

Forum: Environmental Committee

Issue: Restoring the ecological balance of the Aral Sea basin

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TOPIC INTRODUCTION

This issue occurred under Soviet Union infrastructural oversight. The Aral Sea was once the fourth largest lake in the world, filled with healthy and fresh water and thousands of fish with a great level of biodiversity. In the 1960s, the rivers feeding the Sea were blocked and used for cotton farming. This led to a 90% decrease in the Sea's original size. The Sea was originally sixty-eight thousand square kilometers. By the 1980s, the Aral Sea had shed 80% of its volume.

This resulted in the extinction of the Aral Sea's native fish species and severe ecological degradation, for example, the emergence of the Aralkum Desert.¹ Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan share the basin of the Amu Darya River. Due to the fact that sixty-eight thousand square kilometers of water would absorb the strong summer heat while also releasing heat in the winter, that buffer is now gone. Summers are now brutally hotter, while winter has become much harsher and freezing. Due to the air being drier, this makes the conditions extremely difficult for farmers to grow food, as any air being used for farming evaporates instantly.

The loss of the Sea caused a rapid shift from a stable maritime climate to an unforgiving, hyper-continental climate. "Attempted resolutions such as Kazakhstan's Kok-Aral Dams have provided some relief, but the region continues to struggle with profound environmental and socioeconomic struggles in the face of climate change. The situation of the Aral Sea serves as an example of the consequences of prioritizing economic development over environmental sustainability.

DEFINITION OF KEY TERMS

*Aral Sea Basin*²

The Aral Sea Basin is the wider drainage system surrounding the Aral Sea and its major tributaries, particularly the Amu Darya and Syr Darya. It includes several Central Asian

¹ Research starters <https://www.ebsco.com/research-starters/environmental-sciences/aral-sea>

² Food and Agriculture Organization of the United Nations. "Water Resources of the Aral Sea Basin." *Water Report 15: Irrigation in the Countries of the Former Soviet Union*, FAO, www.fao.org/4/W6240E/w6240e03.htm

states whose water, agricultural, and environmental policies influence the condition of the Sea.

Water Scarcity³

Water scarcity occurs when available water resources are insufficient to satisfy the demands of a population, ecosystem, agriculture, industry, or other users. In the Aral Sea basin, scarcity is intensified by the naturally dry climate, intensive irrigation, inefficient water infrastructure, population growth, and climate change.

Desertification⁴

Desertification refers to land degradation in dry regions caused by climatic variations and human activities. Around the Aral Sea, the exposed seabed and degradation of surrounding land have contributed to the creation and expansion of desert-like environments.

Salinization⁵

Salinization occurs when excessive concentrations of salts accumulate in soil or water. Poor irrigation and drainage practices have contributed significantly to salinization in the Aral Sea basin, reducing agricultural productivity and damaging ecosystems.

Transboundary Water⁶

Transboundary water refers to rivers, lakes, groundwater, or other water resources that cross or form boundaries between states. Because the Amu Darya and Syr Darya cross national borders, their management requires cooperation between multiple governments.

Water-Energy Nexus⁷

The water-energy nexus describes the relationship between water management and energy production. In Central Asia, upstream states such as Tajikistan and Kyrgyzstan have strong interests in hydropower, while downstream states have major agricultural demands for irrigation water. This creates an important political and economic relationship between the timing of water releases and energy production.

³ Food and Agriculture Organization of the United Nations. "Water Scarcity." *Land, Soil and Water*, FAO, www.fao.org/land-water/water/water-scarcity/en

⁴ United Nations Convention to Combat Desertification. "Article 1. Use of Terms." *UNCCD*, www.unccd.int/article-1-use-terms

⁵ Food and Agriculture Organization of the United Nations. "Salinization." *Salty Soils*, FAO, www.fao.org/4/r4082e/r4082e08.htm

⁶ United Nations Economic Commission for Europe. "Which Waters Fall under the Scope of the Water Convention?" *FAQs about the Water Convention*, UNECE, unece.org/environment-policy/water/about-the-convention/faqs/4.

