



## The imperative to protect water and water systems during armed conflict

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*Amid the complexities of contemporary armed conflicts, damage to water infrastructure and the use of water as a means or method of warfare have devastating consequences for both civilian populations and the environment. Despite existing legal protections, gaps in compliance and enforcement leave water systems vulnerable, exacerbating humanitarian crises and ecological*

harm. Addressing these challenges requires a renewed focus on legal frameworks, accountability, and practical measures to strengthen the protection of water in conflict settings.

In this post, part of the [Emerging Voices series](#), Tadesse Kebebew, Researcher and Project Manager at the Geneva Water Hub, examines the severe consequences of attacks on water systems and the weaponization of water in armed conflicts. He assesses the strengths and limitations of current international legal protections and offers concrete recommendations to enhance safeguards for freshwater resources, emphasizing the need for stronger compliance with international humanitarian law.

*ICRC Humanitarian Law & Policy Blog · The imperative to protect water and water systems during armed conflict*

According to the [Water Conflict Chronology](#) from the Pacific Institute, there is an [increasing trend](#) of using water as a means or method of warfare in contemporary armed conflicts. Water has been employed both defensively to impede the [advance of enemy forces](#), offensively to target [enemy positions](#), and as strategic targeting for a “[political, social or economic objective](#)”. Numerous [reports](#) have also documented incidental or deliberate destruction of water systems and contamination of water resources during armed conflicts. These conducts have devastating [direct and indirect impacts](#) on civilians and the environment.

The direct impact includes damages to water treatment plants, pipelines, and reservoirs, leading to immediate disruptions in [water supply](#). In conflict situations, “[having access to water is increasingly a matter of survival](#)”. The [indirect or reverberating effects](#) extend beyond the immediate impacts and include the spread of [waterborne diseases](#), [livelihood disruptions](#), [food insecurity](#), [displacement](#) and [environmental degradation](#).

Moreover, the direct and indirect impacts can [accumulate](#) from the successive weakening of resilience due to repeated attacks or protracted armed conflicts. These cumulative impacts also lead to reduced community resilience and complicate post-conflict peacebuilding. Protection of water is therefore essential for [restoring peace and stability](#). More broadly, as [protecting water is protecting civilians](#), understanding and addressing these impacts is crucial.

## What are the legal protections?

### ***Protections under international humanitarian law (IHL)***

The protections given to civilians and civilian objects under IHL are [non-negotiable](#), with multiple layers of safeguards extending to water and water infrastructure. To begin with, a fundamental principle of IHL states that “[the right of the parties to an armed conflict to choose methods or means of warfare is not unlimited](#)”. It also prohibits the use of poison or poisoned weapons when they are intended or designed to kill or injure humans, including contamination of wells and water supplies.

During the conduct of hostilities (COH), parties to an armed conflict must respect the principles of distinction, proportionality and precautions. These principles extend to ensuring the protection of water infrastructure and water-related installations. As per the principle of distinction, they benefit from the protection accorded to civilian objects and, hence, must be spared from [attacks](#), including [indiscriminate attacks](#). They also benefit from a presumption of civilian status. Even when they become military objectives, [proportionality in attack](#) prohibits launching an attack which may be expected to cause collateral damage “which would be excessive in relation to the concrete and direct military advantage anticipated”. There is an ongoing debate regarding which “factors count on both sides of the balancing test and how the comparison must be made” ([Sassòli](#), p.388). When it comes to military advantages of targeting water or water systems, in most instances, they appear minimal or non-existent [compared to the devastating impacts](#) outlined above.



IHL further obliges parties to a conflict to *take constant care* to spare water resources and water infrastructure. Those who plan, decide upon and execute attacks must do *everything feasible to verify* that these are military objectives and that it is not prohibited to attack them. Moreover, the parties must *take all feasible precautions* to protect water and water infrastructure under their control against the effects of attacks. They should also avoid locating military objectives in the vicinity of water infrastructure.

Second, IHL offers special protection for certain objects, including *works and installations containing dangerous forces*, namely dams, dykes and nuclear electrical generating stations and the *natural environment*. It also prohibits some specific methods of warfare, such as *starvation of the civilian population* and the prohibition against attacking, destroying, removing, or rendering useless *objects indispensable to the survival of the civilian population*, such as drinking water installations and supplies and irrigation works. The protections given to objects containing dangerous forces and those indispensable to the survival of the civilian population are vital because even when such objects become military objectives, they shall not be attacked save for limited exceptions.<sup>[1]</sup>

Physical infrastructure is only one of the components of water services. These services also require *consumables and personnel* responsible for carrying out tasks related to the operation, maintenance, repair and rehabilitation of water and water-related infrastructure. In both international armed conflict (IAC) and non-international armed conflict (NIAC), consumables and service personnel also benefit from the protection under COH rules, though “*they do not currently enjoy any special or heightened protection*”. IHL further protects *humanitarian relief personnel, including those involved in water-related activities* and *objects*. However, the protection of relief personnel does not cover all service personnel.

