



## Come War or High Water: Investigating the Weaponization of Water through Manipulation of Dams in the Russia-Ukraine War (2014-2023)

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### ABSTRACT

This thesis delves into the multifaceted dynamics of turning water infrastructures, particularly dams, into weapons within the context of the ongoing war between Russia and Ukraine. Through a comprehensive examination and analysis of dam destructions, blockages and breaches the study investigates the specific case studies where both parties opted for water weaponization as a part of their warfare strategy, whether it was offensive or defensive manner. The thesis sheds light on how such military weaponization of natural resources and their infrastructures accelerated the conflict dynamics. The acceleration of conflict in this thesis is measured by the military advancement gained by “weaponisor”. Additionally, to acceleration the thesis explores the potential backlash effects on both countries and evaluates consequent implications caused within the International Humanitarian Law framework (IHL). The thesis aims to contribute to a deeper comprehension of the complexities surrounding water weaponization in the modern warfare and its ramifications for international legal, environmental, and military frameworks.

**Keywords:** Water weaponization; Dams; Russia; Ukraine; USSR; Strategic tool

### INTRODUCTION

Water, a cornerstone element of humanity, has historically played a pivotal role in shaping both basic human needs and fostering development. Encompassing 71% of Earth's surface, water's distribution is starkly disparate: 97.2% resides in oceans, leaving a mere fraction to glaciers, groundwater, lakes, streams, wetlands, and swamps. Freshwater, the lifeblood of countless organisms, accounts for 2.8% of water on Earth. This paradoxical abundance juxtaposed with scarcity motivated the global community to enshrine the human right to water in 2010, stating that: “the human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic

uses”. In the global climate of the modern era the “water problems” encompassing water scarcity and pollution have been placed as a crucial topic on the international agenda. Despite its pivotal role in sustaining life and scarcity, water has also been wielded as a weapon throughout history, with dams emerging as strategic targets in times of conflict. Thus, the rational use and protection of water resources remains as the today's most acute and complex problems.

Water has been employed by humanity to destroy and contaminate it over and over again throughout history whether in ancient Mesopotamia or wartime Europe during the Second World War (WWII). The dynamics of conflict evolve, simultaneously challenges related to water problems and environmental concerns grow; water reflects the extent

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to which war ideologies lead humanity. Armed conflicts, disruptive by nature, weaken the social-ecological systems essential for meeting the basic needs of societies. Water resources often become targets in armed conflicts, and the destruction of water infrastructure and contamination of water sources can lead to dire consequences for civilian populations. The toll of conflicts on water systems is particularly severe, with war actors leveraging their power over water infrastructure to gain ground in combat. This deliberate manipulation of water resources exacerbates the detrimental effects on humankind. The weaponization of water and the caused danger inflicted upon water infrastructures persist in a manner that are diffuse, less publicized, and challenging to quantify. Dams, in particular, hold immense strategic value due to their ability to control water resources, regulate floods, and generate hydroelectric power. The deliberate targeting of dams in armed conflict represents a calculated attempt to undermine the enemy's infrastructure and achieve military means [1].

Today's ongoing conflict between Russia and Ukraine, which has escalated into war since 2022, stands as the most significant confrontation in Europe in recent history. Beginning in 2014, this conflict has exerted profound effects on geopolitics, the economy, infrastructure, and the environment on a global scale. Zooming out from this geopolitical conflict, wars worldwide have had far-reaching impacts on the various aspects of society, be it natural world, the economic systems, international trade, and individual's livelihoods. These consequences are manifested in increased expenses, unsustainable economic expansion, and persistent fluctuations in macroeconomic conditions. Furthermore, stemming from geographical and conflict-related risks the neighboring nations and trading partners also experience uncertainties.

Amidst the current focus on immediate and catastrophic events, the long-term repercussions of violence tend to be less important than an immediate military utility. The oversight of long-term, lasting impacts of warfare techniques such as water weaponization, which also harm the aggressor and have the potential to backfire, underscored the need to broaden our understanding beyond immediate military gap. This thesis seeks to address this gap by examining indices of water weaponization recorded during the Russia-Ukraine conflict, with a specific focus on dam explosions. Thus, the thesis poses the question of how the utilization of water as a weapon accelerated the conflict between Russia and Ukraine. Acceleration in this context refers to the progression in gaining tactical advantages and attaining territorial or strategic goals [2]. This research is juxtaposed with the opposition to the drawbacks the same water weaponization cases caused, such as restoration costs for Ukraine or complications in water supplying for Russia. These inquiries are achieved by reading across disciplines, reading daily updates, and bringing news reports on the current conflict with a broader idea of warfare and water weaponization, the thesis explores how the weaponization of water accelerates the ongoing conflict. This analysis will be conducted within the framework of International Humanitarian Law (IHL), which

provides critical guidance on protecting civilian populations and essential infrastructure during armed conflicts and its implications for conflict escalation.

