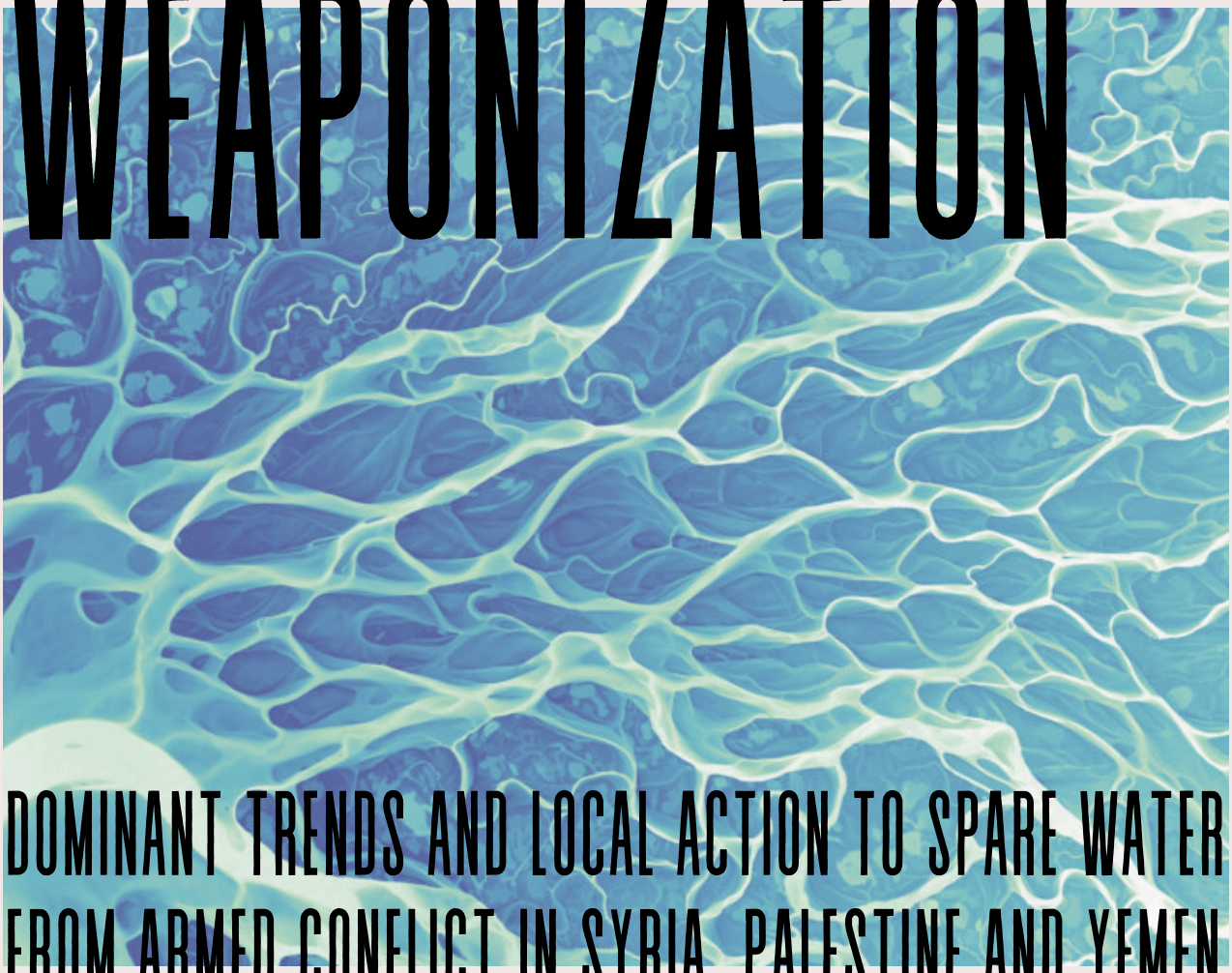
WATER WEAPONIZATION



DOMINANT TRENDS AND LOCAL ACTION TO SPARE WATER FROM ARMED CONFLICT IN SYRIA, PALESTINE AND YEMEN

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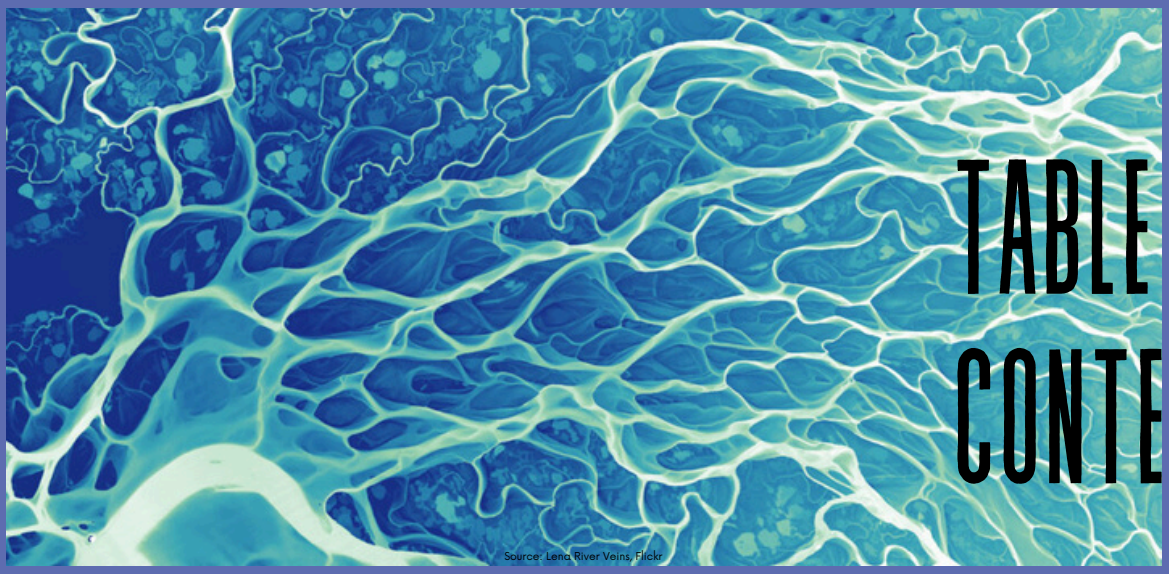

Source: Lena River Veins, Flickr

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INTRODUCTION

This research analyzes trends in the weaponization of water and contributes to understanding how water can be spared from armed conflict. In understanding and mitigating the weaponization of water, much of the academic literature and policy analysis focuses on the role of high-level state and international actors. To help build a comprehensive picture of the weaponization of water, this study examines the role, scope, and effectiveness of local and grassroots action in counteracting the trend of water weaponization. Given that social and political dynamics of conflict are fragile, chaotic, and diverse, a relatively wide definition of local action was applied and not restrained to organized movements of a particular sociopolitical nature or structure. Action explored in this report encompasses various initiatives and work pertaining to political governance, service delivery within religious contexts, and those driven by organizations or individuals.

Implementing policies through multilevel governance is essential for promoting durable and effective solutions. Such a focus is also key in understanding the consequences of the weaponization of water, which can further help in creating typologies focused on its use. International law plays an instrumental role in creating customary norms to mitigate water use in war. This report evaluates the effectiveness of this safeguard, alongside other legal and non-legal mechanisms that may informimpactful advocacy strategies to deter actors from using water as a weapon and garner international influence on water use in conflicts.

Section one provides an overview of the existing literature on the weaponization of water. It sets the ground for a common understanding by reviewing military and political strategies internationally and historically. It provides an analysis of key trends and a review of existing legal frameworks to prevent the weaponization of water.

In **section two**, the research methodology and case study selection are set out.

Section three outlines the geopolitical context of the three case study countries: Yemen, Syria and Palestine.

Section four addresses the research question of how the trends of water weaponisation can be best interpreted. Based on desktop research and interviews, dominant trends observed in the study are presented.

Section five addresses the question of how the weaponisation of water can be reversed. Highlighting novel findings from interview data, the potential of local action is explored.

Section six brings together the observed trends and the analyzed potential of local action, to help the reader establish the connections between a particular trend and the steps to reverse it through local initiatives.

Section seven outlines recommendations for the Global Alliance to Spare Water from Armed Conflict and other high-level international forums, in order to improve responses working to spare water from armed conflict. Multilateral forums such as the Global Alliance have significant institutional agency and political power amongst their membership to facilitate innovation in how the trends in the weaponization of water are addressed. They are well positioned to support the incorporation of findings from the study of local action to strengthen multi-level governance with the aim of mitigating dominant trends in the weaponization of water.

LITERATURE REVIEW

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

I. WATER

II. WEAPONIZATION OF WATER

III. EXISTING FRAMEWORKS

I. WATER

Water serves as a common and vital good but has been intensely politicized and militarized throughout history in conjunction with the establishment and development of agrarian societies (1). This has created broad and complex questions regarding the precise role of water in conflicts. As presented by the Pacific Institute, the use of water in conflicts can be either a trigger, a casualty, a weapon, or all three at once in certain cases (2). This research focuses on analyzing water as a tool of conflict, 'where water resources, or water systems themselves, are used as a tool or weapon in a violent conflict' (3). This definition serves as a useful starting point.

