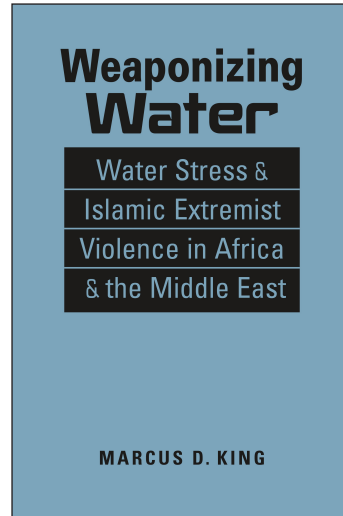


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**Weaponizing Water:
Water Stress and Islamic
Extremist Violence in
Africa and the Middle East**

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1

Water Stress and Violent Extremism

WATER CONDITIONS HAVE REACHED THE POINT OF CRISIS IN many parts of the world. The United Nations estimates that by 2025, 1.8 billion people will be living in areas of absolute water scarcity. Absolute scarcity occurs when there is an insufficient volumetric supply of water to sustain human life and the natural ecosystem simultaneously. It is calculated as a ratio of human water consumption to available water supply. *Volumetric availability* generally refers to the physical abundance of fresh or potable water rather than the availability of water used for other human needs such as sanitation.

Aside from scarcity, the UN projects that two-thirds of the world's population could be subject to *water stress*, which in this volume refers to volumetric supply scarcity and encompasses the equally important factors of inadequate water quality and accessibility,¹ that is, the ability of people to use physically available water supplies. Another way of looking at this is to ask whether water is economically exploitable by people living in areas adjacent to the resource. Economic water scarcity exists when there is lack of investment in water infrastructure, policies, and systems or when the population cannot afford to use such water resources. Lack of access to clean drinking water and lack of sanitation are two of the leading causes of human mortality. In 2018, the combination of these factors alone contributed to nearly 800,000 deaths. This number exceeds annual mortality associated with floods, droughts, or violent conflict.²

The overall health of the freshwater ecosystem must also be taken into account. Changes in conditions can affect environmental flows,

such as the natural filtration provided by wetlands and the movement of bodies of water that carry human waste.

A full understanding of all dimensions of water availability makes it clear that water stress is especially acute in the Middle East and parts of Africa. In Africa, stressed areas include the eastern “horn” of the continent and the Sahel, a band of territory that forms the climate zone between the arid areas of the northern continent and the more fertile southern regions. One factor that these regions have in common is that they experience chronically arid climate conditions and unpredictable, yet prevalent, periods of drought. The Eastern Mediterranean climate zone that encompasses Syria and Iraq shares similar characteristics.

Several parts of the Middle East and Africa additionally suffer from instability resulting from internal conflict, social inequities, and other factors. Compounding these underlying problems, the effects of climate change will further diminish regional food security and social stability. It is difficult to predict exactly how these natural events will unfold. Climate forecasts are hampered because their greenhouse gas (GHG) emissions scenarios rely on national regulatory and energy policies, which change with politics, rather than on natural changes alone. However, various regional models based on a range of scenarios agree that climate impacts on the arid parts of the Middle East and Africa will be negative on balance. Higher temperatures, more frequent droughts, and unpredictable variability in precipitation are outcomes anathema to the farming and animal husbandry that support food systems in these countries.

In terms of precipitation, the net result of changing temperatures, precipitation patterns, and evaporation is that most dry areas will become dryer and wet areas wetter. These effects are already apparent in the arid regions of the Sahel and the Horn of Africa. In the last thirty years, for example, the Horn of Africa, including Somalia, has experienced a persistent decline in rainfall during the primary rainy season, which occurs from March to May. In a region where the maize and sorghum food staples rely on dependable rainfall, lower rainfall has major negative consequences for food security. Crop production is now unable to meet demand on a perennial basis.³

Most of the African continent is projected to warm under all scenarios predicted by global climate models. Climate models predict that arid regions of the Horn of Africa, including Somalia, will have higher temperatures and extreme decreases in precipitation compared to both the global average and the rest of Africa.⁴

Climate change is also behind a steady decline in rainfall in many parts of the Middle East. An overall decline in precipitation in the

Mediterranean region from 1971 to 2010 has also been partially attributed to climate change.⁵ Extreme temperatures have rendered some areas nearly uninhabitable. In June 2017, the Iranian city of Ahvaz recorded a temperature of 127 degrees Fahrenheit. The heat index, which takes temperature and humidity into account, hit an incredible 142 degrees Fahrenheit, a level that can sustain human life for only a short period of time.⁶

Global climate projections suggest a significant intensification of summer heat extremes in the Middle East and North Africa (MENA), including Iraq, Somalia, and Syria. A study conducted in 2021 used a comprehensive ensemble of regional climate projections to examine temperature projections under what is known as a business as usual scenario. Business as usual is the assumption that global greenhouse gas emissions will continue to increase on essentially the same trajectory as they do today. The findings indicate that in the second half of this century unprecedented super- and ultra-extreme heat wave conditions, with temperatures as high as 132.8 degrees Fahrenheit, will emerge and about half of the MENA population, or approximately 600 million people, could be exposed to annual recurring heat waves for a number of weeks.⁷

Droughts in the Middle East are occurring more frequently, and they are also related to climate change. Writing in the *Proceedings of the National Academy of Sciences*, Colin Kelley and colleagues found that observed trends in precipitation and temperature in climate models strongly suggest that GHG emissions resulting in climate change have increased the probability of severe and persistent droughts in the Eastern Mediterranean region.⁸ This study concluded that a reoccurrence of a three-year drought in Syria as severe as that of 2007–2010, which triggered the events described in this volume, is two to three times more likely as a consequence of climate change.⁹

Taken together, the impacts of climate change on temperatures and precipitation will increase water stress in the Middle East and Africa. Water stress compounds food insecurity and reduces populations' resilience to other stressors, such as economic and social cleavages. These factors conflate in war-torn countries, and this volume investigates the correlation between water stress and conflict in the MENA and Africa.

Water Stress and Violent Extremist Organizations

An underlying purpose of this volume is to better understand how natural conditions, including climate trends, pose increasing risks to water

sources in the Middle East and Africa. The next question we will consider is how water stress has become associated with another growing trend that has recently swept across the region: the rise of violent Islamic extremism.

In 2016, as I first set out to answer how these two trends might be related, I pored over remote-sensing maps of the Middle East and Africa drawn from commercial satellite imagery. I was struck by the correlation between the spheres of influence of violent extremist organizations (VEOs) and the driest lands or areas of sparse vegetation in some of the most arid regions on earth. A quick check of reference sources showed that many of these areas where vegetation had been depleted were also under acute water stress measured by a host of other indicators, including lack of groundwater resources, and represented by the increasing impacts of global climate change.