⁷ Proskuryakova, Tatiana, and Winston Yu. "Leveraging the Water-Energy Nexus to Tackle Climate Challenges in Central Asia." *World Bank Blogs*, 11 May 2023, blogs.worldbank.org/en/europeandcentralasia/leveraging-water-energy-nexus-tackle-climate-challenges-central-asia.

Ecological Restoration⁸

Ecological restoration is the process of assisting the recovery of damaged ecosystems. In the Aral Sea basin, restoration can include restoring wetlands, planting vegetation on exposed seabeds, improving river flows, reducing salinity, protecting biodiversity, and restoring fisheries.

Integrated Water Resources Management⁹

Integrated Water Resources Management (IWRM) is an approach that seeks to coordinate the development and management of water, land, and related resources while balancing economic, social, and environmental interests.

BACKGROUND INFORMATION

Historical Background

The Aral Sea developed as a major environmental and economic feature of Central Asia long before the Soviet period. Communities around the Sea and its river deltas depended on fishing, agriculture, livestock, trade, and the natural ecosystems surrounding the water. The Sea also contributed to the local climate by moderating temperatures and providing moisture to the surrounding region.

The region later became incorporated into the Russian Empire and subsequently the Soviet Union. During the Soviet period, Central Asian economic planning increasingly focused on agricultural production, especially cotton. The naturally arid environment meant that large-scale agricultural expansion required extensive irrigation infrastructure.

The Soviet agricultural model prioritized production targets, and rivers that naturally supplied the Aral Sea were increasingly diverted toward agricultural fields. The irrigated area expanded enormously, while the efficiency of irrigation infrastructure remained limited. Water losses through canals, evaporation, and poorly managed drainage further increased pressure on the basin.

This created a fundamental imbalance: water that would previously have reached the Aral Sea was increasingly consumed upstream. The environmental consequences became increasingly visible from the 1960s onward, when the Sea began to shrink dramatically.¹⁰

Soviet Irrigation Policies

⁸ United Nations Environment Programme. "Ecosystem Restoration." *UNEP*, www.unep.org/topics/nature-action/conservation-sustainable-use-nature/ecosystem-restoration

⁹ United Nations Environment Programme. "Integrated Water Resources Management." *UNEP*, www.unep.org/topics/fresh-water/water-resources-management/integrated-water-resources-management

¹⁰ Food and Agriculture Organization of the United Nations. *Water Report 15: Irrigation in the Countries of the Former Soviet Union*. FAO, www.fao.org/4/W6240E/w6240e03.htm.

The Soviet Union's expansion of irrigation was one of the central causes of the Aral Sea crisis. Central Asia was designated as a major agricultural production region, with cotton becoming particularly important. Between 1960 and 1980, the irrigated area expanded substantially, while agricultural water withdrawals increased dramatically.

The problem was not irrigation itself. Irrigation has supported communities in Central Asia for centuries and remains essential for food production. The central problem was the scale, efficiency, and management of irrigation, combined with insufficient consideration of the ecological water requirements of the Aral Sea.

Large canal networks were constructed, but substantial quantities of water were lost before reaching agricultural fields. Poor drainage also contributed to waterlogging and soil salinization. Consequently, increasing amounts of water were withdrawn from the river systems without adequately maintaining the environmental flow required by the Sea and its surrounding ecosystems.¹¹

Causes and Contributing Factors

The Aral Sea crisis resulted from several interconnected factors rather than one isolated decision.

First, large-scale agricultural irrigation drastically reduced the amount of water flowing toward the Sea. Cotton and other water-intensive crops required extensive irrigation in an already dry environment. Second, inefficient infrastructure caused significant water losses. Open canals and outdated irrigation systems allowed water to evaporate or seep into surrounding soils before reaching crops. Third, agricultural incentives encouraged high water consumption. Cotton production generated employment and export revenue, making rapid agricultural reform politically and economically difficult.

