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Original Article

The Geopolitics of the Amu Darya and Syr Darya River Basins: Conflicts, Cooperation, and External Influences

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Abstract

The Amu Darya and Syr Darya river basins are vital lifelines for Central Asia's ecosystems, agriculture, and energy. The riparian states include Kyrgyzstan, Tajikistan, Kazakhstan, Uzbekistan, Turkmenistan and Afghanistan. The concerned states are engaged in an intense geopolitical tension related to the resource sharing of these basins. This article tries to examines the historical legacies of Soviet-era water management, post-independence conflicts over allocation, and emerging challenges from the external actors like the United States and climate change. Drawing on transboundary water politics analyses, it highlights upstream-downstream divides, failed agreements, and nascent cooperative mechanisms. Findings underscore the basins' potential as flashpoints for conflict, with upstream hydropower ambitions clashing against downstream irrigation needs, while external interventions exacerbate regional instability. Under scenarios of reduced glacial melt, transboundary cooperation via institutions like the International Fund for Saving the Aral Sea (IFAS) is imperative to avert humanitarian crises.

Keywords: *Amu Darya, Syr Darya, Central Asia, Transboundary water politics, Geopolitical tensions, Soviet legacy, Hydropower development, Irrigation, Upstream–downstream conflicts, International Fund for Saving the Aral Sea (IFAS), Climate change, External influences, Water governance, regional cooperation, Aral Sea,*

Introduction

The Amu Darya and Syr Darya basins provide essential water resources for over 60 million people inhabiting arid landscapes across the central Asian region, before draining into the Aral Sea, which itself is dwindling. These river systems are the lifeline for sustaining approximately 90% of Central Asia's irrigated agriculture. They are also significant contributors to regional hydropower generation. These rivers have transboundary nature and spans five former Soviet republics and Afghanistan. This creates a classic hydro-hegemony, where the control exerted by upstream nations are significant and this profoundly impacts the security and stability of downstream states. The dissolution of the Soviet Union in 1991 resulted into a contentious international dispute. The previously managed intra-republican water sharing arrangements were either dissolved or not honoured, thereby, exacerbating existing geopolitical frictions, particularly in the context of increasing climate variability and sustained population growth. This article undertakes a comprehensive synthesis of these intricate geopolitical dynamics. It draws upon extensive conflict event databases, detailed institutional analyses, and thorough policy studies to meticulously explore the historical contexts, prevailing tensions, nascent cooperative efforts, and the significant external influences at play. By conceptualizing water as a critical strategic resource, this research illuminates actionable pathways toward achieving equitable governance and effective conflict mitigation within this highly volatile and interconnected nexus.

Historical Context

Soviet central planning engineered the basins' modern geopolitics, prioritizing cotton monoculture through massive diversions from the Amu Darya and Syr Darya, which reduced the Aral Sea's volume by over 90% since 1960.

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Upstream republics like Kyrgyzstan and Tajikistan were designated water suppliers, receiving subsidized energy from downstream hydrocarbon-rich states in a barter system that masked inefficiencies, such as 79% irrigation losses from unlined canals (Kulmatov, 2014; Rakhmatullaev et al., 2012; Wang et al., 2020). Post-1991, this equilibrium unraveled as new borders politicized resources, rendering Soviet allocations obsolete and fostering perceptions of water as a zero-sum commodity (Berndtsson & Tussupova, 2020). Consequently, the resulting allocation disputes have jeopardised the livelihoods of millions, causing annual economic losses of billions. And this has exposed the region's outdated legal framework as a barrier to sustainable water governance (Rakhmatullaev et al., 2010) (Libert & Lipponen, 2012). Recent regional dialogue initiatives remain criplled by deep-seated mistrust among riparians and the lack of a binding transboundary water treaty, perpetuating the governance gap (arfa et al., 2025) (Libert & Lipponen, 2012). Consequently, without a binding treaty, the basin faces escalating water-use inefficiencies and heightened risk of transboundary conflict. This underscores the urgency for coordinated adaptation strategies that can reconcile upstream hydropower development with downstream irrigation demands (Wang et al., 2022) (Chen et al., 2018) (Stucker et al., 2012). Moreover, recent hydrological analyses reveal that declining river discharges driven by reduced glacial melt and altered precipitation patterns exacerbate these allocation tensions. This highlights the need for integrated climate-water management frameworks (Zou et al., 2019).

The 1992 Almaty Agreement sought to perpetuate quotas. However, the upstream grievances over uncompensated exports, exemplified by the 1998 water-for-energy pact's non-implementation has eroded trust. Historical antagonisms include 14 documented water conflicts per the Pacific Institute, such as Uzbekistan's 1997 border militarization against Kyrgyzstan. In the Amu Darya, Afghanistan's exclusion from Soviet pacts like Protocol 566 marginalized its 40% basin share, setting the stage for contemporary disputes (Abbink et al., 2009).