Glancing at Syria and Iraq, I noted that the Islamic State (IS), which was at the height of its power at that time, had postured forces to maintain control of territory along the banks of the Tigris and Euphrates Rivers. Forces were also seemingly positioned to control key water infrastructure, mostly dams. Turning to Nigeria, I also noticed that the VEO Boko Haram was most active in the dry northeast of the country, including the troubled Lake Chad region. In the last few decades, Lake Chad has shrunk to a fraction of its original size primarily as a result of droughts brought on by a changing climate. I suspected that the proximity of VEOs and key water geographies and features in each country warranted further attention, which led me to one of the main questions addressed by this volume: Can connections between water geography, water stress, and violent extremism lead to a better understanding of the nature of modern warfare of the type increasingly perpetrated by VEOs?

Water Stress and the Spectrum of Conflict

Taking a step back, it is important to note that a growing number of scholars are exploring linkages between water stress and conflict. Many researchers attribute the outbreak of wars in MENA, such as the Syrian Civil War, at least in part to environmental causes. On the other end of the spectrum, copious literature also examines water's role in postconflict situations.

What sets this volume apart is that I concentrate on what occurs at the middle of the conflict spectrum—the stage of ongoing warfare. The coming chapters are concerned with VEOs' use of water as a tool of war-

fare during ongoing conflict. This phase of conflict is known as *jus in bello*. My intentions are to expand the water and conflict literature and to completely explore the role of water stress across the full spectrum of conflict: preconflict, ongoing conflict, and postconflict situations.

The question of whether water stress leads to conflict is asked often and usually not in a way that allows for nuance. It is valid to ask whether water stress fits anywhere along a conflict spectrum. The historical record tells us that the allocation of water among parties, especially nations, has actually most often been a vehicle for cooperation. In fact, there is near consensus among water analysts and scholars that water stress is unlikely to spark large-scale international violent conflict. So-called water wars have been long predicted by people ranging from Secretaries-General of the United Nations to the mainstream media; both proclaim on a regular basis that the next international war will be fought over water, and that the possibility lies just around the corner. Nevertheless, history tells us that these predictions have seldom, if ever, been realized.

Reflecting the concern with the possibility of a coming water war, the theme of water as an “urgent security issue” topped the agenda at the InterAction Council 29th Annual Plenary Meeting in Canada in 2011. This body, composed of thirty-seven former heads of state and governmental officials and convened in cooperation with the United Nations University, was designed to offer recommendations on long-term issues facing humankind. By the time of the 2011 conference, at least three Secretaries-General had weighed in on the issue. The first was Boutros Boutros-Ghali, who had famously said in 1985 that the next major war in the Middle East would be fought over water, not politics. This assertion was then echoed by UN Secretary-General Kofi Annan in 2001, who observed that water could be a source of conflict in the future. The next UN Secretary-General Ban Ki-moon added in 2007 that the consequences of a coming water war for humanity would be grave because water scarcity threatens economic and social gains.¹⁰

Although these predictions have not come to fruition, Dr. Fabrice Renaud, head of the Environmental Vulnerability and Energy Security Section of the United Nations University’s Bonn-based Institute for Environment and Human Security, and other experts at the high-level InterAction Council meeting concurred that the tradition of water cooperation could be tested. Aggravating factors would be the increasing tensions resulting from growing populations; urbanization; rising industrial, agricultural, and household demands; and the threat multiplier of

climate change as supplies of fossil water in underground aquifers, on which many countries rely, are exhausted.¹¹

Despite prognostications, an all-out water war between two nations seemingly remains a relatively distant prospect; as of yet, water has been a significant factor in conflicts between nations on discrete occasions. One was a series of confrontations between Israel and its Arab neighbors from November 1964 to May 1967. The flashpoint was control of scarce water resources in the Jordan River drainage basin. The trouble arose when the Arab states deprived Israel of water capacity by diverting the River Jordan's headwaters while Israel was diverting the water of Lake Tiberias and transferring it to its arid south. These actions led to border clashes between Syria and Israel.¹²

The Israeli military attacks against the river diversion effort are considered a factor that led to the Six-Day War in June 1967. Disputes over water allocation were important but certainly not the only factors that contributed to this conflict. Despite this counterexample, prominent water and conflict experts tend to agree that water stress in the context of shared waterways engenders cooperation, not violence, between nations.

The MENA have a limited number of shared watercourses, but there is still substantial historical empirical evidence to support water cooperation, sometimes on a subnational basis.¹³ On balance, positive interactions between nation-states around water sharing have taken place formally and informally since at least the time of the ancient Mesopotamian civilization 2,500 years ago. Biblical narratives in the Christian tradition also support water cooperation involving state actors. One of the earliest stories in the Bible describes a peaceful resolution between Abraham and the Philistines over the rights to a well.

But what has become apparent recently is that the dynamic may have changed. As water scarcity increases, cooperation has decreased and the volume of localized violence around water resources has increased but remains diffuse, less publicized, and harder to quantify. It is probable, then, that experts are chronically underestimating the extent to which water stress is already contributing to local conflict in the Middle East and Africa.

Since the late 1990s, both intrastate and interstate clashes that feature water as a potential cause of conflict have soared, according to the authoritative World Water Conflict Chronology maintained by the Pacific Institute.¹⁴ This database reveals that the number of intrastate conflictual events has been about four to five times greater than the number of interstate conflictual events, numbering an average of thirty to forty incidents per year over the past decade.¹⁵

Peter Schwartzstein, a noted environmental journalist and expert on MENA, explains that in this region, there can be more incentive to violence around water issues among individual communities. It is easier for smaller communities, especially agricultural communities dependent on water, to come to blows than it is for nation-states to mobilize and execute a war. Only the most well-prepared and well-armed nations have the military power to deal with the presumed massive retaliatory repercussions of pilfering large quantities of water from their neighbors. Therefore, a type of conflict deterrence prevails and the options for waging and winning international conflicts over water are limited to Pyrrhic victories.

Deterrence is not a factor, as Schwartzstein observes, at a local level, where resources can be more easily secured or stolen and where the balance of power can be much more fluid than it is among nation-states.¹⁶ Tensions are rising among water users as non-state actors and civil societies oppose one another and the central government over inequitable water allocation. Ethnic and communal groups, such as opposing tribes, compete violently for dwindling water supplies in pastoral settings such as the Nigerian Sahel. However, it is important to note that many forms of action short of war are possible. Instead of physical violence, the panoply of conflict avoidance strategies includes debate, linguistic aggression, demonstrations, migration, and elimination of the sources of environmental degradation of water supplies through such means as investment in climate adaptation programs.

A large body of academic environmental peacebuilding literature casts water as a positive vehicle of cooperation. This situates a role for water squarely on the tail end of the conflict spectrum. Indeed, in ideal situations, discussions over environmental scarcity issues have been proven to facilitate peace by strengthening social cohesion around the realization of common needs. In these cases, skilled mediators have an opportunity to convene stakeholders who have been or would otherwise be belligerents to discuss the common cause of mutually beneficial access to water.