Third, in situations of occupation, occupying powers must ensure the *necessities of life*, uphold *public health and hygiene* and respect *mandatory relief schemes*. They must also respect *human rights* obligations, including the right to safe drinking water. The *International Law Commission's Principles on the Protection of the Environment in Relation to Armed Conflicts* (PERAC Principles) emphasize that an occupying power “shall respect and protect the environment of the occupied territory”.

## ***Protections under other bodies of law***

Other branches of international law complement the protections under IHL. The UNGA has repeatedly recognized water as a human right without a vote (see *Resolution 76/153*). Water is a *prerequisite* for realizing other human rights, including the right to a *clean, healthy, and sustainable environment*. *PERAC Principles* state that the environment, including water, shall be respected and protected per applicable *international law* – i.e., “*relevant treaty-based or customary obligations ... whether derived from international environmental law, human rights law or other areas of law*”.

## ***UNSC resolutions and doctrinal codification***

The UN Security Council (UNSC) adopted *Resolution 2573* (2021), highlighting the severe consequences of damage or destruction to civilian infrastructure, especially those objects indispensable to the survival of the civilian population. It recognizes the interconnectedness of essential services and condemns unlawful attacks against and misuse of such objects. The resolution further calls for similar protection to “objects critical to the delivery of essential services”. Similarly, the unanimously adopted *Resolution 2417* (2018) underscores the centrality of protecting water and water systems to address conflict-induced food insecurity. The UNSC has been enforcing international law by demanding compliance, ceasefires and restricting arms transfers.

*The Geneva List of Principles on the Protection of Water Infrastructure* systematizes the main international rules applicable to the protection of water infrastructure. While most of its Principles restate existing legal obligations, it includes a few recommendations that extend beyond current legal frameworks, drawing inspiration from practices and soft law instruments, such as establishing protected zones around water infrastructure and negotiating water ceasefire agreements.

## ***Navigating the inbuilt indeterminacies of some IHL concepts***

Some of the protections under the COH rules remain “*indeterminate*” as “*laws sometimes need to avoid being over-prescriptive*,” which presents challenges in their application and interpretation. Assessing compliance with the COH rules involves evaluating *several legal factors and establishing the facts*, including what was targeted (not just destruction or casualties), what military advantage was anticipated, what precautionary measures were taken, etc. Such evaluations inevitably involve subjective value judgements (*Sassòli*, p.390).

There is also controversy on whether and how to factor in reverberating effects in assessing proportionality and precautions in attack. The ICRC asserts that under IHL, all *reasonably foreseeable reverberating effects* of attacks must be considered based on *available information, past practices, and empirical data*. This view is supported by both *textual and purposive* interpretations of the principles. However, the precise scope of this obligation – defining which impacts are reasonably foreseeable – remains relative. There is also an argument that “*systemic impacts*” critical to the functioning of society or state could fall within the scope of reverberating effects.

The understanding of what is reasonably foreseeable evolves with improved availability of empirical data on the impacts of attacks on essential services and on parts of the environment, as well as the experiences and practices of armed forces. Therefore, it must be evaluated on a *case-by-case basis*.

Further complexity arises from the cumulative impacts of repeated attacks and protracted conflicts, which degrade the resilience of communities and infrastructure. The COH principles primarily regulate individual attacks directed to clearly separated and distinct military objectives or “a specific tactical operation” (*see Additional Protocol I commentary, para.2207*). Despite this, the references to “military operations” in the proportionality and precautions principles and the obligation to exercise “constant care” to protect civilians and civilian objects, may provide a legal basis for interpreting the law to encompass such long-term and cumulative effects.

According to the ICRC, assessing the incidental effects of a planned attack must consider the impact of previous attacks, and in protracted conflicts, the commander should be aware that essential services may *deteriorate from poor maintenance, supply shortages, or unavailability of maintenance staff*. As the combined effect of protracted conflict is much greater than the sum of individual attacks, such an interpretation opens the way to address the accumulated and long-term impacts on civilians and civilian objects, including *on parts of the natural environment*.

Finally, unresolved issues persist regarding “dual-use” objects that serve both civilian and military purposes (*Sassòli*, p.380). Such objects may become liable to attack if they qualify as *military objectives*. Such classification as military objectives requires concrete verification and adherence to the *principles of distinction and precautions*. The question is whether to consider the entire object as a military target or to separate the civilian component for proportionality assessments.

## **Four ways to enhance better protection of water infrastructure**

### ***1) Re-evaluating IHL concepts to strengthen the law***

Addressing such indeterminacies requires careful consideration of the *underlying objectives of the law* in the interpretation and application of rules. The ICRC emphasized that any challenge to the interpretation of the COH rules must be resolved in light of their object and purpose, “*namely to protect civilians and civilian objects*”. This entails embracing the indirect, long-term and cumulative impacts of armed conflicts.

Establishing precise guidelines on the effective application of the COH principles to address such impacts of damages or destruction of water systems and considering *a total ban on the use of water and water infrastructure as a means or method of warfare* could be part of this discussion. Additionally, armed forces must be trained to fully understand such impacts. It is

also vital to ensure that the protection of civilians is recognized as a strategic objective at the highest political and military levels.