The thesis will be structured as follows, after the introduction to the problematics of water weaponization, which is essential to comprehend the way water is utilized in violent manner, the research proceeds with laying grounds for understanding the theoretical framework IHL. This framework serves as the lens through which the subsequent case studies and their analyses will be examined. Furthermore, the evolution of conflict into warfare will be explored, with a specific focus on the Scorched Earth Policy – a long-standing military strategy employed by the USSR involving the destruction and weaponization of natural resources to achieve military means. Lastly, the thesis will delve into the analysis of four case studies – two from Ukraine and two from Russia – examining closely them from the perspectives of IHL compliance, military gains of the weaponiser and the following backfire and repercussions of weaponization on the “weaponiser” [3].

## LITERATURE REVIEW

Dams, as critical components of water infrastructure, hold particular significance within the realm of water weaponization. Serving means such as flood mitigation, water provision, hydroelectricity generation, recreational activities, and beyond, more than 45,000 dams are approximated to exist. Their significance determines dams' potential to inflict serious damage on adversaries, therefore, dams often become targets during conflicts.

Throughout history, controlling dams has been a strategic objective in conflicts stemming from their ability to regulate water flow, supply, and distribution. The dam demolition or manipulation has the power to disrupt water supplies, cause flooding, and disrupt essential services, thereby endangering the stability and resilience of targeted populations [4].

Water, as a fundamental resource, constitutes a web of interconnected casualties that engage cultural, political, and social dynamics, especially in times of armed conflict. Water stress has already been identified as a security matter by CNA's Military Advisory Board, which claimed that “access to vital resources, primarily food, and water, can be an additional causative factor of conflicts”. Competition to access water resources can intensify grievances and lead to violence, including insurgencies against governing authorities. The weaponization of dams exacerbates water stress, as control over vital water infrastructure becomes a strategic objective for warring parties. This escalation in water-related hostilities highlights the urgent need for robust frameworks to safeguard civilians and essential infrastructure during armed conflicts. Multifaceted implications of water weaponization, particularly related to dams, sheds light on the crucial aspect of addressing these challenges, which require a comprehensive understanding of the legal and ethical frameworks governing armed conflict [5].

The IHL seeks to impose certain limitations on the destruction and suffering caused by armed conflict through its principles of distinction between civilians and combatants, and between civilian objects and military objectives, the principle of proportionality, and the principle of military necessity. The first distinction principle is a cornerstone of IHL and prohibits altogether any attack on civilians and civilian infrastructures. As for the principle of proportionality it is codified in Article 51(5)(b) of the 1977 Additional Protocol I, which reflects customary international law, and states that attacks should be prohibited if: “(it) may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive concerning the concrete and direct military advantage anticipated” (ICRC, Study on Customary International Humanitarian Law, 2005, Rule 14). Lastly, the principle of military necessity requires that a party of an armed conflict to only resort to the “destructive” methods if achieving the means serve the legitimate purpose.

These principles are grounded in the international efforts to protect the natural environment in times of war. Deriving from them, stems the water protection rules and regulations which underwent several stages over time. Before these efforts, Article 23 (g) of the fourth Hague Convention allowed the destruction of the enemy’s property under “special” circumstances: “imperatively demanded by the necessities of the war” (Article 23(g)), nevertheless, after the WWII the alternation of specific legal frameworks led to Geneva Protocols of 1997, particularly, Article 51 (2), which emphasized that targeting civilian populations is prohibited under any occasion [6].

The article also articulates in which cases should Article 56 (I) should cease: “(a) for a dam or a dyke only if it is used for other than its normal function and in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support”. The article consolidated regulations governing the safeguarding of water infrastructures within the realism of IHL.

The protection of water systems in IHL is principally grounded in the essential human requirement of water and sanitation, crucial for human rights health, and food security, constituting indispensable elements for civilian survival. Dams and dikes are identified as water contamination systems harboring hazardous potential since their destruction could significantly harm civilian populations. Thus, attacking such structures is almost universally prohibited. Water resources and other environmental elements are categorized as civilian entities under IHL, affording them the same safeguarding as civilian populations [7].

