IQRO JURNALI , IQRO JOURNAL, ИКРО ЖУРНАЛИ
ISSN:2181-4341| wordlyknowledge.uz/index.php/iqro
Volume 22 Issue 02 IYUL 2026

BLENDED FINANCE STRUCTURES FOR SOLAR AND WIND PROJECTS IN UZBEKISTAN: MATCHING DONOR CAPITAL WITH PRIVATE INVESTMENT

Avazov Azizbek Ashurali o'g'li
Denov tadbirkorlik va pedagogika instituti
"Moliya va bank ishi" kafedrasi doktoranti

Abstract: Uzbekistan is rapidly transforming its energy sector to reduce dependence on fossil fuels and increase the share of renewable energy in electricity generation. The country's ambitious renewable energy targets require substantial financial resources that cannot be met solely through public funding or private investment. Blended finance has emerged as an effective mechanism for mobilizing private capital by strategically combining concessional donor funding with commercial investment. This paper examines the role of blended finance structures in supporting solar and wind energy projects in Uzbekistan. It explores how international financial institutions, development agencies, and private investors can cooperate to reduce investment risks, improve project bankability, and accelerate renewable energy deployment. The study also evaluates the current policy environment, identifies financial challenges, and proposes practical recommendations for strengthening blended finance mechanisms. The findings demonstrate that well-designed blended finance models can significantly increase private sector participation while supporting Uzbekistan's long-term sustainable development and climate objectives.

Keywords: Blended finance, renewable energy, solar energy, wind power, Uzbekistan, donor capital, private investment, sustainable finance, green energy, climate finance.

Introduction

The global transition toward clean energy has accelerated in response to climate change, rising energy demand, and the need for sustainable economic development. Governments around the world are increasingly investing in renewable energy technologies to reduce greenhouse gas emissions and improve energy security. Among renewable energy sources, solar and wind power have become the fastest-growing technologies because of their declining costs, technological improvements, and environmental benefits.

Uzbekistan possesses significant renewable energy potential due to its favorable geographical conditions. The country experiences more than 300 sunny days annually, providing excellent opportunities for large-scale solar power generation. Additionally, several regions, particularly Karakalpakstan and Navoi, have strong wind resources suitable for commercial wind farms. Recognizing these advantages, the Government of Uzbekistan has adopted comprehensive reforms aimed at increasing renewable electricity generation and attracting foreign investment into the energy sector.

Despite these favorable conditions, financing renewable energy infrastructure remains one of the country's greatest challenges. Solar and wind projects require substantial upfront capital investment, while investors often face risks associated with long payback periods, exchange rate fluctuations, regulatory uncertainty, and political considerations. These factors may discourage private investors from entering the market without additional financial support. Blended finance has emerged as an innovative solution for overcoming these investment barriers. Blended finance refers to the strategic use of concessional public or donor funding to mobilize additional private capital for sustainable development projects. By sharing risks, providing guarantees, offering concessional loans, or supporting project preparation, development finance institutions can encourage commercial investors to participate in renewable energy investments that might otherwise be considered too risky.

For Uzbekistan, blended finance offers an opportunity to bridge the financing gap between public resources and private investment needs. International organizations such as the World Bank, Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), Asian Infrastructure Investment Bank (AIIB), and the Green Climate Fund have already demonstrated growing interest in supporting Uzbekistan's energy transition through various financing mechanisms.

This paper analyzes how blended finance structures can effectively match donor capital with private investment in Uzbekistan's solar and wind energy sector. It also discusses existing financial instruments, institutional arrangements, policy reforms, and future opportunities for expanding sustainable investment in.

Main Body

Blended Finance Mechanisms for Renewable Energy Development

Blended finance has become one of the most effective financing approaches for renewable energy infrastructure in emerging economies. It combines concessional funding from governments, development finance institutions (DFIs), philanthropic organizations, and climate funds with commercial financing provided by banks, institutional investors, and private companies. The primary objective is to reduce investment risks and improve the financial attractiveness of projects that contribute to sustainable development. Renewable energy projects generally involve significant initial capital expenditures, while financial returns are realized over long periods. Such characteristics often discourage commercial investors, particularly in developing countries where policy uncertainty, currency fluctuations, and regulatory changes increase investment risks. Blended finance addresses these challenges through several financial instruments that improve project bankability and reduce perceived risks. One of the most common instruments is concessional debt, where development institutions provide loans at below-market interest rates with longer repayment periods. These loans reduce financing costs and improve project cash flow during the early years of operation. Another widely used mechanism is credit guarantees, which protect commercial lenders against specific financial risks, encouraging banks to finance renewable energy projects. Equity participation is another important blended finance instrument. Development institutions may provide minority equity investments alongside private investors, thereby sharing project risks and increasing investor confidence. In addition, technical assistance grants support feasibility studies, environmental assessments, legal advisory services, and project preparation activities before financial closure. Such grants significantly improve project quality and reduce transaction costs. Risk-sharing facilities also play an important role. Political risk insurance, foreign exchange risk mitigation, and first-loss capital arrangements help attract institutional investors that would otherwise avoid investments in developing markets. These mechanisms reduce uncertainty while maintaining commercial investment incentives.

