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IMPROVING MECHANISMS FOR ATTRACTING INTERNATIONAL INVESTMENT DURING THE TRANSITION TO A GREEN ECONOMY

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Abstract: The transition to a green economy requires investment mechanisms that combine environmental objectives with commercially viable projects and credible institutions. This study examines how competitive procurement, payment guarantees, long-term contracts, and development finance can support international investment, using Uzbekistan's solar energy sector as an empirical case. The research applies comparative project analysis to three solar projects, examines the disclosed financing structure of the Samarkand–Jizzakh investment package, and conducts an illustrative sensitivity analysis of financing costs. Calculations show that the average awarded electricity tariff for the two subsequent projects was 32.55% below the Navoi benchmark. The Samarkand–Jizzakh package combined USD 193 million in sponsor equity and USD 216 million in development-bank debt, alongside payment guarantees of up to USD 12 million. These findings document the coexistence of competitive tariffs, foreign participation, and coordinated risk mitigation; they do not establish a causal effect of guarantees or procurement reform. The article proposes an integrated investment mechanism linking project preparation, transparent procurement, targeted financial support, grid readiness, and environmental verification. Its principal contribution is a practical framework for evaluating investment attraction through financial closure, fiscal exposure, and verified environmental performance.

Keywords: green economy, international investment, renewable energy, investment mechanisms, public–private partnership, payment guarantees, Uzbekistan.

Introduction

The transition to a green economy changes both the composition of investment demand and the conditions under which capital is allocated. Renewable energy, energy efficiency, sustainable transport, and resource-efficient production require substantial financing before their economic and environmental benefits materialize. For developing economies, attracting international investment therefore involves converting environmental priorities into projects with predictable revenues, manageable risks, and credible implementation arrangements.

International investment can contribute capital, technology, and managerial expertise. However, foreign participation does not automatically produce sustainable development. An investment project may expand generation capacity while creating fiscal liabilities, environmental pressures, or limited opportunities for domestic suppliers. Investment policy consequently needs to assess the quality of capital alongside its volume.

Uzbekistan provides a relevant setting for examining these issues. Its solar procurement experience offers documented examples of foreign-owned project companies, competitive tenders,

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development-bank financing, and contractual risk mitigation. The International Energy Agency identifies competitive procurement supported by international financial institutions as an important component of the country's development of large-scale solar projects [1].

The central research question is: How can international investment attraction mechanisms be improved to support an economically viable and environmentally credible green transition?

The objective is to identify the institutional and financial arrangements associated with investment implementation and translate the findings into a practical policy framework. The empirical focus is Uzbekistan's utility-scale solar sector. Conclusions concerning other green sectors are presented as policy implications requiring further investigation.

Analytical framework

The study combines three complementary perspectives.

First, a risk–return perspective explains why technically feasible green projects may remain financially unattractive. Uncertainty about electricity payments, contractual enforcement, currency movements, or grid access can increase required returns and borrowing costs.

Second, a transaction-cost perspective emphasizes project preparation and administrative coordination. Standard contracts, accessible project information, and predictable approval procedures can reduce the resources investors spend assessing and negotiating projects.

Third, an environmental-integrity perspective requires investment performance to be assessed through verifiable outcomes. Financing classified as green should demonstrate eligible expenditure, operational performance, and measurable environmental benefits.

These perspectives suggest the following analytical proposition: International investment becomes more feasible when project preparation, competitive selection, revenue arrangements, risk allocation, and environmental accountability operate as a coordinated system.

This proposition guides the descriptive analysis; it is not treated as an econometrically verified hypothesis.

2 Methods

2.1 Research design and data

The study uses a descriptive comparative case design based on publicly available institutional disclosures covering project awards and financing announcements during 2019–2024.

The empirical analysis comprises:

1. A tariff comparison across the Navoi, Samarkand, and Jizzakh solar projects.
2. An assessment of the disclosed Samarkand–Jizzakh financing structure.
3. An illustrative sensitivity analysis showing how financing costs affect annualized generation costs.

The project observations were selected because their capacities, awarded tariffs, and institutional arrangements are publicly documented. This is a purposive sample rather than a representative sample of Uzbekistan's renewable energy sector.

