

**GREEN PROJECTS WITHIN INTERNATIONAL COOPERATION FOR
ENVIRONMENTAL PROTECTION**

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Annotation. This article examines green projects implemented within international cooperation frameworks as a key mechanism for strengthening environmental protection in Uzbekistan. It systematizes the roles of major international programs and institutions—including UNDP, GEF, GCF, GGGI, the World Bank, the EU LIFE Programme, and ADB—by outlining their thematic priorities and ongoing national projects. The study highlights how external technical, financial, and institutional support contributes to Uzbekistan’s green transformation through land degradation neutrality, water-awareness initiatives, climate-resilient infrastructure, renewable energy expansion, and improved waste management. Particular attention is paid to diversified financing models (grants, concessional loans, and innovative instruments such as green bonds/green sukuk) and to coordination mechanisms that enhance project governance, monitoring, and reporting. The findings emphasize that adapting international best practices to local climatic, infrastructural, and socio-economic conditions increases effectiveness and ensures measurable ecological outcomes, including reduced CO₂ emissions, improved water-use efficiency, expanded protected areas, and strengthened environmental monitoring capacities. Overall, international green cooperation is presented as both an environmental policy tool and a strategic element of Uzbekistan’s sustainable development and environmental diplomacy.

Keywords: international cooperation; green projects; environmental protection; Uzbekistan; sustainable development; climate finance; Green Climate Fund (GCF); Global Environment Facility (GEF); UNDP; renewable energy; land degradation neutrality; water resource management; green bonds; green sukuk; environmental monitoring. International environmental programs and green projects have today become key instruments of environmental protection at the level of global policy. They are among the main mechanisms that strengthen cooperation between countries in the processes of sustainable development, combating climate change, conserving biodiversity, and transitioning to a green economy. Worldwide, such initiatives are implemented by many international organizations, financial institutions, and regional alliances. Among the most influential are the United Nations Development Programme (UNDP), the Global Environment Facility (GEF), the European Union’s LIFE Programme, the Green Climate Fund (GCF), the World Bank, the Asian Development Bank (ADB), and the Global Green Growth Institute (GGGI).

Projects financed by the GEF are particularly important: they have established effective mechanisms for environmental protection, sustainable energy, waste management, and measures against land degradation in developing countries such as Uzbekistan. For example, through the “**Land Degradation Neutrality**” project implemented in partnership with GEF and UNDP, agroecological measures aimed at addressing land degradation and salinization problems are being introduced in the Republic of Karakalpakstan and Bukhara region. Similarly, UNDP’s “**UzWaterAware**” initiative has developed information and awareness-raising campaign activities in Uzbekistan to improve water resources management and strengthen a culture of water saving.

Climate-resilient infrastructure projects financed by the **Green Climate Fund (GCF)**, in turn, continue to support Uzbekistan in reducing the carbon footprint in the energy and

agricultural sectors, implementing energy-efficient construction, and expanding the use of renewable sources. At the same time, GGGI is developing the concept of financing environmental projects through **green finance**, in particular via **green sukuk (Islamic bonds)**—which is laying the groundwork for the formation of a green bonds market in Uzbekistan.

Within the framework of the European Union’s **LIFE Programme**, cooperation is developing in the areas of transboundary environmental security, environmental monitoring systems, wastewater utilization, and environmental education. These programs play an important role at the local level in strengthening scientific capacity, improving monitoring systems, and introducing environmental innovations.

International environmental programs not only provide Uzbekistan with technical, financial, and institutional support, but also strengthen commitment to global environmental obligations and enable the alignment of national strategies with international standards. This form of cooperation also carries major strategic significance as a tool of environmental diplomacy.

