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Opportunities for Developing Regional “Green” Infrastructure Provision in Uzbekistan

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Abstract: The article examines the economic, institutional, investment, and technological opportunities for developing regional “green” infrastructure provision in Uzbekistan. The reforms being implemented in the country to transition to a “green” economy, develop renewable energy, improve energy and water efficiency, promote “green” buildings and environmentally friendly transport, and develop climate-resilient urban infrastructure are systematized. Scientific proposals are developed for forming differentiated “green” infrastructure policies based on the resource, climate, urbanization, and economic specialization characteristics of regions; integrating public and private investment; and prioritizing projects based on “green” standards and outcome indicators.

Keywords: regional infrastructure, “green” infrastructure, “green” economy, renewable energy, energy efficiency, water efficiency, “green” buildings, climate resilience, public-private partnership, “green” investment.

1. Introduction

The implementation of economic growth, urbanization, and improvements in population well-being in Uzbekistan is steadily increasing demand for infrastructure in energy, transport, water supply, utilities, buildings, and the urban environment. At the same time, climate change, water scarcity, growing energy consumption, and environmental pressures are strengthening the need to transform the traditional infrastructure provision model toward a resource-efficient and climate-resilient model [1]. In this regard, regional “green” infrastructure is an important factor in relatively decoupling economic growth from resource consumption, ensuring quality services for the population, and strengthening environmental sustainability [2]. The “Uzbekistan – 2030” Strategy and programs for its implementation identify the rational use of natural resources, increasing the share of renewable energy, widespread application of modern energy-saving technologies, reducing the “carbon footprint,” and ensuring interregional coordination aimed at environmental sustainability as priority tasks. These tasks create an institutional basis for moving from managing regional infrastructure according to the logic of “constructing facilities” toward management based on the chain “resource efficiency – service quality – climate resilience – investment sustainability [3].”

In modern economic literature, the concept of “green” infrastructure is interpreted not merely as the environmental modernization of energy and utility facilities, but as a system that integrates natural and engineering infrastructure and ensures resource

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efficiency, adaptability to climate risks, and low-carbon development. The World Bank's Country Climate and Development Report for Uzbekistan identifies improving urban air quality, developing "green" urban master plans, urban mobility, and efficient public transport as important directions for the country [4].

According to World Bank analyses, financing the investments required for decarbonization and climate adaptation in Uzbekistan solely from the state budget is limited, making it important to create a favorable investment environment for the private sector [5]. This justifies the need to combine public-private partnerships, commercial financing, "green" loans and bonds, and resources from international financial institutions in regional "green" infrastructure provision.

The IFC Uzbekistan Green Building project is aimed at developing a "green" building ecosystem in the local market, recognizing international voluntary certifications, developing incentive policy mechanisms, and strengthening the institutional capacity of public, private, and financial-sector stakeholders [6]. This indicates that opportunities are emerging in Uzbekistan to move from regulatory standardization toward market incentives and certification in the "greening" of regional infrastructure.

2. Materials and Methods

The study employed systematic and comparative analysis, an institutional approach, analysis and synthesis, induction and deduction, functional grouping, and logical generalization. Opportunities for developing "green" infrastructure in Uzbekistan were grouped into energy, water and utilities, buildings, transport and the urban environment, financing, and digital governance.

3. Results and Discussion

The first factor shaping opportunities for developing regional "green" infrastructure provision in Uzbekistan is the regional potential of renewable energy resources. Locating solar and wind energy facilities, as well as small and micro-hydropower facilities, in accordance with the resource base of regions can reduce the load on the centralized energy system and increase local energy resilience.

The small hydropower program supported by the World Bank in 2025 is expected to create the capacity to finance up to 150 MW by 2030 and generate more than 520 GWh of "green" electricity annually [7].

The second opportunity is improving the energy efficiency of buildings and utility infrastructure. Modernizing the existing building stock, heating and cooling systems, pumping stations, and street-lighting networks makes it possible to manage energy demand alongside the construction of new generation capacity. IFC's green building project in Uzbekistan, focused during 2023–2026 on the policy and regulatory environment, certification, and capacity development of market participants, expands the institutional opportunities in this segment [8].