Cooperation thus becomes an iterative process that gains momentum. This dynamic also presents opportunities for the parties to discuss issues that are adjacent to environmental degradation such as those that pertain to the roots of the larger conflict. The idea of environmental cooperation then takes on more expansive significance. It does not signal that there is an absolute absence of conflict, but it demonstrates that there is at least a mutual will to address water challenges through communicative means.¹⁷

It is well documented that conversations about the equitable sharing of water have taken place even among countries that are otherwise at war with each other. In the Middle East, many water conflicts have erupted between Israel and one or more of its neighbors. The Jordan River flows between five particularly contentious riparian states, two of which rely on the river as their primary water supply. This situation led to the so-called picnic table talks that started in 1953 between the Jordanians and Israelis about water flow rates and allocations at the confluence of the Jordan and Yarmuk Rivers. The two countries had deep disagreements over coordinating allocation of the Jordan River basin's waters. The picnic table talks, held in secret, were known as track-two negotiations because they were conducted by hydrological experts, not professional diplomats.¹⁸ The parties met sometimes as often as every two weeks during the summer months and the talks carried on despite the fact that the two nations were officially at war from 1948 until 1994, when a formal peace treaty was signed.

Similarly, the Mekong Committee, established by Cambodia, Laos, Thailand, and Vietnam in 1957, exchanged data and information on the Mekong River basin throughout the major disruption of the Vietnam War.¹⁹ Although the political conditions in the region have changed dramatically, with China acting in a hegemonic role controlling the flow of the river system, cooperation established by this organization continues to this day in the form of the Mekong River Commission.

Overall, mutual development of water technologies and solutions are increasingly viewed as strategic opportunities to facilitate discussion among adversaries. This provides rationale for including water development as part of a liberal internationalist peacebuilding agenda, which has as its goal strengthening global institutions and state-building capacity.²⁰ Such actions are referred to as hydro-diplomacy.

Again we find that environmental peacebuilding around water issues prevails predominately at an interstate level. Sadly, none of the conflicts involving violent extremism chronicled in this volume has reached a stable peace or a situation that negotiators refer to as ripe for negotiation to test the capacity of environmental peacebuilding. There is little evidence that the VEOs in these cases are willing to negotiate on any issue with national governments.

It is also important to understand that water cooperation may exist in situations where violence is still pervasive. Marwa Daoudy provides examples in Syria and Iraq, two parties that are weaponizing water but that can cooperate as a strategy of domination. She documents how IS and the Syrian government colluded to weaponize water against other parties, including the Kurds, in the complex civil war in that area. In this

way, both cooperation and domination become integral to weaponization.²¹ The tension between the definitions of cooperation and conflict in the setting of Iraq and Syria is very nuanced and this topic certainly warrants further scholarly attention to test its validity in other settings.

As of 2021, among the cases in this volume, Iraq has been the most free of extremist violence given that the Islamic State has been suppressed if not defeated outright, whereas al-Shabaab and Boko Haram are still launching offensives regularly. However, it is notable that in Iraq water stress still factors into political instability because of shortages in both quality and quantity of the water in the Tigris and Euphrates system.

In the context of cooperation events outnumbering conflict events on the interstate level and of the idea of cooperation itself being nuanced, the following chapters explore ongoing large-scale violence, not between national governments, where little evidence of confrontation exists, but between national governments' substate actors, primarily VEOs. Therefore, I give some attention to the proto-state of Iraqi Kurdistan in the case study of Syria and Iraq. Subnational conflict is the most prevalent form of conflict today; it can be equally disruptive to society as are larger wars and can also result in significant numbers of deaths on the battlefield.

Although there is no clear precedent of an all-out water war in geographies where water resources must be shared across borders, international tensions over access to water have always existed. In fact, the word *rivalry* is derived from the Latin word *rivalus*, meaning "he who shares a river with another." Water conflict analysis in the literature tends to focus on allocation of shared water courses, such as river basins. But the MENA countries examined in this volume only sometimes rely on water from river basins. Some large cities in Iraq, for example, depend on the waters of the Tigris and Euphrates Rivers, but inhabitants of Nigeria, Somalia, and many areas of Syria and Iraq instead rely on rainfall harvesting and groundwater aquifers as primary sources of potable water. Therefore, rather than focusing on shared river basins, this volume takes a different analytic approach by focusing on water balances and ecosystems within states. Although the nations under study do not share disputed water with their neighbors, trans-boundary droughts are a common experience.

Water Stress and the Environment–Conflict Thesis

Starting in the early 1990s, scholars developed a copious literature interrogating the connections between the environment, including degradation

and climate change, and conflict through various lenses. It has become an important, if not essential, topic in the emerging field of environmental security. This work was initially based on a series of country case studies by Professor Thomas Homer-Dixon, then at the University of Toronto, in his groundbreaking 1994 book entitled *Environmental Scarcity and Violence*. Homer-Dixon put forward what has now become widely known as the environment–conflict thesis. Scholars of this early environmental security literature were preoccupied with theoretical proof of the connections between scarcity and conflict that are the lived reality of people who are both victims and perpetrators of violence. Attempts by academics to clearly identify and isolate causative factors of violence resulting from climate change, including the increasing prevalence and frequency of drought, have led to a cacophony of results.

Historical evidence suggests that the environment is just one component of a larger, complex web of causality that interacts with a number of alternative cultural, political, and social variables. As a consequence of this complexity, it is credibly theorized that no conflict can be exclusively environmentally *driven*; rather, violence is environmentally induced when ecological factors combine with a number of other factors to create a structure that allows for an escalation into conflict.²²

Factors that must be considered are the existence of underlying social and ethnic cleavages within a society and sudden onset shocks. In 2016, researchers conducted a global study of the intersection of climate change and conflict and concluded that the “risk of armed-conflict outbreak is enhanced by climate related disaster occurrence in ethnically fractionalized countries.”²³

In recent years, political scientists and others have taken increasingly quantitative approaches to understanding the environment–conflict nexus. In a groundbreaking study, one research team drew from several disciplines to perform a global meta-analysis of sixty quantitative studies on human conflict and to situate them in the context of climate-related events. The researchers assessed a wide scope of conflict, ranging from individual-level and household domestic violence to wars in which countries were the primary belligerents. They found a strong correlation between climate-related events and internal wars, such as those treated in this volume. With each standard deviation of change in the climate toward warmer average temperatures and more extreme rainfall, the median frequency of intergroup internal conflict—that is, civil war—rises by 14 percent.²⁴ The droughts that occurred between 2011 and 2017 are the geophysical focus of this volume, but they are not the only aspect of the climate that carries strong implications for water stress. Interest-

ingly, water stress can also be caused by too much water, when crops are drowned, sewers overrun, and flooding pollutes potable supplies of surface waters. Through the spread of disease, flooding has consequences for human health and food security.

Critics point to the ambition and scope of the meta-analysis, saying the study covers a too wide range of conflict and climatic events and spatial scales, from single municipalities to countries to the entire world.²⁵ This line of criticism provided the inspiration for this author to examine individual case studies using less variability in climate change impacts—drought is a constant factor. The case studies herein are limited to nations where VEOs engaged in civil wars primarily within a closed national political system.