However, this study expands on it by incorporating a definition of a weapon, proposed by Marcus DuBois King as 'a means of gaining advantage or defending oneself in a conflict or contest... an item, action, offensive capability, or mechanism used or intended to kill, injure, or coerce' (4). Additionally, Charlotte Grech-Madin's definition of the weaponization of water is included as 'typically through deprivation (too little water) and inundation (too much), oriented toward strategic and tactical ends' (5), interpreting both military and political goals within tactical ends.

Basing the research on these definitions, Marwa Daoudy's approach to understanding the use of water as a tool in conflict is fostered in conjuction by analyzing the weaponization of water through disruptive and cooperative methods during conflict, recognizing that cooperation can be a significant means of weaponization as well (6).

Source: How northern Syria's triple water crisis is exacerbating its people's woes, Middle East Institute

1.M Daoudy, Water Weaponization in the Syrian Conflict: Strategies of Domination and Cooperation, International Affairs 96:5, September 2020, pp.1347-1366.
2.Pacific Institute, The World's Water, accessed November 17, 2024.
3.Ibid.
4.M.D. King, The Weaponization of Water in Syria and Iraq, The Washington Quarterly 38:4, October 2015, pp. 153-69.
5.C Grech-Madin, Water and Warfare: The Evolution and Operation of the Water Taboo, International Security 45:4, April 2021, pp.84-125.
6.M Daoudy, 2020, pp.1347-1366.

II. WEAPONIZATION OF WATER

Military Strategies

Water has long been used as a weapon in conflicts, employed in both offensive and defensive strategies (7). Tactics include deliberate flooding by destroying dams or dikes to obstruct enemy advances and harm civilian populations. This approach has been instigated in numerous conflicts, including during both World Wars and more recently in the Ukraine-Russia conflict, where flooding was used strategically to hinder military operations (8).

Water has also been weaponized to create food shortages by targeting agricultural lands. For example, flooding farmland destroys crops and increases civilian suffering, forcing opponents to divert resources away from combat (9). Lastly, shared water resources have often been at the center of inter-state tensions, with some authors asserting that upstream nations manipulate water flows to exert political pressure on downstream nations (10).

Source: Dwindling Fresh Water Compounds Syrian Crises, New Lines Institute

Resource depletion is another method of weaponizing water (11). Existing literature documents how this strategy has been enacted in multiple ways. Firstly, water is frequently withheld from the civilian population of an enemy region during times of conflict. This can be done to compound the humanitarian toll of the conflict in hopes that the opposing party will surrender, or to displace the current population of the region and seize the land (12).

In addition, water infrastructure is targeted to cause short and long-term harm to the opposition. For instance, hydroelectric generators are frequently targeted as part of efforts to deprive civilian populations of access to electricity (13). Similarly, resource denial is carried out by contaminating water supplies, such as wells and rivers, with substances including oil, human remains and poison (14).

The methods listed above are by no means exhaustive but instead provide a concise overview of trends across conflicts. The manner in which these are categorized and further analyzed are elaborated upon in the section dedicated to typology.

7. Pacific Institute, The World's Water, accessed November 17, 2024.
8. P Gleick, Rivers and Water Systems as Weapons and Casualties of the Russia-Ukraine War. Earth's Future 11:10, October 2023.
9. C Grech-Madin, Water and Warfare: The Evolution and Operation of the Water Taboo, 2021, pp.84-125.
10. M.D. King, The Weaponization of Water in Syria and Iraq, 2015, pp. 153-69.
11. Pacific Institute, The World's Water, accessed November 17, 2024.
12. A Samad et al, Water War Crimes: How Israel has Weaponised Water in its Military Campaign in Gaza, Oxfam, United Kingdom, 2024.
13. M Daoudy, 2020, pp.1347-1366; Pacific Institute, The World's Water, accessed November 17, 2024.
14. M.D. King, The Weaponization of Water in Syria and Iraq, 2015, pp. 153-69; Pacific Institute, The World's Water, accessed November 17, 2024.

Political Strategies

Creating clear distinctions between military and political goals is difficult or even impossible as military aims act as a short-term tool in pursuit of broader political, social and economic objectives (15). Therefore, the weaponization of water can also be interpreted as a means or method to fulfill political purposes.

Terminology in this field often refers to hydropolitics and the definition has developed over time from the authoritarian allocation of water (16) to inter-state politics over water resources (17), to the emergence of multi-level interactions in water governance, manipulation, and interference at regional, national and international scales (18).

Addressing the use of water as a weapon with respect to its political contexts both across regions and chronologically highlights its prominence with respect to overarching trends. These political strategies are often intertwined with other objectives aiming to establish military, economic, and/or ideological power (19).

Source: The Time to Act on Yemen's Water Crisis is Now, Yemen Policy Center

One-sided water cooperation agreements and tactical political decision-making

A principle approach to instigating political change through the manipulation or withdrawal of water is the creation of inequitable water cooperation agreements or political decision-making between actors, whether it be different states or non-state actors.

Multilateral agreements between Israel, Jordan and the Palestinian Liberation Organization removed Palestinian access to the River Jordan and severely restricted their access to groundwater, playing a key role in Israel's nation-building efforts (20). Similarly, China's hegemonic control over the Mekong River through the building of hydropower infrastructure has created geopolitical tensions with neighboring countries (21). Contested power dynamics are also observed between countries along the Nile Valley where hydropolitics has centralized the Nile River as a mechanism for exercizing political actions, particularly stoking bilateral tensions between Egypt and its neighbouring countries (22).

These political choices also play out within the international community to apply political pressure from further afield, such as the post-Gulf War US sanctions on Iraq that prevent shipments of water treatment chemicals and equipment on the basis that they could be used for military purposes (23). This research seeks to understand the dynamics of the actors engaging in political action through the weaponization of water.

15. C Clausewitz, On War, Translated by J. J. Graham. Project Gutenberg, 2006; P Gleick, Water as a Weapon and Casualty of Armed Conflict: A Review of Recent Water-related Violence in Iraq, Syria, and Yemen, WIREs Water 6:4, July 2019; M Daoudy, 2020, pp.1347-1366.
16. P Mollinga, Water and Politics: Levels, Rational Choice and South Indian Canal Irrigation, Futures 33:8-9, octobre 2001), pp. 733-52
17. A Turton, Hydropolitics: The Concept and Its Limitations, Hydropolitics in the Developing World: A Southern African Perspective, edited by A Turton & R Henwood, African Water Issues Research Unit (AWIRU), 2002.
18. J Warner, Contested Hydrohegemony: Hydraulic Control and Security in Turkey, Water Alternatives 1:2, 2008, pp. 271-88; J Warner & N Zawahri, Hegemony and Asymmetry: Multiple-Chessboard Games on Transboundary Rivers, International Environmental Agreements: Politics, Law and Economics 12:3, September 2012, 215-29.
19. P Gleick, Water as a Weapon and Casualty of Conflict: Freshwater and International Humanitarian Law, Water Resources Management 33:5, March 2019, pp. 1737-51; M Daoudy, 2020, pp.1347-1366.
20. M Zeitoun et al, Analysis for Water Conflict Transformation, Water International 45:4, May 2020, pp. 365-84; J Fergusson, In Search of the River Jordan: A Story of Palestine, Israel and the Struggle for Water, Yale University Press, 2023.
21. N Mirumachi, Transboundary water politics in the developing world (1st ed.), Routledge, 2015; R Brauer et al, Coercive Water-Diplomacy, Water. Power. Conflict., Konrad Adenauer Stiftung, 2017; M.D. King, Weaponizing Water: Water Stress and Islamic Extremist Violence in Africa and the Middle East, Lynne Rienner Publishers, 2023.
22. J O Obenga, Hydropolitics of the Nile: The Case of Ethiopia and Egypt, African Security Review 25:1, 2016, pp. 95–103; A E Cascão et al, The Grand Ethiopian Renaissance Dam and the Nile Basin: implications for transboundary water cooperation, Routledge, 2018.
23. E D Breslin, Water as a Weapon of War, Earth Island Journal 17:2, 2002, p. 44.

Exercizing control over natural resources: Governmental water policies

There is evidence of restrictive governmental or de-facto authority water policy implemented as a political strategy to maintain control over a territory and population during or post conflict. In Zimbabwe, water supplies were limited not only as a military weapon during the Liberation War (1964-1979) but also as a political tool in the post-independence era to control the population (24). With similar power-establishing goals, deep-rooted military objectives were assimilated with political activities and aspirations in Syria by the Ba'athist regime to establish domination over the Kurdish population. Non-state actors such as ISIS engaged with the al-Assad government regime through cooperative water agreements to support mutual interests at the expense of the civilian population (25).

Seeking political legitimacy

A further observed practice within conflicts that seek to establish a new or unrecognized authority is the seizing control of a water supply to create political dependency or garner political legitimacy.

Source: Obscured By War, Water Crisis Looms In Yemen, NPR

Key examples include politicized water agreements between Pakistan and India, particularly in the contested Kashmir and Jammu region (26). Further, the political decision by ISIS to seize control of key dams in Syria, rather than just destroy vital water infrastructure, highlights the complexity of its tangential military and political aims, where its ultimate goal exceeds military power and seeks 'to establish a caliphate that provides public services' therefore legitimizing its power in the region (27). Notably, in the case of Northeast Syria and Idlib, the ruling insurgent groups that recognized internal resource gaps outsourced the delivery of basic public services to private actors, such as international NGOs, local partners and private organizations (28).

