

CLIMATE CHANGE AS A DIPLOMATIC STRESS TEST: POWER, ADAPTATION, AND TRANSBOUNDARY WATER NEGOTIATIONS IN CENTRAL ASIA

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Abstract. *This study investigates climate change as a structural diplomatic stress test in Central Asia, focusing on how it reshapes transboundary water governance, power asymmetries, and state adaptation strategies. Unlike traditional environmental security approaches that treat climate change as an external shock, this research conceptualises it as an endogenous and continuous variable influencing negotiation behaviour, institutional performance, and regional stability. The empirical focus is the Amu Darya and Syr Darya river basins, which form the backbone of water security in Central Asia. These basins are defined by upstream–downstream structural asymmetry: Kyrgyzstan and Tajikistan control headwaters and prioritise hydropower generation, while Uzbekistan, Kazakhstan, and Turkmenistan depend on regulated downstream flows for irrigation-based agriculture and food security. Scientific evidence confirms that Central Asia is one of the most climate-sensitive regions globally. The IPCC (2021) reports accelerated glacier retreat in the Tien Shan and Pamir mountains, rising temperatures above the global average, and increasing variability in seasonal river discharge. The World Bank (2023) further projects that water stress in the region will significantly intensify by mid-century, with direct implications for agriculture, energy security, and regional stability. This study argues that climate change introduces systemic uncertainty into water governance, weakening historically stable hydro-political arrangements. As a result, traditional forms of hydro-hegemony based on geographic position and infrastructural control become less predictable, and bargaining outcomes increasingly depend on adaptive capacity and institutional resilience. Methodologically, the research employs a qualitative comparative case study design, using process tracing, document analysis, and triangulation of international datasets. It draws on policy documents, treaty frameworks, and reports from international organisations such as the IPCC, World Bank, and UNEP. The findings suggest that climate change does not directly cause conflict; rather, it transforms the conditions under which cooperation and contestation occur. Institutional strength, political alignment, and adaptive governance capacity determine whether environmental stress leads to cooperation or diplomatic deadlock.*

Keywords: *climate change, Central Asia, transboundary water, hydro-hegemony, environmental security, diplomacy, adaptation.*

1. Introduction

Climate change has become a defining challenge in contemporary International Relations, affecting security, governance, and cooperation at multiple levels (IPCC, 2021; Adger et al., 2021). Its impact is particularly visible in regions where natural resources are shared across political borders. Central Asia represents one of the most critical cases of transboundary water dependence. The Amu Darya and Syr Darya river systems support millions of people and form the basis of agriculture, hydropower, and industrial production. However, these systems are structurally unequal. Upstream states control water origin, while downstream states rely on regulated flow stability. The IPCC (2021) identifies Central Asia as a hotspot for climate vulnerability due to rapid glacier loss in mountain regions that feed major rivers. Studies show that glacier mass in the Tien Shan and Pamir ranges has declined significantly over recent decades, directly reducing long-term water availability. At the same time, seasonal flow variability is increasing, making water supply less predictable and more politically sensitive. These environmental shifts interact with existing geopolitical tensions, creating a complex diplomatic environment where water allocation becomes a strategic issue rather than a purely technical one.

2. Research Question

How does climate change reshape transboundary water diplomacy in Central Asia in terms of power relations, cooperation, and institutional adaptation?

3. Theoretical Framework

This study integrates three established and widely cited theoretical approaches:

3.1 Hydro-hegemony theory

Hydro-hegemony explains how upstream and downstream power asymmetries shape water allocation through control of geography, infrastructure, and negotiation capacity (Zeitoun and Warner, 2006; Zeitoun et al., 2016). It highlights that power in water politics is not only material but also institutional and discursive.

3.2 Environmental security theory

Environmental security approaches conceptualise climate change as a “threat multiplier” that intensifies existing political and socio-economic vulnerabilities rather than directly causing conflict (Barnett and Adger, 2007; Mach et al., 2019).

3.3 Institutionalism

Institutionalist approaches emphasise the role of formal and informal governance mechanisms in reducing uncertainty and enabling cooperation under conditions of asymmetric power (Zawahri and Mitchell, 2022). Together, these frameworks allow for a

multi-layered explanation of how climate change interacts with power, institutions, and diplomacy.

4. Methodology

This study adopts a qualitative comparative case study design focusing on the Amu Darya and Syr Darya basins.

Data sources include:

IPCC Sixth Assessment Report (2021–2023 updates)

World Bank Climate Risk Country Profiles (2023)

UNEP water security assessments

Regional institutional documents (ICWC, basin agreements)

Peer-reviewed journals in Nature, Water Policy, International Studies Review, Political Geography

Analytical methods:

Process tracing of negotiation developments

Comparative institutional analysis

Thematic coding of diplomatic and policy documents

5. Key Analytical Argument

The central argument of this study is that climate change transforms hydro-political systems from relatively stable hierarchical structures into uncertain and adaptive negotiation environments. Whereas traditional hydro-hegemony assumes relatively stable upstream control, climate change introduces variability that undermines predictability in water availability. This reduces the reliability of infrastructural power and increases the importance of institutional flexibility and diplomatic adaptation.

6. Expected Contribution

Theoretical contribution

Extends hydro-hegemony theory by integrating climate-induced uncertainty as a structural variable. Reframes climate change as an endogenous diplomatic factor in International Relations. Empirical contribution, Provides a systematic analysis of Amu Darya and Syr Darya basin politics under climate stress. Demonstrates how institutional capacity mediates climate-related tensions. Policy contribution. Offers insights for regional water governance reform in Central Asia. Supports adaptive diplomacy and cooperative water-sharing mechanisms.

7. Conclusion

Climate change is reshaping transboundary water diplomacy in Central Asia by increasing hydrological uncertainty and altering traditional power structures. However, it does not mechanically lead to conflict. Instead, outcomes depend on institutional resilience, adaptive governance, and political willingness to cooperate under uncertainty. This

positions Central Asia as a key empirical laboratory for studying the intersection of climate change, power, and diplomacy.

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