Social science in general and the environmental security field specifically have moved beyond the narrow argument of the environment–conflict thesis. Scholars have long observed a correlation between natural resource scarcity coupled with abundance of certain types of resources, such as mineral or alluvial (e.g., surface diamonds), and the initiation of internal conflict by insurgents.²⁶ Most prominent is the greed and grievance theory based on a study by Paul Collier and Anke Hoefler that identified a set of recurring variables related to natural resources in large-scale conflict.²⁷ The theory centers on the predation of natural resources by national governments and rebels. In these situations, natural resources can clearly influence the incidence, duration, and intensity of conflicts, according to their research. Greed and grievance theory is primarily concerned with nonrenewable resources, such as oil and diamonds, which are characterized as easily looted, so it is unclear whether Collier and Hoefler’s theory can be applied to water.

In most situations, water is not lootable or concealable. The greed and grievance theory is especially inapplicable to surface waters, although an argument could be made for single-point water sources, such as individual wells. Also, oil and diamonds provide more reliable support to war economies because of their substitutability for cash payments, a characteristic Collier describes as “fungibility.” Although water is not its focus, the study finds that 40 percent of all intrastate conflicts in the past six decades involved disputes over limited natural resources.²⁸

The theory of eco-violence argues that environmental scarcity is linked to violent conflict and that this linkage will become more prominent over time. This theory can be traced to Thomas Homer-Dixon, who also examined the role of diminished quality and quantity of natural resources in conflict using case studies from over twenty ongoing conflicts.

As mentioned, Homer-Dixon's focus was on nonrenewable resources. My argument here is that natural resource scarcity or abundance coupled with poor resource management and societal cleavages like ethnic or communal differences can ignite a competitive quest for resources in the form of insurgency against the government or civil war.²⁹ Water is often considered a renewable resource, although scarcity is challenging this definition in many parts of the world. Though it might not fit neatly into the eco-violence paradigm as established by Homer-Dixon and Collier, less attention has been paid to the fact that water used in manufacturing processes is necessary to sustain an industrial war economy. Factories that supply war materials often run on hydroelectric power and water is necessary for cooling in all types of utility-scale electricity production.

Homer-Dixon, like many other scholars in the field of environmental security, was not convinced that water would be a cause of interstate wars. His framework allows for only a narrow range of situations that would facilitate a water war between nations, such as when a nation that is upriver in a shared river basin is perceived to be hoarding water or unilaterally constructs a dam, but the downstream or lower-riparian nation has a stronger military. This is currently the case with the impending completion of the Grand Ethiopian Renaissance Dam on the upper Blue Nile. The Nile River supplies over 95 percent of Egypt's water, and Egypt, with its superior military, has on more than one occasion threatened to strike the dam. There is also evidence that Egypt has supported insurgents in destabilizing the government of Sudan, which is the intermediary nation on the Nile River system and could conspire with Ethiopia to restrict water flow. More research is necessary to fully understand how this theory of conflict between riparian parties operates at the subnational level.

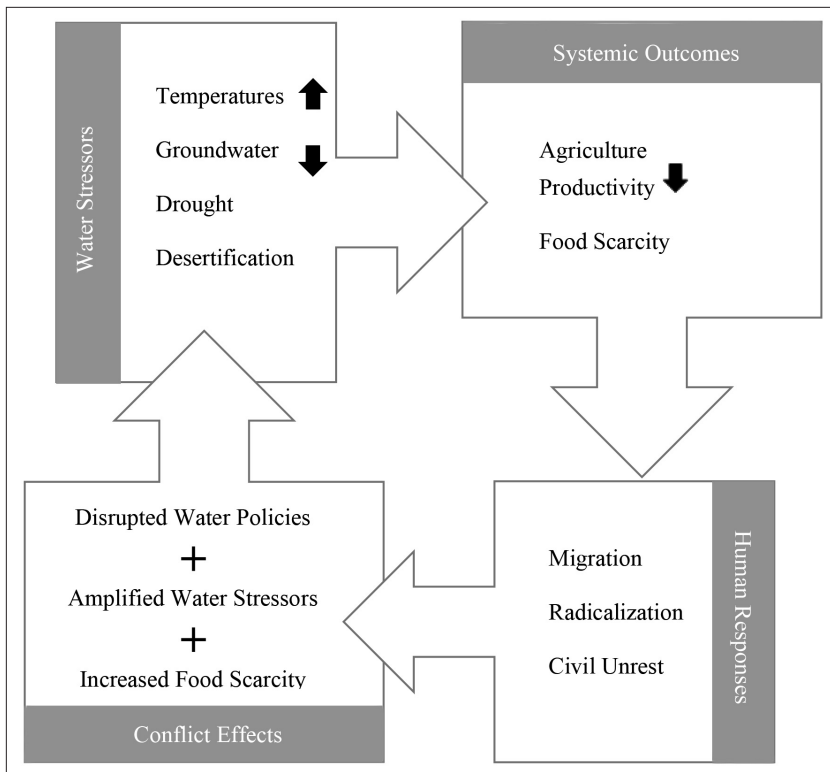
The Water Stress and Conflict Cycle

The cases in this volume argue that water stress is indeed one driver of conflict, although other variables certainly exist. Furthermore, within Iraq and Syria, Nigeria, and Somalia, the relationship between water stress and conflict can best be understood as a cycle. The cycle in each case is distinct and sometimes it is more easily discerned than in other countries, but there are striking similarities among the variables in the conflict cycles so that a generic pattern can be recognized. For example, in each case migration is a catalyst for instability. Any attempt to fully capture the water stress and conflict dynamics in a simplistic manner,

such as in Figure 1.1, is difficult. However, this cyclic approach can be useful for providing a basic illustration of a complex reality and a basis for further analysis in the case studies.

As illustrated in Figure 1.1, the cycle begins with ecological changes, including climate change and droughts that may lead to increased water stress. Precipitation changes, elevated temperatures, and floods are typical indicators. Delineating the underlying conditions of water stress in a country illuminates the systemic and conflict outcomes visible in the next stages of the cycle because the reasons for water stress elucidate a country’s political economy of water access and distribution. The next stage illustrates how water stressors influence these systems that affect human existence. These systems may regulate agriculture, health, or energy production. For example, depleted wheat harvests due to drought led to a breakdown in farming, producing lower agricultural yields and

Figure 1.1 A Representative Water Stress and Conflict Cycle



diminished food security in Syria prior to the outbreak of civil war. The next step shows how humans ultimately respond to the systemic outcomes of water stress. In every case, these responses include internal or out-migration. Radicalization, including adherence to Islamic extremism, and civil unrest are also possible outcomes. In some cases, governments have the opportunity to understand the predicament and make genuine albeit last-minute adjustments to water policies in a desperate attempt to control the negative consequences of water-induced problems before they reach crisis proportions.