Creating data scarcities: withholding hydrological data

The withholding or delayed transfer of hydrological data is an emerging practice and comes in conjunction with increasing scrutiny on the role of cybersecurity under international law. Research has analyzed China's use of hydrological data through the denial of data transfers as a covert political tool to exacerbate conflict and tension with weaker surrounding states (29). While this is an important emerging practice shaping relations between countries regarding water policies and practices it sits beyond the scope of research analyzed for this report.

The political strategies and case studies outlined in this section highlight the complexity and proliferation of the use of water as a political tool in conflicts. It also demonstrates the need for a comprehensive study of how these trends can be usefully categorized and interpreted, which this research aims to address.

24. F Cleaver, Water as a Weapon: The History of Water Supply Development in Nkayi District, Zimbabwe, Environment and History 1:3, 1995, pp. 313-33.
25. M Daoudy, 2020, pp.1347-1366.
26. M Adnan, Hydro Politics: A Conflict between Pakistan and India, Journal of Political Studies, December 2018, pp. 177.
27. T Lossow, Water as weapon: IS on the Euphrates and Tigris: the systematic instrumentalisation of water entails conflicting IS objectives, German Institute for International and Security Affairs SWP Comments 3, 2016.
28. J Drevon & P Haenni, How Global Jihad Relocalises and Where It Leads: The Case of HTS, the Former AQ Franchise in Syria. San Domenico di Fiesole, European University Institute, Robert Schuman Centre for Advanced Studies, 2021.
29. B Chellaney, Water, Power, and Competition in Asia, Asian Survey 54:4, August 2014, pp. 621-50.

Drawing out dominant trends in the weaponization of water

Existing typologies

Multiple typologies exist in the literature to examine and categorize water use as a weapon in conflict. Current typologies focus on the nature of conflicts (e.g., religious, developmental, terrorism, military, political) or weaponization strategies (e.g., direct or indirect attacks on infrastructure). Typologies demonstrate the use of water as a political tool, source of power, and weapon in warfare (30).

The research aims to expand upon existing typologies by incorporating an analysis of the nature of conflicts, the involved actors, and the strategies they employ that weaponize water. The analysis will also address the reverberating impacts of the use of water in conflict. This evaluation will explore how the action that weaponizes water aligns with intended military and political objectives. Recognizing that current research predominantly focuses on using water as a weapon during conflicts, the goal is to develop a framework to counteract this trend, both within and beyond the context of armed conflict.

Source: In Pictures: Malnutrition, cholera add to Yemen woes, Al Jazeera

This framework will also address localized disputes within states, which may fall outside the traditional definitions of international and non-international conflict.

Current trends

Based on historical literature and the Water Conflict Chronology (WCC) from the Pacific Institute, different strategies remain present from as early as 2500 BC until now: water infrastructure damage; flooding; cutting off water sources; and water contamination (31). It is important to underline that often strategies intertwine or overlap, and the occurrence of one strategy might imply the use of another one in many cases. Nonetheless, these five strategies have been used repetitively across time, regardless of location or type of actors.

These findings sit in a wide-spanning timeline. However, we narrow the timespan for this study to the 21st Century to support the relevance of the analysis and resulting recommendations to current and future conflicts.

To contextualize the findings, an analysis from Peter Gleick and Morgan Shimabuku on the Water Conflict Chronology asserts that "the number of events where water was a trigger or casualty generally grew beginning in 2012, while the number of events where water was used as a weapon has essentially remained flat or even decreased in this same timeframe. (...) Since 2011, during all but 2014, water as a weapon remained under 10% of the total number of water-related conflicts" (32). Therefore, while maintaining a focus on the trends in the weaponization of water as a tool of conflict, this research is situated within an understanding of the wider landscape of water geopolitics that encompasses water as a tool, trigger and target of conflict.

30. M Daoudy, 2020, pp.1347-1366
31. Pacific Institute, Water Conflict Chronology List, accessed November 2024.
32. P Gleick & M Shimabuku, Water-related conflicts: definitions, data, and trends from the water conflict chronology, Environmental Research Letters 18:3, March 2023.

It is important to acknowledge the limitations of the existing literature. Issues of underreporting (33) can be prevalent in conflict settings, given the challenges of data collection and dissemination. Additionally, the rise in new technologies has significantly changed the landscape of media reporting and how information is disseminated. Information flow nowadays is arguably more accurate and far-reaching, with open-source information and social media providing access to previously unavailable information. With these new technological and media tools there are also risks of disinformation and digital misinformation of source material. Furthermore, the impact of the emergence of a 'water taboo' from the 1950s to the 2010s (34) leading to falsified reports and attempts to conceal the weaponization of water by certain actors is also considered.

Emerging trends

One strategy that is emerging in this field is cyberattacks on water infrastructures. The Pacific Institute has reported four, mainly occurring in the United States with an Iranian Source (35). It is still a recent phenomenon with limited literature on the subject. Nonetheless, considering the rise of new technologies and the increasing digitalization of key infrastructures including water, it would be pertinent to remain cognisant of this type of strategy when considering future possible trends or conducting horizon scanning activities.

Source: Chronic malnutrition to rise in Yemen on lack of water, poor sanitation, The Jordan Times

33. P Gleick & M Shimabuku, Water-related conflicts: definitions, data, and trends from the water conflict chronology, Environmental Research Letters 18:3, March 2023.
34. C Grech-Madin, 2021, pp. 84-125.
35. Pacific Institute, The World's Water, accessed November 2024.

III. EXISTING FRAMEWORKS

International Humanitarian Law (IHL)

To build a robust framework for understanding the weaponization of water, it is crucial to analyze the role of international law, particularly IHL, in addressing this issue and acting as a step towards enabling its reversal.

Soft law instruments also play a significant role in governing best practice on sparing water from armed conflict. The Geneva List of Principles on the Protection of Water Infrastructure are the result of multi-stakeholder, international collaboration convened by the Geneva Water Hub. The document provides a comprehensive outline of the applicable rules on the protection of water infrastructure during armed conflict and is oriented towards state and non-state actors (36).

Source: Palestinians still struggle to get enough water, AlJazeera

IHL provides a legal framework that governs the conduct of armed conflicts, aiming to protect those who are not participating in hostilities and limiting the means and methods of warfare. Violations related to the weaponization of water are explicitly addressed in provisions such as Article 54 of the 1977 Additional Protocols to the Geneva Conventions, which prohibit attacks on infrastructure indispensable to civilian survival, including water supplies. Article 55 of the Additional Protocols states that in warfare it is essential to safeguard the natural environment from extensive, lasting, and significant harm. This includes banning the use of tactics or weapons that could intentionally or foreseeably cause such damage, endangering the population's health or survival. Additionally, retaliatory attacks targeting the natural environment are prohibited (37).

Keeping these two protocols in mind, attacks can be assessed using tests of proportionality and necessity. The principle outlined in Article 51 of Protocol I dictates that any military action must balance military advantage with the avoidance of excessive harm to civilian life, injury to civilians, damage to civilian objects, or a combination thereof. While the proportionality test is a valuable tool for assessing harm to civilian objects, including water resources and infrastructure when weaponized, its application can be undermined by states justifying such actions through claims of anticipated military advantage (38).

36. Geneva Water Hub, The Geneva List of Principles on the Protection of Water Infrastructure, Geneva 2019.
37. International Committee of the Red Cross (ICRC), Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 1977.
38. Ibid.

Michael Talhami and Mark Zeitoun, writing for the International Review of the Red Cross, emphasize that the 'reverberating effects' of targeting water or water infrastructure can often be foreseen before a military strike. As such, these effects should be factored into the proportionality test. Thus, for the proportionality tests, it is necessary to consider the short-term and reverberating effects of civilian harm against anticipated military advantage (39). This raises the need to critically analyze whether the use of water as a weapon aligns with its claimed military benefits.

Informal agreements

Acknowledging the limitations of international law discussed above, this study looks to evaluate the effectiveness of informal levers or bilateral efforts outside of sources of international law to prevent the weaponization of water in conflicts. For the purposes of this study this encompasses agreements at the national, regional or local level. The relevant actors to engage, and the best approaches to take, can be drawn from both armed and non-armed conflict case studies.

Source: Ending Water Apartheid in Palestine, Yes! Solutions Journalism

There are numerous examples of cooperative efforts and dialogue forums between governmental representatives, local NGOs, and International Organizations, such as water security and cooperation agreements across South Asia (40) and multilateral forums and facilitators such as the Geneva Water Hub, the Global Alliance to Spare Water from Armed Conflict, The World Water Council and UNESCO International Centre for Water.

There are also important examples of grassroots efforts to reject water hegemony or avoid political dependency on an authoritarian power, such as people's resistance in the Nkiya district of Zimbabwe that refused to cooperate with water development activities and developed a culture of 'minimal water use' (41). The research seeks to draw learnings from both high-level and grassroots approaches to stemming and preventing conflicts that weaponize water to inform policy recommendations.

