LEVERAGING FINANCE FOR AN ECOLOGICALLY SUSTAINABLE FUTURE: OPPORTUNITIES, CHALLENGES AND SOME RECOMMENDATIONS FOR TRANSITION TO GREEN ECONOMY IN UZBEKISTAN

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Abstract. *Since “Ecology” has crucial role in individual’s life and there has been occurring tremendous ecological problems almost in all sectors of the world and it is one of the most pressing issue at both national and global level, these rapid climate changes and all other problems with nature that impacting the country’s ecology and making it imbalance. So, it is high time for Uzbekistan and other countries to focus on the green economy and apply it. “Green Economy “is defined as sustainable development, calling for the simultaneous achievement of social, economic, and environmental goals. Uzbekistan is taking green finance as one of the vital components of sustainable development by reducing greenhouse gas emissions and integrating renewable energy, etc. During implementation of Green economy Uzbekistan encounters many challenges in terms of financing, domestic public financing is insufficient for Uzbekistan to achieve the SDGs (“Sustainable Development Goals bond”) and its climate and development ambitions, since at least USD 6 billion investments needed annually, heavily reliance on foreign borrowed money is risky despite all benefits to the green economy. However, if leverage from abroad is well-imposed, regardless of all risks, it could accelerate green development. Without jeopardizing financial stability, it is important to achieve sustainable economic growth through a balanced approach, strengthening debt management, and ensuring transparency*.

Introduction

In the academic world, the concept of “Green Economy” emerged by highlighting ideas presented by David Pearce in the book “Blueprint for a Green Economy.” This book emphasizes that the current pricing system leads to a resource allocation in the economy that is biased against the environment; in some sectors, environmental assets and services are not properly valued, resulting in inefficient consumption of natural resources and environmental degradation. Unfortunately, the public bears the burden of harmful outcomes rather than the contributors themselves. In alignment with the country’s green economy plans, the United

Nations’ Common Country Analysis notes that the rising population in Uzbekistan, urbanization, and rural-urban inequality necessitate sustainable use of natural resources and mitigation of climate impacts, breaking the reliance on carbon emissions, as well as unsustainable consumption and production patterns. Meanwhile, as the rates of manufacturing and urbanization increase, investments should focus on efficient, clean, comprehensive, and flexible industries. Given the issues of water shortages, air pollution, and high CO2 emissions, it is essential to invest in renewable energy, green technologies, and energy efficiency. Implementing strict regulations for polluters and prioritizing sustainable development are crucial. By addressing environmental challenges, attracting foreign investments without relying solely on government funds, and creating new jobs, a robust green economy can be built that supports economic growth, enhances energy security, and decreases dependence on fossil fuels, resulting in significant benefits for all.

Some green projects are financed by foreign investments to accelerate the transition to a green economy and expand the green impact in Uzbekistan. Several green projects are funded by the World Bank and ADB institutions, primarily attracting investments in renewable energy and infrastructure. Borrowing from foreign creditors for green projects can be risky if the financial plan is not managed well, which could lead to a drop in the value of the national currency, making repayments more expensive and placing significant pressure on the economy. The likelihood of problems arising from high debt can be mitigated by strengthening local investments, implementing comprehensive repayment strategies to avoid excessive debt issues, and establishing strict regulations.

Methodology

The country can reduce greenhouse gas (GHG) emissions by using solar power instead of fossil fuels and producing renewable energy. Uzbekistan has set some 2030 goals to reduce GHG intensity in the economy by 35% compared to 2010, and to integrate renewable energy to make up 25% of TPES. Another intention is to decrease the government’s share in the national economy and strengthen the local financial market, thereby encouraging local businesses and investments. In contrast, Uzbekistan’s strategies do not include credible cost information and funding strategies, making it difficult to conclude whether the plans can be effective.

Accelerating the Uzbekistan Climate Transition for Green, Inclusive, and Resilient Economic Growth (Subprogram 1) is the program that supports Uzbekistan in implementing crucial policy and institutional reforms to enhance climate and accelerate green transition to achieve resilient, inclusive, and low-carbon economic growth. This supportive program emphasizes reducing greenhouse gas emissions, as well as aligning with the national

development strategy for 2030 and the Strategic Framework for transitioning to a Green Economy until 2030.

