digital currencies for the formation of a two-circuit monetary system that provides targeted financing for sustainable projects has been identified. A mechanism for monetizing externalities through quasi-financial instruments has been proposed. The connection between the proposed financial mechanisms and the goals of creating a nature-like economy that focuses on the regeneration of natural capital has been demonstrated. Conclusions and practical significance: The need to combine market and administrative mechanisms for regulating sustainable finance has been substantiated. Recommendations have been formulated for developing an experiment in partner financing, introducing a “colored” digital ruble, creating a unified platform for the circulation of quasi-financial instruments, and integrating nature-like criteria into the Russian taxonomy of sustainable projects.

Keywords: circular economy; sustainable finance; partnership finance; digital finance; carbon credits; circular economic systems; a two-circuit monetary system; efficiency; natural capital

For citation: Kvasha N.V., Malevskaia-Malevich E.D. Financial mechanisms to support the transition to a circular economy. *Finance: Theory and Practice*. 2026;30(2):172-184. DOI: 10.26794/2587-5671-2026-30-2-172-184

INTRODUCTION

Scientists conducting research on the new economy agree that the current economic system is unstable, leading to a number of significant contradictions that are characteristic of the current technogenic approach to economic activity [1, 2].¹ A sustainable approach emerged as a result of efforts to resolve contradictions between the current development of society and the interests of future generations. This shift in focus from private to public values has led to the emergence of the concept of a sustainable economy, based on the principles of awareness. One of its directions is a closed-loop (or circular) economy [3–5], which aims to ensure the compatibility of economic growth with environmental sustainability.

This can be achieved through innovative technologies, models, and mechanisms, such as organizational ones, that allow for the complete separation of growth in society's needs from resource use and carbon emissions. The circular economy model is one such sustainable organizational innovation.

The development of a circular economy is closely linked to the broader concept of a “nature-like” economy, which involves the closure of material cycles and the active reproduction of natural resources. This approach considers natural systems as full participants in economic processes and objects of investment, rather than simply sources of raw materials.

A nature-based economy requires new financial mechanisms that support the long-term sustainability of natural systems. This shift from a focus on protecting nature to investing in its capital makes this topic particularly relevant in the context of discussions about financing biodiversity conservation and natural solutions to global challenges.

The transition to a circular economy requires significant investments and a change in financial approaches. The current financial model, which is based primarily on market mechanisms and focuses on short-term profits, cannot fully take into account the long-term and external impacts of circular and nature-based projects [3, 6].

The relevance of the research topic can be seen in three main aspects:

1. **Theoretical aspect:** It is necessary to further develop the theory of sustainable finance in relation to the specific features of the circular economy. This includes refining the conceptual framework and identifying patterns of transformation in financial relations when the global market for sustainable bonds is experiencing stagnation, as reported by the OECD's Global Debt Report 2026,² which shows that the share of sustainable instruments in new debt flows has decreased to 3.5%.

2. **Methodological aspect:** It is essential to develop new methods for financing the circular economy, especially in light of the emergence of alternative capital attraction points such as financing for artificial intelligence infrastructure and defense spending.³

3. **Applied aspect:** The launch of a partnership financing experiment in Russia, the introduction of the digital ruble, the development of the carbon units market, and the explosive growth of the Russian ESG bond market following the release of incentive measures by the Central Bank on preferential risk weights all require scientifically sound recommendations for improving financing mechanisms for the circular economy.⁴ Additionally, the urgency

¹ Bobilev S.N. Economics of sustainable development: textbook. Moscow: KNORUS, 2021. 672 p.

² OECD (2026), Global Debt Report 2026: Sustaining Debt Market Resilience under Growing Pressure, OECD Publishing, Paris. URL: <https://doi.org/10.1787/e9d80efd-en> (accessed on 14.03.2026).

³ Sustainable Bonds Insight 2026. URL: <https://www.environmental-finance.com/content/downloads/sustainable-bonds-insight-2026.html?ref=infragreen.ru> (accessed on 14.03.2026).

⁴ ESG bonds in Russia in 2025: summary results. URL: <https://infragreen.ru/esg-obligatsii-v-rossii-v-2025-ghodu-kratkiie-itoghi/> (accessed on 14.03.2026).

of this issue is strengthened by the need to find financial solutions to close the global gap between environmentally damaging and environmentally sustainable investments.⁵

The aim of this study is to develop theoretical, methodological, and practical recommendations for transforming financial mechanisms to ensure a smooth transition to a circular economy.

Objectives:

- To systematize existing theoretical approaches to sustainable finance and identify its key components.
- To classify financial instruments of circular economy based on their economic mechanisms.
- To explore the potential of quasi-financial tools (such as carbon units, energy certificates, and partner financing) for monetizing externalities.
- To analyze global and Russian trends in sustainable bond markets.
- To justify the use of digital financial instruments for improving the efficiency of sustainable project administration.
- To formulate proposals for improving the financing mechanisms for the transition to a circular economy in Russia, considering the objectives of creating a nature-like economy and the restoration of natural capital.