Table 1. Main Opportunities for Developing Regional "Green" Infrastructure in Uzbekistan

Direction	Existing opportunity	Main instrument	Regional differentiation	Expected result
Renewable energy	Solar, wind, and small hydropower resources	PPP, auctions, local credit	According to resource potential	Energy resilience and decarbonization

Direction	Existing opportunity	Main instrument	Regional differentiation	Expected result
Buildings	Energy-efficient modernization and certification	ESCO, green mortgages/loans, EDGE	Large cities and social facilities	Reduction of energy costs
Water infrastructure	Reduction of water losses and reuse	Smart metering, pump modernization	Water-scarce regions	Water and energy efficiency
Urban transport	Public transport and low-carbon mobility	Electric transport, BRT, TOD	Highly urbanized regions	Reduction of congestion and emissions
Green urban environment	Green areas, drainage, nature-based solutions	Green master plan, GIS	According to climate risk and density	Reduction of heat-island and flood risks
Financing	Combining public and private capital	Green bonds, loans, PPP	According to project readiness	Expansion of investment resources

Source: Systematized by the author based on official strategic documents and data from international organizations.

The data in Table 1 show that opportunities for developing “green” infrastructure are not uniform across regions. Therefore, while common national standards and objectives should be maintained, practical instruments should be adapted to the resource and economic profile of each region. For example, water efficiency should be prioritized in water-scarce regions; transport and buildings in large agglomerations; and generation and storage infrastructure in regions with high renewable-energy potential [9].

The third opportunity is to modernize water and utility infrastructure based on resource efficiency. Reducing technical losses in water supply networks, improving the energy efficiency of pumping stations, expanding digital metering and monitoring, and reusing treated water can generate a dual benefit of water and energy savings under conditions of water scarcity. Therefore, in regional investment programs, water infrastructure projects should be assessed not only by new capacity but also by energy consumption per cubic meter of delivered water and network losses.

The fourth opportunity is low-carbon development of urban and transport infrastructure. The World Bank identifies green urban master plans, urban mobility, and efficient public transport as priority directions for Uzbekistan in relation to air quality, congestion, and climate adaptation [10]. Consequently, developing public transport, electric mobility, pedestrian and cycling infrastructure, and transit-oriented urban planning solutions as an integrated package can generate significant synergies.

Table 2. Differentiated “Green” Infrastructure Policy According to Regional Characteristics

Region type	Main constraint/potential	Priority infrastructure	Policy instrument	Outcome KPI
Water-scarce region	Limited water resources	Water and irrigation infrastructure	Smart metering, reuse, energy-efficient pumps	Water losses; energy consumption per 1 m ³

Region type	Main constraint/potential	Priority infrastructure	Policy instrument	Outcome KPI
Large agglomeration	Density, transport, and air pressure	Transport, buildings, green areas	BRT/EV, green building, green master plan	Public transport share; energy intensity
Industrialized region	Energy and resource intensity	Energy, waste, utility networks	Renewable energy, industrial symbiosis, waste-to-resource	Energy/GDP; recycling share
High solar/wind potential	High renewable-resource potential	Generation, storage, grid	PPP, auction, BESS	Renewable capacity; green electricity generation
High climate risk	Heat, drought, or flooding	Resilient urban and nature-based solutions	Risk mapping, NBS, reserve systems	Duration of disruptions; green area

Source: Author's development.

The fifth opportunity is to diversify financing sources for regional “green” infrastructure projects. The World Bank emphasizes that while public funds should support climate action, they should also serve as a catalyst for attracting private investment [11]. In practice, budget resources or state guarantees can reduce initial project risks, while private capital can be directed toward commercially viable components, thereby creating blended-finance mechanisms.

The 250 MW solar photovoltaic plant and 63 MW/126 MWh energy storage system in Bukhara Region are identified in IFC's green finance portfolio as one of the first renewable-energy initiatives in Central Asia integrating BESS [12]. This practice demonstrates the possibility of structuring generation, storage, and grid infrastructure at the regional level as a single investment project.

Table 3. Proposed Organizational and Economic Mechanism for Developing Regional “Green” Infrastructure

Stage	Main action	Instrument	Management outcome
1. Regional diagnostics	Assess resources, climate, and infrastructure condition	GIS, audit, KPI database	Green infrastructure profile
2. Prioritization	Rank projects by environmental and economic criteria	Green score / ESG screening	Investment portfolio
3. Financing	Combine public and private resources	PPP, blended finance, green bond/loan	Expanded capital base

4. Implementation	Apply standards and life-cycle requirements	LCC/LCA, green procurement	High-quality and efficient facility
5. Digital monitoring	Monitor operational outcomes	Smart meter, IoT, dashboard	Actual KPIs and transparency
6. Outcome-based incentives	Link financial incentives to verification	Performance-based incentive	Sustainable impact and accountability

Source: Author's development.

The main feature of the proposed mechanism is to treat “green” infrastructure not as a collection of separate sectoral projects, but as a unified portfolio managed in accordance with the resource, climate, and investment characteristics of a region [13]. First, regional diagnostics are conducted; projects are then ranked according to integrated environmental and economic criteria, and financing conditions are linked to the ranking results. During operation, planned performance is verified through digital monitoring, and subsequent incentives are based on actual outcomes [14].

