

QUALITATIVE STUDY

Governing Water Security in the Horn of Africa

Institutional Frameworks and Conflict Prevention

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ABSTRACT

This article examines the institutional governance of water security in Tanzania, a critical state within the Horn of Africa's geopolitically sensitive hydrology. Through a qualitative case study incorporating 27 key-informant interviews and documentary analysis, it investigates how domestic institutional frameworks shape conflict potential over transboundary and local water resources.

The findings reveal a fragmented governance landscape, where overlapping mandates between ministries, basin water boards, and local authorities create coordination failures and contested entitlements. Crucially, the research identifies a persistent disconnect between formal statutory systems and informal customary management institutions, which fosters parallel systems of authority and exacerbates competition among users. The analysis demonstrates that this institutional polycentricity, embedded within a distinct political economy, transforms water scarcity from a managerial challenge into a catalyst for social tension. The study concludes that strengthening coherent, inclusive, and adaptive institutional architectures is essential for mitigating water-related conflicts, offering evidence-based insights for policymakers and regional bodies engaged in cooperative governance and conflict prevention.

Keywords: *Water Security, Hydro-Political Conflict, Institutional Fragmentation, Polycentric Governance, Transboundary Water Management, Pastoralist Conflicts, Tanzania, Horn of Africa*

Article Highlights

- Fragmented institutional frameworks create coordination failures in water governance
- Disconnect between formal statutory systems and informal customary management exacerbates user competition
- Institutional polycentricity embedded within political economy shapes conflict potential
- Coherent, adaptive architectures essential for mitigating water-related conflicts

Methodological Approach

Qualitative case study incorporating 27 key-informant interviews and documentary analysis of Tanzania's water governance institutions.

This analysis offers evidence-based insights for policymakers addressing hydro-political conflicts.

Introduction

Water security in the Horn of Africa represents a profound political challenge, where hydrological scarcity intersects with governance failures to create conditions ripe for conflict (Angelakis et al., 2021) (Angelakis et al., 2021). As Angelakis et al (Bendavid et al., 2021). (2021) illustrate, water conflicts are not merely contemporary phenomena but are deeply embedded in historical struggles over power and resource control (Blair et al., 2021).

This article situates itself within this enduring nexus, arguing that institutional frameworks are central to understanding and mitigating water-related tensions. Tanzania presents a critical case study within this regional panorama (Boyce, 2021). While often perceived as more stable than its northern neighbours, Tanzania is enmeshed in the complex hydrology of the Horn, sharing major transboundary basins like the Nile and managing internal pressures on rivers such as the Pangani.

Its experience is therefore pivotal for examining how domestic governance structures mediate between competing demands and external pressures. The research problem addressed here stems from a significant gap in the political science literature: while much attention is paid to interstate water diplomacy, there is less understanding of how domestic institutional architectures shape the potential for localised and cross-border conflict. This article posits that fragmented and polycentric water governance in Tanzania, rather than providing adaptive management, often exacerbates competition by creating overlapping mandates and unclear entitlements.

It contends that this institutional fragmentation, when coupled with the political economy of resource allocation, transforms water scarcity from a technical challenge into a catalyst for social tension. The analysis contributes to broader debates on environmental security and conflict prevention by demonstrating how the micro-politics of institutional design have macro consequences for regional stability. The article proceeds by first outlining its qualitative methodology, then presenting empirical findings on Tanzania's governance landscape, followed by a discussion that interprets these findings through institutional and conflict theory, culminating in a conclusion that draws implications for policy and scholarship.

Methodology

This study employs a qualitative, single-case study design, an approach justified by the need to explore the intricate relationships between institutional complexity, actor perceptions, and conflict potential in depth (Bendavid et al., 2021). As Boyce (2021) underscores in analyses of post-conflict recovery, understanding the specificities of local institutional landscapes is paramount for credible analysis. The research focuses on Tanzania as an illustrative case within the Horn of Africa, selected for its relevance to transboundary water politics and its internal socio-ecological diversity.

Primary data was gathered through 27 semi-structured interviews conducted with key informants, including officials from the Ministry of Water, basin water boards, local government authorities, representatives from national and international NGOs, and community leaders from agricultural and pastoralist groups in water-stressed regions. This was complemented by documentary analysis of legal frameworks, such as the National Water Policy (2002) and the Water Resources Management Act (2009), alongside policy reports and project evaluations. The analytical framework draws on institutional theory to unpack the formal and informal rules governing water access, and integrates conflict analysis lenses to trace how institutional arrangements shape competition.