MATERIALS AND RESEARCH METHODS

The study is based on a systematic approach that allows us to examine financial mechanisms in relation to the transition to a circular economy. The methodological framework consists of:

- Theoretical analysis methods (scientific abstraction, induction, and deduction) are used to clarify the concept of sustainable finance and identify the essential characteristics of the phenomenon under study.
- Comparative analysis is used to compare

different financial instruments (traditional, partnership, digital) in terms of their suitability for financing the circular economy.

- Classification method is used to organize financial instruments for sustainable development according to specific criteria.
- Statistical analysis is used for processing and analyzing statistical data.
- The method of analyzing practical cases is used to evaluate the Russian experience, such as an experiment on partner financing, the introduction of the digital ruble, and the development of the carbon units market.
- Forecasting methods are used to determine the prospects for the studied processes' development and to formulate practical recommendations.

The information base includes scientific publications on sustainable development and the circular economy, regulatory legal acts of the Russian Federation, data from the Bank of Russia and the Moscow Stock Exchange, the register of carbon units, materials from expert analytical platforms, foreign reports on sustainable finance development, as well as current data from international organizations.

THE RESULTS OF THE STUDY

The Modern Financial Model and Its Limitations in Financing the Circular Economy

Finance is traditionally understood as a system of monetary relations that ensures the accumulation, distribution, and redistribution of resources. However, the current paradigm of financial relations is based on neoliberal principles focused on maximizing short-term profits. This is characterized by the dominance of speculative capital over real investments and a gap between the financial and real sectors of the economy.

According to various estimates, the volume of financial transactions is an order of magnitude [7] larger than the volume of transactions in the real sector of the economy (Fig. 1). This is consistent with the world-systems approach, which suggests that the core of the current systemic cycle of capital

⁵ OECD (2026), Global Debt Report 2026: Sustaining Debt Market Resilience under Growing Pressure, OECD Publishing, Paris. URL: <https://doi.org/10.1787/e9d80efd-en> (accessed on 14.03.2026).



Fig. 1. Global Stock Market Capitalization

Source: Glazyev S.Yu. [8].

accumulation is going through a phase of financial expansion [8].

A natural stage of this process was the transition of interest rates to negative levels in several developed countries (2014–2021). This indicates an extreme degree of saturation in the financial sector and creates opportunities for investing in socially significant projects.

However, there is a key contradiction between the needs of a circular economy and the current financial model. Circular projects are typically long-term and involve high initial costs with significant external effects. Meanwhile, market mechanisms focus on short-term gains and cannot fully account for externalities [9, 10].

Current data on the global financial markets supports this thesis. The Global Debt Report 2026⁶ shows that natural resource-destructive financial flows total 7.3 trillion US dollars annually, while investments in natural solutions total 220 billion US dollars annually. This creates a funding gap of 33 times, clearly

⁶ OECD (2026), Global Debt Report 2026: Sustaining Debt Market Resilience under Growing Pressure, OECD Publishing, Paris. DOI: 10.1787/e9d80efd-en

demonstrating the inability of the current financial model, which focuses on short-term shareholder value maximization, to provide sufficient financing for the preservation of natural capital. This calls for the search for new financial solutions that combine market and administrative regulatory mechanisms in order to address this issue.

The author's classification of stable financial instruments

In a broad sense, sustainable finance can be defined as a set of economic relationships related to financing measures to combat climate change and adapt to environmental conditions. It also includes effective management of environmental risks, protection of the environment, and impacts on society.

The system of sustainable finance can be represented schematically in the following way (Fig. 2):

The systematization of existing approaches to sustainable financing [11] has made it possible to create a classification of financial instruments based on the economic