Moral pressure and ethics

As discussed in the Trends Section, the post-World War II era marked a shift in how the weaponization of water was perceived. The 1948 Universal Declaration of Human Rights, particularly Article 3 'right to life' and Article 25 'right to a standard of living adequate for the health and well-being of himself' (42) materialized notions of human rights relating to access to water. From this period a normative 'water taboo' was developed, functioning as a moral condemnation of the use of water in conflict (43). This tool requires further analysis to address the cultural link between people and water to understand how this moral pressure can be best used to prevent the use of water as a tool of conflict.

39. M Talhami & M Zeitoun, The Impact of Attacks on Urban Services II: Reverberating Effects of Damage to Water and Wastewater Systems on Infectious Disease, International Review of the Red Cross 102:915, December 2020, pp. 1293-1325.
40. V Narain et al, Water Security, Conflict and Cooperation in Peri-Urban South Asia: Flows across Boundaries, Cham, Springer International Publishing, 2022.
41. F Cleaver, 1995, pp. 313-33.
42. United Nations, Universal Declaration of Human Rights, 1948.
43. C Grech-Madin, 2021, pp. 84-125.

METHODOLOGY

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

I. DATA COLLECTION

II. CASE STUDIES

III. RESEARCH LIMITATIONS

Source: Water Research, University of Waterloo

I. DATA COLLECTION

To contribute to addressing the gap in the existing literature, the research design was developed to identify dominant trends in the weaponization of water and the role of local initiatives in potential reversals. This study combined desk-based research from academic and internationally reputable reports with data gathered from qualitative, semi-structured interviews that were conducted with actors whose expertise lies in the protection of water in conflict settings in Palestine, Syria, or Yemen. The principal research method to identify dominant trends in the weaponization of water was desktop research. Expert interviews were then used to confirm and/or refute preliminary findings. The second aim of identifying the role of local initiatives in potential reversals, relied exclusively on interview data, given the gap in the existing literature on this topic. Interview subjects were chosen for their ability to contribute to knowledge production, specifically on the efforts and impacts of local action.

Therefore, interview subjects primarily focused on local non-governmental organizations or local municipality-level expertise. Given the broad and complex nature of local action during armed conflict, interviews were conducted with actors with experience in municipal and regional-level service delivery, technical water projects, humanitarian aid, academia, advocacy, and international organizations.

A purposive sampling strategy was employed to select interview subjects with relevant expertise. All interview informants were anonymised. In total, twelve interviews were conducted with participants who had country-specific expertise on the following cases:

Source: Water Research, University of Waterloo

Source: GISGeography, Syria on a World map

- Environmental and civil society response specialist
- Middle East humanitarian response and water expert
- Water engineer international organization response expert
- Water and environment non-governmental organization specialist

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Source: GISGeography, State of Palestine on a World map

- Municipal-level water expert
- Regional water service delivery expert
- Local humanitarian aid service provider
- Municipal and private water sector specialist
- Biodiversity, sustainability and human rights expert
- Environmental scientist and water and sanitation expert

Source: GISGeography, Yemen on a World map

- International legal and water expert
- Middle East humanitarian response and water expert
- Human rights and conflict non-governmental organization specialist

Source: Water Research, University of Waterloo

II. CASE STUDIES

The case studies selected to inform this research are Palestine, Syria, and Yemen. These countries were chosen to contribute to regional knowledge of the weaponization of water in the Middle East, as well as to inform international knowledge production on this phenomenon. Each case study has a particular geopolitical and environmental profile that shapes the weaponization of water and is contextualised in this report.

There are multiple distinctions including the nature and scale of the conflicts, the ecology of the natural and built water resources and the structure of local and national-level governance. Case studies were chosen as countries with different state contexts experiencing protracted conflicts in water-stressed regions. Yemen's political framework was governed by a mix of constitutional rule and tribal governance and law prior to its 2011 popular revolution, with conflict escalating during the 2015 civil war and over the last decade. Syria also saw an outbreak of civil war in 2011, framed by a prolonged history of oppression and autocracy under the Assad regime. Palestine has experienced continuous conflict beginning with the 1948 Nakba and military occupation by Israel since 1967, with marked periods of more intense armed conflict. These distinct contexts help to understand how water is weaponized depending on the type of conflict and actors involved. The report takes into consideration whether there are differences between state and non-state armed actors in the weaponization of water, informing the debate on actor status, scale of action and geographical variations.

The historic and current context that frames the conflicts in Syria, Palestine and Yemen is further outlined in the following Case Studies section and is informed by expert interviews.

III. RESEARCH LIMITATIONS

Qualitative Interviews come with inherent limitations, but measures were implemented to address these challenges effectively. Primarily, a subjectivity bias can result in analyses of the data that are dependent on particular perspectives and understanding. To reduce subjectivity bias, triangulation was employed by cross-checking data from multiple sources. To support generalizability of the outcomes, the scope of the case studies is clearly defined to focus on theory-building, aiming to generate insights adaptable to other contexts. In addition, to enhance replicability, standardized interview protocols were established, detailed documentation of research processes was maintained, and peer feedback was sought. The number of interview participants and the number of case studies addressed are limited in scope. This research aims to serve as an initial contribution to a growing field of academia, policy, and practice that is oriented towards researching and developing innovative approaches to understanding the weaponization of water and its reversal.

CASE STUDIES

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

I. SYRIA

II. PALESTINE

III. YEMEN

SYRIA

Source: GISGeography, Syria map – roads and cities

Political unrest and violent conflict escalated in 2011 with the outbreak of the Syrian Civil War, leading to challenges for essential services, particularly in water management. Control over these systems has been routinely contested between various state and non-state actors. Control over key water resources shifted over time depending on the outcomes of local conflicts, with authority alternating principally between the Syrian government and opposition groups. These parties to the conflict often used water infrastructure strategically as a tool of dominance over civilian populations. According to interview subjects, numerous negotiations involving both local and International NGOs and international organizations, were undertaken to depoliticize and protect water systems.

Despite some shifts in political structures and power dynamics, water infrastructure remains unevenly managed. As of March 2025, discussions are ongoing between the transitional government, led by the Hay'at Tahrir al-Sham Administration, and other stakeholders to address water and sanitation governance (44).

Sporadic cases of cooperation over water management have also been observed, despite continuous conflict. During the Syrian Civil War, there were short-lived instances of cooperation between the government and rebel groups on the supply of natural resources, including water. For example, in 2015, in Idlib, the Assad regime briefly provided the opposition party with oil, in exchange for access to opposition-controlled water resources. This arrangement helped both parties to conserve water amid the ongoing conflict. Furthermore, in 2015 opposition forces took control of Aleppo but allowed government experts to assist in restoring the hydraulic system that maintains the city's water resources (45).

Source: GISGeography, Syria on a World map

44. Multiple expert interviews. Syria, Local humanitarian and service delivery specialists. Conducted April-May 2025.
45. Ibid.

PALESTINE

Source: GISGeography, Syria map – roads and cities

Source: GISGeography, State of Palestine map – roads and cities

The ongoing context of Israel's military occupation has framed a long history of the weaponization of water in Palestine. Within this protracted situation, key trends and historical shifts mark Israel's use of water as a weapon in Palestine. The 1993 Oslo Accords were designed as a temporary measure to facilitate the transition to Palestinian sovereignty but many elements are still in effect today, including the water and sewage governance under Article 40 of the 1995 Oslo II agreement. The weakness of this agreement has established a governance structure where water resources can be weaponized by Israel against Palestine. Recurring issues include inequality of access to natural water resources, destruction of Palestinian water infrastructure and denial of permits for new water and sanitation projects.

2008 – 2015 marked a period of legal challenges in the West Bank as an attempt to halt illegal Israeli settlements on Palestinian territory. From 2006 the weaponization of water became more aggressive in Gaza following an Israeli military blockade. Consequences include delays and disruptions to the import of materials needed for wastewater treatment and water infrastructure repairs (46).

October 2023 to present comprises the well-documented deliberate deprivation of water, targeting of water infrastructure and denial of humanitarian support in Gaza. Amongst these issues the weaponization of water is inseparable from also addressing the direct and indirect restrictions on energy resources. Water and sanitation supply is deeply reliant on electricity, which has traditionally been extremely limited by Israel. Since October 2023 energy supply in Gaza has been cut, and inhabitants are effectively 'living in full darkness', with no electricity supply and extremely limited water supply (47).

Source: GISGeography, State of Palestine on a World map

46. Multiple expert interviews. Palestine, Local humanitarian and service delivery specialists. Conducted April-May 2025.
47. Ibid.

YEMEN

Source: GISGeography, Yemen map – roads and cities

Since the outbreak of the Yemeni civil war in 2015, water has become a weapon in the hands of multiple actors seeking to assert control and weaken opponents. Key actors in this weaponization include the Ansar Allah 'Houthis' group, the Saudi Arabia and UAE-led coalition, and local militias aligned with either side. The Houthis, who control much of northern Yemen including the capital Sana'a, have taken over key water infrastructure, such as dams, wells, and pumping stations, and have at times diverted water supplies to their strongholds or withheld access from communities under the control of other groups. In addition, it is worth noting that they, and other parties to the conflict, are responsible for the planting of mines and explosive devices near water sources.

