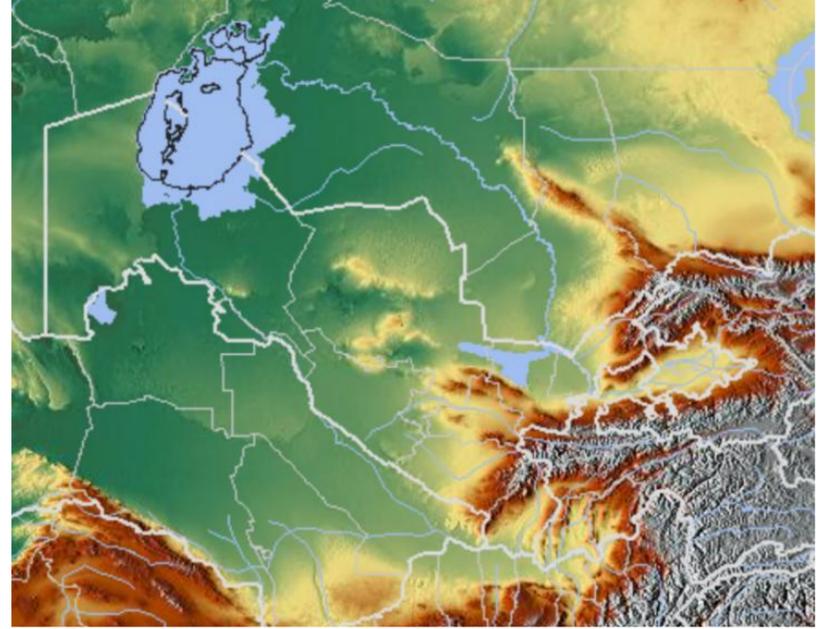
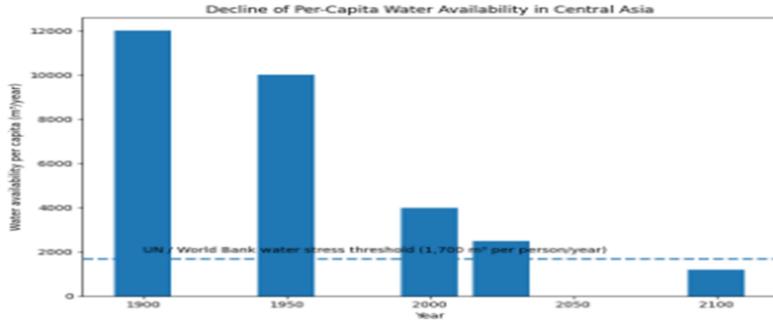


Water Challenges in Central Asia

Adylov Kobyljon & Christian Gessl



	Climate Change & Glacier Loss	Aral Sea Basin Degradation	Inefficient Water Use	Institutional & Transboundary Gaps	Socioeconomic & Gender Vulnerability	Land & Forest Degradation
Research Problem	Warming & glacier retreat reduce runoff reliability	Insufficient ecological inflows cause salinization & biodiversity loss	Agriculture uses >90% of water with high losses	Weak coordination fuels upstream-downstream tensions	Women & rural communities are disproportionately affected	Deforestation intensifies erosion & flooding
Main Finding	Rising hydrological risk; long-term runoff decline	Basin instability; ≥4.2 km³/year needed for recovery	Institutional progress since 2017 shows reform capacity	Water diplomacy agreements show growing trust	Women's participation improves efficiency by ~25%	Reforestation cuts runoff peaks by ~20%
Strategic Direction	Technological monitoring & early warning systems	Environmental integration & ecological flows	Institutional strengthening & coordination	Education & capacity-building for diplomacy	Social inclusion & gender-sensitive governance	Green finance for restoration & watersheds

Research Design and Data Sources

Interdisciplinary, multi-level research design combining climatology, hydrology, social geography, and international relations. The study integrates hydro-climatic analysis (1960–2025), water-balance and scenario modeling (IPCC RCP 4.5 and 8.5), GIS and remote sensing (Landsat-8, Sentinel-2), and socio-institutional analysis based on interviews with regional water institutions, farmer associations, and women water users. Regional case studies include the Amu Darya delta and Southern Aral Sea, the Fergana Valley, and mountain watersheds of Kyrgyzstan and Tajikistan.

EngageH2O – Public-Private Dialogue (PPD)

EngageH2O – Advancing the Green Agenda in Uzbekistan through Public-Private Dialogue demonstrates how research-based water analysis is translated into structured dialogue between public institutions, private sector actors, and civil society. The PPD component supports evidence-based policy discussion, coordination, and trust-building in water governance.

EngageH2O – Participatory Film: Training & Production

Participatory filmmaking is used as a research and capacity-building tool. Youth and community members are trained in documentary methods to co-produce films on local water challenges, linking experiential knowledge with policy-relevant narratives and social inclusion.

Awareness & Public Engagement: Bir Duino Human Rights Film Festival

Screenings and public discussions at platforms such as the Bir Duino Human Rights Festival frame water as a human right and social justice issue. Festival-based dissemination raises awareness, amplifies marginalized voices, and connects grassroots perspectives to national and international audiences.