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FINANCIAL MECHANISMS FOR MITIGATING INVESTMENT RISKS IN FINANCING GREEN ECONOMY PROJECTS

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Abstract

This paper examines the economic nature of investment risks arising in the financing of green economy projects, their main categories, and their impact on attracting financial resources. Particular attention is paid to the role of credit guarantees, insurance instruments, foreign exchange risk hedging, blended finance, and public-private partnerships in reducing investment risks. Drawing on international experience, the study identifies opportunities for improving financial risk management mechanisms in Uzbekistan. Furthermore, scientific proposals and practical recommendations are developed to strengthen the financial sustainability of green investment projects, enhance their investment attractiveness, and encourage greater private sector participation in green financing.

Keywords: Green economy, investment risks, green finance, credit guarantees, financial risk management, insurance, blended finance, hedging, public-private partnerships.



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Introduction

The increasing importance of sustainable development principles in the global economy has intensified the need to modernize economic sectors, improve energy and resource efficiency, and promote investments in renewable energy technologies. In this context, financing green economy projects has become an essential component of sustainable economic growth and environmental protection. However, the implementation of such projects is frequently associated with substantial initial capital expenditures, long investment recovery periods, and various financial and non-financial risks.

Unlike conventional investment projects, the economic benefits of certain green projects are generated not only through increased production or service revenues but also through reductions in energy consumption, resource utilization, and operating costs. These characteristics create additional challenges in forecasting future cash flows, determining investment payback periods, and establishing appropriate financing conditions.

According to the World Bank's Uzbekistan Country Climate and Development Report, expanding green investments in Uzbekistan requires strengthening private sector participation, developing financial markets, and improving mechanisms for managing climate-related risks.[1]

Consequently, improving the financing mechanisms for green economy projects in Uzbekistan requires not only mobilizing additional investment resources but also establishing effective financial instruments for identifying, assessing, allocating, and mitigating investment risks.

The objective of this study is to identify and classify the major investment risks associated with financing green economy projects and to develop scientific proposals and practical recommendations for improving financial mechanisms aimed at their mitigation.



Investment risk in green economy projects can be defined as the probability that actual financial and environmental outcomes will deviate from expected results due to internal and external uncertainties. Such risks may extend investment recovery periods, reduce the net present value of projects, weaken borrowers' debt repayment capacity, and increase the overall cost of financing.

High investment risks may also reduce the willingness of commercial banks and institutional investors to finance environmentally sustainable projects. Nevertheless, limited access to financing does not necessarily indicate that a particular green project is economically inefficient. In some cases, appropriate risk-sharing arrangements, credit guarantees, and financial protection mechanisms can significantly improve the bankability of otherwise viable investment projects.

From an economic perspective, investment risks associated with green financing can be classified into financial, technological, institutional, market, and environmental or climate-related risks. Each category is influenced by specific factors and therefore requires an appropriate financial risk mitigation mechanism. Financial risks primarily include fluctuations in interest rates, exchange rate volatility, liquidity shortages, and uncertainty regarding debt repayment obligations. Technological risks arise when newly introduced technologies fail to achieve their expected performance or when operating and maintenance costs exceed initial projections. Institutional risks are associated with changes in regulatory conditions, contractual obligations, licensing procedures, and the availability of supporting infrastructure.

Environmental and climate-related risks involve potential financial losses resulting from droughts, water scarcity, extreme temperatures, and other adverse natural conditions. Such risks are particularly relevant to investments in

renewable energy, water management, agriculture, and climate-resilient infrastructure.

The diversity of these risks indicates that their effective management requires a differentiated approach based on the economic characteristics of investment projects. In this regard, the relationship between particular investment risks and relevant financial mitigation instruments is presented in Table 1.

Table 1. Major Investment Risks in Green Economy Projects and Financial Mechanisms for Their Mitigation

Type of investment risk	Impact on project financing	Financial risk mitigation mechanism
Credit risk	Probability of borrower default and financial losses	Partial credit guarantees and risk-sharing arrangements
Foreign exchange risk	Currency mismatch between debt obligations and project revenues	Currency hedging and local currency financing
Interest rate risk	Increased debt servicing costs	Fixed-rate financing and interest rate swaps
Technological risk	Failure to achieve expected technological performance	Insurance, performance guarantees, and phased financing
Market risk	Changes in demand and market prices	Long-term purchase agreements and revenue diversification
Political and institutional risk	Changes in regulatory and contractual conditions	Political risk insurance and contractual protection
Climate risk	Financial losses caused by adverse climatic events	Climate insurance and financial reserve mechanisms

As demonstrated in Table 1, investment risks differ significantly in their economic characteristics and potential consequences. Therefore, applying a single financial instrument to all categories of risk may not provide sufficient protection for investors and financial institutions.

Credit risks, for instance, can be partially mitigated through guarantee mechanisms, while foreign exchange risks require appropriate currency matching or hedging arrangements. Technological and climate-related risks may be reduced through insurance instruments, technical assessments, contractual guarantees, and the establishment of financial reserves.