Additionally, transboundary competition developed after the collapse of the Soviet Union. The newly independent Central Asian states inherited an interconnected water system but possessed different economic priorities. Downstream states generally prioritized irrigation, while upstream states increasingly prioritized hydropower.

Finally, climate change is adding further pressure. Rising temperatures increase evaporation and can intensify drought conditions. UNEP reported in 2025 that Uzbekistan's average annual temperature had risen by 1.6°C, with increases of up to 2.5°C in parts of the Aral Sea region.¹²

Effects on the Ecosystem and Biodiversity

The shrinking of the Aral Sea dramatically altered the region's ecosystems. As water levels fell and salinity increased, many fish species could no longer survive. The collapse of

¹¹ Food and Agriculture Organization of the United Nations. "The Aral Sea Basin." *Water Report 15*, FAO, www.fao.org/4/W6240E/w6240e03.htm.

¹² United Nations Environment Programme. "Climate Change Drives Rising Temperatures and Severe Drought in Uzbekistan, Shows New UNEP Atlas." *UNEP*, 25 Nov. 2025, www.unep.org/news-and-stories/press-release/climate-change-drives-rising-temperatures-and-severe-drought.

fisheries affected not only biodiversity but also communities whose livelihoods depended on fishing.

Wetlands and river-delta ecosystems also deteriorated. These ecosystems had previously provided habitat for fish, birds, and other wildlife while helping support local agriculture and communities.

The exposed seabed created the Aralkum Desert. Unlike an ordinary desert, the Aralkum contains substantial quantities of salt and residues from decades of agricultural activity. Wind can transport these materials across large areas, affecting soil, vegetation, agriculture, and human health.

Ecological restoration must therefore go beyond simply adding water. Restoring wetlands, stabilizing exposed soils, planting salt-tolerant vegetation, and protecting remaining biodiversity are all necessary parts of restoring ecological balance.¹³