In addition, international environmental programs are ensuring faster progress for Uzbekistan on the path of green transformation by enhancing the capacity of national institutions, improving regulatory and legal frameworks, and facilitating the transfer of modern technologies. For example, the “**Sustainable Rural Energy**” project implemented with the World Bank supports the installation of solar panels, biogas units, and energy-efficient heating systems in regions experiencing energy shortages. Such initiatives not only reinforce environmental sustainability, but also promote socio-economic equity and long-term development. Therefore, environmental projects implemented through international cooperation are an important vector in Uzbekistan’s sustainable development strategy, and international criteria, indicators, and financing mechanisms are deeply integrated into their planning and monitoring.

Table 4.3.1

International environmental programs and green projects implemented in Uzbekistan by key priority areas

International program organization /	Main focus areas	Active projects in Uzbekistan
GEF (Global Environment Facility)	Land degradation, waste management, biodiversity restoration	Land Degradation Neutrality, Waste Management pilot
UNDP (UN Development Programme)	Water resources management, environmental education, green policy	UzWaterAware, Green Transition Strategy support
GCF (Green Climate Fund)	Climate-resilient infrastructure, renewable energy	Resilient Infrastructure Development Program
GGGI (Global Green Growth Institute)	Green finance, green sukuk concept, institutional capacity	Project to develop the green bonds market
World Bank	Rural energy, energy-efficiency technologies	Sustainable Rural Energy Project
EU LIFE Programme	Transboundary environmental security, monitoring, wastewater	Environmental Education and Policy Training Program
ADB (Asian Development Bank)	Renewable energy, environmental investments	Solar & Wind Capacity Development Loans

Source: Prepared by the author based on official reports of GEF, UNDP, GCF, GGGI, the World Bank, the EU LIFE Programme, and ADB (2022–2024), as well as open data of the Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan and UN materials on the “Green Transition” strategy.

The table systematically summarizes major international environmental programs operating in the Republic of Uzbekistan, their main thematic areas, and specific ongoing projects. It reveals the scope of international cooperation in the environmental sphere, the diversity of directions, and the functional role of these projects in addressing concrete environmental problems in Uzbekistan. Each organization has its own strategic focus, and high-level results are being achieved by aligning these priorities with the country’s real environmental needs.

For instance, the GEF-supported “**Land Degradation Neutrality**” project targets land degradation and biodiversity conservation, while UNDP’s “**UzWaterAware**” initiative aims to shape public awareness by raising society’s understanding of water resources and promoting water-saving technologies. Infrastructure projects financed by the GCF serve to introduce climate-resilient energy solutions—particularly visible in the solar and wind energy sectors.

GGGI supports the development of a national green finance market through innovative financial instruments—especially **green sukuk** and **green bonds**—creating a strategic foundation for long-term and sustainable financing of environmental projects. Through the EU LIFE Programme, capacity-building and training programs are being implemented in transboundary environmental security, wastewater monitoring, and environmental policy. The World Bank and ADB focus on improving energy efficiency and expanding renewable energy capacity to support socio-economic stability.

Overall, the table shows that international environmental programs in Uzbekistan ensure broad participation not only in the form of technical or financial assistance, but also in research, education, regulatory reforms, and the development of sustainable management systems. This clearly reflects Uzbekistan’s environmental diplomacy and its commitment to international obligations on sustainable development.

Cooperation mechanisms and financing sources

To organize green projects for environmental protection effectively and achieve long-term results, cooperation mechanisms and financing sources are decisive. International experience shows that implementing environmental projects not only from state budgets, but also on the basis of multi-party financial participation and diversified mechanisms, improves effectiveness and sustainability. In Uzbekistan, active measures are being taken in this direction, and the concept of “green finance” is gradually being integrated into national policy.

Cooperation mechanisms are formed on a multi-stakeholder basis. State bodies (ministries and agencies), international financial institutions (GEF, GCF, the World Bank, ADB, EIB), international organizations (UNDP, UNEP, GGGI), the private sector, civil society institutions, and local authorities work in a coordinated manner. For example, within the “**Joint Project Management Unit**” model between UNDP and the Ministry of Ecology, national and international experts jointly manage project stages, monitoring, and reporting systems.