## **2) Upholding the obligation to ensure respect for IHL**

The obligation to *ensure respect for IHL*, under all circumstances, is an established norm that extends *beyond the immediate parties to a conflict*. Third states are tasked with preventing breaches of IHL, promoting compliance, and avoiding actions that might facilitate violations, such as *arms transfers*. It imposes both a negative and a positive obligation (*para.187*).

In its *Advisory Opinion* on the Wall, the International Court of Justice (ICJ) reinforces that third states are responsible for exerting pressure on conflict parties to uphold humanitarian standards. Likewise, the International Criminal Tribunal for the former Yugoslavia in the *Kupreskic et al. case* highlights that IHL endows the international community a “legal entitlement to demand respect for such obligations”. The ongoing case of *Nicaragua v. Germany* before the ICJ, along with recent decisions by domestic *courts*, is progressively clarifying and reinforcing the scope of this obligation.

All High-Contracting Parties must ensure accountability for *grave breaches* of the Geneva Conventions and Additional Protocol I. They are obligated to do so for grave breaches – called “*crimes of universal obligation*”– through exercising universal jurisdiction. Third states also have “*the right to vest universal jurisdiction in their national courts over war crimes*”, i.e. to investigate alleged war crimes and, if warranted, prosecute the suspects. In addition, states must investigate war crimes, including those allegedly committed in NIAC, *by their nationals or armed forces, or on their territory*. Serious violations relating to water, including deliberate starvation (in both IAC and NIAC) and indiscriminate or disproportionate attacks on water systems (in IAC), may be prosecuted as war crimes at both the national level and under the Rome Statute (where applicable).

However, a significant challenge remains: the global response to armed conflicts often exhibits a *troubling double standard*. Some crises receive extensive attention and resources, while equally severe situations are often *neglected or forgotten*. This disparity undermines IHL enforcement, making it imperative that all conflicts receive the international attention and aid they deserve.

## **3) Employing advanced technologies**

Utilizing *new technologies* for real-time monitoring and rapid response can strengthen *IHL compliance* by enhancing military planning, *impact assessments* and improving *transparency and accountability*. Satellite imagery and drone surveillance could offer critical insights into the condition of water infrastructure and the extent of damage. Early warning systems and predictive analytics can help anticipate and mitigate potential impacts. Transparent tracking and reporting on water infrastructure conditions can enhance accountability efforts for IHL violations.

Using new technologies, however, comes with certain limitations, including potential errors or malfunctioning, *unpredictability and unreliability, mis- and disinformation*, and other “*digital risks*”.

## **4) Situating the local communities at the core**

Recognizing the role of local communities in protection activities, reconstruction of damaged water systems and related relief efforts is essential. In addition to the technical expertise in maintaining and repairing complex water systems, grassroots organizations have valuable insights into water protection, providing information and enhancing the resilience of local water systems. Most often, local actors are the *first responders* to challenges related to essential services. Empowering local actors with training and resources will improve their capacity to respond to and recover from the impacts of conflicts.



Promoting international cooperation is also vital for a unified response to water-related challenges – both emergency responses and long-term peacebuilding efforts. As aptly noted by Mark Zeitoun, “*the greater the amount of clean water that is available, the greater the ability to reach a lasting and just resolution of the conflict*”.

## Conclusion

The damage or destruction of water infrastructure as well as the use of water as a means or method of warfare has severe direct, indirect and cumulative impacts. These actions deprive civilians of essential resources, destabilize communities and exacerbate health and environmental crises.

IHL strives to limit the consequences of war and uphold core humanitarian values. This requires strict compliance with IHL, and interpreting and applying IHL in good faith and in conformity with the object and purpose of the law – adhering to its inherently protective purpose. Additionally, it is crucial to prevent violations and ensure accountability when they occur. By doing so, we can better protect water and water systems and address the urgent needs of affected populations.

[1] It is interesting to note that the corresponding customary IHL rules ([Rule 42](#) and [Rule 54](#), though exceptions are discussed in commentaries) and the treaty rules for non-international armed conflicts (NIACs) (Articles [14](#) and [15](#)) do not explicitly include the exceptions enshrined under treaty provisions for international armed conflicts (IACs).

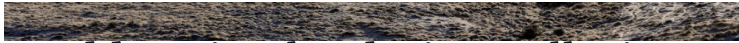
## See also:

- Matt Pollard, [IHL and the challenge of maintaining food security in armed conflict](#), October 17, 2024
- Marnie Lloyd, Peter Herby, Caroline Baudot and Tobias Ehret, [Protecting essential service personnel is a vital part of humanitarian action](#), October 10, 2024
- Eirini Giorgou and Abby Zeith, [When the lights go out: the protection of energy infrastructure in armed conflict](#), April 20, 2023
- Abby Zeith and Eirini Giorgou, [Dangerous forces: the protection of nuclear power plants in armed conflict](#), October 18, 2022

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