POLICY BRIEF

Leveraging synergies from integrative land-biodiversity-climate action for improving monitoring, reporting, and investments into land restoration in Uzbekistan

Uzbekistan's Path to Resilience

Tackling Land Degradation, Climate Change, and Biodiversity Loss

Uzbekistan, located at the heart of Central Asia, has strong transboundary links in water, energy, and food systems. Its diverse landscapes—from the desiccated Aral Sea and arid Kyzyl-Kum Desert to the fertile Fergana Valley and the Pamir and Tian Shan mountains—offer both opportunities and challenges. The country's extreme climate, with scorching summers over 40 °C and freezing winters, further complicates sustainable resource management.

Agriculture is central to Uzbekistan's job markets, producing cotton, wheat, fruits, vegetables, rice, and livestock, which sustain rural livelihoods. However, water scarcity, outdated irrigation systems, and widespread land degradation limit productivity. Improper irrigation has caused secondary salinization, reducing soil fertility and crop yields across large areas. Climate change exacerbates these issues, increasing droughts, disrupting rainfall, and harming agriculture. The desiccation of the Aral Sea has worsened environmental damage, leading to toxic dust storms and socio-economic challenges.

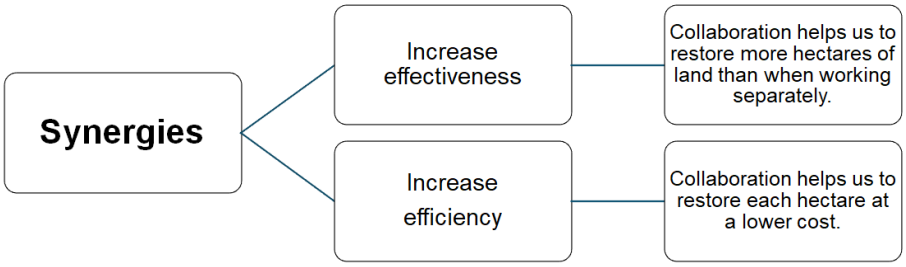
In response, Uzbekistan is committed to achieving **Land Degradation Neutrality (LDN) by 2030** under the **UNCCD**, while aligning efforts with its **National Biodiversity Strategy and Action Plan (NBSAP)** under the CBD and **Nationally Determined Contributions (NDCs)** under the **UNFCCC**. Major initiatives include restoring 1.2 million hectares in the Aral Sea region, modernizing irrigation, and adopting sustainable farming practices.

Land degradation, climate change and biodiversity loss are closely interrelated. None of these

three challenges can be effectively addressed in a siloed manner, neither at national nor at global levels. In a world grappling with these interlinked challenges of climate change, biodiversity loss, and land degradation, the need for coordinated action has never been more apparent.

The existing finance gap to reach the Rio targets calls for the most efficient use of available funds. Creating synergies between implementation processes that often are siloed and not harmonized provide a powerful lever to minimize the overall implementation costs at national level (Figure 1).

FIGURE 1 Synergies from integrative land-biodiversity-climate approach to land restoration



Costs of ecosystem degradation in Uzbekistan

Land degradation poses a significant environmental, economic, and social challenge for Uzbekistan, leading to substantial losses in productivity, biodiversity, and ecosystem services. Between **2001 and 2020**, the country incurred an estimated **3 billion USD** in economic losses due to ecosystem degradation. This underlines the urgency of implementing effective restoration and sustainable management practices to mitigate further losses and ensure long-term resilience.

Grassland degradation was the largest contributor to economic losses, accounting for **2.4 billion USD** of the total. These losses primarily stemmed from reduced productivity in rangelands, which cover over half of Uzbekistan's total land area and are essential for livestock grazing. The degradation of forests and shrublands added another **0.5 billion USD**, reflecting the vulnerability of these ecosystems to deforestation and unsustainable land use practices.