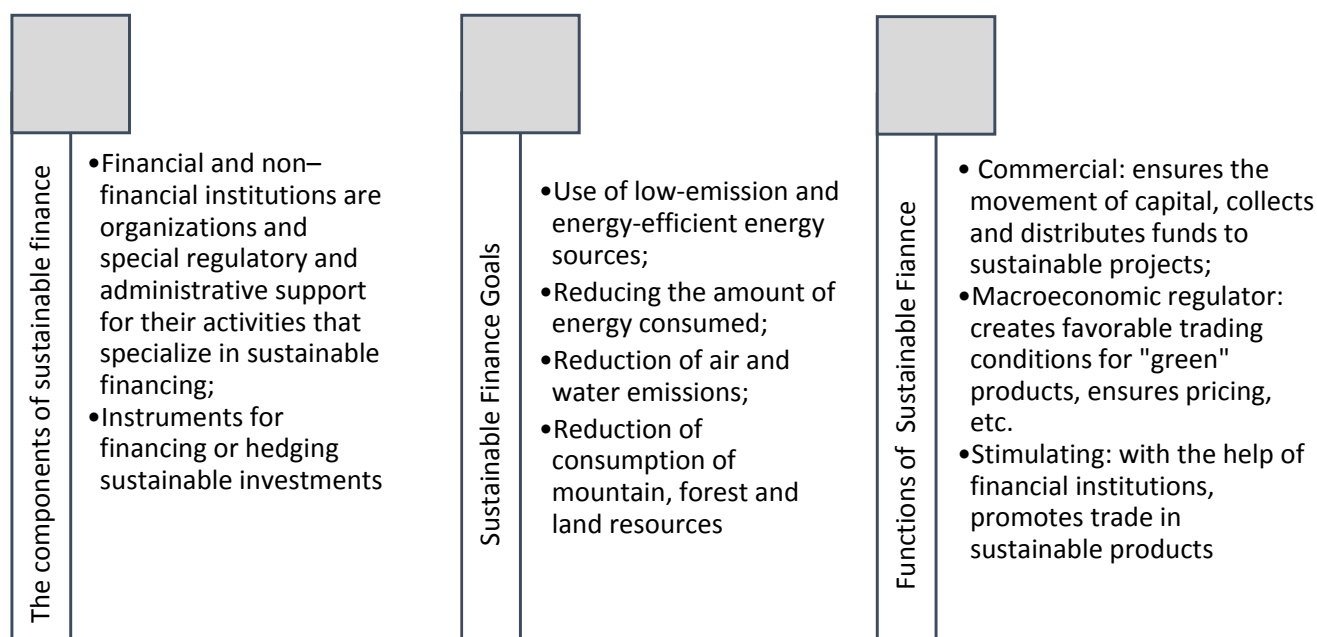


Fig. 2. A Generalized View of the Sustainable Finance System

Source: Compiled by the authors.

mechanism⁷ they implement. The two main regulatory mechanisms in the economy, including in finance, are:

- Market mechanism
- Administrative mechanism (public or private sector)

Each of these mechanisms has its own institutional costs that vary depending on specific circumstances. The sustainable finance system can be analyzed according to the type of economic mechanism it employs (Fig. 3).

The market mechanism includes both traditional and non-traditional financial instruments, such as sustainable crowdfunding, carbon units, and energy certificates. Additionally, there are partner (Islamic) financing options available. The administrative mechanism comprises traditional project financing instruments from public funds, as well as innovative digital sustainable financial instruments that are also funded by public funds and used for project financing. [12–14].

⁷ The report “ESG, decarbonization and green finance in Russia 2023/24”. Moscow: Open Communications Expert Agency, 2024. 120 p. URL: <https://infragreen.ru/?year=2029&month=10&ysclid=mms3c4rlmp228558724> (accessed on 14.03.2026).

Analysis of Global and Russian Trends in the Sustainable Debt Finance Market

Traditional financial instruments for a sustainable market are a variety of standard financial products that have been adapted to include socio-ecological considerations. These instruments can be divided into the following main groups:

Sustainable bonds are debt securities that are issued to finance projects that have a positive impact on the environment and society. There are various types of sustainable bonds, including those linked to specific goals, such as green bonds and social bonds. The Moscow Exchange offers a range of sustainable development products, including bonds linked to these goals, as well as bonds for national and adaptation projects.⁸

The INFRAGRIN⁹ expert analysis platform and the Central Bank of Russia both use

⁸ The Sustainable Development Sector of Moscow Stock Exchange PJSC. URL: <https://www.moex.com/s3019> (accessed on 14.03.2026).

⁹ Report “ESG, decarbonization and green finance in Russia 2023/24”. Moscow: Open Communications Expert Agency, 2024. 120 p. URL: <https://infragreen.ru/?year=2029&month=10&ysclid=mms3c4rlmp228558724> (accessed on 14.03.2026).