The analysis distinguishes between foreign sponsor equity, international development-bank lending, and payment guarantees. These instruments are not interchangeable, and their combined value is not reported as foreign direct investment.

2.2 Variables and calculations

The percentage tariff reduction relative to the Navoi benchmark is calculated as:

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$$D_i=\frac{T_0-T_i}{T_0}\times 100.$$

Here, T_0 represents the Navoi tariff and T_i represents the comparator tariff.

The capacity-weighted tariff is:

$$\overline{T}=\frac{\sum_i C_i T_i}{\sum_i C_i},$$

where C_i is project capacity. Since Samarkand and Jizzakh have equal capacities, their capacity-weighted average equals their arithmetic mean.

Financing shares are calculated as:

$$S_E=\frac{E}{E+D}\times 100, \qquad S_D=\frac{D}{E+D}\times 100,$$

where E denotes disclosed sponsor equity and D denotes disclosed debt. The symbol D_i above denotes a tariff reduction and is distinct from the financing variable D.

A financing-to-guarantee ratio is also calculated:

$$R_{FG}=\frac{E+D}{G},$$

where G is the maximum disclosed guarantee amount. This indicator describes the relative scale of financing and guarantee coverage. It does not measure additional investment caused by the guarantee.

2.3 Financing cost sensitivity

An illustrative generation-cost model is used:

$$LCOE=\frac{CAPEX\times CRF(r,n)+OPEX}{8760\times CF},$$

with:

$$CRF(r,n)=\frac{r(1+r)^n}{(1+r)^n-1}.$$

Here, r is the assumed financing rate, n is project life, and CF is the capacity factor. CAPEX is measured in USD/kW and annual OPEX in USD/kW-year, giving LCOE in USD/kWh; multiplying by 1,000 gives USD/MWh.

The scenario assumes capital expenditure of USD 700/kW, annual operating expenditure of USD 12/kW, a 25-year life, and a 22% capacity factor. These are illustrative assumptions, not estimated characteristics of the selected projects. The simplified model excludes taxes, degradation, construction timing, storage, and network costs.

2.4 Methodological limitations

The sample contains three projects and no untreated comparison group. Regression analysis would therefore provide little credible evidence about policy effects.

Awarded tariffs also differ from realized generation costs. Differences may reflect project scale, solar resources, technology prices, financing conditions, or contract provisions. Financing announcements describe disclosed commitments and structures, rather than independently verified disbursements.

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Accordingly, the study reports descriptive findings and conditional policy interpretations.

3 Results

3.1 Comparative tariff analysis

Table 1

Selected solar projects and awarded electricity tariffs

Project	Capacity MW	Awarded tariff US cents/kWh	Reduction relative to Navoi
Navoi	100	2.679	Benchmark
Samarkand	220	1.791	33.15%
Jizzakh	220	1.823	31.95%
Samarkand–Jizzakh combined	440	1.807	32.55%

Source: Institutional project disclosures [1, 2, 4]; percentage changes and the combined tariff are the author's calculations. Navoi's tender was won in October 2019; the other two awards were announced in May 2021.

The combined tariff is:

$$\bar{T}=\frac{220(1.791)+220(1.823)}{440}=1.807 \text{ US cents/kWh.}$$

The corresponding reduction is:

$$D=\frac{2.679-1.807}{2.679}\times 100=32.55\%.$$

The comparison documents lower awarded prices in the subsequent projects. It does not isolate the contribution of any individual investment mechanism.

The procurement process also attracted multiple offers: IFC reported seven bids for Jizzakh and six proposals for Samarkand [2]. This provides evidence of competition within the two tenders, although bidder numbers alone do not establish procurement efficiency or long-term project performance.

3.2 Financing structure and payment guarantees

The World Bank's March 2023 disclosure reported USD 193 million in Masdar equity and USD 216 million in debt financing for the Samarkand–Jizzakh projects. It also described payment guarantees of up to USD 6 million per plant, supporting letters of credit linked to the electricity purchaser's payment obligations [5].