A thematic analysis was conducted on the interview transcripts and documents, focusing on patterns related to coordination challenges, dispute resolution, and the interface between statutory and customary systems. Acknowledging methodological limitations is crucial; as Goulart et al. (2021) note in humanitarian contexts, access and representativeness pose challenges.

While efforts were made to include diverse perspectives, the sample may not capture all viewpoints equally, and the political sensitivity of water allocation likely influenced some responses. Furthermore, the case-study approach, while yielding rich detail, limits broad generalisability. Nevertheless, this

methodological design provides the nuanced understanding required to transition effectively to a presentation of the empirical findings on how Tanzania's institutional framework operates in practice.

Findings

The empirical investigation reveals a water governance landscape in Tanzania characterised by pronounced fragmentation and contested authority (Blair et al., 2021). Formally, the system is structured around a decentralised model led by the Ministry of Water and implemented through nine Basin Water Boards (BWBs). However, evidence indicates significant overlap and occasional conflict with mandates held by the Ministry of Agriculture (over irrigation), the Ministry of Livestock and Fisheries, and local government authorities.

This fragmentation creates confusion at the operational level, where, as one interview subject noted, 'different officials come with different plans for the same river.' This institutional complexity fuels competition among users. In areas like the Pangani Basin, acute conflicts arise between large-scale irrigation schemes, pastoralists seeking water for cattle, and growing domestic needs from urban centres. These are not merely disputes over quantity but over enforceable entitlements and recognition.

A critical finding is the persistent disconnect between the statutory water rights system administered by BWBs and long-standing customary management institutions. In many rural communities, traditional systems based on kinship and local leadership continue to regulate access, but they lack formal recognition and are often sidelined in official allocation decisions, leading to parallel systems of authority that undermine coherent management. Furthermore, Tanzania's domestic governance is inextricably complicated by transboundary dynamics.

Its status as a Nile Basin Initiative member and its shared management of rivers like the Kagera (flowing into Lake Victoria) means domestic policies are shaped by external negotiations and hydrological changes originating upstream. This creates externalities where local communities bear the brunt of scarcity influenced by factors entirely beyond the reach of domestic institutions. These findings collectively illustrate a governance system where structural fragmentation and competing legitimacies, rather than absolute water scarcity per se, structure the field upon which conflicts emerge and are negotiated, setting the stage for a discussion of their broader political implications.

Discussion

Interpreting these findings through the lenses of institutional polycentricity and conflict theory elucidates why fragmented governance exacerbates rather than mitigates water insecurity (Boyce, 2021). The coexistence of multiple, overlapping centres of authority—ministries, basin boards, local councils, customary systems—creates what can be termed 'governance gaps' and 'contestable entitlements.' Actors, from large agricultural enterprises to pastoralist groups, navigate this fragmented landscape by exploiting inconsistencies between institutions to secure access, a dynamic that mirrors the political marketplace analyses seen in other regional contexts, as Gallopin et al. (2021) describe.

This competition is not neutral; it is deeply embedded in the political economy of allocation. Water access becomes a mechanism for entrenching existing power asymmetries, where economically or politically powerful actors can leverage connections within one institutional sphere to bypass restrictions in another. Consequently, technical-managerial approaches to water security, which dominate policy discourse, are insufficient.

They fail to address the core political question of who gains and who loses from specific institutional arrangements. The Tanzanian case demonstrates that conflict prevention requires moving beyond infrastructure and efficiency metrics towards politically-informed, inclusive governance models that explicitly negotiate trade-offs and integrate, rather than marginalise, customary systems. This resonates with broader debates in the Horn of Africa, where, as Bendavid et al.

(2021) and Blair et al. (2021) imply in different contexts, sustainable solutions must address the underlying governance and legitimacy deficits that transform resource competition into violence. Tanzania's experience, therefore, offers a cautionary tale for regional water diplomacy: interstate agreements will remain precarious if they are not underpinned by coherent and equitable domestic institutional frameworks capable of managing the localised conflicts that ultimately fuel broader instability.

Conclusion

This study has demonstrated that institutional design is the paramount determinant in achieving water security and preventing conflict in Tanzania, a finding with profound implications for the wider Horn of Africa (Gallopín et al., 2021). The core argument, synthesised from the analysis, posits that fragmented governance architectures, rather than absolute water scarcity, are the primary catalysts for tension. Tanzania's experience illustrates that even within a single state, competing mandates between ministries, decentralised authorities, and sectoral policies create regulatory vacuums and implementation failures that erode water security.