However, even if there is a political appetite and a legitimate will to improve living conditions for all people, a national government's options may be curtailed by limited finances. As the following chapters demonstrate, successful policy interventions often require functional, transparent, and well-informed governments. None of the national governments detailed in this volume consistently reach that standard. Migration and the absence of effective governance facilitate a resort to violence perpetrated by citizens who are aggrieved by the situation. Grievance can manifest in various ways, including internal or cross-boundary migration. In all cases, as its water crisis worsens, a country becomes more unstable and violent and the national government loses effective control so that improved water policy implementation becomes impossible. Conflict itself interrupts the implementation of water policies, amplifies water stressors, and erodes the systems that support human security.

Water Weaponization

The concept of environmental terrorism, from which the concept of water weaponization is largely derived, is not new by any standard. In 2001, Elizabeth Chalecki broke ground by defining environmental terrorism as the unlawful use of force against in situ environmental resources so as to deprive populations of their benefit(s) and/or to destroy other property. She made the useful distinction between two types of environmental terrorism: resource-as-tool terrorism and resource-as-target terrorism. Chalecki notes that, under this framework, water can fit into both categories.³⁰

Some hint of how water weaponization, an understudied concept, would play in international power dynamics was also foreseen in a 2012 US Intelligence Community Assessment on global water security. The assessment presciently judged that the use of water as a weapon would

become more common during the next ten years—taking us just about up to the present—not only on the subnational level but also between states as powerful upstream nations impede or cut off downstream flow. More to the point of this volume, the intelligence report also predicted that water will be used within states to “pressure populations and suppress separatist elements.”³¹

Today, it is clear—as it has probably always been—that states with relatively greater water resources exercise strategic advantage, or what has been called hydrohegemony, over their neighbors that occupy inferior downstream positions in riparian river systems.³² These so-called hegemonies have not yet fully weaponized water in a lethal sense, according to the criteria established in this volume and elsewhere, but they have employed water resources as very distinct and sometimes painful leverage over neighboring states.

For example, the Tigris and Euphrates Rivers originate in Turkey and then flow through Syria and Iraq. Turkey is a nation that has long used its position as the upper riparian to its political advantage, especially when dealing with issues relating to either neighboring nation’s support of Kurdish separatism. In this volume, I argue that instead of deployment for the somewhat blunt goal of geopolitical leverage, the water weapon is already being used in a more tangible and deadly manner by VEOs in the Middle East and Africa.

It is useful to reflect on the commonly understood meaning of *weapon*. At its most basic, a weapon is a means of gaining advantage over or defending against an adversary in a conflict or contest. Wielded by a nation or a group, a weapon can take the form of an item, action, or offensive capability used or intended to kill, injure, or coerce.³³ In this volume, I classify water weaponization into six categories related to this basic definition: strategic weaponization, tactical weaponization, coercive weaponization, and water used as an instrument of psychological terror, extortion, or incentivization. A seventh category is unintentional weaponization (see Table 1.1). The intent of the perpetrator, including whether for political or military advantage, is also an important consideration. These categories are not necessarily mutually exclusive. For example, a water weapon may be deployed tactically but with the intent of coercion. The case studies will demonstrate this clearly.

Strategic Weaponization

A strategic weapons system is designed to strike an enemy at the source of military, economic, or political power.³⁴ Strategy is widely considered

Table 1.1 The Categories of Water Weaponization

Strategic	Tactical	Coercive	Unintentional	Instrument of Psychological Terror	Instrument of Extortion or Incentivization
The use of water to destroy large or important areas, targets, populations, or infrastructure	The use of water against targets of strictly military value within the battlespace	The use of water provision to fund territorial administration or weapons acquisition with aspirations of achieving legitimacy	Attempted water weaponization causes collateral damage to the environment or its human component	The use of the threat of denial of access or purposeful contamination of the water supply to create fear among noncombatants	The use of water provision to reward the behavior of subject populations and support legitimacy of the perpetrator

to be the highest level of battle. This classification system envisions two dimensions of strategic water weaponization. First is the use of water for a spectacular purpose, which might include control of large or important land areas, cities, or facilities on an actual or virtual level. The threat of inundation alone can be sufficient to gain virtual control of an area, including by denying access to the enemy. Second is the use of rent collected from a subjugated population for water provision as an asset to fund VEO activities, including payment of officials' salaries or purchase of weapons. Water can become a conflict commodity, according to Collier, or, literally, a liquid asset. In these cases, water weaponization can be seen as a coercive act. Actions that target or destroy large population centers or strike at the opponent's industrial base or critical infrastructure certainly qualify as strategic weaponization.

Tactical Weaponization

The most clear-cut example of tactical weaponization is when water is employed against targets of strictly military value within a confined battlespace. In these situations, water is the medium of violence itself generally but not exclusively on the battlefield. Targeting enemy positions or military formations by destroying dikes or levees with the aim of deluging them with water is an example of tactical weaponization. In some cases, combatants seek to deny water supply to enemy forces by destroying wells or other water infrastructure. Finally, the use of water cannons to control violent crowds is an example of tactical weaponization in a noncombat situation, but this use is not relevant to the cases in this book.

Coercive Weaponization and Instrument of Terror, Extortion

Water used entirely for terrorism is another possibility. Any category of water weaponization can be classified as terrorism depending on the perpetrator's intent. Water, especially water in small wells rather than lakes and rivers, is universally accessible, somewhat fungible, and a weapon that is easily exploitable by terrorists. The mere threat of denial of access or purposeful contamination of the water supply can have a larger demonstration effect consistent with the ends of terrorism. In an effect closely tied to strategic weaponization, water use for terrorist purposes can reverberate and create fear among noncombatants disproportionate to the terrorist organization's actual area of operations or control.

On the other side on the coin, water can be used as an instrument of extortion or coercion. In what can popularly be described as a good cop, bad cop routine, terrorist organizations pose as modern-day Robin Hoods, stealing from the rich and giving to the poor. VEOs might offer to meet poor people's basic needs where the federal government is ineffective in doing so, possibly as a result of the instability that the insurgency itself has caused. When VEOs act as gangsters, also known as water mafias, steady water provision to the subjugated population becomes a reward for loyalty. Water might be provided to populations under terrorists' direct control to create legitimacy for VEOs that are seeking to build Islamic caliphates.

Unintentional Weaponization

This research also reveals that attempts to deploy the water weapon in a strategic or tactical way can sometimes backfire because water can be a very blunt weapon. This falls into the category of unintentional weaponization, where the perpetrator's initiation of the act is intentional, but the outcome is not. This situation might be akin to manslaughter rather than murder under a Western legal system. Once waters are released with aggressive intentions, the resulting floods can be difficult if not impossible to control. It is also easy to imagine situations in which it would be impossible for a militant group to deny water to some percentage of the population that opposes them, but not to support others after the deliberate destruction of water infrastructure and systems. When the water weapon backfires, food insecurity and famine may follow in its wake. The cases of Somalia and Nigeria illustrate this point.

Using the Water Weapon

All of the VEOs addressed in this volume have used the water weapon. Some of the national governments that combat these organizations have resorted to its use to a small extent during the time period described in the case studies. This discrepancy is interesting, and I posit that states are bound by norms of modern warfare that are ignored by VEOs.