The Saudi Arabia and UAE-led coalition that supports the internationally recognized Yemeni government, has conducted airstrikes that have damaged water treatment facilities and pipelines, further crippling access to clean water (48).

Local militias and tribal groups have also played a role, sometimes blocking or rerouting water access to pressure rival factions or civilian populations. Fuel blockades, often imposed by the coalition, have made it impossible to operate water pumps, while the Houthis have been accused of obstructing humanitarian aid deliveries, including water and sanitation supplies. Actions committed by all parties have weaponized water access, exacerbating Yemen's already severe humanitarian crisis and contributing to mass displacement, disease outbreaks, and impoverishment (49).

Source: GISGeography, Yemen on a World map

48. Multiple expert interviews. Yemen, Local humanitarian and service delivery specialists. Conducted April-May 2025.
49. Ibid.

WEAPONIZATION OF WATER TRENDS

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

I. VIOLATIONS OF IHL

II. POLITICAL-MILITARY STRATEGIES

Source: Securing Yemen's Tomorrow: The Vital Role of the Marib Dam, CSO Yemen

I. VIOLATIONS OF IHL

Water plays a critical and often overlooked role in armed conflict, and attacks or disruptions involving water infrastructure can constitute violations of International Humanitarian Law (IHL). IHL provides layered protections for water systems, emphasizing the principles of distinction, proportionality, and necessity. An alarming trend is growing where these protections are frequently ignored by parties engaged in armed conflict. Despite its importance, violations of IHL relating to water often receive less attention in mainstream media reporting than other protected civilian objects like schools or hospitals. Armed actors often profess adherence to IHL, although some, such as ISIS which engaged water as a weapon through flooding, chemical contamination, and supply manipulation in Syria and Iraq, openly reject international norms.

The applicable legal framework of treaty law varies by country: Yemen and Palestine are bound by the Geneva Conventions and both Additional Protocols, which provide specific protections for the environment and water. Israel and Syria have not ratified Additional Protocol II but are signatories of the Geneva Conventions. However, customary IHL still applies to Syria and Israel, which in theory should ensure some level of protection for water and other vital resources, alongside protection of civilians in times of conflict.

In Yemen, key informants indicated that conflicting parties do not show interest in complying with international or national laws and that adherence to the rule of law has seen a sharp decline (50). One respondent highlighted that the Houthis, a key armed rebel group, often assert their adherence to IHL in pursuit of international legitimacy. However, their actions, such as weaponizing water by cutting off supplies to cities like Khar, highlight a starkly different reality. The country's legal hierarchy places Sharia law above the constitution. Local sheikhs hold significant power, applying a mix of religious and customary law to manage local disputes, including those over water access. This decentralization has intensified in the wake of state collapse, with many local actors such as local leaders and Sheiks now operating autonomously (51).

50. Expert interview. Yemen Non-Governmental Organization Human Rights Specialist. Interview conducted May 2025.
51. Expert interview. Yemen International Legal Analyst. Interview conducted April 2025.

Source: Children are drinking from puddles and wading through sewage pools, as Israel pummels water systems in Gaza, CNN

In Palestine, as the weaponization of water has grown since 7 October 2023, a serious erosion of IHL and other well-recognized international norms, have taken place. Interview respondents referenced high civilian casualties, statements of genocidal intent released by high-ranking Israeli officials, and military action that has been carried out relating to siege warfare and collective punishment (52). Israel cut off all supplies from entering Gaza on 9 October 2023, including water. This tactic has been repeatedly employed by the Israeli military and government since the initial blockade. Children are afforded special protections under IHL, with all parties to a conflict required to supply children with necessary care and aid (53). One informant highlighted the disproportionate and catastrophic impact of the weaponization of water on children in Gaza, where cases of dehydration, malnutrition, and water and sanitation-related diseases are prevalent (54). Overall, all respondents reflecting on Israel's use of water as a weapon indicated a failure of international law to hold Israel to account, arguing that powerful actors repeatedly act with impunity (55).

The research highlights the limits and failures of international law to deliver sufficient protection for water in armed conflict. Violations of IHL emerge as a dominant trend and so, more than a strictly legalistic view is required to address this phenomena. Responses beyond the international legal approach should be explored and highlighted. Additionally, further analysis is recommended on how local laws and customs that govern the protection of water can be best promoted to spare water from armed conflict in contexts where IHL and its corresponding normative frameworks are less impactful.

52. Multiple expert interviews. Palestine local legal, humanitarian and service delivery specialists. Interview conducted April 2025.
53. International Committee of the Red Cross, Legal Protection of Children in Armed Conflict, 2003.
54. Expert interview. Palestine local humanitarian aid service provider. Interview conducted April 2025.
55. Multiple expert interviews. Palestine local legal, humanitarian and service delivery specialists. Interview conducted April 2025.

Source: Palestine runs dry: 'Our water they steal and sell to us', AlJazeera

II. POLITICAL-MILITARY STRATEGIES

This study analyses the relationship between military strategies that use water as a means for achieving political goals and defines it as a political, military and water nexus. Common trends ascertained from interviews with key informants and desk-based research highlight the strategic exercise of weaponizing water through destruction of water infrastructure, controlling natural water resources and engaging in siege warfare. In each case the party to the conflict engages in these military tactics as a method of achieving broader political outcomes.

Destruction of water infrastructures

The strategic value of water differs by context: in water-rich regions, it may be weaponized symbolically for legitimacy or to exert pressure on downstream regions, while in water-scarce areas control through deprivation can have devastating humanitarian consequences.

It was observed in this study that the routine and deliberate destruction of water infrastructure was more entrenched in Palestine than in Syria and Yemen. In Palestine, respondents from local-level water governance bodies highlighted that they work with the International Committee of the Red Cross and the United Nations Office for the Coordination of Humanitarian Affairs to share key information and the locations of critical water infrastructure in Gaza with the Israeli military. Israel routinely targets water resources in Gaza at a large-scale, despite having access to the precise coordinates of this infrastructure (56). This indicates a highly systematic and deliberate approach to the weaponization of water, particularly through the destruction of critical infrastructure by military strikes, in Palestine. The role of this military action should not be viewed in isolation but rather constitutive of wider political goals of occupation and annexation that Israel has pursued in the Palestinian territories.

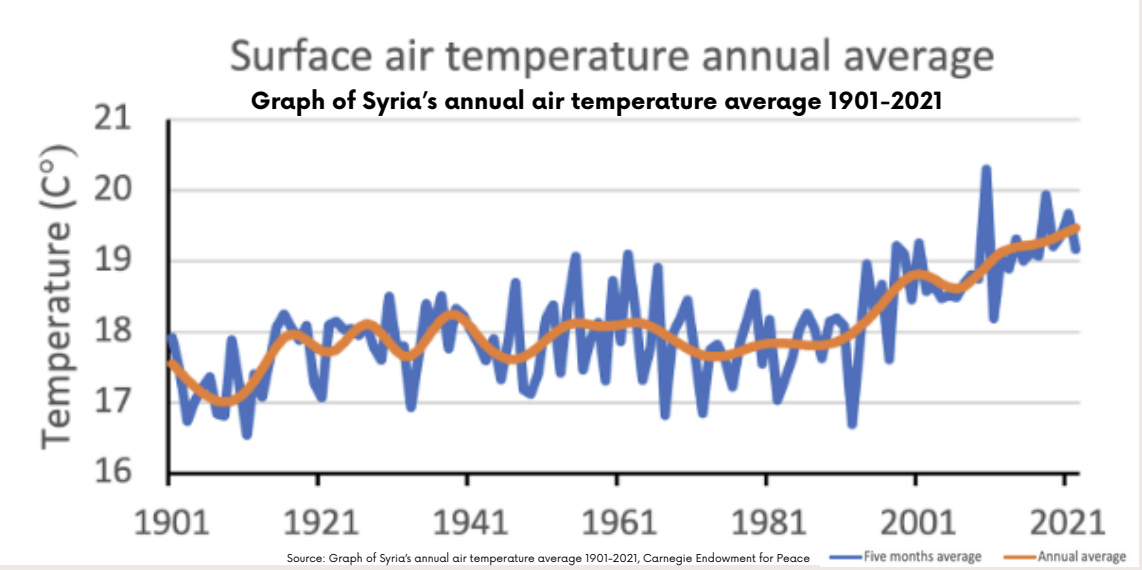
56. Expert interview. Palestine municipal level water expert. Interview conducted April 2025.

Source: Russia condemns destruction of Syrian infrastructure by US-led coalition, CGTN

However, the destruction of water infrastructure is also present in Syria and Yemen, both by government forces and armed non-state actors. A key informant on Yemen highlighted repeated targeting of water sources and facilities as tactics engaged in by multiple parties to form part of a wider strategy to attack vital infrastructure (57). The broad cases enacted by multiple parties highlight the fractured political context in Yemen where military conflict is decentralised in multiple contested power structures. Examples include targeted strikes on water infrastructure by the coalition forces led by Saudi Arabia and the UAE and the destruction of water and sanitation pipes through bombings in urban areas. A prevalent issue in Yemen is the placing of mines and explosive devices near water sources and along main roads, a practice engaged in by multiple parties to the conflict. This prevents access to water supplies and contaminates wells, forcing civilians to seek alternative sources at high costs.