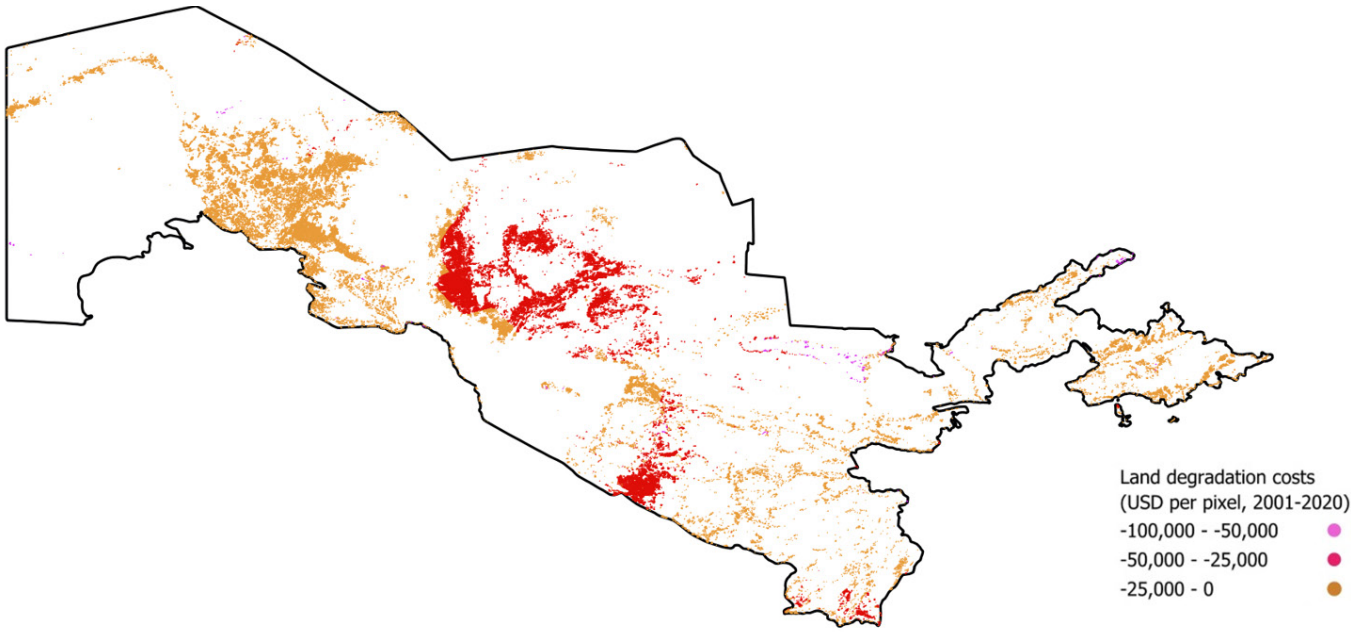
Environmental and Climate Change Consequences

Uzbekistan's **4.2 million hectares of high-biodiversity terrestrial areas under protected status** did not escape the impacts of degradation. Land degradation has been observed within these protected zones, as well as in biodiversity-rich areas outside of them. The degradation of these areas threatens the country's unique ecosystems, further undermining its biodiversity and ecosystem functions.

Land degradation during this period also resulted in the emission of approximately **24 million tons of carbon** into the atmosphere. This loss of carbon sequestration capacity exacerbates climate change and reduces the resilience of ecosystems to environmental stresses. The largest emissions were associated with the conversion of vegetated areas to barren or less productive lands, driven by processes like salinization, erosion, and overgrazing.

FIGURE 2 Haloxylon species grown on the Aral Sea bed
Source: Forestry Agency Uzbekistan