Table 2

Disclosed financing structure of the Samarkand–Jizzakh package

Indicator	Value
Foreign sponsor equity	USD 193 million

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Indicator	Value
Development-bank debt	USD 216 million
Combined disclosed equity and debt	USD 409 million
Equity share	47.19%
Debt share	52.81%
Maximum combined payment guarantees	USD 12 million
Financing-to-guarantee ratio	34.08
Guarantee amount relative to financing	2.93%

Source: World Bank disclosure [5]; ratios are the author's calculations. Guarantees are shown separately from funded financing.

The ratio is:

$$R_{FG}=\frac{193+216}{12}=34.08.$$

Thus, every dollar of maximum disclosed guarantee coverage corresponded to approximately USD 34.08 in disclosed project financing.

This finding illustrates the scale relationship between a targeted payment instrument and a larger financing package. It should not be interpreted as a private-capital mobilization multiplier: the financing includes development-bank debt, and the analysis cannot determine how much investment would have occurred without the guarantees.

3.3 Evolution toward more complex financial arrangements

The Bukhara solar-and-storage financing announcement provides a supplementary example. IFC described a package combining lending, concessional finance, a payment guarantee, and interest-rate swaps for a 250-MW solar project with a 63-MW battery storage system [3].

The case indicates that investment support can address several distinct constraints within one transaction. Payment instruments address purchaser-related risk; concessional funding changes financing terms; interest-rate hedging addresses exposure to rate movements; and storage introduces additional technical and contractual requirements.

This is evidence of a broader instrument mix, rather than proof that the package achieved the lowest possible financing cost.

3.4. Sensitivity to financing costs

Table 3

Illustrative annualized generation costs under alternative financing rates

Assumed financing rate	Capital recovery factor	Modeled cost USD/MWh
6%	0.0782	34.64

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Assumed financing rate	Capital recovery factor	Modeled cost USD/MWh
8%	0.0937	40.25
10%	0.1102	46.24
12%	0.1275	52.54

Source: Author's calculations using the assumptions stated in Section 2.3. These are scenario outputs, not observed project costs.

Under these assumptions, reducing the financing rate from 12% to 8% lowers the modeled generation cost by:

$$\frac{52.54-40.25}{52.54}\times 100\approx 23.39\%.$$

The percentage above uses the rounded costs displayed in Table 3. Using unrounded model outputs gives approximately 23.38%.

The sensitivity exercise demonstrates the importance of financing conditions for capital-intensive infrastructure. It does not estimate the interest-rate reduction achievable through any particular policy.

The scenario results should not be directly compared with the awarded tariffs in Table 1 because the projects' actual costs, financing structures, and contractual conditions are not reproduced in the model.

4 Discussion

4.1 Interpretation of the empirical evidence

The selected cases support a practical interpretation: attracting international green investment requires coordination across the project cycle.

Competitive procurement can reveal investor offers, but a tender requires credible project information and contractual arrangements. Long-term revenue commitments can support financing, but their value depends on the purchaser's ability to pay. Guarantees can address specified risks, while grid constraints can still prevent a financially structured project from delivering electricity.

The empirical findings therefore support an integrated approach to investment attraction. They do not demonstrate that guarantees alone reduced tariffs or that the observed projects represent all foreign investment in Uzbekistan.

4.2 Proposed improvements to investment mechanisms

Table 4

Proposed framework for improving international green investment attraction

Mechanism	Proposed improvement	Performance indicator
Project preparation	Complete resource studies, land assessment, environmental screening, and grid studies before procurement	Share of tendered projects with completed preparation