The extent of this program: this subprogram mainly focus on 1) reinforce of the institutional framework, planning, budgeting, and monitoring mechanisms 2) enhance climate resilience in water and land resources management, agriculture and social protection systems, state-owned enterprises' (SOE) climate and sustainability risk uncovering and thirdly, accelerate transitioning to a low-carbon economy, particularly in the climate-critical sectors of transport and energy. As a request of the Government of Uzbekistan (GoU), borrowing of USD 250 million each from AIIB and the Asian Development Bank (ADB) to cofinance Subprogram 1. Nowadays, financing of Subprogram 1 hasn't been approved yet by AIIB's Board of Directors, and as the lead co-financier, ADB will provide Program preparation and Environmental and Social (E&S) services to AIIB. The Co-financing Framework Agreement will command co-financing arrangements between AIIB and ADB and will be formalized via a Memorandum of Understanding (MoU) to be signed by ADB and AIIB.

Overall, in Uzbekistan, 14 projects are approved by AIIB, including five non-sovereign-backed ones, covering energy, water, urban development, transport, and health. AIIB co-financed two development policy operations with the **World Bank (2023-2024),** gaining valuable insights into Uzbekistan's challenges. These experiences have toughened AIIN's AIIB's **project implementation** and **policy dialogue.**

Climate finance. Joint MDB methodology for tracking mitigation and adaptation finance is considered as a 100 % climate finance program, as it is shown in the table. Through the program document, particularly direct linkages to the expected program policy actions are represented through the number of reform areas, vulnerability of the project can be seen. This table provides information about the breakdown between climate mitigation and adaptation finance. Overall climate mitigation for the project is USD239.30 million, of which AIIB financing is USD119.65 million, and total adaptation finance is estimated at USD260.7 million, of which AIIB adaptation finance amount stands at USD130.35 million.

Climate finance estimation	**Total Project Finance**	**Clim Finance**			
Source	**Amount**	**Adaptation** (USD	**%**	**Mitigation** (USD million)	**%**

	(US million) D millio n)			
Asian Development Bank	250.00	130 .35	119.6 5	
Asian Infrastructure Investment Bank (AIIB)	250.00	130 .35	119.6 5	
Reform area 1 (enabling environment)		**44.65**	62. 4%	**26.7 9** 37 .6%
Reform area 2 (climate adaptation actions)		**67.85**	95 %	**3.5 7** 5 %
Reform area 3 (climate mitigation actions)		**17.85**	25 %	**89.2 9** 7 5%
TOTAL AIIB Climate finance		**130.35**	**52.2%**	**119.65** **47.8%**

Constraints during development:

Macroeconomic background of Uzbekistan with over 37 million population considered a lower-middle-income country, and an income per capita of around USD 2,790. From 2017 to 2023, the economy grew at an average rate of 5.5 percent per year by embarking on projects such as market-oriented reforms by attracting both foreign and domestic investment, and boasts a high investment rate, around 40 percent of GDP. Finally, Uzbekistan outperforms many other middle-income countries.

Climate vulnerability: The Landscape of Uzbekistan consists mainly of desert plains in the western areas, reported that the Aral Sea has dried up. According to the WB’s Climate Change and Development Report, Uzbekistan is already experiencing the injurious effects of droughts, extreme heat, rainfall volatility, and dust storms. Uzbekistan encounters remarkable climate change dangers from GHG emissions despite being a minor contributor to GHG emissions. These threats might exacerbate water scarcity, accelerating land degradation, and inflicting damage on infrastructure, agricultural productivity, and the water dependency of Uzbekistan is 80 %.

Uzbekistan has made considerable strides in its step forward in the green agenda through focusing on improving vehicle emission standards, setting formidable environmental goals, and enhancing its new pollution system. The high greenhouse gas

(GHG) emissions per unit of GDP necessity significant developments in energy efficiency. From 2021 to 2030, Uzbekistan strengthened its Nationally Determined Contributions (NDCs), raising its target to a 35 percent reduction in emissions intensity. As stated by EBRD, initial data illustrate a substantial growth in electricity generated by solar plants, albeit from low levels.