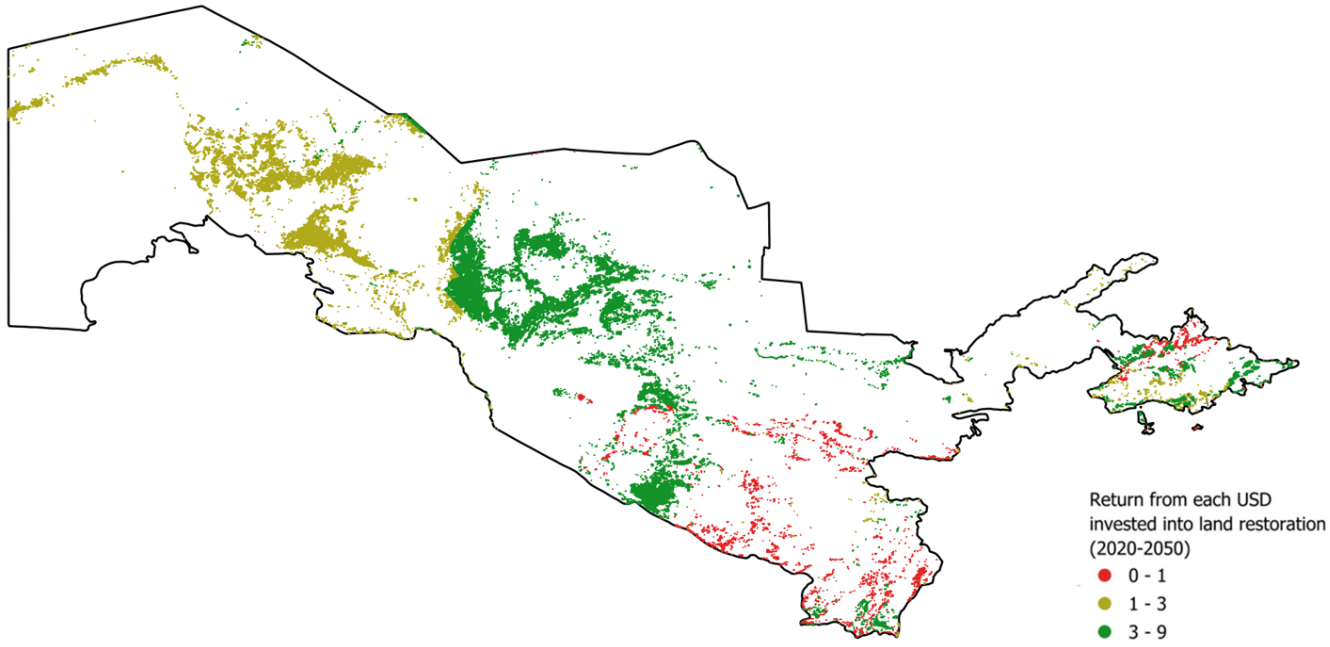
FIGURE 3 Hotspots of ecosystem degradation in Uzbekistan



Key Hotspots and Drivers of Degradation

The provinces of **Navoi**, **Bukhara**, **Khorezm**, and **Karakalpakstan** experienced the highest economic losses due to land degradation. These areas are particularly affected by desertification, overuse of rangelands, and secondary salinization of croplands. The desiccation of the Aral Sea has further compounded the situation, creating toxic dust storms and degrading vast tracts of adjacent land.

FIGURE 4 Return from each USD invested into land restoration in Uzbekistan (2020–2050)



Investment Needs for Land Restoration in Uzbekistan

Land restoration offers significant opportunities for Uzbekistan to address ecosystem degradation, improve livelihoods, and enhance climate resilience. To achieve these goals, the country requires **7.3 billion USD** in investments between **2020 and 2050**. Every dollar invested is expected to generate **2.4 USD** in economic returns, underscoring the financial viability of restoration efforts (Figure 4).

Through spatial analysis, **1.37 million hectares** of degraded ecosystems have been identified as suitable for restoration efforts that are both environmentally sustainable and economically profitable. These areas represent critical opportunities to reverse ecosystem degradation, restore ecosystem services, and improve land productivity.

TABLE 1 Land restoration targets in Central Asian countries in hectares

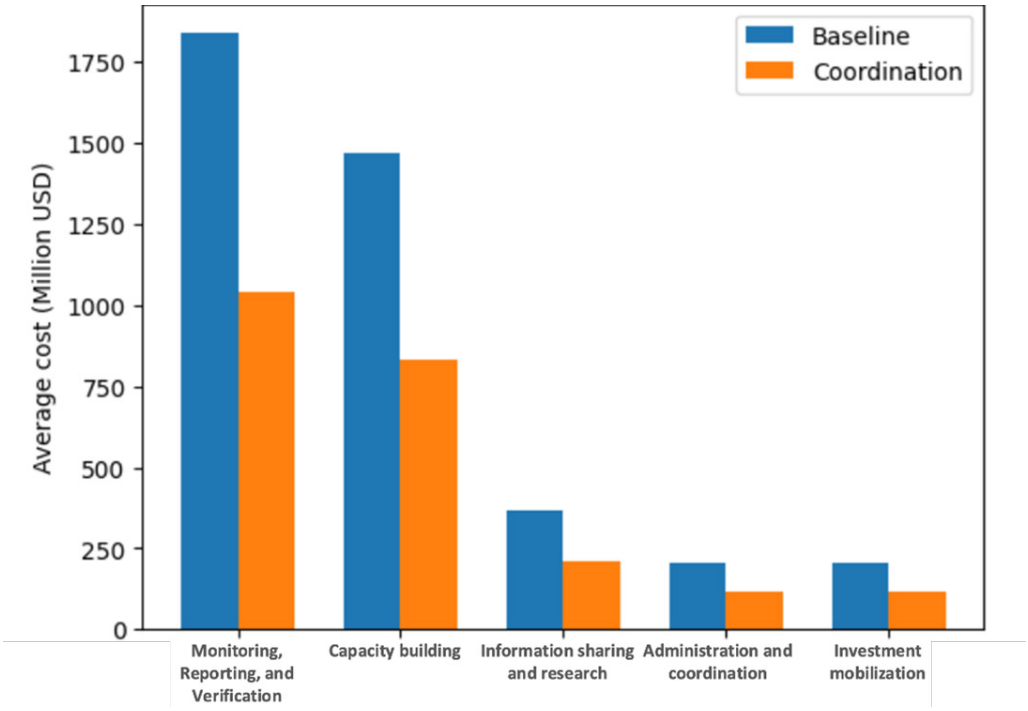
Provinces	Investment needs for restoration, million USD	Benefits from land restoration, million USD	Returns on each USD invested
Andijan	36	128	3.5
Buhara	635	1829	2.8
Fergana	58	139	2.4
Horazm	61	59	0.9
Jizzah	51	162	2.5
Karakalpakstan	2,178	3,282	1.5
Kashkadarya	276	570	2.0
Namangan	67	195	2.8
Navoi	4,122	11,361	2.7
Samarkand	40	37	0.6
Surhandarya	131	169	1.7
Syrdarya	5	12	2.5
Tashkent	11	25	2.0
Total	**7,678**	**17,974**	**2.4**