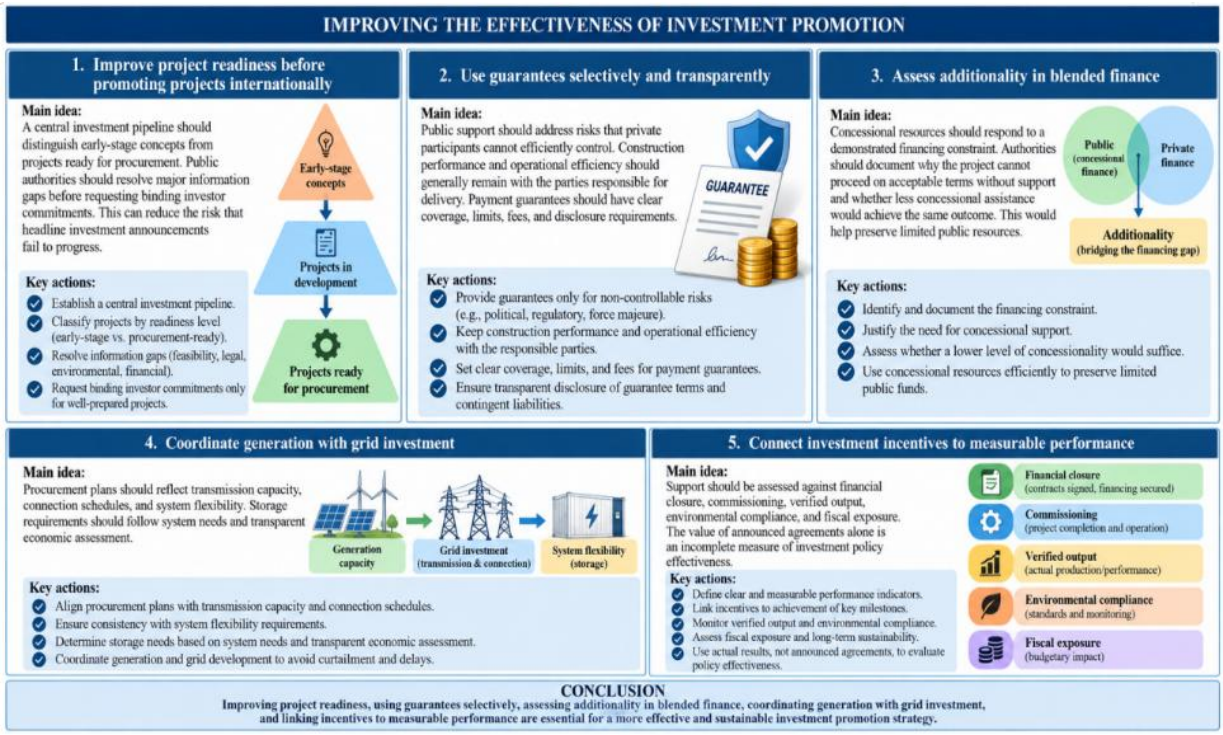
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Mechanism	Proposed improvement	Performance indicator
Competitive procurement	Publish evaluation criteria, draft contracts, and award results	Qualified bids and share of awards reaching financial close
Revenue arrangements	Define payment security, curtailment, indexation, and dispute procedures clearly	Payment delays and contract disputes
Risk mitigation	Match guarantees to identified risks and disclose contingent liabilities	Guarantee exposure and claims
Blended finance	Require a documented financing gap and justification for concessional support	Concessional support per unit of verified output
Grid coordination	Align generation procurement with connection capacity and network investment	Connection delays and curtailment
Environmental verification	Require expenditure tracking and independently reviewable performance reporting	Verified generation and emissions outcomes
Domestic participation	Develop supplier information, training, and transparent subcontracting opportunities	Qualified domestic suppliers and skills outcomes

Source: Author's proposed framework informed by the case analysis.

The proposed framework for improving the effectiveness of investment promotion highlights five interconnected strategic directions: enhancing project readiness, ensuring the selective and transparent use of guarantees, assessing additionality in blended finance, coordinating energy generation with grid infrastructure, and linking investment incentives to measurable performance indicators. First, improving project readiness requires establishing a centralized investment pipeline that differentiates preliminary investment concepts from projects prepared for procurement and implementation.

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This approach enables public authorities to identify and address financial, legal, technical, and environmental constraints before attracting international investors, thereby reducing project uncertainty and implementation risks. Second, the selective application of public guarantees promotes an efficient allocation of financial responsibilities between public institutions and private investors. Transparent guarantee mechanisms, including clearly defined coverage, financial limits, fees, and disclosure requirements, contribute to fiscal discipline and institutional accountability. Furthermore, assessing additionality in blended finance ensures that concessional financial resources are allocated only when genuine financing constraints exist, preventing unnecessary public expenditure and encouraging the efficient mobilization of private capital.