However, this volume argues that the systematic and comprehensive use of the water weapon by the belligerents in the civil war in Syria and Iraq from 2012 to 2015 exceeds prior use by any nation or subnational group and it is unprecedented in modern conflict in many ways. Compared with smaller extremist organizations, the Islamic State was

the main perpetrator taking advantage of all categories of the water weapon. In contrast, al-Shabaab in Somalia and Boko Haram in Nigeria wielded the weapon more selectively and less frequently. Their use of the weapon was constrained, to a certain extent, by ecological and tactical limitations, not the least of which was their relative inability to hold territory. It is a general lesson of history that terrorist and guerilla groups are poor at establishing durable governance structures. In any case, al-Shabaab and Boko Haram did not govern territory as effectively as IS because it was not their intention to do so based on their political aims and doctrine.

There are historical examples of limited use of water as a weapon by nation-states in conflicts, but scant evidence of its use by subnational actors until today. Still, something can be learned from a brief review of how nations have employed the water weapon and how these strategies and tactics may have provided ideas and inspiration to the VEOs waging war in the Middle East and Africa. Modern nation-states' use of the water weapon involves attacks on infrastructure and can be traced back to the seventeenth century and the Franco-Dutch War. In 1672, Louis XIV started the war, and the French overran the Netherlands. In defense, the Dutch opened their dikes and flooded the country, creating a watery barrier that was virtually impenetrable.³⁵

Centuries later, during the Second Sino-Japanese War in 1938, Chinese forces destroyed the Huayuankow Dike on the Yellow River. Several thousand invading Japanese soldiers were washed away, and their advance was stemmed. However, as is often the case with the water weapon, the unintentional result was major floods that damaged parts of three Chinese provinces and destroyed several million hectares of farmland. The human death toll from the incident was also extraordinary. Several towns and cities were inundated, and hundreds of thousands of Chinese people drowned. Millions were left homeless. Not easily found in the historical record, this incident is nonetheless likely to have been the most destructive act of water weaponization ever recorded.³⁶

The next decade saw a more notorious and more successful usage of strategic water weaponization by Allied forces in May 1943. During the Second World War, Allied air strikes destroyed two dams in Germany's Ruhr Valley that were impounding a massive 130 million and 200 million cubic meters of water, respectively, dealing a strong blow to Germany's military-industrial capability. Over a hundred factories were damaged. Bridges, coal mines, and farms were lost along with at least 1,300 German citizens' lives. This figure does not include the large number of enslaved workers who also perished in the attack.³⁷

The Korean Conflict was the next chapter in water weaponization, when use of the water weapon was more intrinsic. In 1952, US and allied forces strategically bombed dams in North Korea, an approach that some consider one of the more important aspects of the air war.³⁸ Successful allied attacks on North Korea's Sui-ho Dam on the Yalu River caused electricity outages in North Korea and parts of Chinese Manchuria for two weeks. The goal of this bombardment was to cut off the flow of hydroelectric power. The situation would have been more morally troublesome and more relevant to this book if the allies had intended to release the dammed water to wipe out soldiers or civilians, but because this was not their intent, significant political repercussions were lacking. Rather than applauding the restraint demonstrated, given the laws of war that renounce the water weapon, some US members of Congress complained that such successful actions had not been initiated earlier.³⁹ However, it was during the Korean Conflict that an international consensus around this indiscriminate form of warfare began to form consistent with coalition actions against the North Koreans.

Subsequent US strategic offensives against Vietnam served only to solidify the global consensus that clashed with US war-fighting strategy.⁴⁰ In 1966, as part of Operation Rolling Thunder, the US Department of Defense entertained the idea of breaching Vietnamese dikes, which had existed for centuries, in the high monsoon period to flood crops and so induce a food crisis. President Lyndon Johnson shut down the idea for fear that the North Vietnamese would exploit the situation for propaganda purposes.⁴¹

In subsequent years, as the war ground on, the morality of the decision to breach the dikes was the subject of vigorous debate between President Richard Nixon and his closest advisers, including Secretary of State Henry Kissinger. Nixon considered the strategic use of the water weapon as an option alongside the use of nuclear weapons. The question of whether the United States intentionally bombed dikes in Vietnam is still debated. The legal arguments against targeting civilian infrastructure during wartime were also mounting, as will be discussed in the next section.

It is notable that the United States established a cloud-seeding program during the Vietnam War, which broadly is considered meteorological warfare and more narrowly could be considered a type of water weaponization. Cloud seeding, or treating clouds with chemicals to induce rain, was conducted under Operation Popeye in 1967–1972. It was a highly secret attempt to extend the length of the monsoon season

over the Ho Chi Minh Trail to soften the roads and create landslides that would make it impassable. The cloud-seeding technique may have been used widely in South Vietnam as well. The cloudbanks were also intended to obfuscate fire from anti-aircraft batteries to protect US bombing missions.⁴²

Legal and Theological Constraints

Water weaponization violates international law as well as moral and religious norms. Use of the water weapon is a clear violation of the international body of law regulating armed conflict, and its use by Islamic extremist organizations is also problematic for a variety of reasons particular to Abrahamic faith traditions.

Charlotte Grech-Madin of Uppsala University identified the evolution of a water (weaponization) taboo that prescribes national military strategies. She asserts that at one time water was a standard weapon in conflicts between nation-states (including as recently as the Korean War), but the latter half of the twentieth century witnessed a remarkable strengthening of state consciousness against weaponizing water in conflict.⁴³

Given Katzenstein's definition of norms as the "collective expectations for the proper behavior of actors with a given identity,"⁴⁴ Grech-Madin provides a convincing argument that a normative water taboo has evolved since World War II and that it rules out the use of water as a weapon in a range of conflicts since that time when it may have been strategically beneficial. However, she notes that there are limits to this taboo, especially in its application beyond international conflict.⁴⁵

International Law

In 1863, US president Abraham Lincoln enacted the Lieber Code, also known as military General Orders No. 100, designed to regulate the actions of federal troops against opposing Confederate forces during the US Civil War. Widely held to be the first comprehensive codified law of war, it set out provisions for the ethical conduct of war, including protections for civilians and civilian property—defined in a sufficiently expansive way to include water infrastructure—and prohibited the use of poison. The code stated that use of poison in any manner, "be it to poison wells, or food, or arms, is wholly excluded from modern warfare."⁴⁶

The Hague Conventions of 1899 and 1907 were the first multilateral treaties regulating the conduct of war and were largely based on the Lieber Code. The Hague Convention of 1899, with respect to the Laws and Customs of War on Land, as confirmed in 1907, also outlawed the use of poisons, looting of a town or place, and the bombardment of undefended towns. Article 25 of The Hague declarations of 1907 protects basic infrastructure such as water systems, undefended towns, villages, dwellings, and buildings. The vast majority of sovereign states at that time were party to these conventions.⁴⁷

After the Second World War, the international community undertook new efforts to regulate armed conflict with some regard to water and infrastructure. The Fourth Geneva Convention of 1949 prohibits the destruction of property not justified by military necessity. However, the clearest international legal instrument against the use of water in wartime comes from the Additional Protocols of the Geneva Convention.