In Syria, respondents highlighted that armed conflict was documented to take place in close proximity to key water infrastructure when control is contested, putting access for technicians and systems operations at risk (58). For example, heavy military action in 2016 around Wadi Barada and Ein El Fijeh springs in Damascus cut off access to safe drinking water for 5.5 million people, increased water-borne diseases, and caused sewage system flooding in residential areas (59). Similar to the case of Yemen, multiple parties engaged in the Syrian conflict meant that the weaponization of water formed a channel to accomplish larger political ambitions for territorial and political control. Demonstrably, the Hay'at Tahrir Al-Sham opposition group which now leads the Syrian Administration, took control of most of the Idlib Governorate by force in 2018 including its critical water infrastructure. In 2019 large amounts of water infrastructure was damaged when government forces attacked eight facilities in Al-Ma'ra, including the central water station in southern Idlib, removing water access for 250,000 inhabitants (60).

57. Expert interview. Yemen Non-Governmental Organization Human Rights Specialist. Interview conducted May 2025.
58. Expert interview. Syria water engineering and conflict expert. Interview conducted March 2025.
59. Unicef, 2017, In Damascus, water cuts and crumbling sewage systems pose serious health risks, 2017.
60. A Abbara et al, Weaponizing water as an instrument of war in Syria: Impact on diarrhoeal disease in Idlib and Aleppo governorates, 2011–2019, International Journal of Infectious Diseases, 2021.



Control of natural water resources

Geographical differences in the weaponization of water were observed in each case study. The research aims to outline how strategies to weaponize water develop or emerge by taking into consideration geographical distinctions.

In recent years, climate change has exacerbated water issues in Syria, particularly in areas where water already plays a key role as a weapon in territorial conflicts. Low rainfall and increased air temperature has increased droughts and soil dryness, contributing to water loss which was estimated at a cumulative loss of 2.2 billion cubic meters by 2022 (61). These natural geographical changes have often exacerbated the devastating impacts of the weaponization of water in water-stressed regions. However, it has also occasionally provided rare grounds for cooperation. Supporting civilian access to water can create political legitimacy in contested areas. For example, in Northeast Syria and Idlib, the ruling insurgent groups recognized internal resource gaps and outsourced the delivery of basic public services to private actors, such as international NGOs and local partners (62). Water-related conflicts can flow across borders and military strategies can be influenced by regional political ambitions. In 2013, ISIS permitted engineers from the Syrian government to continue operating seized dams and water facilities so that water would flow to Iraq (63).

In Palestine, both the natural resources and built infrastructure vary between the West Bank and Gaza, though both areas have been subjects of limited access to poor quality water sources. In Gaza, the only freshwater source is the Coastal Aquifer Basin which supplies approximately 90% of Gaza's water (64). Informants working for municipal-level water services in Gaza indicated significant water supply issues, even prior to 7 October 2023. The water from the Coastal Aquifer Basin is of low quality and had to be mixed with brackish water, increasing salinity (65). Three aquifers underlie the West Bank (66), but Israel restricts access to water from the Eastern Aquifer Basin only. This is of poorer quality than the Western Aquifer Basin and Northeastern Aquifer Basin, controlled by Israel (67).

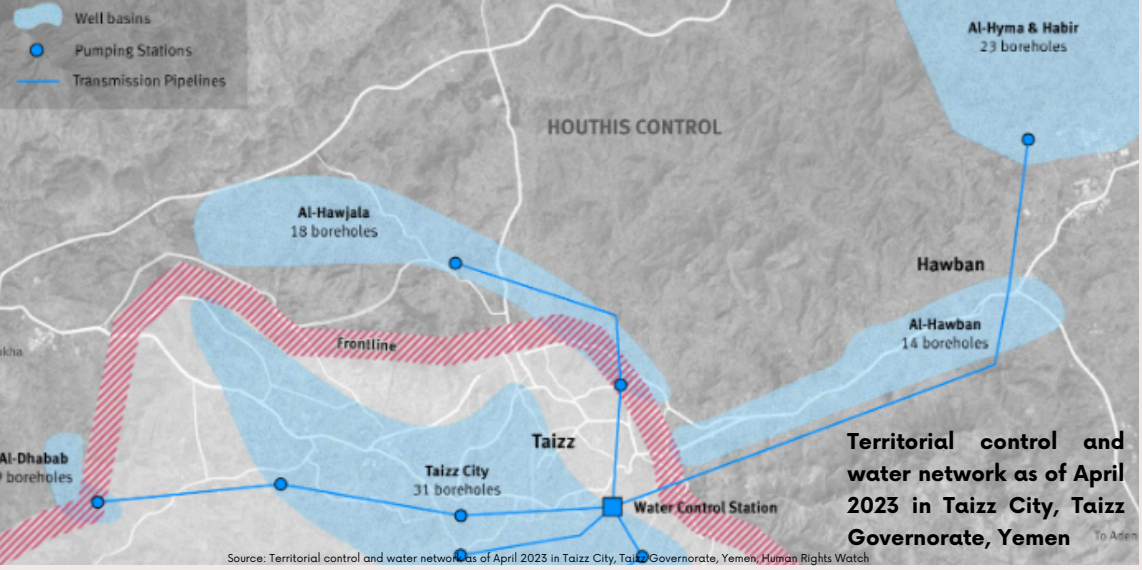
61. A Sottimano & N Samma, Syria has a water crisis. And it's not going away, Atlantic Council, 2022.
62. J Drevon & P Haenni, How Global Jihad Relocalises and Where It Leads: The Case of HTS, the Former AQ Franchise in Syria, San Domenico di Fiesole, European University Institute, Robert Schuman Centre for Advanced Studies, 2021.
63. A J Sakran, The Euphrates dam is at risk in the sdf operation to capture it from ISIS. Atlantic Council, 2017.
64. Palestinian Water Authority, Status Report of Water Resources in the Occupied State of Palestine-2012, Annual Water Resources Status Report, 2012.
65. Expert interview. Palestine regional level water expert. Interview conducted April 2025.
66. S Klawitter, Water resources at stake: The Mountain Aquifer beneath the occupied West Bank, Palestinian Territories, New York, 2006.
67. Expert interview. Palestine municipal level water expert. Interview conducted April 2025.

Map of mountain and coastal aquifers in Palestine

Source: Map of mountain and coastal aquifers in Palestine, UN Environment Programme

Alongside the natural resources that differ between the Palestinian territories, intentional limitations governed by Israel on the use of the Aquifers exacerbates water crises. Water abstraction limits set out in Article 40 of the Oslo Accords are different depending on the region, though both of the limits allocated for Gaza and the West Bank are significantly less than what is required for the respective populations (68). It is important to highlight that the weaponization of water can occur in a militarised context through political strategies. Israeli policies in the West Bank perpetuate water scarcity. For example, Israel has made it illegal for Palestinians to collect rainwater and expansionist policy has involved cutting off water from Palestinian agricultural and farming land to support the expansion of Israeli settlements (69).

68. Expert interview. Palestine regional level water expert. Interview conducted April 2025.
69. Expert interview. Palestine biodiversity, sustainability and human rights expert. Interview conducted April 2025.



Territorial control and water network as of April 2023 in Taizz City, Taizz Governorate, Yemen

Source: Territorial control and water network as of April 2023 in Taizz City, Taizz Governorate, Yemen, Human Rights Watch

Siege warfare tactics

Evidence of siege warfare, specifically the cutting off of water and other supplies necessary to sustain life, has been observed as prevalent in all three conflicts of this study. Siege has been identified as a dominant trend for its occurrence in armed conflicts and the significant depth and spread of harm to civilians that it causes.

In Yemen, a respondent outlined the protracted siege tactics employed by the Houthis in the city of Taïzz by taking control of the principal water basins and the main water control station of the city. By preventing the transfer of, or access to, water to the areas controlled by the internationally recognized government forces and other parties, tensions increased and military confrontations between these factions have persisted in Taïzz since 2015. The Houthis-imposed siege on the areas controlled by the government forces has cut off water supplies almost entirely. This has forced residents to seek alternative water sources, which have high salinity and are unsuitable for drinking, according to repeated reports from local inhabitants. The cost of obtaining water has increased to more than three times the price before the siege and the scarcity of water and its poor quality has led to the spread of diseases such as cholera, typhoid, schistosomiasis, and others (70). In 2023, only 21 of 88 of the wells in Taïzz's public water supply network were in operation, and the Houthis continued to block the entry of water trucks and humanitarian agencies providing water and sanitation services (71).

70. Expert interview. Yemen Non-Governmental Organization human rights Specialist. Interview conducted May 2025.
71. Human Rights Watch, Death is More Merciful Than This Life: Houthi and Yemeni Government Violations of the Right to Water in Taizz, 2023.

