Water Resource Management in Uzbekistan: Irrigation, Losses and Reform

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Key Takeaways

Water resource management in Uzbekistan means deciding how a shrinking supply from the Amu Darya and Syr Darya is shared, measured, delivered and paid for, in an economy where agriculture uses about 90% of the water. In practice it rests on four tasks: knowing how much water each canal takes and loses, setting allocation rules that hold in dry years, cutting the energy cost of pumping, and giving new district water service bodies the skills and money to maintain what donors are now building.

- Efficiency is low - a June 2026 assessment for the R8 canal system in Khorezm reports irrigation efficiency of about 40% and withdrawals above plan in every year from 2019 to 2022.
- Pumping is an energy problem - the World Bank reports that about 1,700 pumping stations use roughly 16% of Uzbekistan's electricity to irrigate 56% of its irrigated land.
- Big investments are under way - a USD 200 million World Bank credit and an ADB sector project of about USD 154 million are modernising canals, outlets and drainage.
- Institutions are changing - 159 district water service bodies with greater financial autonomy now carry responsibility for service, fees and maintenance.
- Measurement decides success - lined canals save water only when flows are measured, allocations adjusted and assets maintained after the works end.

In short: Water resource management is the planning, allocation, measurement and financing of water across a basin so that farming, towns, energy and ecosystems can all be served without exhausting the supply. For Uzbekistan, it means turning canal and pump investments into measured savings, fair allocation and maintenance that lasts.

Introduction

Uzbekistan's irrigated agriculture depends on two rivers that it shares with its neighbours, a canal network built largely in the twentieth century and thousands of pumps that lift water onto higher land. The World Bank expects climate change to reduce water availability by 30-40% while irrigation demand rises by about 25%. That combination leaves little room for losses.

The government has responded with a national programme for 2025-2028, a draft 2030 strategy and a new layer of district water service bodies. Development partners are financing canal lining, flow control and drainage. This article explains what water resource management means in practice for a water-scarce irrigated economy, what the current projects reveal about the gaps, and what ministries and project units can do now.

What Water Resource Management Means for an Irrigated Economy

In textbooks, integrated water resource management is about coordinating water, land and related resources across a basin. In an irrigation ministry it becomes a set of very practical jobs. Someone has to estimate how much water will be available this season, divide it between provinces and canals, deliver it on time, record what was actually taken, and explain the difference.

Five building blocks matter most:

- Planning and allocation: basin water balances, seasonal limits and rules for dry years.
- Delivery efficiency: reducing seepage, spills and unauthorised use in canals and on farms.
- Measurement and accounting: flow meters, gauges and data that show where water goes.
- Energy and cost: pumping efficiency, maintenance budgets and fees that cover operation.
- Institutions and users: clear roles for ministries, district bodies and water user organisations, with ways to resolve complaints.

Weakness in one block undermines the others. A new concrete lining saves little if outlets are uncontrolled, and a fee system fails if farmers do not receive reliable service.

Uzbekistan's Water Challenge in Numbers

The World Bank's May 2025 press release on the National Irrigation and Energy Efficiency Improvement Project gives a clear picture. Agriculture provides about a quarter of GDP and employment and uses about 90% of water. About 2.4 million hectares, 56% of irrigated land, rely on pumps. Roughly 1,700 pumping stations use around 7.2 billion kWh a year, about 16% of national electricity use.

The canal network is the other half of the story. A draft Uzbekistan 2030 strategy, reported by Kun.uz in January 2026, states that 66% of the 18,700 km of main and inter-farm canals have earthen beds. It targets 13,100 km of lined canals, or 46% of the network, and a reduction in saline irrigated land to 1.7 million hectares.

The 2025-2028 programme approved in August 2025 sets near-term targets: reconstruct 2,551 km of irrigation networks, extend water-saving technology to another 1.4 million hectares including 293,000 hectares of drip irrigation, raise the share of lined canals from 39% to 47%, and save 14 billion cubic metres of water by 2028, according to Daryo's report of the decision.