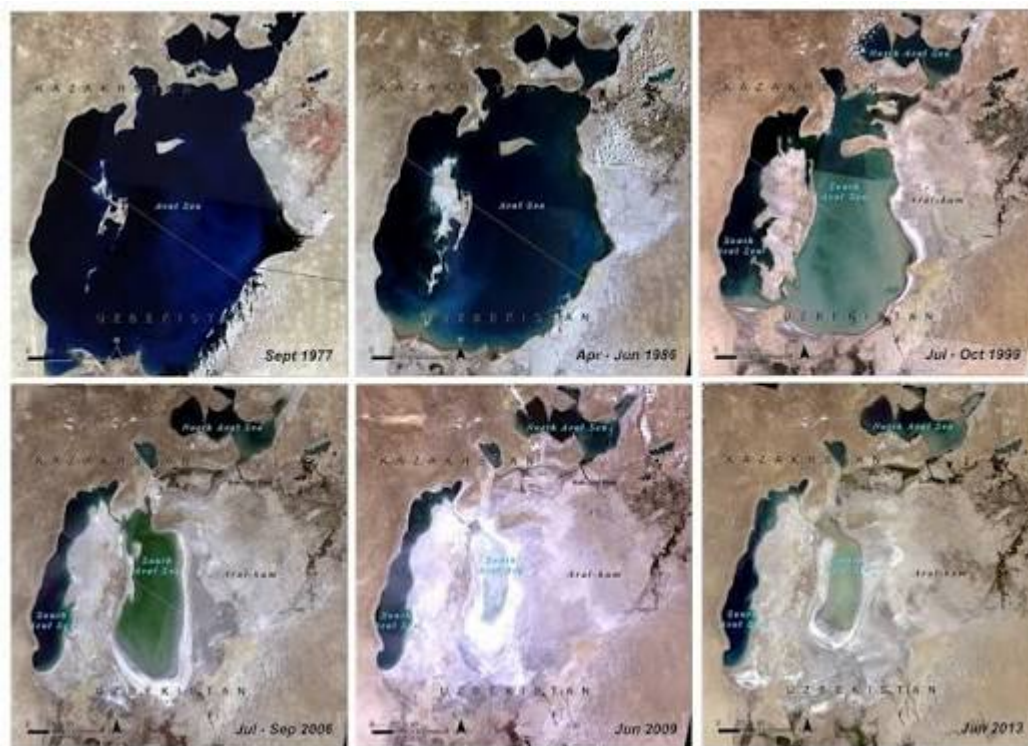


Figure 1¹⁴: The Aral sea during the years

Effects on Food Availability and Agriculture

The decline of the Aral Sea affected food security through several interconnected pathways. The collapse of fisheries removed an important source of food and income. At the same time, soil salinization and water scarcity reduced agricultural productivity in many areas.

¹³ Food and Agriculture Organization of the United Nations. "Fisheries in Irrigation Systems of Arid Asia." FAO, www.fao.org/4/y5082e/y5082e0e.htm.

¹⁴ <https://www.mdpi.com/2073-4441/13/22/3196>

Agriculture is also part of the solution. Improving irrigation efficiency can reduce water consumption without necessarily eliminating agriculture. Drip irrigation, laser land leveling, improved canal systems, better irrigation scheduling, and modern monitoring technologies can reduce losses.

A further option is crop diversification. Replacing some water-intensive crops with less water-demanding varieties can reduce pressure on rivers while allowing rural economies to remain productive. However, agricultural reform must be gradual because millions of people depend on farming for employment and income.¹⁵

The Public Health Crisis

The environmental collapse of the Aral Sea has also produced serious public-health consequences. The disappearance of water has exposed large areas of seabed, allowing dust and salt to become airborne. Communities can therefore be exposed to particles originating from the former seabed as well as residues from historical agricultural chemicals.

Water quality is another major concern. Increasing salinity and inadequate access to safe drinking water can increase health risks for communities living in the most severely affected areas.

Public-health policy should therefore be integrated into environmental restoration. Governments should expand access to safe drinking water, monitor air quality, improve medical services, and establish systems capable of identifying communities facing particularly high environmental exposure.

The Aral Sea should consequently be treated as a human-security crisis as well as an environmental crisis.¹⁶

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

The Republic of Kazakhstan

Kazakhstan is one of the two countries directly bordering the Aral Sea and has played a particularly important role in the restoration of the Northern Aral Sea. In 2005, Kazakhstan completed the Kok-Aral Dam as part of efforts to retain water from the Syr Darya in the northern section of the Sea. This intervention improved water levels and salinity conditions in the Northern Aral Sea and supported the partial recovery of fisheries.¹⁷

However, the success of the Northern Aral Sea also demonstrates the difficulty of managing a divided basin. Retaining water in the north means that less water is available to flow farther south. Kazakhstan therefore has an important interest in protecting the Northern Aral Sea while also cooperating with neighboring states on the broader basin.

¹⁵ Food and Agriculture Organization of the United Nations. "Drainage Water Management in the Aral Sea Basin." *Summaries of Case Studies*, FAO, www.fao.org/4/y4263e/y4263e0c.htm

¹⁶ United Nations Development Programme. "Beyond the Disappearing Lake: What the Aral Sea Can Teach Us about Human Security." *UNDP*, 19 Aug. 2026, www.undp.org/eurasia/stories/what-aral-sea-teaches-about-human-security.

¹⁷ World Bank. "Syr Darya Control and Northern Aral Sea Phase I Project." World Bank, www.worldbank.org.

Kazakhstan's position demonstrates that restoration projects should not be evaluated only according to national borders. Water management must consider the entire river system and the interests of downstream populations.

The Republic of Tajikistan

Tajikistan is an upstream country with significant influence over the Amu Darya system and possesses major hydropower potential. Its mountainous geography gives it access to water resources that are important for downstream countries.