Source: Syria conflict: Life under siege in rebel-held Aleppo, BBCNews

In Gaza, Israel has engaged in deliberate statements of genocidal intent and military actions to cut off water, food supply, and the resources needed for the operation of water infrastructure, namely electricity and fuel. On 9 October 2023 the Israeli government announced a complete blockade, cutting off the entry of aid into Gaza, including water, food, medicine, and energy supplies. Besides brief periods of limited aid entry, siege tactics continue to prevent the entry of supplies, including water. As of 2 March 2025 to date of writing (16 May 2025) no humanitarian aid supplies have entered Gaza. Multiple states, international organizations and Non-Governmental Organizations have strongly criticized Israel's persistent and wide-spread use of siege in Gaza.

During the Syrian Civil War the government regime engaged in prolonged siege warfare in multiple cities including areas of Dara, Homs, Hama, Aleppo and Damascus. Opposition groups engaged similar tactics in the Idlib region. Expert interviews revealed the brutal consequences of the regime's siege, forming part of a broader political strategy to quash groups that opposed the governmental status quo (72). Vital resources were cut off when areas fell under opposition control. Water, along with other energy resources that are crucial to water services such as electricity, diesel and gas, were denied entry. Besieged residents suffered mass displacement and had to use untreated water for drinking, cooking and hygiene purposes (73).

72. Expert interview. Syria environmental and human rights expert. Interview conducted April 2025.
73. Amnesty International, Syria: We Leave or We Die: Forced displacement under Syria's 'reconciliation' agreements, 2017.

LOCAL ACTION IN SPARING WATER

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

I. COMMUNITY-BASED SOLUTIONS

II. SOCIAL COHESION

III. AID COORDINATION

IV. ADVOCACY

This study examines the role of local actors, civil society organizations and municipalities in preventing the weaponization of water during conflict. It analyzes their contributions to safeguarding water from becoming a tool of war. Furthermore, it aims to strengthen multi-level governance between local structures and international humanitarian responses that work to spare water from armed conflict by synthesizing the unique and pivotal contributions that local action provides.

I. COMMUNITY-BASED SOLUTIONS

Armed conflict often induces decentralization and fragmentation, characterized by competing powers and a breakdown of routine organizational structures. As a result most governance functions and community support are shifted to local municipalities and NGOs. Due to their proximity to the conflict, they are usually first responders in such conflicts and address the immediate needs of communities.

Source: Global Communities Ramps Up WASH Services in Response to Cholera Outbreak in Syria, Global Communities

The level of support can vary drastically depending on the local context. For example, support in Gaza can look very different from that in the West Bank, depending on the intensity of targeting, the availability of resources, and the scale of displacement, which can dismantle existing structures amid the ongoing genocide by Israel. Addressing the immediate needs of communities, such as hunger and access to water, are evident in the many initiatives by Civil Society Organisations (CSOs) in Palestine launched to provide food and water, especially in the face of failing legal and accountability systems (74).

In Yemen, currently divided into five different authorities, support varies and largely depends on the level of humanitarian access granted by each authority (75). This was similarly the case in Syria during the Civil War (76). Overall, however, cities that are less strategically important to the parties in the conflict tend to see greater success in water resilience projects and a higher activity of CSOs.

74. Multiple expert interviews. Palestine, Yemen, & Syria. Local humanitarian and service delivery specialists. Interview conducted April-May 2025.
75. Expert interview. Yemen International Legal Analyst. Interview conducted April 2025.
76. Expert interview. Syria water and environment non-governmental organization specialist. Interview conducted April 2025.

Similarly, local municipalities often attempt to restore basic water supplies and infrastructures in collaboration with private actors and CSOs. For example, in Gaza, local municipal service providers have furnished agreements with farmers to provide water to localised populations through the use of agricultural wells. While this solution encounters multiple challenges, including a lack of water testing, disinfecting mechanisms and short distribution systems, it demonstrates a resilient response at the local level to respond to the water crisis in Gaza (77). In Yemen, where water infrastructures are often surrounded by mines to prevent access to them, a principal focus of local actors has been on demining (78).

These local initiatives can face constraints, particularly in terms of funding and political dynamics restricting their work. External donors may impose conditions that undermine local decision-making and geopolitical pressures can create power imbalances that hinder municipalities' ability to engage and thus operate safely with the belligerents and the communities (79). In addition, interviewees described instances where international organizations or foreign humanitarian actors directly implemented major aspects of projects that went against perspectives articulated by local actors, often due to a lack of trust in local knowledge (80).

Source: Disaster Planning Pays-off in Northwest Syria, Global Communities

These externally driven interventions have, in many cases, proven ineffective or failed to deliver their objectives. Such experiences reinforce the perception of local actors as implementers or subcontractors, rather than equal partners in decision-making processes. In Syria for example, NGOs are often deeply reliant on funding from international organizations or governments and shared experiences of strict project conditions, local expertise being ignored, and funding being cancelled arbitrarily (81).

Evidently, while efforts across the case studies vary due to the outlined constraints, it was demonstrated that local communities possess a nuanced understanding of the challenges facing their populations. Their awareness of socio-political dynamics and local contexts can help mitigate the impacts of armed conflict on water access and use. This contextual knowledge enables them to anticipate needs and offer solutions tailored to their communities.

Despite the significant work of local actors, there is a critical gap in research on how local actors can be leveraged to prevent the weaponization of water. Engaging local actors has emerged as a growing but strong field in peacebuilding and humanitarian responses. This research serves as an initial contribution and further efforts should be made to explore how localization can be centred in efforts to spare water from armed conflict. Although high-level governance generally engages with local actors in some capacity, such engagement is often ad hoc and left to the discretion of individual organizations. Taking steps to institutionalize processes within formal mandates could help ensure both the consistency and integrity of local involvement (82).

77. Expert interview. Palestine regional level water expert. Interview conducted April 2025.
78. Expert interview. Yemen Non-Governmental Organization Human Rights Specialist. Interview conducted May 2025.
79. Multiple expert interviews. Palestine, Yemen & Syria. Local humanitarian and service delivery specialists. Conducted April-May 2025.
80. Expert interview. Syria environmental and human rights expert. Interview conducted April 2025.
81. Ibid.
82. T Paffenholz et al, Toward a Third Local Turn: Identifying and Addressing Obstacles to Localization in Peacebuilding Negotiation Journal; 39:4, 2023, pp. 349–375.

II. SOCIAL COHESION

Local action has also played a crucial role in preventing the escalation of tensions between communities in intercommunal conflicts that arise due to displacement, particularly in contexts where water becomes increasingly vulnerable to weaponization.

The conflicts in Syria, Yemen, and Palestine have led to widespread internal displacement, forcing diverse communities to live side by side, often for the first time. This is especially true in Syria and Yemen over the last two decades, and to a lesser extent in Palestine. The resulting proximity has sparked new tensions, particularly over scarce resources like water, further straining already fragile contexts. These tensions often escalate into intercommunal conflicts, which are frequently mediated and resolved by local leaders (83).

Source: Diversity and social cohesion, German Federal Ministry for Economic Cooperation and Development

Yemen and Syria present unique cases where local authorities have retained significant influence both during and after periods of intense conflict. In Syria, for example, local authorities promoted water not just as a neutral resource but as a tool for building social cohesion between Kurdish and Arab populations in Afrin. The arrival of large numbers of Arab Bedouin people into this Kurdish-majority area sparked competition over land and water. However, through cooperation and agreements led by local leaders, communities were able to share essential resources such as water, livestock, and farmland. In such community-led solutions, especially in geographic areas that are less strategic to belligerents or in pockets of relative stability, water emerges not only as a tool for cooperation but also for resilience and development (84).

A similar dynamic was observed in Yemen, where local sheikhs often assume leadership roles in areas where rebel groups allow them greater autonomy. This is particularly relevant given that Sharia law, based on Islamic teachings, is constitutionally recognized as the source of all legislation in Yemen and coexists with secular laws in a hybrid legal system. Local sheikhs frequently serve as mediators in community conflicts, drawing on Islamic beliefs and values to foster cooperation. These values often mirror the humanitarian principles of IHL, especially regarding the stewardship of natural resources like water (85).

83. Multiple expert interviews. Syria & Yemen, Local humanitarian and service delivery specialists. Interview conducted April-May 2025.
84. Expert interview. Syria environmental and human rights expert. Interview conducted April 2025.
85. Expert interview. Syria water engineering and conflict expert. Interview conducted March 2025.

However, it is important to recognize the limitations of local leaders in preventing the weaponization of water in communal conflicts. Key limitations include: (1) the political alignment of local leaders, which may influence their impartiality; and (2) the potential for corruption and self-interest. Furthermore, while local leaders play a vital role in mitigating water-related conflict, they are often not formal parties to conflict and thus are not bound by IHL. Instead, they operate under national and religious norms, which further emphasizes the need to engage with them through context-specific capacity-building initiatives (86).

The spark for water cooperation is rarely straightforward; it grows out of specific regional conditions. Geography, resource availability, religious and cultural beliefs, and local political dynamics all shape community responses. Some interviewees cited traditions that view giving water as a sacred act, offering life itself, while others pointed to cultural beliefs that may contradict this view. What is clear, however, is that community leaders play a central role in enabling cooperation, particularly in the face of political disruption and mass displacement which can cause a further use of water as a tool in conflict (87).

High-level governance structures should continue to explore the role of local leaders as conflict mediators and negotiators and invest in targeted capacity-building. They may also benefit from leveraging Islamic legal and cultural norms when engaging with local leaders in relevant contexts (88).