Where the Water Goes: Lessons from the Khorezm R8 Assessment

Project documents often show the management gap more clearly than national statistics. In June 2026 an initial environmental examination was prepared for the R8 canal subproject in Khorezm under ADB's Climate Adaptive Water Resources Management in the Aral Sea Basin Sector Project (53120-001).

It reports irrigation efficiency of about 40% in the area. It also compares actual withdrawals with planned limits: they were about 65% above plan in 2019, 19% in 2020, 24% in 2021 and 48% in 2022. The works aim to raise the conveyance efficiency of the system from about 0.56 to 0.80 across a command area of 19,992 hectares.

Withdrawals above plan are not simply a sign of poor discipline. They usually reflect several system issues at once: losses that force operators to release more water to reach the tail end, limited measurement at outlets, allocation plans that do not match crop demand, and weak feedback between district operators and planners. The assessment also contains figures for expected water savings that are not fully consistent between sections, which shows how important a single, agreed water account is for any project that must report savings.

The same subproject framework lists an output to strengthen the capacity of water management organisations and water consumer associations on infrastructure management and water use efficiency, to be supported by a separate consultant. Capacity, in other words, is already recognised as part of the investment.

Canals, Pumps and Energy: The World Bank's P504600

The World Bank's USD 200 million credit, with USD 23.2 million of government co-financing, is the first phase of the Water Efficiency and Conservation multiphase approach in Central Asia (P504600). The Ministry of Water Resources leads implementation in Karakalpakstan, Bukhara, Kashkadarya, Namangan and Surkhandarya.

The project will concrete-line 259 km of eight major primary canals linked to the Amu Darya and Syr Darya, re-section and raise canal beds so that gravity can replace pumping where feasible, build about 470 hydraulic structures, and install gated outlets with flowmeters and a SCADA system. The Bank expects better service on 232,000 hectares, benefits for about 180,000 water users including 80,000 women, water losses reduced by about 540 million cubic metres a year and electricity savings of more than 165 million kWh a year.

For managers, the important point is that two of these results, water and energy saved, must be measured against a baseline. That requires agreed measuring points, reliable meters and a reporting routine that district staff can maintain long after contractors leave.

New Institutions: District Water Service Bodies and Private Operators

According to Daryo's report of the 2025-2028 programme, 159 "Water Supply Services" institutions were formed from district irrigation departments and given greater financial autonomy. The programme also plans meters on 5,200 pumps, digital systems on 12,000 observation wells and 1,750 pumps, a unified digital platform joining 11 departmental systems, and a sector training centre with 200 places. It reports that 2,612 water facilities are already managed through public-private partnerships.

Financial autonomy changes the job. A district body that depends on its own revenue needs a service agreement with users, an asset register, a maintenance plan, a fee schedule that users understand, and a way to handle complaints. Oversight of private operators needs contracts with clear performance indicators and the data to check them.

International experience is instructive. In Türkiye, the state hydraulic works agency began transferring irrigation management to user organisations in 1993 with World Bank support. A review published by the US National Academies found these organisations managed 91% of the systems the agency had built and that performance indicators had improved, but that maintenance spending was well below what the statutes suggested. Transfer without a funded maintenance plan stores up problems for later.

Environmental, Social and Procurement Risk in Water Projects

Irrigation works look simple but carry real environmental and social risks. The R8 assessment classifies the subproject as Category B under ADB's safeguard policy and notes that a state ecological expertise conclusion is a mandatory document under national rules. It records about 1,855 trees affected in a preliminary count, encroachments along the canal, and the need for further social due diligence once the design is final.

Procurement also needs care. In January 2026 a request to ADB's Accountability Mechanism raised concerns about the project's procurement and bid evaluation; it was closed in February 2026 as outside the mechanism's scope and referred to ADB's procurement and anticorruption offices. Whatever the merits of a particular case, clear evaluation records and timely responses to bidders protect both the project and the agency.

Risk management is therefore part of water resource management, not a separate compliance task. Delays in tree permits, land issues or contract disputes postpone the water savings that

justify the investment.

Projects Shaping Water Resource Management in the Region

Uzbekistan's projects share problems with irrigation and river programmes elsewhere in Asia and Africa.