Economic and Social Benefits of Ecosystem Restoration

Investing in land restoration can yield substantial socio-economic benefits, including:

- **Job Creation:** Restoration activities are projected to create between 11,000 and 16,000 jobs, providing vital employment opportunities for rural populations and enhancing economic stability in affected areas. These jobs span activities such as afforestation, soil conservation, and infrastructure improvements.
- **Increased Agricultural Productivity:** Restored lands will boost agricultural outputs, contributing to food security and improved livelihoods for farming communities.
- **Enhanced Ecosystem Services:** Restoration will improve water retention, reduce soil erosion, and increase carbon sequestration, providing long-term benefits for both the environment and the economy.

FIGURE 5 Benefits from coordinated ecosystem restoration



Key Synergy Mechanisms for Achieving the Benefits from Coordination

To unlock the full potential of synergies, five key mechanisms have been identified through participatory stakeholder consultations:

1. Monitoring, Reporting, and Verification (MRV)

Establish a unified MRV system with a spatially explicit database integrating data from multiple institutions. Clear protocols, trained personnel, and integration with decision-making processes ensure reliable data collection and transparency. Third-party audits bolster credibility and compliance with international commitments.

2. Capacity Building

Set up regional training hubs to build expertise in sustainable land management, GIS technologies, and climate adaptation. These hubs will train professionals, government staff, and technicians, linking capacity development directly to practical field needs, such as MRV operations.

3. Information Sharing and Research

Develop platforms to consolidate and share data across institutions. Integrated research collaborations and standardized tools will ensure seamless data exchange, enabling policymakers to evaluate restoration outcomes and fine-tune strategies effectively.

4. Administration and Coordination

Strengthen inter-institutional coordination using mechanisms like the Climate Council to harmonize efforts and minimize redundancies. Formal frameworks with regular meetings and reporting schedules will align national priorities with international obligations.

5. Mobilizing Investment

Enhance private sector involvement through tax incentives, PPPs, and eco-tourism opportunities. Innovative financing tools, such as green bonds and carbon markets, can help mobilize funding, driving large-scale restoration.

Access the full report and other ELD knowledge pieces at **www.eld-initiative.org**

Photo credits
Cover: CAMP Alatoo Public Foundation

The **Economics of Land Degradation (ELD)** Initiative is a global initiative at the interface of science, policy, and practice that works to make the values of land count to inform, promote, and scale land solutions for transformative change.

For further information and feedback please contact:

ELD Secretariat
Nina Bisom
c/o Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Friedrich-Ebert-Allee 32 + 36
53113 Bonn
Germany

T + 49 228 44 60 – 15 20
E eldinitiative@giz.de
I www.eld-initiative.org

german cooperation
DEUTSCHE ZUSAMMENARBEIT
Implemented by: giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
IRRI International Rice Research Institute
ICARDA Science for resilient livelihoods in dry areas
CGIAR
ECONOMICS OF LAND DEGRADATION INITIATIVE ELD
Green Central Asia
Enhancing environment, climate and water resilience