Uzbekistan is reliant on natural resources and outdated irrigation, and it is compounding some ecological problems like water shortages, poor soil health, and air pollution. Drying of the Aral Sea is mainly harmed by cotton farming since it needs a lot of water, causing desertification. Uzbekistan is said to be one of the energy-intensive economies, as it contributes only 0.32 % of global emissions. 80% of emissions come from the energy sector, mainly from fossil fuels and methane leaks, whereas agriculture causes 19 %.

Some green leveraged projects.

Aral Sea Green Rehabilitation Investment Project (GRIP) leveraged by collaboration with the Global Green Growth Institute (GGGI) and funded by the Korea International Cooperation Agency (KOICA), successfully mobilized $1 billion through the issuance of sustainable and green bonds on the London Stock Exchange. The purpose of the funds is to enhance climate-resilient agriculture and promote environmental sustainability in the targeted areas. (2024)

Uzbekistan is planning to finance about $1.3 billion in building waste-to-energy plants, working together with international companies such as China's CAMC Engineering and the UAE's Tadweer Group. These projects intend to turn 4.7 million metric tons of solid waste annually into 2.1 billion kilowatt-hours of electricity by 2027.

Other projects like the United Nations Conference of Parties on Climate Change (COP29), Uzbekistan secured a $6.5 million grant in collaboration with GGGI to support its green transition. In 2024, the European Bank for Reconstruction and Development (EBRD) raised its investments in Uzbekistan, focusing on green financing, and the total amount of funding reached a record €16.6 billion.

Key Risks

Macroeconomic Outlook and Debt Risks

Uzbekistan's economy encounters challenges from geopolitical tensions, weaker trade partner growth, and energy price increases. Due to high domestic demand, inflation is slowly declining, and fiscal consolidations have begun. Medium growth of the country is forecasted at 5-6 %, and 36 % of GDP growth in public debt, primarily pandemic-related expenses and investments financed externally. Meanwhile, foreign debt of the country reached 61 % of the GDP is going to stay constant according to long and concessional rates

and including depreciation of currency and weak commodity prices. The government has implemented fiscal rules and an **external borrowing cap, a debt ceiling of 60% of GDP, and a budget deficit target of 3% of GDP.**

Green Financing and Public Financial Management (PFM) Risks

A Green Sovereign Eurobond worth $660 million is ensured by Uzbekistan to finance environmental projects such as **water conservation, renewable energy, sustainable transport, and reforestation.** However, risks are available in **budgeting alignment, public investment screening, and financial reporting.** Risks to the Outlook include slower growth in trading partners, especially Russia, Uzbekistan’s major trading partner and source of remittances, which are a major support to livelihoods and external finance. Domestically, risks include contingent liabilities from SOEs and potential slippages in reforms.

Key **PFM risks** include:

- **Delayed fiscal planning**, leading to misallocated funds.
- **Weak public investment management**, affecting project selection and impact.
- **Inaccurate financial reporting**, obscuring climate-related expenditures.
- **Lack of program-based budgeting**, making it difficult to track green spending.

As it is mentioned in the official green project documents, **development partners (e.g., ADB, UNDP)** are supporting **institutional reforms, technical assistance, and IPSAS adoption**. A new **PFM Reform Strategy (2025-2030)** aims to strengthen budget integration, investment efficiency, and financial transparency.

Conclusion

For the sustainable development of Uzbekistan, the transition to a green economy is vital, but high dependency on foreign debt to finance green projects contributes to serious troubles in the economy. While leveraging finance permits for intensive investment in renewable energy, infrastructure, and sustainable industries, as well as increasing debt burden and financial vulnerabilities. To ensure for balanced and effective green transition, Uzbekistan should attract more local investments, green bonds, and public-private partnerships (PPPs) rather than external debt. Enhancing specific credible information through strong financial strategies. Encouraging long-term investments and responsible borrowing by implementing stronger policies and incentives. Prioritizing energy-saving technologies to reduce emissions and reliance on fossil fuels. In addition, green funds should be financed by Uzbekistan’s revenue from natural resource exports (such as gas and minerals), carbon pricing mechanisms, and eco-tourism revenue. To gather returns and self-financing over time of green projects, mainly profitable green ventures such as solar farms

and sustainable infrastructure should be financed. Offering tax incentives for individuals or businesses who actively support domestic participation in the green transition and contribute to the fund. In contrast, conducting strong management on funds for green projects and setting strict rules and penalties for businesses or citizens those who pollute the environment and conducting strong management on funds for green projects.

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