

Transboundary Adaptive Water Management: Addressing the Urgent Need

Dursun Yıldız

Director

Hydropolitics Academy ,

Abstract

Transboundary water resources, such as rivers, lakes, and aquifers, often cross political boundaries, necessitating cooperation among neighboring countries for sustainable and equitable management. The effects of climate change, including altered precipitation patterns, rising temperatures, and more frequent extreme weather events, pose significant threats to the availability and reliability of these shared water sources. Recognizing the interconnectedness of climate change and transboundary water management is essential for developing resilient and adaptive strategies.

Climate-informed transboundary water management is crucial for addressing the challenges posed by climate change on shared water resources. As the impacts of climate change become more pronounced, the need for adaptive and collaborative approaches in managing transboundary water sources becomes increasingly evident. This article explores the key components, challenges, and strategies associated with climate-informed transboundary water management.

Keywords: Adaptive water management, Transboundary Water, Climate Change,

1. Introduction

The world's water resources are facing unprecedented pressures from population growth and economic development. Estimates indicate that, with current practices, the world will face a 40% shortfall between forecast demand and available supply of water by 2030. Climate change is worsening the situation, making water availability more unpredictable and increasing the frequency and intensity of floods and droughts.

The 6th IPCC assessment and the 2023 IPCC synthesis report recognize transboundary risks across the food, energy, and water sectors, requiring climate-informed transboundary management.

Transboundary river basin management can be analyzed in terms of the development and implementation of international "agreements," such as treaties, protocols, gentlemen's agreements, tacit understandings, etc., including binding laws and non-binding policies (4,5)

Sharing transboundary water resources is a major concern in many areas of the world. In many regions, there is simply not enough water to satisfy all needs. As the climate warms, additional stress is placed on the availability, allocation, and sharing of these resources. Presently, more than 250 river basins are shared by two or more countries. These shared basins occupy 43.5% of the Earth's surface, contain approximately 60% of the surface water flows, and house 40% of the world's population.

History shows that transboundary water allocation arrangements can work for the benefit of the states involved, but only if they are well designed, jointly agreed, adaptable, and effectively implemented.

2.The Increasing Importance of Climate-Informed Transboundary Water Management

Climate-informed transboundary water management is gaining importance due to interconnected factors highlighting the urgency of addressing the impacts of climate change on common water resources. Climate change is leading to more frequent and severe weather events, changing precipitation patterns, and rising temperatures, directly affecting water availability, quality, and distribution. This necessitates the evolution of transboundary water management to address the increasing risks and uncertainties associated with these impacts.

Many regions already face water scarcity, exacerbated by climate change. Shared water resources often cross borders, and increased competition for limited water resources can lead to conflicts. To ensure sustainable and equitable use, climate-informed management becomes imperative, especially in regions where water scarcity is an increasing problem. Additionally, increasing population, urbanization, and agricultural demands put additional pressure on water resources, making climate-informed transboundary water management crucial to anticipate and address these increasing demands.

3.Water Cooperation and Diplomacy

Shared water resources require international cooperation and diplomatic efforts. Climate change adds another layer of complexity to these relationships, as countries must work together to adapt to changing conditions, share data, and negotiate agreements that take into account evolving climate realities. Water scarcity and competition can become a source of tension and conflict between nations, making proactive addressing of climate change impacts on transboundary water resources crucial for increasing regional stability and security.

Impacts on water availability can have serious humanitarian consequences, affecting communities that depend on these resources for their livelihoods. Climate-informed transboundary water management is crucial to protect vulnerable populations from the adverse effects of climate change.

In summary, transboundary adaptive water management has become important due to the strong interrelation between climate change, water scarcity, ecological threats, and the need for international cooperation. Proactive measures and adaptable strategies are essential to ensure the flexibility and sustainability of shared water resources in the face of a changing climate.

Countries involved in transboundary water management may have varying capacities to adapt to climate change. International cooperation should involve capacity-building initiatives to ensure that all parties can actively participate and benefit from shared solutions.

4. Transboundary Adaptive Water Management

Adaptive management approaches play a crucial role in managing transboundary water resources in the context of climate change. These approaches provide a flexible and iterative framework that allows water managers and policymakers to respond to uncertainties, changing conditions, and evolving knowledge. Adaptive management extends to legal and institutional frameworks, facilitating ongoing dialogue and cooperation among riparian states, enabling joint responses to shared challenges presented by climate change (6).

Implementing early warning systems for extreme weather events can help riparian countries prepare for and respond to potential disasters, reducing the impact on water resources and communities. Establishing adaptive governance structures allows for the flexible adjustment of policies and agreements in response to changing climate conditions. This includes regular reviews and updates to ensure relevance and effectiveness. Strengthening regional collaboration and fostering dialogue among neighboring countries is essential for building trust, sharing knowledge, and collectively addressing the challenges posed by climate change on shared water resources. Securing funding for climate-resilient water management projects is crucial. This includes investments in infrastructure, technology, and capacity building to support adaptation and mitigation measures.

5. Conclusions

There isn't a specific international convention solely focused on transboundary water management that explicitly includes provisions for addressing climate change effects.

Climate-informed transboundary water management is imperative for addressing the complex challenges posed by climate change. It provides a framework for adaptive, cooperative, and sustainable approaches to ensure the resilience and equitable use of shared water resources. A holistic and collaborative approach, integrating climate science, adaptive governance, and inclusive stakeholder engagement, is essential for developing resilient strategies to address the impacts of climate change on shared water resources. Proactive and cooperative measures are essential for ensuring the sustainable use and equitable distribution of transboundary water resources. . Yet, most treaties and international agreements lack important tools for dealing with current challenges, such as flood control and water quality, and they lack adequate mechanisms for addressing changing social, economic or climate conditions(3).

Transboundary water basin countries should consider incorporating the new mechanisms into existing treaties to allow for flexibility to adopt climate change .Therefore flexible allocation strategies and water quality criteria, provisions for extreme events, clear amendment and review procedures and joint management institutions need to be considered for exisxing and draft treaties.

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Biography



Dursun Yıldız C.E. (MSc.) is a hydropolitics specialist and Director of the Hydropolitics Academy Association located in Ankara-Turkey. He is a civil engineer and used to be Deputy Director at State Hydraulic Works in Turkey; completed a hydroinformatics post graduate course at the IHE in Delft, a Technical training program in USBR-USA, and a master's degree in Hydropolitics at the Hacettepe University-Turkey. He has over 5 years of teaching experience in some Turkish Universities and now works as head of his own Hydro Energy & Strategy consulting company located in Ankara. He has published several international articles and 15 books. He received the Most Successful Researcher Award on International Water Issues from Turkish Agricultural Association in 2008 and from the Central Union of Irrigation Cooperatives in 2016. He received the Professional Services Award of Excellence from İstanbul Çekmeköy Rotary Club in 2021. He becomes a part-time lecturer at the IZTECH International Water Resources Department in In the 2020-2021 academic year

January 24 2024