Financing sources include grants, loans, technical assistance packages, subsidies, and innovative financing instruments. In particular, GEF and GCF finance project portfolios aimed at strengthening technical and institutional capacity through multi-year grants. The World Bank and ADB provide long-term, low-interest loans for infrastructure-type green projects. For example, under the World Bank-financed “**Sustainable Rural Energy**” project, a credit line of **USD 100 million** was opened to install solar panels and biogas units in rural areas.

Innovative financing instruments include **green sukuk** (Islamic-finance-based green bonds), pay-for-performance contracts, carbon credits, and cross-border financing packages.

Currently, with GGGI support, Uzbekistan is developing a regulatory framework “On Green Bonds”, and plans to attract international investors into environmental projects through this instrument.

In addition, technical assistance, grants, and research programs are provided through the European Union, Germany (GIZ), Japan (JICA), Korea (KOICA), and the Scandinavian countries. For example, under the “Climate Risk Insurance” model, GIZ has piloted mechanisms for financing climate risks in Uzbekistan.

Diversifying cooperation mechanisms and funding sources is serving as a key factor in the successful and sustainable implementation of environmental projects in Uzbekistan. This approach enables high effectiveness not only in environmental outcomes, but also in economic and social dimensions.

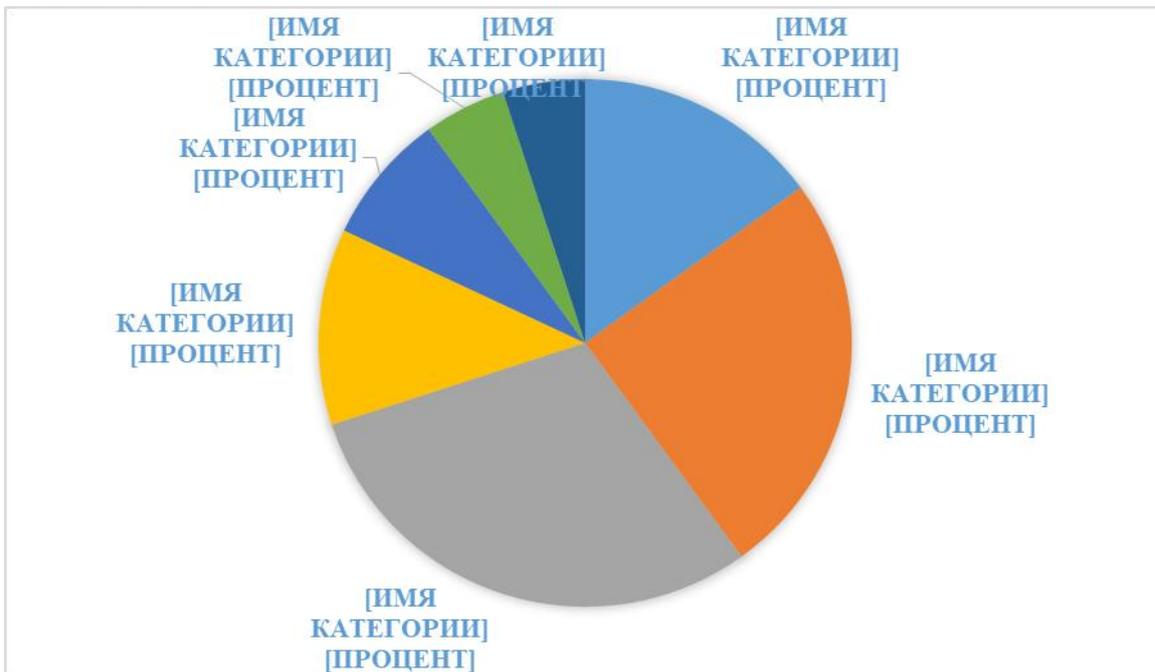


Figure 4.3.1
Financing sources and shares of green projects implemented in Uzbekistan in 2024

Source: Prepared by the author based on official financial reports of GEF, GCF, UNDP, GGGI, the World Bank, ADB, and the European Union (2022–2024), as well as data from the Ministry of Ecology of Uzbekistan and UN “Green Finance” programs.