To effectively address the weaponization of water and promote sustainable cooperation in conflict zones, high-level governance structures should move beyond short-term humanitarian partnerships and recognize the long-term potential of local leadership, investing in the capacity of community leaders. In certain contexts, those rooted in religious or traditional authority can create pathways for resilience, social cohesion, and conflict resolution. This includes formalizing partnerships, integrating culturally grounded frameworks like Islamic norms where appropriate, and ensuring that local actors have access to resources and decision-making processes (89). Ultimately, empowering local leadership within a supported and structured system may be one of the most effective strategies for protecting water as a shared, life-sustaining resource in times of conflict.

Source: Water crisis in northern Syria reached critical levels: MSF, North Press Agency

86. Expert interview. Syria water engineering and conflict expert. Interview conducted March 2025.
87. Multiple expert interviews. Yemen, Local humanitarian and service delivery specialists. Interview conducted April-May 2025.
88. Expert interview. Yemen International Legal Analyst. Interview conducted April 2025.
89. Multiple expert interviews. Yemen, Local humanitarian and service delivery specialists. Interview conducted April-May 2025.

III. AID COORDINATION

CSOs play a critical role in coordinating and implementing humanitarian efforts on the ground. In multi-level governance structures, such as the WASH Clusters led by UNICEF in Palestine and Syria, CSOs serve as key partners in delivering emergency services. For international and humanitarian organizations, CSOs offer three essential functions: 1. they mobilize technical experts, engineers, and private contractors, 2. they act as intermediaries between communities and external actors, helping adapt programs to local needs, and 3. they directly deliver humanitarian aid and services (90).

Source: Turkish charity group aids 1,150 families in Yemen, Anadolu Agency

CSOs bring a nuanced understanding of the local context, enabling more targeted and responsive interventions. Their engagement ensures that community-specific needs are reflected in planning and implementation, enhances accountability, and improves service delivery outcomes. Additionally, coordination between CSOs and municipal service providers improves logistical efficiency and supports accurate mapping of water and sanitation needs (91).

High-level governance structures should deepen their engagement with CSOs by shifting from a transactional approach to one that prioritizes genuine strategic partnership in coordination. This means integrating CSOs early in coordination mechanisms, such as clusters and sectoral working groups, so that their knowledge informs planning, priority-setting, and response strategies (92). Rather than limiting their role to implementation, CSOs should have formal, sustained representation within coordination platforms to ensure that local perspectives shape humanitarian governance. Strengthening coordination with CSOs in this way enhances the relevance, accountability, and effectiveness of humanitarian efforts by embedding local insight into every stage of the water related response.

90. Multiple expert interviews. Palestine, Yemen, & Syria. Local humanitarian and service delivery specialists. Interview conducted April-May 2025.
91. Ibid.
92. T Paffenholz et al, 2023, pp. 349-375.

IV. ADVOCACY

One of the most critical roles CSOs play is in advocacy which is enabled by their close proximity to conflict zones and their deep-rooted understanding of local contexts. Their on-the-ground presence allows them to monitor and document crucial developments, including shifts in power dynamics, changes in territorial control affecting water infrastructure, violations of IHL, human rights abuses, and emerging community needs (93). This positions CSOs uniquely to conduct evidence-based advocacy that reflects both immediate realities and the complex, nuanced challenges faced by affected populations.

Many local movements concentrate their efforts primarily on advocacy. In Palestine, institutional mechanisms have repeatedly failed to hold Israel accountable for the systematic use of water as a weapon. Social media, used by individuals and NGOs alike, has become a central platform for raising awareness and mobilizing resistance (94).

Source: Governance, advocacy and leadership in water, sanitation and hygiene (GoAL WaSH), UNDP-SIWI Water Governance Facility (WGF)

On the other hand, In contexts like Syria and Yemen, where power vacuums and competition amongst multiple non-state actors create more opportunities for negotiation and mediation, advocacy is often still prioritized through collaboration with international organizations due to their broader reach. In many cases, CSOs primarily support advocacy by collecting and documenting evidence for international organizations and private entities (95).

At the same time, many local actors face heightened security risks due to their frontline roles and proximity to conflict. Their advocacy efforts, while critical, are often underrecognized globally, especially as the use of water as a tool of war and its various devastating impacts remains marginalized in mainstream media (96).

Despite safety challenges, advocacy remains central to local CSO engagement, grounded in their contextual awareness and ability to articulate realities that high-level actors may avoid for geopolitical reasons. Their voices should be consistently highlighted and uplifted in international forums to expose the growing weaponization of water and its profound and various impacts on affected communities.

93. Multiple expert interviews. Palestine, Yemen & Syria. Local humanitarian and service delivery specialists. Interview conducted April-May 2025.
94. Expert interview. Palestine local humanitarian aid service provider. Interview conducted April 2025.
95. Multiple expert interviews. Syria & Yemen Local humanitarian and service delivery specialists. Interviews conducted April- May 2025.
96. Ibid.

MITIGATING TRENDS THROUGH LOCAL ACTION

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

01 Violations of IHL

Community-based solutions

Local leaders are well positioned to overlay common principles from IHL with other dominant legal structures in the community to support compliance.

02 Destruction of water infrastructures

Community-based solutions

Local experts are able to propose decentralized water solutions to shift reliance on centralized water infrastructures which are at a higher risk of military action.

Aid coordination

Local actors have in-depth field knowledge of the environmental, social and political context to facilitate viable temporary and long-term solutions.

Advocacy

On-the-ground local actors are well positioned to document and disseminate destruction of water infrastructure accurately and rapidly, as well as the reverberating impacts that may emerge over time.

03 Control of natural water resources

Community-based solutions

Participatory and equitable management approaches between local actors can prevent the monopolization of natural resources.

Social cohesion

Strengthening community relations can prevent the co-opting of natural resources and support the equitable division of water resources between communities.

04 Siege warfare tactics

Aid coordination

Local networks have the expertise to propose alternatives in water access or protection of key infrastructure.

RECOMMENDATIONS

Source: A Fatal Necessity: The Weaponization Of Water By Terrorists, The Organization for World Peace

This research highlights connections drawn between the dominant trends in the weaponization of water and the pivotal role that local action plays in responding to and mitigating these trends. All work to spare water from armed conflict requires a robust multi-level governance approach that addresses the current imbalance at the local level. The following recommendations are addressed to the Global Alliance to Spare Water from Armed Conflict and other international forums with decision-making power to support the effective redress of governance structures and embed the role of local actors more centrally into water protection efforts.

This report recommends that international forums such as the Global Alliance to Spare Water from Armed Conflict:

Facilitate further academic and policy research on alternative legal structures and levers at the local level to engage state and non-state armed actors in the protection of water from armed conflict in diverse contexts.

Integrate explicit commitments to local actors working to protect water into any inter-governmental political declarations on sparing water from armed conflict.

Center local action in the promotion of multilateral work including of the UN Security Council, General Assembly and other soft law instruments to spare water from armed conflict.

Develop context-specific capacity-building programs for local leaders and water specialists to effectively manage and resolve water-related disputes, helping to prevent the weaponization of water.

CONCLUSION

This study aimed to address the question of how the trends of weaponization of water can be best interpreted to enable the reversal.

Mapping out the existing literature on the weaponization of water helps give shape to a complex and multifaceted issue in conflict. The weaponization of water manifests in myriad ways, including flooding, contamination, the destruction of critical infrastructure, and restrictive control of water resources.

This report highlights that military action and political goals are interconnected and facilitate the creation of inequitable water cooperation agreements, exclusionary political decision-making between actors, and restrictive governmental or de-facto authority water policies to maintain control over a territory and population. The creation of political dependency through seizing control of a water supply or the withholding or delayed transfer of hydrological data further illustrates the interactions that form the military, political and water nexus.

The interviews conducted for this research add novel findings to an analysis of the dominant trends in the weaponization of water. Violations of IHL are increasing and the legal mechanisms to hold actors accountable have resulted in limited success. Therefore, the research oriented towards a focus on local customs and actions as potential avenues for reversals. Key informants helped build an understanding of the pivotal role that local action plays in sparing water from armed conflict and how it could be further leveraged to enhance multi-level governance.

Local actors have the relevant expertise, nuance, and social networks to drive forward community-based solutions and improve social cohesion. In particular, they are acutely aware of community tensions, political dynamics, and physical environments, making them ideal intermediaries to promote coordination, implement humanitarian responses, and facilitate political negotiation that spares water from armed conflict. This study can be used to further the discussion on how the weaponization of water can be best interpreted to enable its reversal in armed conflicts. Secondly, it forms an initial foundation for a spotlight on local action to spare water from conflict, and it is recommended that further research into the potential of local action is conducted. Conducting research in conflict settings has inherent challenges but intergovernmental funding and academic resources would support the production of detailed findings and analysis to bolster knowledge-building.

The devastating impacts of using water as a tool of conflict have been demonstrated throughout this report, in wider literature, the media and beyond. Dedicated, innovative and bold efforts must continue to be made to stem this issue and ensure that water is spared from armed conflict. This study highlights the potential of local responses and advocates for greater inclusion and mainstreaming of local actors, as the best informed actors to enhance water management during conflict in their respective regions.

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