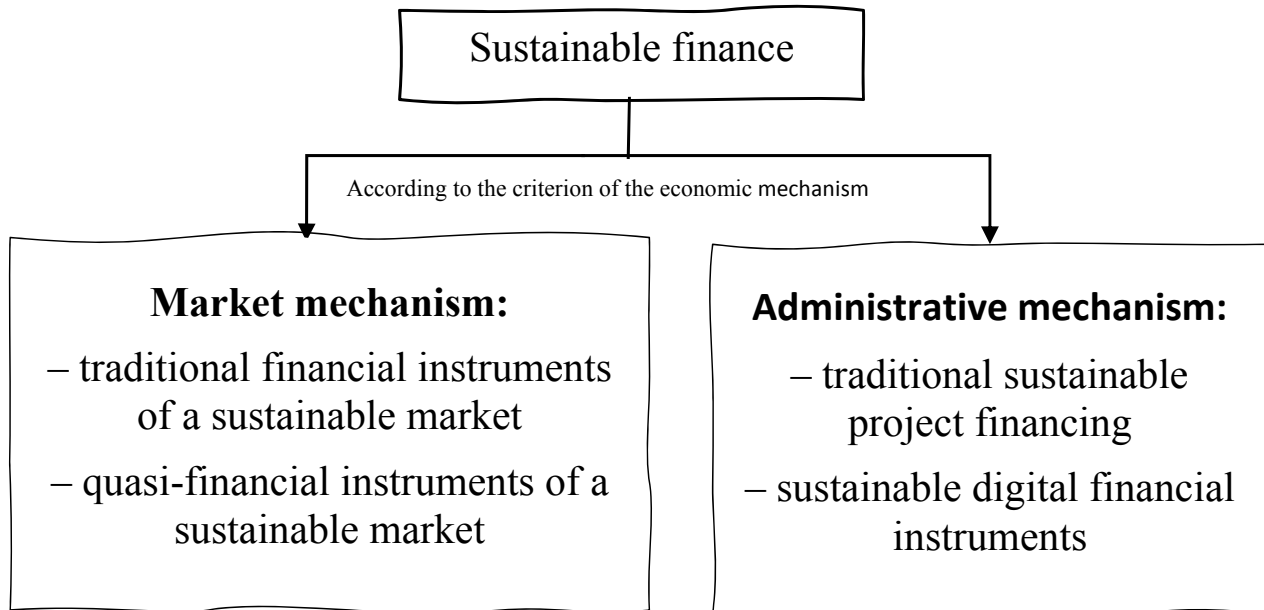


Fig. 3. The Differentiation of Sustainable Finances According to the Criterion of the Implemented Economic Mechanism

Source: Compiled by the authors.

a similar classification system for sustainable bonds.¹⁰ This classification includes green, social, and sustainable development bonds, as well as other types of bonds related to specific sectors, such as water resources, Arctic projects, and forestry.

The analysis of global and Russian analytics data revealed the following key trends in the debt financial instruments market,^{11,12}:

- The total volume of issuance of sustainable bonds in 2025 amounted to \$984 billion, which is \$75 billion less than a year earlier. Green bonds retain a market share of about 62%.
- The share of stable instruments in the new debt flow decreased to 3.5%.
- 65% of sovereign sustainable issues are in Europe, which confirms the thesis about the crucial role of regulatory rather than market infrastructure.

¹⁰ Regulation of the Central Bank of the Russian Federation dated December 19, 2019 No. 706-P "On Standards for the issue of securities".

¹¹ ESG bonds in Russia in 2025: summary results. Access mode of this URL: <https://infragreen.ru/esg-obligatsii-v-rossii-v-2025-ghodu-kratkie-itogi/> (accessed on 14.03.2026).

¹² OECD (2026), Global Debt Report 2026: Sustaining Debt Market Resilience Under Growing Pressure, OECD Publishing, Paris. DOI: 10.1787/e9d80efd-en (accessed on 14.03.2026).

- The issue of bonds linked to sustainability indicators has fallen by more than 75% from the peak of 2021.

- Against this backdrop, the Russian market is demonstrating the opposite trend. The rapid growth in the second half of 2021 is particularly significant. Following the release of incentive measures by the Central Bank of the Russian Federation for preferential risk weights, nine transactions worth almost 150 billion rubles have been completed, confirming the effectiveness of these regulatory incentives.

Sustainable loans are loans aimed at financing a transition to a more sustainable economy. These can be divided into green, social, and adaptation loans, depending on their specific purpose. The use of green mortgages with reduced interest rates for real estate in energy-efficient buildings (with an energy efficiency class ranging from A to A++) and green car loans for purchasing electric vehicles are also being promoted.

Responsible insurance aims to account for and reduce the risks associated with environmental, social, and governance (ESG) factors. It also takes into consideration the ESG

ratings of policyholders when determining the insurance premium.

Quasi-financial Instruments as Elements of the Mechanism of Monetization of External Effects

Circular economy projects have significant positive externalities, such as emission reduction, waste reduction, and resource conservation, that are not fully reflected in market prices. These effects can be monetized through the use of quasi-financial instruments.

Quasi-financial instruments are instruments that perform financial functions, such as accounting, accumulation, and value redistribution, in relation to environmental and social impacts. They operate on the principle of closing resource flows and impacts [3], which is consistent with the circular economy approach. By creating additional sources of financing through these instruments, the benefits of circular economy projects can be realized.

The main groups of non-traditional financial instruments in the market mechanism include the following [11]:

- **Sustainable crowdfunding:** This is a method of financing sustainable projects, primarily in the form of startups, innovative early-stage enterprises, and social entrepreneurship. Crowdfunding includes various forms, such as crowdlanding, crowdfunding, acquisition of digital rights, crowdrewards, and fundraising through donation agreements. These activities are governed by the law “On Attracting Investments using Investment Platforms”.

- **Carbon units (CUs).** A CU is a verified result of a climate project implementation, expressed as a mass of greenhouse gas equivalent to one ton of carbon dioxide. To generate a CU, a climate project must undergo a validation process (certification of compliance with climate standards) and verification of calculations. The CUs generated by a project can be traded on a voluntary market. *Figure 4* shows the process of how the carbon unit system works.