The figure shows the financing sources of green projects implemented in Uzbekistan in 2024 and their shares in percentage terms, clearly indicating where and through which financial instruments environmental initiatives are being supported. Seven main international sources are reflected, demonstrating the diversity of external financial cooperation in Uzbekistan’s environmental sector.

The largest share—**30%**—belongs to the **World Bank**. The Bank’s low-interest loans are mainly directed to infrastructure green energy, water resources management, and the introduction of energy-efficient technologies. The second-largest source is the **GCF (Green Climate Fund)** with a **25%** share, financing climate-resilient infrastructure projects through grants and concessional loans.

Grants financed by the **GEF** account for **15%** of total expenditures, supporting land degradation measures, waste management, and biodiversity conservation. The **ADB** share is **12%**, focusing primarily on renewable energy and green transport infrastructure.

The remaining sources—UNDP (8%), GGGI (5%), and the European Union (5%)—are directed to technical assistance, policy development, strengthening legal frameworks, and developing green finance tools (e.g., green bonds). In particular, GGGI support for introducing investment mechanisms based on **green sukuk** opens up opportunities for long-term sustainable financing.

Overall, the figure demonstrates that green project financing in Uzbekistan is multi-sourced and strategically diversified. This indicates the breadth of international cooperation, the growing number of reliable donors, and expanded opportunities to carry out green transformation on a sustainable basis.

Impact of international green projects on Uzbekistan’s national ecosystem

The impact of international environmental projects on Uzbekistan’s national ecosystem is multifaceted: they not only improve environmental quality, but also drive sustainable changes in environmental governance, monitoring systems, biodiversity conservation, and public awareness. Assessing this impact requires an approach based on ecological, institutional, and social indicators. In particular, programs implemented by UNDP, GEF, GCF, GGGI, and the World Bank in 2020–2024 had a noticeable positive effect on key components of Uzbekistan’s ecosystem.

At the ecological level, the GEF–UNDP “**Land Degradation Neutrality**” project helped restore soil fertility and reduce erosion and salinization in nearly **10,000 hectares** of desert areas in the Republic of Karakalpakstan and Bukhara region. As a result, the average organic matter content in soils increased by **20%**, supporting the recovery of local ecosystem services. In water resources, UNDP’s “**UzWaterAware**” project achieved a **12–15%** reduction in water consumption in major population centers by improving water-use culture—positively influencing resource replenishment and the stability of aquatic ecosystems.

In biodiversity, “**In-situ conservation**” projects implemented by UNDP and GEF expanded the protected area network by **5%** by 2024. Monitoring systems for rare wild species were strengthened in Surkhandarya and the Fergana Valley, and new management regimes were introduced for more than **15** endangered animal and plant species.

In energy and waste management, projects supported by the GCF and the World Bank played an important role in reducing carbon emissions. For example, solar power stations installed in Tashkent region prevented approximately **140,000 tons of CO₂** emissions annually, improving not only the climate impact but also local air quality and public health.

Furthermore, international projects contribute to national monitoring systems. IoT-based monitoring systems for air quality, water pollution, and waste flows have been introduced through international technical assistance, increasing transparency and speed in environmental governance.

Thus, the impact of international green projects extends beyond nature itself and directly influences environmental policy, governance culture, and public ecological awareness—serving as a strategic factor accelerating Uzbekistan’s green transformation.

Table 4.3.2

Impact of international environmental projects on the national ecosystem (2020–2024 examples)

International project	Regions	Impact on the ecosystem
Land Degradation Neutrality (GEF–UNDP)	Karakalpakstan, Bukhara	Soil fertility increased by 20%, salinization decreased
UzWaterAware (UNDP)	Tashkent, Namangan, Samarkand	Water use reduced by 12–15%, water infrastructure improved

In-situ Conservation (GEF–UNDP)	Surkhandarya, Fergana Valley	Protected areas increased by 5%, monitoring strengthened
Solar Power Development (GCF & World Bank)	Tashkent region	Annual CO ₂ emissions reduced by 140,000 tons, air quality improved
Waste Management Pilot (UNDP–GEF)	Fergana, Andijan	Recycling share increased, waste management system improved

Source: Prepared by the author based on GEF & UNDP “Land Degradation Neutrality Project Report” (2022), UNDP “UzWaterAware Annual Report” (2023), GCF & World Bank “Solar Power Development in Uzbekistan” (2023), UNDP–GEF “Waste Management Pilot Project Review” (2022), and reports of the Ministry of Ecology of Uzbekistan (2020–2024).