One of the most important financial mechanisms for mitigating investment risks is the provision of credit guarantees. This instrument enables part of the credit risk assumed by a financial institution to be transferred to a guarantee provider, thereby improving the availability of financing for projects that may otherwise face difficulties in obtaining commercial loans.

International experience demonstrates the importance of guarantee mechanisms in attracting private investment to developing economies. In particular, the World Bank Group launched its Guarantee Platform in 2024, consolidating credit guarantees, trade finance guarantees, and political risk insurance instruments. This initiative was designed to simplify access to financial guarantees and support private investment in developing countries.[2]

The economic effectiveness of credit guarantees lies not in the complete elimination of investment risks but in their appropriate allocation among project participants. Therefore, the use of guarantee instruments should take into account the level of coverage, guarantee fees, and the financial sustainability of the institutions providing such protection.

Foreign exchange risk represents another significant challenge in financing green economy projects. This risk becomes particularly important when investment projects are financed through foreign currency-denominated loans while their revenues are generated in domestic currency. Under such conditions, exchange rate depreciation may substantially increase debt servicing costs and undermine the financial sustainability of investment projects.

Accordingly, developing local currency financing mechanisms, improving access to foreign exchange hedging instruments, and aligning the currency composition of debt obligations with project revenues are essential measures for reducing currency-related risks.

However, hedging instruments may generate additional transaction costs. Their application should therefore be based on an assessment of the relationship between the costs of risk protection and the potential financial losses arising from exchange rate fluctuations.

Another promising approach to mitigating investment risks is blended finance, which combines concessional resources provided by governments and international development institutions with commercial capital from private investors.

The primary economic purpose of blended finance is to improve the investment attractiveness of projects that generate positive environmental and social outcomes but face limitations in attracting conventional commercial financing.

According to the OECD's Blended Finance Guidance 2025, effective blended finance arrangements should be based on clearly identified risks, balanced risk allocation among financing participants, and the efficient use of concessional resources to mobilize additional private capital.[3]

From this perspective, concessional financial resources should not be used solely to reduce financing costs. Instead, they should serve as instruments for addressing specific investment barriers, mitigating excessive risks, and encouraging private sector participation in sustainable projects.

In Uzbekistan, the Green Economy Financing Facility (GEFF II), supported by the European Bank for Reconstruction and Development, represents an example of integrating financial resources with technical assistance and climate-related risk management. The programme supports environmentally sustainable

investments through participating financial institutions and contributes to strengthening their institutional capacity in green finance.[4]

In addition to blended finance, public-private partnerships (PPPs) represent an important mechanism for managing investment risks in large-scale green infrastructure projects. These arrangements enable public and private participants to distribute financial, construction, operational, and management responsibilities according to their respective capacities.

The Presidential Resolution of the Republic of Uzbekistan No. PQ-308, dated August 30, 2024, establishes priorities for developing public-private partnerships, expanding private investment participation, and implementing infrastructure projects.[5]

The effectiveness of PPP arrangements largely depends on the rational distribution of risks between public and private partners. Construction, operational, and technological risks may be allocated to private partners possessing the required expertise and management capabilities, while certain regulatory and contractual obligations remain the responsibility of the public sector.

Nevertheless, transferring excessive risks to the government may increase contingent fiscal liabilities and negatively affect long-term public financial sustainability. Consequently, investment risk allocation under PPP arrangements should be evaluated from both the investor's perspective and that of public financial management.

Based on the above analysis, the author considers that improving investment risk mitigation mechanisms in Uzbekistan requires the development of a comprehensive approach that incorporates the entire life cycle of green investment projects.

During the project preparation stage, priority should be given to feasibility studies, technical assessments, environmental evaluations, and the identification of institutional risks. At the financing stage, attention should focus on credit risk, interest rate exposure, currency mismatches, and financial guarantees. During construction, technological and contractor-related risks should be carefully managed. Finally, during the operational stage, monitoring should concentrate on revenue stability, debt repayment capacity, technological performance, and environmental outcomes.

In addition, commercial banks should be encouraged to integrate environmental and climate-related risk indicators into their traditional credit assessment procedures. Such an approach would enable financial institutions to evaluate green projects not only in terms of profitability and collateral availability but also in relation to technological reliability, resource efficiency, environmental compliance, and exposure to climate-related uncertainties.

Financial indicators such as net present value (NPV), internal rate of return (IRR), and debt service coverage ratio (DSCR) should be considered together with environmental performance indicators and scenario-based cash flow analysis. Integrating these evaluation criteria would provide a more comprehensive basis for assessing the investment attractiveness and financial sustainability of green projects.

A comprehensive investment risk management mechanism based on the sequence "risk identification – risk assessment – selection of financial instruments – risk allocation – continuous monitoring" should be developed and implemented.

This mechanism would facilitate the systematic management of financial uncertainties throughout the investment process, improve coordination among financing participants, and ensure that financial protection instruments are

selected in accordance with the specific characteristics of each green investment project.

Furthermore, the proposed approach could contribute to improving the quality of investment decisions and strengthening the participation of commercial banks, institutional investors, and international financial organizations in financing environmentally sustainable projects in Uzbekistan.

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