Current Geopolitical Dynamics

The basins' geopolitics pivot on upstream-downstream asymmetries: Kyrgyzstan and Tajikistan, hydrocarbon-poor, pursue hydropower via megaprojects like Rogun and Kambarata-1 dams, potentially curtailing summer flows critical for downstream Uzbekistan and Turkmenistan's agriculture. Uzbekistan, with the highest conflict centrality (degree 6), has clashed nine times with Kyrgyzstan over infrastructure, while Kazakhstan leads cooperation (degree 15). Water mismatches—Gini coefficients averaging 0.61 for water-cropland alignment—intensify summer irrigation shortages and winter energy deficits, with 591 political events from 1951–2018 showing 89% cooperation but mostly low-level verbal support (Libert & Lipponen, 2012; Wang et al., 2022). Consequently, scholars argue that only a binding, basin-wide treaty anchored in a robust legal framework can transform these superficial assurances into enforceable cooperation (Seidakhmetov et al., 2014).

In the Amu Darya, Afghanistan's Qosha Tepa Canal (2022), backed by $600 million in USAID funding, threatens 10–15% flow reductions to Uzbekistan, evoking Soviet-era exclusions and raising sabotage fears. The Syr Darya's Toktogul Reservoir exemplifies seasonal trade-offs: winter fillings for Kyrgyz power flood Kazakh farmlands, while summer releases aid irrigation but strain upstream economies. Aging infrastructure, like the 2010 Kyzyl-Agash Dam failure, underscores vulnerability, with evaporation and leaks compounding 25% annual losses (Boer et al., 2021; Didovets et al., 2021; Zhupankhan et al., 2017).

Basin	Upstream States	Downstream States	Key Resource Tension
Amu Darya	Tajikistan, Afghanistan	Turkmenistan, Uzbekistan	Irrigation vs. Canal Diversions
Syr Darya	Kyrgyzstan, Tajikistan	Kazakhstan, Uzbekistan	Hydropower vs. Agricultural Flows

Conflicts and Cooperation Mechanisms

Conflicts manifest in militarized posturing. One example is Uzbekistan's 2012 war threats over Rogun—and ecological fallout, with Aral dust storms elevating Karakalpakstan's tuberculosis rates and spurring outmigration. Downstream military superiority (e.g., Uzbekistan's forces dwarfing Tajikistan's) deters explicit aggression but fuels covert tensions. Cooperation, though predominant, remains shallow. The Interstate Commission for Water Coordination (ICWC, 1992) and IFAS (1993) facilitate data sharing. But enforcement lags, as seen in Turkmenistan's 2003 Almaty withdrawal (Rahaman, 2012; Rysbekov, 2007; Stucker et al., 2012; Zhupankhan et al., 2017). Thus, establishing a legally binding, basin-wide treaty that delineates clear water-sharing obligations and dispute-resolution mechanisms is

essential for overcoming such enforcement deficiencies (Eritja, 2019) (Abbink et al., 2009).

Recent diplomacy under Uzbekistan's Mirziyoyev has thawed relations, yielding 2017 border pacts and joint dam oversight. Yet, 8.97% conflictive events—peaking in summer—signal fragility, with themes like quantity disputes dominating.

External Influences

Great powers exploit the basins' volatility. The USAID programs of U.S, including $4.5 billion in regional water aid, position Washington as a mediator. But funding of contentious projects like Qosha Tepa, ostensibly for Afghan stability is perceived as leverage against Russia and China. Russia's historical ties sustain energy swaps, but waning influence cedes ground to China's Belt and Road investments in Tajik hydropower. Iran's Amu Darya stake adds downstream pressure, while the World Bank's Aral restoration dams in Kazakhstan highlight selective multilateralism. These interventions risk neo-colonial dynamics, prioritizing donor agendas over riparian equity (Berndtsson & Tussupova, 2020; Jalilov et al., 2015; Libert & Lipponen, 2012). Moreover, the influx of externally funded infrastructure often accelerates sediment accumulation in aging reservoirs, further compromising storage capacity and downstream water reliability (Rakhmatullaev et al., 2012).

Future Trajectories

Climate projections forecast 50% glacial retreat by 2050, slashing summer flows by 30% and amplifying mismatches, potentially displacing 5.1 million and costing 1.3% GDP annually. Upstream dam cascades could mitigate variability but provoke retaliation, while integrated nexus modeling advocates cooperative reservoirs for mutual gains: +10% water availability, reduced emissions, and GDP boosts. High-level treaties, akin to Helsinki principles (acceded by downstream states), are urged, alongside IFAS reforms for inclusive Afghan participation. Absent unified strategies, basins risk "water wars," but nexus tools offer a pathway to resilience (Hasan et al., 2023; Hassan et al., 2019; Jalilov et al., 2015; Zeitoun et al., 2013).

Conclusion

The Amu Darya and Syr Darya basins epitomize Central Asia's hydro-geopolitical quandary: Soviet legacies, upstream ambitions, and external meddling converge to threaten stability. While conflicts loom, 89% cooperative events and diplomatic overtures signal reform potential. Prioritizing equitable allocation, infrastructure modernization, and climate-adaptive governance via ICWC/IFAS can transmute rivalry into regional prosperity. Future research must track nexus interlinkages to preempt tipping points in this parched crossroads.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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