The table presents the direct ecosystem impacts of key environmental projects implemented in Uzbekistan during 2020–2024 within international cooperation. It describes geographic coverage and measurable ecological contributions. It enables evaluating not only the project names or stated goals, but also the real environmental outcomes achieved in practice.

Adapting international environmental experience to Uzbekistan’s local conditions

Adapting international environmental experience to Uzbekistan’s local context is a crucial component of the sustainable development strategy. This is not only about introducing technologies, but also about applying them in a way adapted to climate, geology, economics, and social realities. Instead of simply importing models, it is necessary to customize them to national policy, regulatory frameworks, governance systems, and societal context to achieve practical results.

For example, based on Germany’s “**Energiewende**” (energy transition) experience, Uzbekistan developed a national roadmap for renewable energy. However, models that work in Europe cannot be fully applied under Uzbekistan’s desert climate, grid capacities, and regional differences. Therefore, solar energy projects were modeled for high-insolation areas such as Karakalpakstan, Navoi, and Jizzakh, taking local resources into account—improving both energy efficiency and technological performance.

Another important example is Japan’s “**Zero Waste**” model. Due to the limited development of recycling industries in Uzbekistan, it was modified rather than implemented directly. Considering household sorting habits, logistics infrastructure, and financial capacity, a “phased separate collection” system was introduced in Tashkent, Andijan, and Samarkand—reducing pollution through locally suitable solutions while moving closer to international standards.

In addition, based on Scandinavian “green city” approaches, the “Green City” concept was developed in Uzbekistan. However, it has been introduced differently in Tashkent, Nukus, and Qarshi depending on land resources, transport capabilities, and population density. This led to positive results such as improved public health outcomes, more stable urban microclimates, and increased shares of green spaces.

A further key aspect of localization is strengthening institutional capacity. Trainings, technical assistance projects, and advisory services conducted by UNDP, GIZ, and GGGI have helped ministries and agencies in Uzbekistan adopt international practice in environmental planning, financing, and monitoring. In this way, international experience is being integrated into national policy and producing tangible results through effective models.

Therefore, adapting international environmental practice to local conditions is not simple copying; it requires systematic approaches of innovative modification, needs-based design, and ensuring social acceptance—aligning Uzbekistan’s environmental strategy with international standards and supporting sustainable development.

Table 4.3.3

Analytical comparison: localization of international environmental experience in Uzbekistan

International experience model /	Main focus	Form of localization (Uzbekistan)
Energiewende (Germany)	Transition to renewable energy	Solar power infrastructure introduced in high-insolation regions
Zero Waste (Japan)	Waste-free economy	Separate collection and recycling introduced in phases
Green City (Scandinavia)	Green infrastructure and eco-transport	Different “green city” models applied in Tashkent, Nukus, and Qarshi
Integrated Water Management (Israel)	Sustainable water resources management	Drip irrigation and water-saving technologies widely introduced
Green Sukuk (Malaysia)	Financing green projects through Islamic finance	Regulatory framework for issuing green bonds developed with GGGI support

Source: Prepared by the author based on official reports of Germany’s Energiewende program (BMWK, 2022), Japan’s Zero Waste model (MOE Japan, 2021), OECD reports on Scandinavian Green City initiatives (2022), Israel’s Integrated Water Resources Management experience (FAO & UNEP, 2021), and the green bonds (Green Sukuk) concept developed by GGGI and the Ministry of Finance of Uzbekistan (2023).

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