In Russia, the carbon unit registry started operating on January 9, 2022. By March 2026, 102 climate projects had been registered, with more than 36 million carbon units in circulation and about 102 million more planned to be issued. In addition, more than 165 thousand carbon units have already been credited. The largest operators include GAZPROM MKS LLC (with a project to prevent methane emissions) and PJSC RUSHYDRO, which issued 71.9 thousand carbon units. In November 2023, the Moscow Stock Exchange held the first auction to sell 2,735 carbon units [12]. Currently, there are both mandatory and voluntary markets for carbon units in Russia. The mandatory market is being established on Sakhalin as part of an experiment that will continue until 2028.

- **Sustainable certificates** (certificates of origin of electricity, renewable energy certificates, energy certificates) are voluntary certificates that confirm the origin of energy from non-traditional low-carbon and renewable sources. These certificates can be purchased either directly from the generator through the digital marketplace of the low-carbon energy registry (the Beber project) or through the over-the-counter trading platform RTS Board in the Climate Financial Instruments sector. Certificates registered with Carbon Zero are also available.

Units of nature: Natural capital as an important area for quasi-financial instrument development

According to a survey conducted by institutional investors (Natural Capital Report 2026), 87% of respondents associate natural capital with protecting biodiversity and ecosystems. However, only 56% of current investors hold less than 1% of their portfolio¹⁵ in this asset class. This is due to several factors, including a short history of profitability and difficulties in justifying investments from a fiduciary duty perspective.

The establishment of the world’s first natural

¹⁵ Monthly digest “Nature and Capital”, issue No. 2, February 2026. URL: <https://infragreen.ru/the-february-ssue-of-the-digest-on-environmental-financing-has-been-released/> (accessed on 14.03.2026).

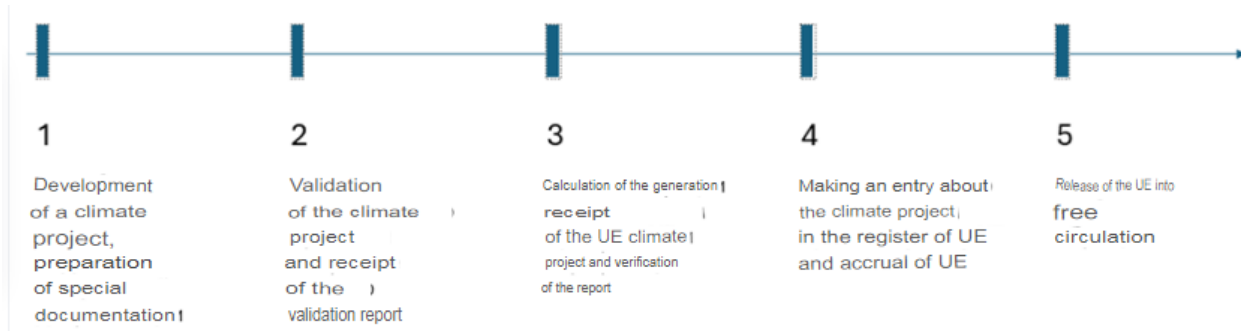


Fig. 4. The Operation of the Carbon Unit Mechanism

Source: Compiled by the authors.

capital fund regulated by the government of Guernsey, under the management of Gresham House, a British company (February 2026), has set a global precedent. This “Natural Capital Fund” aims to achieve a dual goal: financial returns and a measurable contribution to the environment, with independent verification of results.

This precedent establishes the direction for the future of the natural-like economy, showing the feasibility of institutionalizing investment in the restoration of natural resources. It demonstrates the potential for investing in the preservation and regeneration of our planet’s ecosystems.

Partnership (Islamic) Finance as a Model for a Circular Economy

Islamic finance is a financial system based on the principles of Sharia law, which includes restrictions on economic activity. The main difference between Islamic and traditional finance lies in the function of money. In Islamic finance, money does not serve as an asset, but rather as a means of exchange and a measure of value. The goal of the Islamic economy is not profit, but benefit. This principle applies not only to the government but also to the commercial sector. Profit in Islamic finance is seen as a bonus from business activities related to the production and sale of useful goods, rather than the other way around, as is commonly practiced in Western societies today.

Islamic finance implies the absence of a speculative component, which affects the

liquidity of Islamic financial instruments but provides greater financial stability. The Islamic financial model focuses on the real economy and is a project financing model where the supplier of financial resources is not a bank in the traditional sense but something closer to venture funds. The interaction between parties is characterized by transparent and unchanging contractual obligations, a partnership in risk and income sharing, and a focus on achieving not only private but also significant benefits for society as a whole [6, 16]. That is why Islamic finance is also known as partner finance and Islamic banks as participation banks.