Protocol II, Article 49 (dated 1977), relates to the Protection of Victims of International Armed Conflicts:

Starvation of civilians as a method of combat is prohibited. It is therefore prohibited to attack, destroy, remove or render useless, for that purpose, objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works.⁴⁸

Within the body of the conventions, Article 56 (Protocol I, 1977) is the most directly relevant to water weaponization, even unintentional:

Works or installations containing dangerous forces, namely dams, and dikes, and nuclear electrical generating stations shall not be made the object of attack, even when these objects are military objectives, if such an attack may cause the release of dangerous forces and consequent severe losses among the civilian populations.

In the wake of the Vietnam War, the UN convened the Global Conference on the Human Environment in Stockholm in 1972. Above all, the aim of this conference was to protect and improve the environment for present and future generations. The 1972 Stockholm Declaration presented a common outlook for the environment based on preventing harm to natural resources expressly, including flora, fauna, and water. The declaration served as an early articulation of the concept of sustainability that later became an established principle of international customary law.⁴⁹

Inspired partially by US military actions such as the meteorological warfare characterized by Operation Popeye, the international Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques (ENMOD) was opened for signatories on December 10, 1976. In Article I, the convention prohibits the contracting parties from engaging in “military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.”⁵⁰

Within the ENMOD treaty, the term *environmental modification technique* refers to “any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.” Water poisoning along with “interference with the hydrological balance” is prohibited.⁵¹

The convention has seventy-eight signatories. Therefore, its provisions only carry the force of customary international law with regard to regulating the actions of signatories. It is notable that, except for Syria, none of the state-level belligerents discussed in this volume, including the United States (as a combatant actor in some form in Iraq and Syria, Nigeria and Somalia), initially ratified the ENMOD treaty. However, Iraq, Syria, and Turkey are signatories as of 1977.⁵²

At its Madrid Conference in 1976, the International Law Association (ILA) adopted the Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict (Madrid Rules). These rules offer guidelines for protecting water to ensure that human consumption is protected. The resolution declares that water diversion, flooding, and poisoning, along with “interference with the hydrological balance,” are prohibited.⁵³

The ILA is an international nongovernmental organization founded for “the study, clarification and development of international law, both public and private, and the furtherance of international understanding and respect for international law.”⁵⁴ Its long-established history and consultative status provide it the legitimacy to create guidance on water-related issues and make decrees. The ILA addresses the contamination of water, water as a target by militant organizations, and the overall protection of water and water installations, dams, dikes, and occupied territories and renders illegal any action that would cause disproportionate civilian suffering according to international law. Ultimately, the organization’s focus remains on protecting civilians and it has prohibited the destruction or diversion of water

that causes disproportionate suffering to civilians. The prolonged attention on international water law is a testimony to the complexity of the problems involved and the undeveloped state of this branch of the law.⁵⁵

The actions of the Geneva Water Hub represent the most recent attempts to regulate the abuse of water and related infrastructure, including water weaponization. In 2015, fifteen countries⁵⁶ co-convened the Global High-Level Panel on Water and Peace with the task of developing a set of proposals aimed at strengthening the global framework to prevent and resolve water-related conflicts and facilitate the use of water as an important factor of building peace and enhancing the relevance of water issues in national and global policymaking.⁵⁷

In July 2019, the panel endorsed twenty-eight draft principles on environmental protection in conflict.⁵⁸ The *Geneva List of Principles on the Protection of Water Infrastructure* expressly prohibits the deliberate destruction of water infrastructure. The panel members consulted existing laws of war, human rights law, water law, and environmental law to clarify the legal state of the environment in conflict.⁵⁹ The group cooperated with United Nations organizations such as UN Environment and UNICEF. Although, again, this declaration amounts to what is called soft international law, analysts and policymakers in the fields of development and water security are hopeful that implementation of these principles will further strengthen international prohibitions against weaponizing water.⁶⁰ This latest effort to prohibit the abuse of water is especially important. As water stress increases in the Middle East and Africa, the need for the community of nations to craft international legal responses will only grow more acute.

In cases where water weaponization is clearly considered to be a war crime or a crime against humanity and therefore a terrorist act, the United Nations and some regional and subregional organizations that enforce international criminal law may be relevant actors. They can provide the means to prosecute individuals who committed or ordered the weaponization of water. The mandate and law-making powers of international criminal enforcement organizations vary considerably. Some, such as the International Criminal Court (ICC) based in The Hague, Netherlands, have extensive legislative and supranational authority.

In 1998, the Statute of the International Criminal Court adopted in Rome led to the establishment of the International Criminal Court. The ICC Statute does not provide jurisdiction for prosecuting an offense of “terrorism,” which describes many acts of water weaponization, but the ICC may prosecute terrorist acts if they amount to war crimes, crimes

against humanity, or genocide within the definition provided in the statute.⁶¹ The ICC is the only organization that has the power to, as it is politely described, “obtain individuals abroad” for purposes of putting them on trial. The other bodies possess only the power to adopt non-binding recommendations. Although this is the case, the ICC lacks universal territorial jurisdiction and may only investigate and prosecute crimes committed within member states, crimes committed by nationals of member states, and crimes in situations referred to the court by the UN Security Council.⁶² A brief review of the cases of the forty-five leaders who have been indicted by the court for these crimes against humanity does not indicate that water weaponization has ever been among the counts of the indictment.

The UN Security Council also has the power to create ad hoc tribunals under Chapter VII of the UN charter, for crimes against humanity. These tribunals were established in the war in the former Yugoslavia in 1993 and the Rwandan genocide of 1994. Other tribunals tasked with adjudicating cases of war crimes, crimes against humanity, and genocide have been created, so it is also possible that water weaponization could fall within the scope of the crimes prosecuted by such tribunals. Again, there is no evidence that this has yet been the case.

Finally, at the most granular level of legal options, authorities have the power to prosecute individual terrorists who perpetrate acts of water weaponization under the national and local criminal laws. Governments that have territorial jurisdiction over such acts can bring charges for murder or even destruction of property, so terrorism need not be an explicit factor. Globally, it is unclear how often local criminal law has been used to regulate armed conflict under any circumstance let alone in relation to water weaponization.