Tajikistan's development priorities can sometimes differ from those of downstream agricultural states. Hydropower generation can be especially important during winter, while downstream countries require large quantities of water during the agricultural growing season. This creates the water-energy nexus at the center of Central Asian water politics.

Tajikistan therefore has an important role in any long-term solution. Rather than treating upstream hydropower and downstream agriculture as opposing interests, regional agreements could coordinate reservoir releases, energy exchanges, and agricultural water requirements.¹⁸

The Republic of Uzbekistan

Uzbekistan is central to the Aral Sea crisis because a large portion of the Amu Darya basin and the southern Aral Sea region lies within its territory. Uzbekistan's agricultural economy has historically relied heavily on irrigation, with cotton playing a major role.

This creates a difficult policy dilemma. Reducing agricultural water consumption can help restore ecosystems, but agriculture also provides employment, income, food, and export revenue. Uzbekistan therefore cannot simply eliminate irrigation without creating significant socioeconomic consequences.

The strongest approach would be agricultural modernization rather than an immediate abandonment of farming. Improved irrigation, crop diversification, water-saving technologies, and climate-resilient agriculture can reduce pressure on the basin while protecting rural livelihoods.¹⁹

The United Nations Development Programme (UNDP)

UNDP plays an important role in connecting environmental restoration with development and human security. Rather than focusing exclusively on the physical restoration of the Sea, UNDP projects in the region have addressed water governance, climate resilience, livelihoods, monitoring, and local communities.

In 2026, UNDP, Uzbekistan, and Japan began a new project focused on strengthening water-resource governance and climate resilience in the Aral Sea region. The project includes modernization of irrigation infrastructure, digital water monitoring, and support for sustainable livelihoods.

¹⁸ United Nations Economic Commission for Europe. Second Assessment of Transboundary Rivers, Lakes and Groundwaters. UNECE, 2011, unece.org/second-assessment-transboundary-rivers-lakes-and-groundwaters.

¹⁹ Food and Agriculture Organization of the United Nations. "The Aral Sea Basin." Water Report 15, FAO, www.fao.org/4/W6240E/w6240e03.htm.

This approach is important because environmental restoration will be unsuccessful if local communities cannot maintain sustainable livelihoods. UNDP can therefore help connect environmental policy with poverty reduction, economic development, and human security.²⁰

Central Asia Regional Economic Cooperation (CAREC)

The Central Asia Regional Economic Cooperation (CAREC) Program is a regional cooperation framework that brings together Central Asian states and development partners to promote economic cooperation and connectivity. Water management is particularly relevant because infrastructure, agriculture, energy, and environmental policy are interconnected across the region.

CAREC can support cooperation by helping states develop infrastructure, improve data-sharing systems, and coordinate investment. For the Aral Sea, regional economic cooperation can help ensure that environmental objectives do not conflict unnecessarily with development goals.²¹

TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
Pre modern era (1700s) under the russian empire	The Aral Sea was an integral source of the region of central asia as an environmental source and trade hub
1930s	The Soviet Union started to install water diversion projects such as for the purposes of agriculture and industry.
1960s	The soviet union began rapidly making use of the arel sea to the point where it started shrinking creating the Aralkum Desert
1991	The Soviet Union collapses leaving central asia republics as sovereign nations
1993	Kyzy-Orda agreement signed by the first 5 heads of states regarding the Aral sea crisis
2000	Uzbekistan reported to the UN the water crisis and the possible drought of the area.

²⁰ United Nations Development Programme. "Uzbekistan, Japan and UNDP Begin Implementation of New Aral Sea Water Project." UNDP Uzbekistan, 26 May 2026, www.undp.org/uzbekistan/press-releases/uzbekistan-japan-and-undp-begin-implementation-new-aral-sea-water-project.

²¹ Asian Development Bank. Central Asia Regional Economic Cooperation Program. Asian Development Bank, www.carecprogram.org.