Nepal's experience is a useful warning. The World Bank's December 2024 review of the previous Rani Jamara Kulariya phase reported 629 hectares of new irrigated area against a 2,000-hectare target, only 29.4% of grievances resolved against a 60% target, and a need for further capacity building so the water users association could take on operation and maintenance.

Practical Steps for Ministries and Project Units

Most of what improves water resource management does not require new money. It requires routines that turn investment into evidence.

1. Build one water account per system

Agree a single water balance for each canal system, with inflow, deliveries, losses and return flows, and use it in every report. This resolves inconsistent savings figures before financiers notice them.

2. Measure before you build

Install or calibrate gauges and pump meters before lining starts, so there is a baseline. Without it, claimed savings cannot be verified.

3. Write allocation and drought rules in advance

Agree seasonal limits by canal and trigger levels for dry years with district bodies and users before the season begins, rather than negotiating during a shortage.

4. Audit pumping energy

Rank pumping stations by kWh per cubic metre delivered. Rehabilitation, scheduling and gravity replacement can then be targeted where they save most.

5. Fund maintenance from day one

Give each district water service body an asset register and an O&M budget linked to fee income, and track maintenance spending as a performance indicator.

6. Invest in people

Train mixed teams of engineers, finance staff, safeguards specialists and user representatives together, so the tools connect across functions.

Critical Questions Government and Project Leaders Should Be Asking

Do we know how much water each canal really takes?

If withdrawals are estimated rather than measured, allocation plans cannot be enforced. Measurement at main intakes and key outlets is the first priority.

Can we prove the savings our projects report?

Financiers expect water and energy savings measured against a baseline. Check that baselines exist and that savings figures are consistent across documents.

Are district water service bodies ready for financial autonomy?

They need service agreements, asset registers, fee systems and complaint handling. A short capacity assessment shows where support is needed first.

What happens to maintenance after the contractor leaves?

Lined canals and new gates deteriorate quickly without funded maintenance. Budget for it before handover.

Are our drought rules agreed before the next dry year?

With water availability expected to fall by 30-40%, allocation rules should be agreed in advance with users and published.

Are environmental, social and procurement risks managed early?

Tree permits, land issues and bid evaluation disputes can delay works for months. Assign owners and deadlines for each risk at design stage.

How Risalat Can Help

Risalat works with ministries, water service bodies and project units to build the skills behind these steps. Our Water Resource Management Training in Istanbul covers basin allocation, canal efficiency, water accounting, pumping energy, user organisations and cost recovery using Uzbekistan's projects as cases. Teams can start with the free institutional capacity assessment or explore our free tools.

Frequently Asked Questions

What is water resource management?

It is the planning, allocation, measurement and financing of water across a basin so that agriculture, towns, energy and ecosystems are served without exhausting the supply. In irrigation it covers water balances, allocation rules, canal efficiency, metering, maintenance funding and drought planning.

Why is water resource management urgent in Uzbekistan?

Agriculture uses about 90% of the water, pumping uses about 16% of national electricity, and the World Bank expects water availability to fall by 30-40% while irrigation demand rises by about 25%.

Which projects support irrigation reform in Uzbekistan?

Major examples are the World Bank's USD 200 million National Irrigation and Energy Efficiency Improvement Project (P504600) and ADB's Climate Adaptive Water Resources Management in the Aral Sea Basin Sector Project (53120-001).

What should district water service bodies focus on first?

Measuring water at intakes and outlets, agreeing service standards with users, keeping an asset register, and linking maintenance budgets to fee income.

Sources

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- EIB: Volcanoes Community Resilience Northern Rwanda
- US National Academies: Participatory Irrigation Management in Turkey

Related Risalat programmes

- Procurement under World Bank and ADB Rules for Project Teams in Dubai, Dubai (4 Jan 2027)
- Procurement under World Bank and ADB Rules for Project Teams in Istanbul, Istanbul (1 Feb 2027)
- Financial Management & Disbursement for World Bank-Funded Projects Training in Budapest, Budapest (25 Jan 2027)
- Integrated Water Resource Management, Climate Change, and Adaptation Training, Vientiane (1 Feb 2027)

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