The framework also emphasizes the importance of infrastructure coordination and performance-oriented investment policies in achieving sustainable economic development. Coordinating electricity generation projects with transmission networks, connection schedules, and energy storage requirements contributes to greater operational efficiency, reduces infrastructure bottlenecks, and strengthens the reliability of energy systems. Such coordination is particularly relevant for renewable energy investments, where inadequate grid capacity and insufficient system flexibility may negatively affect project implementation and economic returns. In addition, connecting investment incentives to measurable outcomes establishes a more transparent and results-based evaluation mechanism. Key performance indicators, including financial closure, project commissioning, verified production output, environmental compliance, and fiscal exposure, enable policymakers to assess the actual economic contribution of investment projects rather than relying exclusively on announced investment commitments. Overall, the integration of these five strategic directions provides a comprehensive institutional and financial framework for strengthening

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investment governance, improving resource allocation, mitigating implementation risks, and promoting long-term economic sustainability.

4.3 Scientific contribution and further research

The article's contribution is the integration of three evaluation dimensions: commercial feasibility, public risk exposure, and environmental performance.

The empirical analysis shows how these dimensions can be examined using transparent project-level information without presenting descriptive ratios as causal estimates. The proposed framework also shifts policy evaluation toward implemented projects and verified outcomes.

Further research should assemble a larger dataset containing financing terms, procurement participation, project delays, guarantee coverage, and operational performance. With sufficient comparable observations, such data could support stronger analysis of the relationship between policy instruments and investment outcomes.

5. Conclusion

Uzbekistan's selected solar projects demonstrate how foreign sponsorship, competitive procurement, development-bank lending, and payment security can operate within a coordinated investment structure. The subsequent Samarkand–Jizzakh awards had an average tariff 32.55% below the Navoi benchmark. Their disclosed financing package totaled USD 409 million, alongside guarantees of up to USD 12 million. These findings are descriptive and do not establish the independent effect of any instrument.

Improving international investment attraction during the green transition requires better project preparation, transparent competition, targeted risk allocation, coordinated grid development, and credible environmental reporting. Success should be evaluated through financial closure, reliable operation, verified environmental benefits, and manageable public liabilities.

References

1. International Energy Agency. (2022). *Solar Energy Policy in Uzbekistan: A Roadmap*. https://www.iea.org/reports/solar-energy-policy-in-uzbekistan-a-roadmap
2. International Finance Corporation. (2021, May 20). *Uzbekistan Announces Winner of the Tender for Solar Power Plants in the Jizzakh and Samarkand Regions*.
3. International Finance Corporation. (2024, May 21). *Uzbekistan to Build New Solar Plant and First Battery Energy Storage System with World Bank Group Support*.
4. World Bank. (2020, December 22). *Pioneering Solar Power Plant to Take off in Uzbekistan with World Bank Group Support*.
5. World Bank. (2023, March 7). *New Solar Power Plants to Be Launched in Uzbekistan with World Bank Support, Helping Expand Access to Clean Energy*.
6. Ibrokhimova Shirmonoy Khusan qizi. "Analysis OF the Share OF the State Budget in Investments in Fixed Capital in the Republic OF Uzbekistan." Pioneer: Journal of Advanced Research and Scientific Progress 4.2 (2025): 51-55.
7. Mahammadsidik, A., & Sherzodjon o'g'li, H. U. (2025). Analysis OF the Historical Evolution AND Development Stages OF Free Economic Zones. Pioneer: Journal of Advanced Research and Scientific Progress, 4(1), 13-18.

HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

8. Sh, Habibjonov U. "Analysis of factors influencing the volume of foreign direct investments in the republic of Uzbekistan: correlation analysis." Экономика и социум 4-1 (131) (2025): 200-207.
9. Sherzodjonovich, Habibjonov Usmonjon. "Analysis of free economic zones in Uzbekistan." Economics and Innovative Technologies 12.5 (2024): 88-95.
10. Khabibjonov, U., & Ismoilov, I. (2024). General structure and development of China's "One belt, one road" program. Science and innovation, 3(A7), 29-34.
11. Parwoniy, M., & Usmonjon, H. (2024). Islamic finance and its impact on the economy of Uzbekistan. Innovative Developments and Research in Education, 3(32), 242-245.