

PROBLEMS OF ARAL SEA

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Abstract: *The Aral Sea, once one of the largest inland seas, has dramatically shrunk due to extensive irrigation projects that diverted its water sources. This environmental crisis has led to severe ecological, economic, and social consequences for the surrounding regions. The loss of biodiversity, soil salinization, and health problems among local populations are some of the pressing issues. Efforts to mitigate the damage have been implemented, but the recovery of the sea remains uncertain. This abstract explores the causes.*

Key words: *environmental crisis, water diversion ,ecological impact, salinization, restoration efforts*

INTRODUCTION

Aral Sea has experienced a catastrophic decline due to extensive water diversion for agricultural purposes. Since the 1960s, its area has shrunk by more than 90%, leading to severe ecological consequences, including increased salinity and loss of biodiversity. This environmental crisis has devastated local communities that relied on fishing and agriculture for their livelihoods. Additionally, health issues related to pollution and deteriorating living conditions have emerged, affecting the well-being of the population. Addressing the Aral Sea crisis requires urgent international cooperation and sustainable management strategies to restore the region's ecosystem and support its communities.

Aral Sea's desiccation and salinization is a severe environmental catastrophe that is mostly caused by human activity. At over 68,000 square kilometres, the Aral Sea was once one of the biggest inland bodies of water in the world. Large-scale irrigation projects, especially for the Soviet Union's cotton industry, began to divert the Amu Darya and Syr Darya rivers' waters in the 1960s. The sea rapidly shrank as a result of this diversion, which significantly decreased the inflow. The depletion of the sea has disastrous results. Over 90% of the Aral Sea had vanished by the early 2000s, leaving behind a poisonous and extremely salty desert. Many native fish species could no longer live in the residual water due to the sharp rise in salt concentration.

Furthermore, there has been some progress in preserving the Small Aral, the northern portion of the Aral Sea, which has improved local conditions and partially restored water levels. Wider socioeconomic effects have also resulted from this environmental catastrophe. The region's shifting climate, which is marked by colder winters and hotter summers, has further complicated the ecological balance, and the loss of water resources has decimated agricultural towns and forced residents to relocate.

For numerous decades, there have been attempts to revive the Aral Sea, with differing degrees of success. The Kok-Aral Dam project, which was started by the Kazakh government

with World Bank funding, is among the most well-known projects. Constructed in 2005, the dam divides the Aral Sea's rapidly diminishing southern region from its northern region, referred to as the Small Aral. By capturing inflow from the Syr Darya river, this project sought to stabilise water levels in the northern basin. Significant progress has been made in the Small Aral since it was finished, with fish populations startin" to rebound and water levels rising.

Communities in this area have benefited economically from the fishing industry's resurgence. And preventing desertification in the arid. Reforestation and the avoidance of desertification on the arid southern Aral Sea's seabed are the subjects of another significant endeavour. In order to stabilise the soil and lessen the frequency of dangerous dust storms that transport salt and chemicals over great distances, salt-tolerant flora, such as saxaul trees, must be planted. This project, spearheaded by Uzbekistan and carried out in partnership with global institutions such as the World Bank and the UN, is to enhance the quality of the air for those living in the vicinity and lessen the harm that the sea's evaporation causes to the ecosystem. Apart from these regional endeavours, there are more extensive regional programmes designed to advance sustainable water management throughout Central Asia. These include the creation of more effective irrigation methods and regional collaboration to effectively oversee the Amu Darya's shared water supplies.

In my view, preserving the Aral Sea demands a multi-faceted approach, blending environmental, political, and technological strategies:

1. **Sustainable Water Management:** Establishing improved water usage policies is a priority for the region. This entails optimizing irrigation systems and implementing water-saving technologies to decrease the amount of water drawn from the Amu Darya and Syr Darya rivers. Reducing water waste in agriculture, especially in cotton cultivation, could allow more water to reach the Aral Sea.

2. **Regional Cooperation:** Since the Aral Sea spans several nations, including Uzbekistan and Kazakhstan, cross-border collaboration is essential for restoration. A unified water management plan and open dialogue among Central Asian countries could help ensure that water resources are managed sustainably and equitably. International organizations could support and guide these cooperative efforts.

3. **Reforestation and Ecological Restoration:** Expanding reforestation projects on the dried seabed, particularly with salt-resistant plants like saxaul trees, is vital for curbing toxic dust storms and stabilizing the ecosystem. Wetland restoration initiatives could further establish buffer zones that protect the local environment and enhance air quality.

4. **Alternative Economic Development:** Shifting away from water-intensive agriculture is another necessary step. By diversifying the economy with investments in renewable energy, such as solar or wind power, or developing less water-dependent industries, the region could create sustainable job opportunities. This would help reduce reliance on water resources and relieve environmental stress.

Though a full restoration of the Aral Sea may not be feasible, these measures could prevent further harm and promote environmental stability for future generations.



Protecting the Aral Sea requires a mix of strategic efforts focused on sustainable water use, regional partnerships, environmental recovery, and economic shifts. Improved water management, particularly in agriculture, could significantly reduce water diversion from key rivers. Cooperation between countries like Uzbekistan and Kazakhstan is essential to ensure resources are shared equitably, with support from global organizations. Restoring vegetation on the dried seabed and enhancing wetlands can reduce dust storms and benefit the ecosystem. Encouraging economic diversification, especially through renewable energy, could ease pressure on water resources. Although full restoration may not be feasible, these actions could help preserve the area's environment for future generations.

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