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Water at the Center of Central Asian Geopolitics: Security, Conflict, and the Reconfiguration of Regional Power

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the first paragraph of the Introduction, the sentence “Water-related pressures can also weaken states’ capacity to manage water resources and create conditions conducive to the intensification of political and security tensions” contains an unclear causal structure because the antecedent of “water-related pressures” is not explicitly defined. The authors should identify whether they mean scarcity, variability, drought, unequal allocation, climatic change, infrastructural dependence, or institutional failure. This distinction is theoretically important because the environmental-conflict literature does not generally treat water scarcity itself as a sufficient cause of political conflict. The paragraph should therefore specify the causal mechanism through which environmental pressure is hypothesized to affect state capacity and interstate tension.

In the first paragraph of the Introduction, the claim that “approximately 80% of the Amu Darya’s flow originates in Tajikistan, 12% in Afghanistan, 6% in Uzbekistan, and 3.5% in Turkmenistan” should be carefully rechecked because the percentages as written exceed 100% when summed. Even if these figures refer to different hydrological accounting methods, tributary contributions, or approximate shares, the present formulation creates an immediate quantitative inconsistency. The authors should return to the original source, clarify whether the figures refer to runoff formation, basin contribution, or national territorial generation, and present values that are internally consistent. This issue is important because the article’s argument regarding hydropolitical asymmetry depends heavily on the empirical credibility of such distributional data.

In Section 3.2, the historical statement concerning the “Temporary Regulations on Irrigation in the Turkestan Region” adopted in June 1877 and the later discussion of Stalin’s 1948 Plan for the Transformation of Nature require more explicit

connection to the article's central argument. The historical background is informative, but the authors should explain precisely which institutional legacies survived into the post-Soviet period. For example, did Soviet basin-management practices produce path dependence in allocation rules, infrastructure design, agricultural specialization, bureaucratic institutions, or expectations concerning water–energy compensation? A stronger causal bridge between historical institutional arrangements and contemporary hydropolitics would make this section analytically stronger.

In Section 4.1, the sentence stating that hydropower accounts for "approximately 85% and 98% of electricity production" in Kyrgyzstan and Tajikistan, respectively, should be supported with direct and temporally specified evidence. Hydropower shares may vary substantially by year, hydrological conditions, imports, thermal generation, and methodological definition. The authors should provide the year to which the figures refer and ensure that the source directly supports these values. The same concern applies to the claim that more than 90% of annual freshwater withdrawals are allocated to agriculture in several regional states. Time-specific data are essential in an article that links water dependency to contemporary geopolitical bargaining power.

Section 4.2 argues that "decision-support systems that integrate hydrological data, climate projections, and sectoral requirements can facilitate the examination of water-allocation scenarios." This recommendation is scientifically reasonable, but the supporting citation concerns the Nile Basin decision-support system rather than Central Asia. The authors should explain the comparative relevance of that case or supplement it with Central Asia-specific studies on basin modeling, data-sharing systems, or climate-informed allocation mechanisms. Otherwise, the paragraph shifts from empirical analysis of Central Asia to a general technical recommendation without establishing sufficient regional applicability.

Authors revised the manuscript and uploaded the document.

1.2. Reviewer 2

Reviewer:

In the third paragraph of the Introduction, the sentence "more than 30% of Central Asia's glaciers may disappear by 2050" requires greater methodological qualification. The authors should specify whether this projection refers to glacier area, glacier volume, glacier mass, or the number of individual glaciers, and under which climate scenario or emission pathway the estimate was produced. Similarly, the subsequent assertion that "water resources may decline by approximately 5% in the Syr Darya Basin and approximately 15% in the Amu Darya Basin by 2050" should indicate whether these estimates concern annual runoff, available renewable water resources, seasonal flow, or another hydrological variable. Without these qualifications, the article risks presenting scenario-dependent projections as fixed forecasts.

The final paragraph of the Introduction states that the study provides "an integrated analysis of water simultaneously as a natural resource, a security variable, and an instrument of geopolitical power." This is potentially the article's central contribution, but the novelty claim is currently asserted rather than demonstrated. The authors should compare their approach explicitly with previous studies on Central Asian hydropolitics and explain what those studies have treated separately that the present study integrates. For example, the article could distinguish itself from research focused primarily on scarcity, water–energy exchanges, institutional governance, or great-power competition. A clearer research gap would make the contribution more convincing and prevent the study from appearing primarily as a synthesis of existing literature.

In the first paragraph of Section 2, the statement that "hydropolitics examines interactions among actors concerning access to, allocation of, and management of shared water resources" is useful, but the theoretical section would benefit from a more explicit distinction between hydropolitics and water geopolitics. At several points, these terms appear almost interchangeable, although they operate at different analytical levels. The authors should specify whether "water geopolitics" constitutes the broader spatial-power framework and "hydropolitics" refers more specifically to political relations surrounding transboundary water allocation and management. Such clarification is especially necessary because the analytical framework later combines hydropolitics, hydro-hegemony, Regional Security Complex Theory, and water security.

In the paragraph introducing Regional Security Complex Theory, the sentence "Regional Security Complex Theory provides an appropriate framework for explaining the relationship among water resources, security, and power relations in Central Asia"

requires stronger justification. The theory was not originally developed specifically for environmental or water-security issues, and the article should explain how water becomes securitized within the regional security complex. The authors should clarify whether water is treated as a distinct security sector, as a cross-sectoral issue connecting economic, environmental, and political security, or as a variable affecting existing regional security interdependence. Without this step, the theoretical framework risks appearing additive rather than analytically integrated.

In the hydro-hegemony paragraph of Section 2, the sentence “this concept emphasizes the importance of asymmetric power distribution, upstream and downstream positioning, possession of water infrastructure, economic capabilities, and political influence” is incomplete from a hydro-hegemony perspective. The literature on hydro-hegemony generally places significant emphasis not only on material and riparian power but also on bargaining power, ideational power, knowledge production, legal framing, institutional rule-setting, and discourse. The authors should therefore broaden the operationalization of hydro-hegemony beyond geographical location and infrastructure. This would also allow the article to explain why an upstream state is not automatically hegemonic and why a downstream state with greater economic or diplomatic capacity may still shape regional water arrangements.

In the final paragraph of Section 2, the authors identify three analytical dimensions: “geopolitical structure and water inequality,” “security implications and patterns of regional interaction,” and “power relations and the reconfiguration of the regional order.” This is a strong organizing device, but the article does not clearly explain how evidence is assigned to each dimension or how the dimensions interact methodologically. The authors should convert these dimensions into explicit analytical indicators and explain, preferably in the methodology section, how documentary material was coded or interpreted according to these categories. Otherwise, the framework remains conceptual rather than operational, and the reader cannot assess whether the later analysis systematically follows the proposed model.

Section 3.1 states that “the Fergana Valley, as one of the region’s major population and agricultural centers, occupies a particularly important position in water relations,” but the article does not subsequently develop this point. Given the Fergana Valley’s complex borders, irrigation networks, enclaves, demographic concentration, and history of local-level disputes over water and land, this area could provide an important empirical illustration of the relationship among geography, scarcity, infrastructure, and political tension. The authors should either expand the discussion with a specific example or remove the sentence if the valley is not analytically incorporated. At present, it introduces an important case but leaves it underdeveloped.

Authors revised the manuscript and uploaded the document.

2. Revised

Editor’s decision: Accepted.
Editor in Chief’s decision: Accepted.