Islamic finance is the fastest-growing sector, with double-digit asset growth rates and a projected market volume of approximately \$5.9 trillion by 2026. In 2025, the volume of sustainable Islamic sukuk reached a record \$14.6 billion, confirming the potential of partnership finance to finance sustainable projects.¹⁴

The growth potential of the Islamic financial system has traditionally been associated with an increase in the Muslim population and the growth of economies in Muslim countries. However, the concept of partnership finance aligns closely with the circular sustainable economy model, which has the potential to develop in both Muslim and non-Muslim countries.

Since September 2023, Russia has been

¹⁴ Sustainable Bonds Insight 2026. URL: <https://www.environmental-finance.com/content/downloads/sustainable-bonds-insight-2026.html?ref=infragreen.ru> (accessed on 14.03.2026).

conducting an experiment to develop partnership financing in four pilot regions: the Republic of Bashkortostan, the Republic of Tatarstan, Chechnya, and Dagestan. The goal of this experiment is, among other things, to assess the need for special regulatory provisions in Russian legislation to create a legal framework for partner financing [17–19].

It has been proven that the partnership financing system implicitly includes the open-book principle, which is a crucial condition for the creation of efficient circular economies. The circular economy relies on the cooperation of numerous independent entities, requiring trust, transparency, and fair distribution of outcomes. Implementing the open-book concept in conjunction with an appropriate digital information and communication platform ensures the emergence of what is known as a smart circular economy.

It is important to note that the principles of partnership finance align closely with the emerging concept of a nature-based economy. The Islamic model, which prohibits the speculative separation of money from real assets, requires assessing any project based on its usefulness, which is similar to the concept of ecosystem services in a nature-based model. As mentioned above, investments in both nature-destructive and nature-conserving areas differ significantly. It is not possible to bridge this gap without shifting from the model of extracting natural rent to the model of investing in the reproduction of natural capital, which is fundamental to a nature-based approach. Partnership finance, with its connection to the real economy, risk-sharing, and focus on public benefits, can be a tool for this transition.

Digital Financial Instruments and a Two-tier Monetary System

Projects implemented in the circular economy have a significant number of external impacts. According to Coase's theorem, the market mechanism may not function effectively. However, if we consider that the concept of a sustainable economy presupposes and

requires a shift in personal values towards social values, the external microeconomic model may no longer accurately describe the behavior of actors in a circular and sustainable economy. At the same time, the formation of specific green effects, among others, is often long-term in nature and disrupts the market's well-known short-term orientation [3].

Sustainable finance, which is based on an administrative regulatory mechanism, includes both traditional sustainable project financing and sustainable digital financial instruments. The administrative mechanism can be applied in both the private and public sectors of the economy, as you know. Project financing is a very effective tool for financing large projects, and it involves allocating resources to a specific project with the aim of achieving desired results. These results can be both commercial and non-commercial, and they can have both a private and a public impact.

Public effects can be achieved through public participation, so sustainable project financing usually involves a public-private partnership. To achieve the goals of a circular economy, it's important to involve the private sector in financing and implementing sustainable projects due to their high capital intensity and long payback periods. This requires active economic policies, adequate government support, and resolving risk-sharing issues.

One of the main challenges of state participation is the need for strict management of financial relations to ensure their close connection with funded projects. Due to the long-term nature of the effects generated, a stable model is prone to opportunistic behavior at all stages and levels of project implementation.

In these circumstances, technological solutions such as digital financial instruments (blockchain, smart contracts) have the potential to improve efficiency. In this regard, digital currencies are particularly interesting, as their use allows for targeted allocation of financial resources to specific projects, ensuring a tight link between them. This can significantly reduce the cost of administration and control [20, 21].

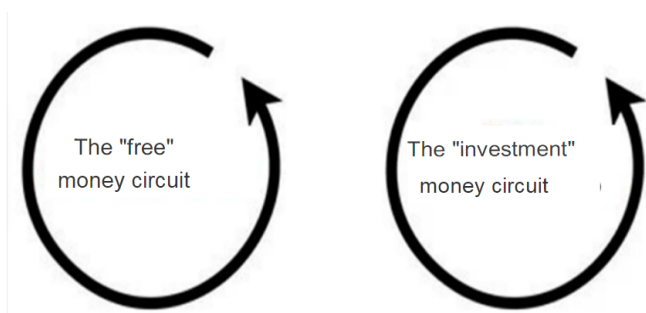


Fig. 5. Operation of a Two-circuit Monetary System

Source: Compiled by the authors.

The possibility of “coloring” digital money creates the conditions for the formation of a two-tier monetary system (Fig. 5). New funds can be allocated automatically exclusively for real investments in key projects, particularly projects of a circular and sustainable economy. This helps to overcome investment hunger in the real economy and minimizes inflation risks.

In a nature-based economy, “colored” digital finance can be an ideal tool for financing long-term projects related to the reproduction of natural capital. It ensures strict control over the use of funds and transparency for all participants.