By referencing IHL, this thesis acknowledges the legal imperative to safeguard dam infrastructures and mitigate the humanitarian consequences of their destruction in armed conflicts. It delves into the intricate role of water infrastructures within the conflict dimensions, striving to mitigate the reverberating effects of mankind stemming from parties deploying water resources for their destructive potential. Water, with its dual capacity to serve as both a

means and a method of warfare, underscores the imperative for protective measures to safeguard humans. Through the IHL lens, efforts are directed toward curtailing the indiscriminate harm inflicted by the weaponization of water.

Furthermore, the analytical framework of IHL offers avenues for comprehensively evaluating the multifaceted impacts of water stress caused by water weaponization. By integrating sectoral models and considering diverse spatial scales, such a framework can shed light on the how international arena can safeguard the water infrastructures from turning into part of the military strategy [8].

The weaponization of water, particularly through strategic targeting of dams, despite having a “positive” military acceleration effect for the “aggressor” in that time moment, in the long-term it has tendency of further contributing to warfare. Within this framework, IHL emerge as a crucial guiding principle, and by adhering to its principles, parties involved (Russia and Ukraine) in armed conflict can mitigate the devastating impacts of water-related hostilities, safeguarding civilians, and essential infrastructures.

In light of these considerations, this thesis will delve into the specific dynamics of dam warfare within the context of the Russia-Ukraine conflict. By focusing on dams as strategic targets and applying the IHL framework, this study aims to contribute to a deeper comprehension of the complexities of armed conflicts and the imperative of protecting critical infrastructure, particularly dams, in conflict zones. Furthermore, it will explore the decision-making processes surrounding water management during warfare, aiming to contribute to a deeper understanding of the intricate dynamics shaping conflicts.

## DISCUSSION

### Research Question and Hypothesis

The central inquiry guiding this research circles around the examination of how water weaponization exacerbated the war between Russia and Ukraine. Specifically, the research question poses: How did the utilization of water as a weapon accelerate the conflict between Russia and Ukraine? The acceleration of conflict in this thesis encompasses the advancement of the aggressor’s objectives through the strategic utilization of water as a weapon. This acceleration entails the progression of military strategies serving as the means to gaining tactical advantages and achieving the territorial or strategic goals of the parties. This is researched in opposition to the drawbacks the same water weaponization events caused (such as restoration costs for Ukraine or water delivery complications for Russia). The thesis dives deeper into how this aggressive use of water backfires, leading to unintended environmental and socio-economic consequences for the “weaponisor”; thus water weaponization undermining their military strategy and national security in the long term. This query serves as the focal point for the investigation of the multifaceted dynamics of water weaponization within Russia-Ukraine’s armed conflict [9].

Analysis of conflict acceleration in the Russia-Ukraine conflict employs a combination of different approaches. With a thorough literature review of existing researches, policy documents, and media reports, the thesis identifies key factors of water weaponization, which contributed to conflict escalation during different cases with the advantage of one side then another.

The research employs thematic analysis techniques to uncover patterns and causal relationships between military advantages and conflict dynamics. Through integrating findings from qualitative analyses, the study develops a comprehensive understanding of conflict acceleration dynamics, and consequently, its severity and trajectory. This evidence-based approach applies the IHL framework to evaluate the military acceleration and how it affected both parties.

Consequently, the complementing hypothesis to the question states that water weaponization accelerated the conflict between Russia and Ukraine by initially providing tactical advantages to the respective parties, nevertheless, the lasting consequences and unintended repercussions of water utilization ultimately exacerbated conflict tensions, partly hindering the goals of the aggressor and potentially backfiring on their strategic aims in the long run. This hypothesis highlights the complex nature of water weaponization and its impacts on conflict dynamics.

### Research Objectives

The overarching goal of this research is to explore the intricate dynamics of water weaponization detected within the dam explosion paradigm and its role in the Russia-Ukraine conflict acceleration. To achieve this aim, the study is guided by three primary objectives. Firstly, the research endeavors to explore water weaponization's key role within Russia-Ukraine conflict. Through scrutinizing contemporary incidents, historical patterns, and scholarly analysis, the research aims to elucidate the multifaceted dimensions of water weaponization within the armed conflict context. Secondly, the study examines the specific case studies of water weaponization and this objective involves an in-depth analysis of the military advantages gained through the water utilization, legal implications of targeting water infrastructures, and the repercussions of such actions for the aggressors. Lastly, the thesis aims to evaluate the enduring complications and consequences of water weaponization on conflict escalation. The study sheds light on how targeting dams and their utilization as weapons exacerbates conflict dynamics and perpetuates long-term consequences which affects both the "victim" and "weaponiser".