2005	Kazakhstan completed the Kok-Aral Dam, helping restore water levels in the North Aral Sea.
2008	The United Nations launched additional programs to address the Aral Sea environmental crisis
2014	The eastern basin of the South Aral Sea dried up completely for the first time in recorded history

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

Agreement on Cooperation in Joint Management and Protection of Interstate Water Sources — 1992

In February 1992, the Central Asian states signed an agreement concerning cooperation in the joint management and protection of interstate water sources. The agreement was significant because the newly independent states inherited a water system that had previously been centrally managed by the Soviet Union.

The agreement helped establish the Interstate Commission for Water Coordination (ICWC), providing a regional mechanism for discussing water allocations and management. Its importance lies in recognizing that the Aral Sea crisis cannot be solved by one state acting independently.²²

Kyzylorda Agreement and Establishment of IFAS — 1993

In March 1993, the five Central Asian states signed an agreement on joint action to address the problems of the Aral Sea and its surrounding region. The meeting also established the International Fund for Saving the Aral Sea. IFAS was designed to attract international attention and financial support while coordinating environmental, scientific, and socioeconomic projects. It remains one of the most important regional institutions connected to the Aral Sea. The significance of the 1993 agreement is that it recognized that the crisis required collective regional action, rather than isolated national projects.²³

²² International Fund for Saving the Aral Sea. "Establishment of the Fund." *IFAS*, www.ifas.kz/en/page/establishment-of-the-fund_146.

²³ International Fund for Saving the Aral Sea. "Establishment of the Fund." *IFAS*, www.ifas.kz/en/page/establishment-of-the-fund_146.

United Nations Sustainable Development Goals

The Aral Sea crisis is directly connected to several Sustainable Development Goals, particularly SDG 6: Clean Water and Sanitation, SDG 13: Climate Action, and SDG 15: Life on Land. SDG 6 emphasizes sustainable water management and access to clean water. SDG 13 addresses climate adaptation and resilience, which are increasingly relevant as Central Asia experiences rising temperatures and drought. SDG 15 focuses on protecting terrestrial ecosystems and combating land degradation and desertification.

Using the SDGs as a framework allows delegates to connect restoration of the Aral Sea with wider international development objectives.²⁴

UN General Assembly Resolution 75/278 — 2021

In 2021, the UN General Assembly adopted Resolution 75/278, “Declaring the Aral Sea Region a Zone of Ecological Innovations and Technologies.” The resolution recognizes the international importance of the Aral Sea crisis and encourages innovation, environmental protection, and international cooperation.

This resolution is particularly relevant to the Environmental Committee because it moves beyond simply recognizing the crisis and emphasizes the use of technology and innovation. It provides an international framework through which states can pursue new approaches to water management, environmental monitoring, restoration, and climate adaptation.²⁵

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Regional Water Cooperation After the Collapse of the Soviet Union

Following independence in 1991, the Central Asian states recognized that the inherited Soviet water system could not be managed effectively through national policies alone. In 1992, the states established mechanisms for coordinating interstate water resources, and in 1993 they created IFAS. These institutions were important because they established a basis for cooperation and provided a platform for discussing water allocation, environmental restoration, and socioeconomic development. However, disagreements between upstream hydropower interests and downstream agricultural interests have continued to complicate cooperation. The major lesson from these early agreements is that institutional cooperation is necessary but not sufficient. Regional organizations need reliable funding, accurate data, enforcement mechanisms, and political commitment.²⁶

International Fund for Saving the Aral Sea

²⁴ United Nations. “The 17 Goals.” *United Nations Sustainable Development Goals*, sdgs.un.org/goals.

²⁵ United Nations General Assembly. *Declaring the Aral Sea Region a Zone of Ecological Innovations and Technologies*. Resolution 75/278, 18 May 2021, digitallibrary.un.org/record/3928288.

²⁶ International Fund for Saving the Aral Sea. “Establishment of the Fund.” *IFAS*, www.ifas.kz/en/page/establishment-of-the-fund_146.