In our country, research into the possibility of establishing a reserve investment circuit for a two-tier national monetary and financial system has already begun [20]. In 2023, the digital ruble appeared in the financial system of the Russian Federation, and a pilot project was launched in August 2023 covering a limited number of clients from several banks. The introduction of this third form of national currency will occur gradually over several years, and it is necessary to study the potential impact of this digital currency on economic development, which is closely linked to the issue of ensuring technological independence.

At the start, 13 banks participated in the pilot project. In February 2024, one of the banks, Qiwi, had its license revoked.¹⁵ A limited number of customers were also involved in the project at the beginning. Later, the

project expanded and a second group of credit institutions joined, increasing the number of participants to 9.000 individuals and 1.200 legal entities. Currently, another 45 credit institutions are preparing to join the pilot.

According to the law, from September 1, 2026, the largest banks and trading companies will be required to provide their customers with the option to transact with digital rubles.

CONCLUSIONS AND PRACTICAL RECOMMENDATIONS

Theoretical Conclusions

A modern economy, based on a technogenic approach, is facing serious contradictions that require transition to a circular model. To successfully implement this model, financial mechanisms need to be transformed, taking into account the long-term nature of emerging effects.

Sustainable finance requires a combination of market and administrative regulatory mechanisms. Quasi-financial instruments have the potential to monetize external effects based on the circular principle of resource flow closure.

The system of Islamic finance fully complies with the open-book principle and can serve as a model for financial mechanisms of a circular economy. These mechanisms are focused on obtaining socially significant results rather than making profit at all costs.

- Digital financial instruments, including the “colored” digital ruble, form the basis for a two-tier monetary system that targets financing for priority sustainable development projects.

- While the transition to a circular economy is necessary for sustainable development, it is not sufficient. The goal is to create a nature-based economy, where natural capital is seen not as a free resource but as an asset that needs to be invested in and maintained.

The Results of the Work With Elements of Scientific Novelty and Originality

- The position that the partnership finance system implicitly includes the open-book principle, which is a necessary condition for

¹⁵ URL: https://www.cbr.ru/fintech/dr/#a_123392 (accessed on 14.03.2026).

the formation of effective circular economies, is supported.

- A classification of sustainable financial instruments has been developed based on the criteria of the economic mechanism implemented (market — administrative) and the level of securitization (traditional — quasi-financial).

- The potential of digital currencies to form a two-tier monetary system that provides targeted financing for circular economy projects has been identified.

- The mechanism for monetizing external effects through quasi-financial instruments (carbon units, energy certificates), based on the circular principle of resource flow closure, has been justified.

Practical Recommendations

- It is recommended to expand the partnership financing experiment to new regions, considering the revealed compatibility of the principles of partnership finance with the circular economy model.

- When developing the regulatory framework for the digital ruble, mechanisms should be provided for “coloring” digital funds to target financing of priority sustainable development projects.

- A single platform for circulation of quasi-financial instruments (carbon units, energy certificates) should be created, with unification of verification standards.

- Methodological recommendations should be developed for evaluating the effectiveness of circular economy projects, considering external effects and opportunities for their monetization.

- When developing “colored” financial instruments and a taxonomy of sustainable projects, it is recommended to consider the positive contribution of these projects to the reproduction of natural capital. It is also suggested to explore the possibility of including indicators related to the implementation of nature-like technologies and ecosystem restoration in the list of Sustainable Development Goals for Russian companies. Additionally, it would be beneficial to explore adapting the experience of regulated natural capital funds in Russia.

The implementation of these recommendations could contribute to the development of an integrated system of financial mechanisms that would facilitate the transition to a circular economy in Russia, as well as creating the basis for a nature-based economy.

ACKNOWLEDGMENTS

The study was carried out using funds from the Russian Science Foundation grant No. 23-28-00619 on the topic: Methodology for ensuring the efficiency of circular economic systems in a region (using the example of North-West Russia), <https://rscf.ru/project/23-28-00619/>. North-West Institute of Management — branch of RANEPa, Saint Petersburg, Russian Federation.

REFERENCES

1. Bodrunov S.D. Overcoming the challenges of global transformation: STP, knowledge, and noonomics. *Studies on Russian Economic Development*. 2023;34(4):435-438. DOI: 10.1134/S1075700723040032 (In Russ.: *Problemy prognozirovaniya*. 2023;(4):8-14. DOI: 10.47711/0868-6351-199-8-14).
2. Bodrunov S.D., Zolotarev A.A. Transition to noonomy, problems of technological sovereignty, and regional development. *Ekonomika Severo-Zapada: problemy i perspektivy razvitiya = Economy of the North-West: Issues and Prospects of Development*. 2024;(1):75-79. (In Russ.). DOI: 10.52897/2411-4588-2024-1-75-79
3. Kvasha N.V., Malevskaya-Malevich E.D., Kudryashov V.S. Transformation of efficiency mechanisms in the circular economy. *Ekonomicheskoe vozrozhdenie Rossii = Economic Revival of Russia*. 2024;(1):64-74. (In Russ.). DOI: 10.37930/1990-9780-2024-1-79-64-74
4. Kvasha N.V., Bolotnikova O.I., Malevskaia-Malevich E.D. Biotechnological basis of the pulp and paper industry circular economic system. *Economies*. 2023;11(12):302. DOI: 10.3390/economies11120302