### Case Study Selection

The critical aspect of this research methodology was the selection of case studies, which provide empirical evidence to support the study's objectives. The chosen case studies are the North Crimean Canal blockage in 2014 and the Irpin dam breach in 2022 carried out by Ukraine; on the other side are the destruction of the infamous Kakhovka Dam in 2023 and

dam explosion on the Mokri Yaly River in June 2023 carried out by Russia. The case studies are selected based on their relevance to the phenomenon of water weaponization, its influence on the Russia-Ukraine conflict and their backfiring effect on the "weaponisers" itself.

Several criteria inform the selection process, including geographic importance, and the availability of comprehensive data for analysis. By examining several case studies, ranging from strategic dam destruction to water supply disruption, the research aims to capture the different manner of water weaponization manifestations carried out by both sides of the conflict.

Data collection methods encompass a combination of qualitative approaches, aiming to gather comprehensive insights into the water weaponization. Primary data sources include official reports, and scholarly literature, providing first-hand analyses of water weaponization typologies and their respective case study. As for the secondary data, supplementary to the primary data, sources include news articles, and historical records offering diverse perspectives on the conflict.

By triangulating data from multiple sources, the research aims to enhance the validity and reliability of its findings.

### Limitations and Considerations

As the research voices the modern-day news, several limitations exist that may impact the research outcomes and interpretations. Constraints on data availability, potential biases in source materials, and the dynamic nature of the Russia-Ukraine conflict pose significant challenges to the research process.

It should be acknowledged that the complexity of the analysis of geopolitical conflicts and the inherent subjectivity of interpretation may introduce uncertainties and limitations in the study's findings. It is essential to recognize these limitations and exercise caution in drawing conclusions based on the available evidence.

Ethical considerations are paramount throughout the research process as the topic could be delicate matter for the reader. Thus, special attention is paid to the sensitivity of the subject, particularly in contexts involving armed conflict and humanitarian crises. By adhering to ethical principles and guidelines, the research endeavors to uphold integrity and trustworthiness in its analysis, findings and recommendations.

### Conflict Overview

The seed of war between Ukraine and Russia was sowed in the year 2014. It incited a bitter and bloody war, which has devastated Ukraine, further isolated Russia from the West, and fueled economic and environmental vulnerabilities around the globe. As President Viktor Yanukovich announced his rejection of a deal for greater economic integration with the European Union a violent crackdown by state security forces was sparked, which led to protests manifesting as an

armed conflict in Eastern Ukraine. While Mr. Yanukovich was stealing the “Ukrainian Dream” and murdering protestors in Kyiv, Putin reclaimed Crimea with the “wishful desire” to protect the rights of Russian citizens.

Russia’s denial of direct military involvement was shattered by their support for separatist forces in Eastern Ukraine which heightened ethnic divisions and motivated pro-Russian separatists in the Eastern Ukrainian regions of Donetsk and Luhansk who held their independence referendums. Sporadic armed conflict stirred international efforts, such as the Minsk Accords initiated in 2015, which aimed to ceasefire and restore Ukrainian control over the conflict zone. Meanwhile, NATO bolstered its presence in Eastern Europe to deter potential Russian aggression by deploying troops and conducting military exercises in the region. On a more individual level, countries-imposed sanctions to have a signaling effect on individuals and companies related to the conflict.

Entrenched interests in the Russia-Ukraine conflict determined the failing factors of the agreements and international efforts which hoped to bring about a lasting peace.

Initiated on February 24, 2022, Russia’s large-scale invasion of Ukraine stirred a significant shock to the global order. Vladimir Putin’s authorization of “special military operation” against Ukraine was a televised broadcast which aimed to demilitarize and denazify Ukraine, alleging genocide of Russians in Ukrainian territories.

### Water Weaponization as a Long-Standing Tradition

Environmental destruction as a strategic tool trace back to the traditional Russian idea of retreating to victory by “Scorched Earth” policy, which refers to the military tactic of destroying everything that enables the enemy to wage war. Russia historically has turned to its long-standing tradition of using Scorched Earth policies when faced with the challenges of failure in organization or leadership. Currently, Russia has moved on from scorched to flooded and radioactive earth, as dams and nuclear power plants have become the new target of destruction.