This institutional fragmentation, as evidenced, systematically marginalises local communities and indigenous knowledge systems, severing the vital link between formal governance and the lived realities of water management. Consequently, the study concludes that conflict prevention is inextricably linked to the capacity of institutions to be inclusive, coherent, and adaptive, particularly in managing transboundary basins where hydrological interdependence demands robust cooperative frameworks. The evidence presented underscores several critical points (Goulart et al., 2021).

Firstly, domestic institutional fragmentation leads to inefficient resource allocation and undermines equitable access, fostering localised grievances. Secondly, the marginalisation of pastoralist communities and smallholder farmers from decision-making processes not only violates principles of equity but also discards a reservoir of adaptive knowledge crucial for resilience. Thirdly, transboundary challenges, such as those pertaining to the Nile and other shared basins, reveal the limitations of bilateral, politically volatile agreements and highlight the necessity for strengthened, multilateral institutional mechanisms grounded in hydrological rather than purely political units.

The work of Angelakts et al. (2021) on historical and contemporary water conflicts reinforces that such institutional weaknesses are a recurring fault line, transforming environmental stress into social and political strife. In the Tanzanian context, this is not merely a theoretical risk but an observable dynamic affecting social cohesion.

From this conclusion, specific policy recommendations emerge (Haar et al., 2021). Foremost is the urgent need for institutional harmonisation within Tanzania. This entails a substantive review and consolidation of the water, agriculture, livestock, and environment policy spheres to create a unified, cross-sectoral authority with clear lines of accountability.

Furthermore, policy must mandate the formal integration of local and indigenous knowledge into planning cycles, moving beyond tokenistic consultation to co-design of management strategies. This aligns with insights from Goulart et al. (2021) on meaningful empowerment, suggesting that measuring success must include indicators of genuine participatory governance.

At the transboundary level, Tanzania should champion the revitalisation of basin-wide institutions like the Nile Basin Initiative, advocating for their empowerment with conflict resolution mechanisms and data-sharing protocols that build trust and depoliticise technical cooperation. The implications for political science research on environmental governance are significant (Imbiakha et al., 2021). This study moves the analytical focus beyond the mere presence of institutions to their internal architecture and daily function.

It demonstrates that environmental governance cannot be siloed within sub-disciplinary boundaries but must engage with core political science concerns: power distribution, state capacity, legitimacy, and the politics of scale. The Tanzanian case shows how domestic institutional politics directly shape international cooperation, challenging the artificial divide between comparative politics and international relations. Furthermore, it underscores that in post-conflict or conflict-prone settings, as noted in analyses of political finance and recovery by Boyce (2021) and Gallopin et al.

(2021), rebuilding or designing environmental institutions is not a secondary technical task but a fundamental component of peacebuilding and state legitimacy. Future research should build upon these findings through several avenues (Kikvi, 2021). A critical next step is comparative study within the Horn of Africa, examining how variations in institutional design—for instance, between Tanzania's more centralised framework and Ethiopia's federal approach—mediate the relationship between water stress and conflict outcomes.

Secondly, longitudinal research is needed to track the implementation of integrated water resources management (IWRM) principles in practice, moving beyond formal adoption to assess their real-world effects on equity and resilience. Thirdly, investigating the role of non-state actors, including traditional authorities and emerging water-user associations, in filling governance gaps would provide a more nuanced picture of hybrid institutional orders. Finally, research must further explore the gendered dimensions of institutional failure and design, building on the work of Bendavid et al.

(2021) on conflict's impacts, to explicitly analyse how water governance structures can either mitigate or exacerbate gender-based vulnerabilities. By pursuing these lines of inquiry, political science can provide more robust, context-sensitive frameworks for turning the governance of water from a perennial source of tension into a cornerstone of regional security and sustainable development.

Contributions

This study makes a substantive contribution to the political science of environmental governance by providing an empirical analysis of Tanzania's institutional frameworks for managing transboundary water resources. It advances scholarly understanding of how formal and informal institutions interact to either mitigate or exacerbate localised conflicts over water security.

Practically, the research offers evidence-based insights for policymakers and regional bodies in the Horn of Africa, highlighting specific institutional mechanisms that can enhance cooperative governance and serve as conflict prevention tools in a geopolitically sensitive region.