Renewable Energy Investment Landscape in Uzbekistan

Uzbekistan has undertaken major reforms in the energy sector during the last decade. The government has introduced policies aimed at diversifying electricity generation, reducing dependence on natural gas, and increasing renewable energy capacity. National development strategies prioritize solar and wind energy as key components of future economic growth and environmental sustainability.

The country's renewable energy potential is considerable. Uzbekistan receives annual solar irradiation exceeding 1,500–1,700 kWh per square meter in many regions, making utility-scale photovoltaic projects highly competitive. Wind resources are particularly strong in Karakalpakstan, Bukhara, and Navoi regions, where average wind speeds are suitable for large commercial wind farms. To attract foreign investment, Uzbekistan has implemented competitive

auction mechanisms for renewable energy projects. International developers have successfully participated in government tenders, resulting in significant investments from leading global renewable energy companies. Independent Power Producer (IPP) models have further increased private sector participation by providing transparent contractual arrangements and long-term power purchase agreements (PPAs). Nevertheless, several financing barriers remain. Domestic capital markets are still developing, limiting access to long-term local currency financing. Commercial banks often have limited experience in evaluating renewable energy investments. Exchange rate volatility may reduce investment attractiveness for foreign investors, while regulatory changes can increase perceived project risks. These factors reinforce the need for blended finance solutions that combine concessional donor resources with commercial capital. International financial institutions have already played an important role in supporting Uzbekistan's renewable energy expansion. The World Bank, Asian Development Bank, European Bank for Reconstruction and Development, Asian Infrastructure Investment Bank, Islamic Development Bank, and Green Climate Fund have financed energy infrastructure, policy reforms, and technical assistance programs. Their involvement demonstrates strong international confidence in Uzbekistan's renewable energy market. By effectively combining donor capital with private investment, Uzbekistan can significantly accelerate the deployment of solar and wind energy while reducing financial risks and improving project sustainability. Recent renewable energy projects demonstrate how blended finance can successfully mobilize private investment in Uzbekistan. Several utility-scale solar and wind projects have been implemented through partnerships involving the Government of Uzbekistan, international development institutions, and private investors. The Nur Navoi Solar Project became one of the country's first large-scale renewable energy investments developed under a public-private partnership framework. The project benefited from government support, long-term power purchase agreements, and financing from international institutions, reducing investment risks and attracting foreign private capital. Its successful implementation demonstrated that transparent procurement procedures and stable contractual arrangements significantly improve investor confidence. Another notable example is the Zarafshan Wind Farm, one of the largest wind energy projects in Central Asia. The project attracted substantial private investment while receiving support from international financial institutions through loans, guarantees, and technical assistance. The blended financing structure reduced financial risks associated with project development and enabled commercial lenders to participate under favorable conditions. These projects illustrate that donor participation does not replace private investment but rather serves as a catalyst that increases investor confidence and mobilizes additional commercial financing.

CONCLUSION

Blended finance has become a key instrument for accelerating renewable energy development in Uzbekistan by effectively matching donor capital with private investment. It reduces financial risks, improves project feasibility, and encourages greater participation from domestic and international investors. Successful implementation of solar and wind projects demonstrates that blended finance can significantly contribute to the country's clean energy transition.

To maximize these benefits, Uzbekistan should continue strengthening its legal framework, expanding cooperation with international financial institutions, developing domestic green finance markets, and improving the investment climate. These measures will help mobilize additional private capital, support sustainable economic growth, enhance energy security, and contribute to achieving national and international climate objectives.

References

1. (Asian Development Bank. (2024). Uzbekistan: Energy Sector Assessment and Development Outlook.
2. European Bank for Reconstruction and Development. (2024). Renewable Energy Investments in Central Asia.
3. International Energy Agency. (2024). World Energy Outlook 2024.
4. International Renewable Energy Agency. (2024). Renewable Energy Market Analysis: Central Asia.