IFAS was established in 1993 to coordinate efforts to address the environmental and socioeconomic consequences of the Aral Sea crisis. Its objectives include attracting international support, financing environmental and scientific projects, and improving the living conditions of affected communities.

The creation of IFAS represents one of the most significant regional attempts to institutionalize cooperation. However, its effectiveness depends on the willingness of member states to coordinate their national water and environmental policies.

A strengthened IFAS could potentially become even more effective if it received greater financial resources, stronger technical capacity, improved data-sharing systems, and clearer mechanisms for implementing regional decisions.²⁷

Kok-Aral Dam and the Northern Aral Sea

The Kok-Aral Dam is one of the most successful examples of targeted ecological restoration in the Aral Sea region. Completed in 2005, the dam helped retain water in the Northern Aral Sea and contributed to improvements in water levels, salinity, and fisheries.

Its success demonstrates an important principle: partial restoration can be more realistic than attempting to restore the entire historical Sea immediately.

However, the project also illustrates the difficulty of managing water at the basin level. A structure designed to protect the northern section cannot by itself solve the environmental problems of the southern section. Future policies should therefore combine successful local interventions with basin-wide water management.²⁸

Aral Sea Basin Programmes

The Aral Sea Basin Programmes have attempted to address environmental degradation, water management, socioeconomic development, and institutional capacity. The first programme included objectives such as restoring affected environments, improving water and land management, and strengthening regional institutions. These programmes demonstrate that the international community has already recognized the need for an integrated approach. Nevertheless, implementation has been uneven, and water use continues to be influenced by competing national priorities. The next generation of programmes should therefore focus more heavily on measurable targets, transparent monitoring, financing, and accountability.²⁹

POSSIBLE SOLUTIONS

²⁷ International Fund for Saving the Aral Sea. "Establishment of the Fund." *IFAS*, www.ifas.kz/en/page/establishment-of-the-fund_146.

²⁸ World Bank. "Syr Darya Control and Northern Aral Sea Phase I Project." *World Bank*, www.worldbank.org.

²⁹ International Fund for Saving the Aral Sea. "ASBP-1." *IFAS*, ifas.kz/en/page/asbp-1.

Adjustment to water supply

The first priority should be to reduce unnecessary water consumption and ensure that sufficient water remains in rivers to support ecosystems. Rather than setting an unrealistic objective of immediately restoring the entire Aral Sea, states could establish minimum environmental-flow requirements for the Amu Darya and Syr Darya. These requirements would determine the minimum amount of water that must remain in the river system to sustain wetlands, biodiversity, agriculture, and downstream communities. Water allocations could then be adjusted according to annual rainfall, snowpack, glacier conditions, reservoir levels, and drought forecasts. This approach would allow countries to continue using water for essential purposes while recognizing that rivers and ecosystems themselves require water.

Change in agricultural methods

Implementing agriculture switches to dry crops so the use of water on thirsty plants decreases massively. Countries in the Aral Sea basin particularly Uzbekistan and Turkmenistan must actively agree to a structural shift away from cotton and rice. To introduce drought-resistant dry crops like winter wheat, sorghum, and native halophytes which are also salt-tolerant plants.

Implementation of strategic Dam Infrastructure

The use of smaller and targeted dams to allow water to be managed concentrated rather than scattered. This can allow engineers to successfully build a thriving environmentally friendly economy.

The expansion of the Kok-Aral dam by raising the existing 12-kilometer dam by an additional 6 to 8 meters. This would lead to the North Aral Sea being able to hold significantly more water volume and push the shoreline back closer to the former port city of Aralsk. This would lead to a drastic increase in the freshwater capacity of the northern basin, further lower water salinity, and expand the local fishing industry, creating hundreds of new jobs for regional communities.

Consensus building among High Land countries

Prima mountain regional countries like Tajikistan and Uzbekistan hint at a solution that leads to the stop of trapping water in the winter season at the Nurek and Rogun dams. Instead, they hold it until the dry summer months and release it all at once to flow down and revive the Aral Sea basin.³⁰

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