However, previously, the instances of Scorched Earth policies are traced back to Red Army troops deliberately rupturing the dam of the Dnieper Hydroelectric Station, located approximately 210 kilometers upstream from the present-day Nova Kakhovka dam in August 1941, when Nazi forces advanced towards Zaporizhyya during the German invasion of the Soviet Union. The special team carried out its secret mission of tearing a hole in the dam and temporarily cutting off part of the city from the invaders. The explosion occurred without warning to those in the flood's path, resulting in a tidal surge that killed thousands of unsuspecting civilians, as well as Red Army officers. The destruction of the dam reverberated across the USSR, symbolizing a significant blow to Soviet heavy industry.

Mikhail Pervukhin, overseeing the Soviet Union’s electric power stations, noted that the flooding was a strategic move to impede the enemy’s progress and cause significant damage to their forces and equipment, in other words, it was a successful manifestation of water weaponization practices. His notes retrieved from the diary stated that: “The explosion should be organized in such a way as not only to prevent the enemy from moving to the other shore but also to destroy as much of his equipment and manpower as possible”.

Occupying German forces attempted to repair the power station but ultimately resorted to blasting the dam themselves in 1943. Before the explosion Germans drained the water from the upper brief and they opted for the same methods as the Red Army in 1941 lowering the water level and then when the Soviet troops passed the outer defensive perimeter in the direction of Zaporizhyya, the Germans blew up part of the dam. After the consecutive explosions, the dam underwent a full restoration by 1950 and is now operated under private ownership. The similarities between the 1941 and 2023 assaults can be explained through the similarities between Stalin’s management and “Little Stalin’s” admiration of sending one’s men to the slaughter to achieve means of war.

## CONCLUSION

Water weaponization in Russia-Ukraine conflict turned into a war reveals a complex web of strategic maneuvering, geopolitical tensions, and humanitarian consequences. Evaluating the key water utilization instances through dam explosion case studies from 2014-2023 timeline, further pinpoints how water infrastructures can be turned into a powerful tool in the arsenal of modern warfare.

Such manner of deliberate actions targeting dams not only imposes immediate threats to civilian populations, infrastructure, and the environment but also acts as the means of coercion and geopolitical leverage. The water weaponization frequently used by both parties of the war has the ability to accelerate the conflicts mere: acceleration in this thesis was defined as the military advantage gained by the parties, which employed dam weaponization as the part of their military strategy. The case studies reflected on how dams as a warfare tool are calculated approach to gain military advantage, disrupt enemy operations and assert power over contested territories.

Despite the strategic nuances behind water utilization, Russia and Ukraine showed different approaches toward the military tactic. One (Russia) using water infrastructures as an offensive mechanism is more similar to Soviet warfare strategies such as “Scorched Earth Policy”, disregarding any consequences or inflicted harm on themselves as well; while another side (Ukraine) refers to water weaponization as a defensive mechanism towards the aggressor or even if it used as an offensive mechanism the inflicted harm on civilian population is minimized as much as possible.

Nevertheless, whether water weaponization was carried out “smartly” or “poorly” the research demonstrated that these tactics might have achieved successes, however, it is crucial to acknowledge that such actions can also backfire for the “weaponisor”, leading to long-term challenges for both parties. And thus, are not very strategic.

This finding should serve as a crucial message for the international arena that while water weaponry may initially accelerate conflict by providing tactical advantages, it also introduced impediments to further military operations. For the defending party, containing water becomes complicated mission, while offensive troops cannot advance on land or face the risk of losing their own water sources. Additionally, the aftermath of war, including the post-war reconstruction efforts is affected by the consequences of water (dam) weaponization (of course, this concern places as secondary matter compared to the imminent need of winning the war).

As showcased in this thesis the water weaponization comes with significant costs and unintended consequences, as visualized in the backfiring effect, population displacement, environmental degradation, and the costly post-war reconstruction efforts. Thus, the weaponization raises ethical, legal, and humanitarian concerns, highlighting the importance of upholding IHL principles and protecting civil populations and infrastructures. As the Russia-Ukraine conflict turned into a warfare, unfortunately, continues to unfold, it is crucial for international arena to prioritize de-escalation efforts and humanitarian assistance to mitigate the impacts of water weaponization through upholding human rights principles and have a hope for sustainable post-war reconstruction.

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