

THE EVOLUTION OF CIRCULAR ECONOMY FINANCING CONCEPTS IN THE SUSTAINABLE DEVELOPMENT PARADIGM.

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Abstract. In the context of increasing environmental constraints and growing systemic risks to sustainable development, the transformation of financial mechanisms to support the circular economy is of strategic importance. The aim of this study is to identify patterns and stages in the evolution of circular economy financing concepts within the sustainable development paradigm, as well as to justify their institutional and instrumental transformation.

Keywords: Circular economy, sustainable finance, ESG factors, green financial instruments, institutional transformation, sustainable development.

Introduction

Global environmental constraints, increasing climate risks, and depletion of natural resources have necessitated a revision of the traditional linear model of economic growth based on the "extract-produce-consume-dispose" principle. Under these circumstances, the concept of a circular economy, focused on closing material flows, extending product life cycles, and minimizing waste, is seen as a systemic alternative to the linear development model. However, the practical implementation of circular principles largely depends on the transformation of financial mechanisms capable of ensuring the long-term sustainability and scalability of corresponding business models.

In the sustainable development paradigm, finance ceases to serve solely as a means of capital redistribution and assumes a strategic role in managing environmental and social risks. The evolution of financial concepts—from environmentally oriented investments to sustainable and integrated finance—reflects the changing priorities of the global financial architecture. The development of green bond instruments, the development of an ESG approach, and the introduction of sustainable activity taxonomies and blended finance mechanisms indicate a transition to an institutionally enshrined model for supporting circular transformations.

Despite the significant amount of research in the field of sustainable finance and the circular economy, their evolutionary relationship remains understudied. The academic literature is dominated by either sector-specific studies of individual financial instruments or conceptual works that fail to explore the dynamics of their institutional integration. This necessitates a comprehensive analysis of the evolution of circular economy finance concepts within the context of sustainable development.

Review of literature on the subject

In recent years, global scientific literature has examined circular economy financing in the context of transforming the sustainable development model and modernizing the financial system. Geissdoerfer et al. [6] substantiate the circular economy as a systemic alternative to the linear model of production and consumption, emphasizing the need to reallocate investment flows toward resource-efficient and low-carbon solutions. The authors note that without an institutional restructuring of financial mechanisms, scaling circular business models is difficult. OECD analytical materials [4] examine the circular economy through the lens of public policy and financial support instruments. Particular attention is paid to blended finance mechanisms, public-private partnerships, and the development of sustainable activity taxonomies. They emphasize that standardizing sustainability criteria reduces investment risks and increases market transparency.

Kumar et al. [3] systematically analyze the role of green financial instruments - green bonds, ESG investments, and sustainable lending - in ensuring the transition to the circular model. The authors conclude that integrating ESG parameters into investment analysis contributes to reducing long-term risks and forming sustainable investment portfolios. Ma et al. [11] examine the financial aspects of a circular economy from an institutional perspective, highlighting the mechanisms for capital mobilization, risk distribution, and market participant coordination. The work shows that the development of financial infrastructure and regulatory framework directly affects the pace of circular transformation. The World Bank's reports [8] focus on financing the circular economy in developing countries, where key factors are guarantees, risk mitigation tools, and institutional support for private investment. The need to adapt financial mechanisms to the national characteristics of economic systems is noted.

Thus, the analysis of modern literature indicates a shift from fragmentary studies of individual instruments to a comprehensive study of the institutional evolution of sustainable financing. Existing works confirm the growing role of the financial sector in ensuring circular transformation, however, there remains a need to systematize the stages of development of financing concepts and their integration into the sustainable development paradigm.

Research methodology

The methodological basis of the study was formed using systemic, institutional, and evolutionary approaches, which made it possible to consider the financing of a circular economy as a dynamically developing subsystem of the financial architecture of sustainable development.

The following methods were used in the work:

- content analysis of academic publications, international analytical reports, and strategic documents in the field of sustainable and green finance;
- comparative analysis to identify differences and commonalities at various stages of the transformation of financial concepts;
- institutional analysis aimed at assessing the role of the regulatory and legal framework, disclosure standards, and financial taxonomies;
- a structural-functional method used to classify financial instruments that support circular business models;
- elements of evolutionary analysis, which made it possible to identify key stages in the development of financing concepts.