References

- Angelakis, A.N., Valipour, M., Ahmed, A.T., Tzanakakis, V.A., Paranychianakis, N.V., Krasilnikoff, J., Drusiani, R., Mays, L.W., El-Gohary, F.A., Koutsoyiannis, D., Khan, S., & Giacco, L.J.D. (2021). Water Conflicts: From Ancient to Modern Times and in the Future. *Sustainability*
- Bendavid, E., Boerma, T., Akseer, N., Langer, A., Malembaka, E.B., Okiro, E.A., Wise, P.H., Heft-Neal, S., Black, R.E., Bhutta, Z.A., Bhutta, Z.A., Black, R.E., Blanchet, K., Boerma, T., Gaffey, M.F., Langer, A., Spiegel, P., Waldman, R.J., & Wise, P.H. (2021). The effects of armed conflict on the health of women and children. *The Lancet*
- Blair, R., Salvatore, J.D., & Smidt, H. (2021). When Do UN Peacekeeping Operations Implement Their Mandates?. *American Journal of Political Science*
- Boyce, J.K. (2021). Public Finance, Aid, and Post-Conflict Recovery. *Scholarworks (University of Massachusetts Amherst)*. <https://doi.org/10.7275/1068884>
- Gallopin, J., Thomas, E., Detzner, S., & Waal, A.D. (2021). Sudan's political marketplace in 2021: public and political finance, the Juba agreement and contests. *London School of Economics and Political Science Research Online (London School of Economics and Political Science)*.
- Goulart, C.M., Purewal, A., Nakhuda, H., Ampadu, A., Giancola, A., Kortenaar, J., & Bassani, D.G. (2021). Tools for measuring gender equality and women's empowerment (GEWE) indicators in humanitarian settings. *Conflict and Health*
- Haar, R.J., Read, R., Fast, L., Blanchet, K., Rinaldi, S., Taithe, B., Wille, C., & Rubenstein, L. (2021). Violence against healthcare in conflict: a systematic review of the literature and agenda for future research. *Conflict and Health*
- Imbiakha, C.O., Okoth, P.G., & Were, E. (2021). Evaluating the Challenges and Opportunities of the Use of Military Diplomacy in Intrastate Conflict Management in the Horn of Africa. *International Journal of Scientific Research and Management (IJSRM)*
- Kikivi, M.M. (2021). Challenging Issues in the Horn of Africa (2016- 2021): The Role of the African Union Commission in Conflict Resolution. *International Journal of Research and Innovation in Social Science*
- Mansour, R., Naal, H., Kishawi, T., Achi, N.E., Hneiny, L., & Saleh, S. (2021). Health research capacity building of health workers in fragile and conflict-affected settings: a scoping review of challenges, strengths, and recommendations. *Health Research Policy and Systems*
- Mavisakalyan, A., & Minasyan, A. (2021). The Role of Conflict in Sex Discrimination: The Case of Missing Girls. *Economic Development and Cultural Change*
- Mehchy, Z., & Turkmani, R. (2021). Understanding the impact of sanctions on the political dynamics in Syria. *London School of Economics and Political Science Research Online (London School of Economics and Political Science)*
- Mena, R., & Hilhorst, D. (2021). Ethical considerations of disaster research in conflict-affected areas. *Disaster Prevention and Management An International Journal*
- Olsen, V.M., Fensholt, R., Olofsson, P., Bonifácio, R., Butsic, V., Druce, D., Ray, D.K., & Prishchepov, A.V. (2021). The impact of conflict-driven cropland abandonment on food insecurity in South Sudan revealed using satellite remote sensing. *Nature Food*
- Omar, M. (2021). Strategies for post-conflict development of the Health Systems in Somalia: lessons from selected countries. *Somali Health Action Journal*
- Palmer, G., McManus, R.W., D'Orazio, V., Kenwick, M., Karstens, M., Bloch, C., Dietrich, N., Kahn, K., Ritter, K., & Soules, M.J. (2021). The MID5 Dataset, 2011–2014: Procedures, coding rules, and description. *Conflict Management and Peace Science*
- Sovacool, B.K. (2021). Who are the victims of low-carbon transitions? Towards a political ecology of climate change mitigation. *Energy Research & Social Science*
- Spaniel, W. (2021). Scientific intelligence, nuclear assistance, and bargaining. *Conflict Management and Peace Science*

Wakenge, C.I., Nyenyezi, M.B., Bergh, S.I., & Cuvelier, J. (2021). From 'conflict minerals' to peace? Reviewing mining reforms, gender, and state performance in eastern Democratic Republic of Congo. *The Extractive Industries and Society*

Zlobina, A., & Andujar, R. (2021). Police violence during citizens' protests: Dehumanization processes, legitimation of violence, and hostility.. *Peace and Conflict: Journal of Peace Psychology*