5. Kvasha N.V., Malevskaia-Malevich E.D. The problem of ensuring the efficiency of circular economic systems in the North-West Region. *Ekonomika Severo-Zapada: problemy i perspektivy razvitiya = Economy of the North-West: Issues and Prospects of Development*. 2022;(4):54-60. (In Russ.). DOI: 10.52897/2411-4588-2022-4-54-60
6. Anvekar R., Patil S. Circular economy goals, large capitalization, and ESG funds: An investment perspective. *Finance: Theory and Practice*. 2024;28(2):206-218. DOI: 10.26794/2587-5671-2024-28-2-206-218
7. Tkachenko E.A., Gorelchanik P.I. Is the finance of noonomy a paradox or a result of evolution? *Noonomika i nooobshchestvo. Al'manakh trudov INIR im. S. Yu. Vitte = Noonomy and Noosociety. Almanac of Scientific Works of the S. Y. Witte INID*. 2022;1(4):63-75. (In Russ.). DOI: 10.37930/2782-618X-2022-1-4-63-75
8. Glazyev S.Yu. On the periodic table of world capitalist development. In: 3rd Arrigiev readings on the topic "Russia's path to the future world order". Proc. Int. sci.-pract. conf. (Orel, October 22–24, 2020). In 2 pts. Pt. 1. Orel: Kartush; 2020:11-21. (In Russ.).
9. Korovin G.B., Krokhina E.A. Complementary institutions for funding regional economies. *Finance: Theory and Practice*. 2017;21(4):30-39. DOI: 10.26794/2587-5671-2017-21-4-30-39
10. Bodrunov S.D. From economic interests to noo values. *Voprosy filosofii*. 2022;(7):15-26. (In Russ.). DOI: 10.21146/0042-8744-2022-7-15-26
11. Sitnik A.A. "Green" finance: The concept and system. *Aktual'nye problemy rossiiskogo prava = Actual Problems of Russian Law*. 2022;17(2):63-80. (In Russ.). DOI: 10.17803/1994-1471.2022.135.2.063-080
12. Chernikova L.I., Egorova D.A., Melikhov K.S., Yashchenko A.I. The interdependence of environmental activities and investment attractiveness: Finances of Russian metallurgy. *Finance: Theory and Practice*. 2023;27(4):42-53. DOI: 10.26794/2587-5671-2023-27-4-42-53
13. Samkov K.N. Financing the implementation of national and regional projects: Problems and sustainable development directions. *Finance: Theory and Practice*. 2021;25(4):24-36. DOI: 10.26794/2587-5671-2021-25-4-24-36
14. Semenova N.N., Ivanova I.A., Eremina O.I. "Green" financing and ESG: Opportunity for sustainable socio-economic development. *Finance: Theory and Practice*. 2023;27(5):160-169. DOI: 10.26794/2587-5671-2023-27-5-160-169
15. Lapina M.A., Zav'yalov M.M., Gurinovich A.G. Commercialization of public finance management: Modern realities and organizational and legal modernization. *Finance: Theory and Practice*. 2022;26(5):60-78. DOI: 10.26794/2587-5671-2022-26-5-60-78
16. Arsyad I., Kharisma D.B., Wiwoho J. Artificial intelligence and Islamic finance industry: Problems and oversight. *International Journal of Law and Management*. 2025. DOI: 10.1108/IJLMA-07-2024-0236
17. Abramova M.A., Krivoruchko S.V., Lunyakov O.V., Fiapshev A.B. Development of decentralized finance in comparable indicators of the financial sector of the economy. *Finance: Theory and Practice*. 2025;29(2):20-35. DOI: 10.26794/2587-5671-2025-29-2-20-35
18. Mohammadia K.M. Trends of project finance in the world market and in Arab countries. *Finance: Theory and Practice*. 2020;24(1):24-33. DOI: 10.26794/2587-5671-2020-24-1-24-33
19. Milyutin A.N. On the tasks and principles of using the digital ruble. *Russian Economic Bulletin*. 2023;6(2):227-234. (In Russ.).
20. Pashkovskaya I.V. Decentralized finance and prospects for creating a dual-loop economy. *Finansovye rynki i banki = Financial Markets and Banks*. 2023;(4):78-85. (In Russ.).
21. Perepelitsa M.A. Digital ruble as a factor in strengthening the monetary sovereignty of the state. *Vestnik Universiteta imeni O.E. Kutafina (MGYuA) = Courier of the Kutafin Moscow State Law University (MSAL)*. 2023;(7):158-165. (In Russ.). DOI: 10.17803/2311-5998.2023.107.7.158-165

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Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

The article was submitted on 22.08.2024; revised on 29.10.2024 and accepted for publication on 22.11.2024.

The authors read and approved the final version of the manuscript.