The sixth opportunity is to digitalize regional governance and introduce a “green infrastructure passport.” It can contain facility-level data on energy, water, transport, buildings, green areas, waste, and climate risks. Such an information platform can enable objective assessment of investment needs, comparison of regions, monitoring of outcome KPIs, and preparation of reporting aligned with the requirements of international financial institutions [15].

4. Conclusion

The research findings demonstrate that Uzbekistan possesses significant energy, resource, institutional, and financial potential for the development of regional green infrastructure. However, the effective realization of this potential requires the integration of existing opportunities into a unified regional management framework that accounts for differences in resource availability, climate conditions, infrastructure capacity, and investment potential. The study shows that a transition toward green infrastructure should be based on a differentiated regional approach rather than a uniform development model. The integration of renewable energy, resource efficiency, green buildings, sustainable transport, and climate-resilient infrastructure can contribute to more efficient resource use, reduced environmental pressures, and improved long-term infrastructure sustainability. Overall, Uzbekistan has the necessary foundations to move from an extensive infrastructure development model toward a more resource-efficient, climate-resilient, and investment-sustainable model of green development. Achieving this transition requires stronger coordination between regional planning, investment decisions, financing mechanisms, infrastructure implementation, and digital performance monitoring.

REFERENCES

- [1] Government of the Republic of Uzbekistan, “Uzbekistan–2030” *Strategy and the State Program for Its Implementation in the Year of Environmental Protection and the “Green Economy”*, Tashkent, Uzbekistan, 2025. [Online]. Available: [Government Portal of the Republic of Uzbekistan](#)
- [2] World Bank, *Uzbekistan Country Climate and Development Report*. Washington, DC, USA: World Bank Group, 2023, report no. 185827. [Online]. Available: [Uzbekistan Country Climate and Development Report](#)
- [3] International Finance Corporation, *Uzbekistan Green Building*, Advisory Services Project No. 607634. Washington, DC, USA: International Finance Corporation, 2023–2026. [Online]. Available: [IFC Project 607634](#)

- [4] World Bank, "Uzbekistan to enhance energy production through hydropower with World Bank support," press release, Jun. 25, 2025. Washington, DC, USA: World Bank Group, 2025.
- [5] World Bank, *Prime Picks for a Green Pivot: Uzbekistan State Funds for Climate Action*. Washington, DC, USA: World Bank Group, 2024. [Online]. Available: [Prime Picks for a Green Pivot: Uzbekistan State Funds for Climate Action](#)
- [6] International Finance Corporation, *Green and Social Bonds Impact Report FY24: UZ Solar 3, Uzbekistan*. Washington, DC, USA: International Finance Corporation, 2024.
- [7] International Finance Corporation, *National Green Building Design Competition, Uzbekistan*. Washington, DC, USA: International Finance Corporation, 2025.
- [8] Strategic Development and Reforms Agency under the President of the Republic of Uzbekistan, *Towards a Greener Economy in Uzbekistan*. Tashkent, Uzbekistan: Strategic Development and Reforms Agency, 2025.
- [9] Asian Development Bank, *Uzbekistan: Country Partnership Strategy (2024–2028)*. Manila, Philippines: Asian Development Bank, Aug. 2024.
- [10] European Bank for Reconstruction and Development, *Uzbekistan: Country Strategy 2024–2029*. London, U.K.: European Bank for Reconstruction and Development, 2024.
- [11] United Nations Development Programme, *Policy Brief: Green Recovery and the Transition to Green Economy in Uzbekistan*. Tashkent, Uzbekistan: United Nations Development Programme, Mar. 2, 2021. [Online]. Available: [UNDP Policy Brief](#)
- [12] United Nations Development Programme, *Report on Integration of Climate and Green Priorities into the Strategic Planning and Budgetary Process in Uzbekistan*. Tashkent, Uzbekistan: United Nations Development Programme, 2026.
- [13] International Finance Corporation, "Uzbekistan to build new solar plant and first battery energy storage system with World Bank Group support," press release, May 21, 2024. Washington, DC, USA: International Finance Corporation, 2024.
- [14] World Bank, "Uzbekistan to launch a new solar plant in the Khorezm region with support from the World Bank Group," press release, Dec. 23, 2024. Washington, DC, USA: World Bank Group, 2024.
- [15] United Nations Development Programme, "Environment and climate action," UNDP Uzbekistan, Tashkent, Uzbekistan, n.d. [Online]. Available: [UNDP Uzbekistan — Environment and Climate Action](#)