Analysis and results

Three stages have been identified in the evolution of circular economy financing concepts:

- the stage of environmentally-oriented investment, characterized by fragmented support for environmental projects;
- the stage of developing sustainable finance, based on the integration of ESG factors into the investment process;
- the stage of institutionalized integration of circular principles into the financial system through the introduction of sustainable activity taxonomies, disclosure standards, and specialized financial instruments.

The transformation of investment evaluation criteria has been established: transitioning from a short-term financial return dominance to a multi-factor model that considers environmental, social, and management parameters, as well as long-term systemic risks.

A functional typology of circular economy financing instruments was developed:

- capital mobilization instruments (sustainable and green bonds, ESG-focused investment funds);
- risk sharing and mitigation instruments (blended finance, government guarantees, public-private partnership mechanisms);

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– institutional coordination instruments (taxonomies, reporting standards, and disclosure of non-financial information).

It has been established that the institutionalization of circular principles contributes to the standardization of sustainability criteria, the reduction of transaction and regulatory costs, and the increase in the transparency of investment decisions.

A structural model for integrating circular economy financing into the sustainable development system has been developed, reflecting the interrelationship between the regulatory environment, financial institutions, capital redistribution instruments, and circular business models.

The results obtained expand on existing scientific understanding of the relationship between the circular economy and sustainable finance, shifting the analysis from an instrumental to a systemic and evolutionary level. Most previous studies interpret sustainable finance as a set of market instruments aimed at mitigating climate risks and supporting environmental projects. In this context, the circular economy is viewed either as a sector for the application of "green" capital or as an element of industrial policy. This study refines this position, demonstrating that circular economy financing represents an independent trajectory of institutional transformation within the financial system.

First, the identified stages in the evolution of financial concepts allow us to structure the disparate approaches presented in the literature. While early studies emphasized environmentally conscious investments as a form of compensation for negative externalities, later studies substantiated the integration of ESG factors into investment analysis. The results demonstrate that the current stage is characterized not simply by the expansion of assessment criteria, but by an institutional restructuring of the financial architecture—through the introduction of taxonomies, non-financial disclosure standards, and sustainable asset regulation mechanisms. This confirms the thesis of a transition from voluntary environmental responsibility to a normatively enshrined model of sustainable capital redistribution.

Secondly, the results clarify the findings of studies on mitigating long-term risks through sustainable finance. Unlike studies that view ESG as a tool for minimizing reputational or climate risks, this study demonstrates that integrating circular principles also reduces transaction and regulatory costs by standardizing sustainability criteria and increasing information transparency. This expands the theoretical understanding of sustainable finance as a mechanism for systemic coordination of economic agents.

Third, the developed structural model for integrating circular economy finance complements existing conceptual frameworks for sustainable development, which often view the financial sector as a supporting element. The study's results confirm that financial institutions act as an institutional filter, redistributing resources toward circular business models and thereby shaping long-term trajectories of economic transformation.

The theoretical significance of this work lies in:

- developing an evolutionary typology of circular economy financing concepts;
- refining the categorization of sustainable finance by distinguishing between the stages of its institutionalization;
- substantiating the relationship between financial instruments, the regulatory environment, and circular business models as a unified system;
- expanding understanding of the role of the financial sector in transforming the economic growth model.

The study thus contributes to the development of institutional and evolutionary theory of sustainable development.

Overall, the results confirm that circular economy financing is a key institutional mechanism for implementing the sustainable development paradigm, ensuring not only capital mobilization but

also the structural restructuring of the economic system toward resource efficiency and long-term sustainability.

Conclusions and suggestions

The study allowed us to conceptually substantiate the evolution of circular economy financing as a consistent process of institutional transformation of the financial system. Three stages of development were identified: environmentally oriented investments, the integration of ESG factors, and the institutionalization of sustainable finance. Each of these stages reflects the deepening integration of circular principles into capital allocation mechanisms. It was established that the key qualitative shift is the transition from short-term return assessment to a multi-factor model of investment decisions that takes into account long-term environmental and systemic risks.

Summarizing the results, it can be argued that circular economy financing is not a derivative element of environmental policy, but an independent institution for sustainable development, ensuring the structural reorientation of investment flows and the development of long-term resource sustainability in economic systems.

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