Water and International Human Rights Law

Denial of water to an individual is a basic human security violation. Accordingly, the human right to water and sanitation (HRWS) has been recognized in international law through human rights treaties and UN resolutions. Most prominently, the right is stipulated in the International Covenant on Economic, Social and Cultural Rights (ICESCR), which is binding under international law.⁶³ The ICESCR recognizes the right of every human being to have access to sufficient water for personal and domestic uses (between 50 and 100 liters of water per person per day). This water supply must also be safe and affordable (not to exceed 3 percent of household income) and physically accessible (the source has to

be within 1,000 meters of the home, and water collection time should not exceed thirty minutes).⁶⁴

Furthermore, after protracted negotiations in the UN General Assembly, 122 countries formally acknowledged the human right to water and sanitation in Resolution 64/292 on July 28, 2010.⁶⁵ The General Assembly declared that clean drinking water is “essential to the full enjoyment of life and all other human rights.”⁶⁶ In September 2010, the UN Human Rights Council adopted a resolution recognizing that the human right to water and sanitation forms part of the right to an adequate standard of living or freedom from want that is intrinsic to human security.⁶⁷

Islamic Theology

As established above, weaponization of water is a clear violation of international law. It is also a violation of Islamic laws (*urf*) and inimical to some of the most prominent aspects of Muslim culture. It is therefore a remarkable hypocrisy that Islamic extremist organizations that espouse Sharia law would engage in the weaponization of water. Dating from approximately 1790 BC and considered the predecessor of basic Jewish and Islamic legal systems, the Babylonian legal Code of Hammurabi that enshrines the idea of proportionality through the doctrine of “an eye for an eye” is the first known written law to govern irrigation rights.⁶⁸ Sanskrit, Jewish, and Christian texts also contain provisions to protect civilians and the destruction of the natural environment.

The significance of water in Islam is reflected in the Quran, where it is mentioned sixty-three times. Islamic water use requirements are also found in the hadiths—reports or statements of action prescribed by the prophet Muhammad. First and foremost, they establish the characteristics of the relationship between humankind and nature. Humans are co-owners of three things: water, fire, and pastures and therefore must share them.

As indicated by the Quran, sharing water is the highest form of charity, and there will be a reward for sharing water with any living being, including animals.⁶⁹ *Sadaqah*, or the act of giving alms or charity, is one of the five pillars of Islam. Providing food or water is considered an act of *sadaqah*. Muslim children are often told that the act of providing water for their family or elders will result in *thawab*, spiritual merit or reward that accrues after performing a good deed. In addition to short-term giving, *Sadaqah Jariyah* is a type of charity that continues to benefit people over the long term and earns the giver rewards, even after death.

Developing a clean water system, as extremist groups often have done when attempting to curry favor with subject populations, is an example of an attempt to perform *Sadaqah Jariyah*.⁷⁰

According to Islamic belief, the way in which a person has treated water is also an important consideration on the Day of Resurrection. This is detailed in a number of hadiths emphasizing that water should be freely available to all. A man who, having water in excess of his needs, refuses it to a traveler will be ignored.⁷¹ The Quran states: “Whoever digs a well will receive reward for that from Allah (*swt*) on the day of judgment when anyone amongst jinn, men, and birds drink from it.”⁷² Likewise, general hoarding of water is described as a sin. The Quran admonishes: “Do not withhold the surplus of water, for that will prevent people from grazing their cattle,” and “Do not withhold the surplus water in order to withhold the surplus grass.”⁷³

Islamic Water Law

Islamic law itself is essentially based on water. *Sharia*, as referred to before the advent of Islam in Arabia, stemmed from the *shuraat al-ma’a*, a series of rules that granted permits and rights for drinking water.⁷⁴ The meaning of the term was only later expanded to include the entire body of laws and rules given by God.⁷⁵ The conception of *Sharia* as “the watering source” or “the path that leads down to a source of water” is an allegorical demonstration that Divine law will quench the thirst for knowledge. It is the path leading to the source of truth.⁷⁶

The basic principle of Islamic water law states that water, pasture, and fire—in their natural states—are *res communes* (common things), as are other “natural” resources such as land resources (grazing and minerals) and resources of the sea. “No legal person or ruler, therefore, may appropriate a river, for example, or try to sell or rent its water. Nor may tax be taken directly on such natural resources, only on the produce resulting from their exploitation (e.g. on crops, livestock, or on the profits of pearling expedition).”⁷⁷

Islamic water law addresses allocation and precedence of use. The paramount rule in this legal system is *shafa*, the universal right of humans to quench their thirst and that of their animals. Second is *shirb*, the right of irrigation, which gives all users the right to water their crops.⁷⁸ Therefore, in places where an irrigation system passes through or under another village and the water remains in its pure, unpolluted state, people have the right to tap into it for drinking purposes so long as they do not pollute it. Above the ground, whoever has

surface or riparian rights to water may do nothing to impede the flow of that water supply or prevent access.⁷⁹

Water is also intrinsic to the active religious practice of Islam. *Zamzam* water is a key part of the hajj, the pilgrimage to Mecca, which is a responsibility of every Muslim. It is considered to be the water that sprang forth from the earth when Hajar—wife of the prophet Abraham—ran through the desert hills praying to God to bestow water upon her thirsty son, Ishmael.

Ablution, or ritual purification through hand washing, in preparation for prayers is an obligatory and deeply meaningful spiritual practice. Therefore, mosques are required to provide running water. Any form of water weaponization that denies water to areas where mosques are located is easily interpreted as a sin of great magnitude.

This description of the centrality of water to Islam exposes the heresy of using water as a weapon. This heresy is especially profound as applied to extremist groups. Al-Shabaab, Boko Haram, and the Islamic State are all adherents to a Salafist fundamentalist interpretation of Islam that requires literal interpretation of the hadiths. Yet the hadiths are unambiguous when it comes to the abuse of water.

Therefore, it is particularly ironic that IS relied on theology to justify the use of the water weapon. Muslim, Christian, and Jewish texts alike teach that depletion of the Euphrates, an outcome accelerated by IS's interference with water installations, portends the Day of Judgment. IS has used Islamic (and biblical) tradition to portray the Day of Judgment itself as a flood.

According to their argument, Noah as a prophet of Allah built the Ark in response to the flood that punished those who rejected his messengers. The flood was the consequence of opposing the truth, and the destruction it caused demonstrated that anyone who rejected the truth would be punished.

The story of the Ark, as portrayed by the Islamic State, seeks to proclaim that those who choose to embrace the truth are the righteous and the few and that those few, in their acceptance, save themselves from total destruction. In this way, IS propaganda, through *Dabiq*, the official magazine of the Islamic State, gives those deemed “nonbelievers” the metaphorical choice to be part of the few or the many—to choose between “the Islamic State or the flood.”⁸⁰ Seen in this light, the use of the water weapon to eliminate opposing populations (which has, in many circumstances, mainly included other Muslims) gains legitimacy and is theologically supported as an inevitable actualization of IS's prophetic vision.

This propaganda is based on twisted logic. It also stands against the hadith and Sharia law as practiced even before the advent of Islam. In short, the use of the water weapon by all three Salafist groups examined in this volume is not only illegal, odious, and hypocritical but also arguably heretical.

Although it is predictable that VEOs will have little to no respect for international law, an interesting proposition is whether clearly identifying water weaponization as a profoundly heretical practice could be used as a way to pressure these extremist groups into altering their decisions to use the water weapon. This is an option that is at least worth exploring as part of a comprehensive counterinsurgency strategy in the war of ideas against extremism.

About the Book

The chapters that follow explore how the water and conflict cycle operates in various geographies and how the weaponization of water by violent extremists has played a role.

Chapters 2 through 4 trace the water and conflict cycle and water weaponization in the cases of Syria and Iraq, Nigeria, and Somalia, especially during the years 2011–2017 when drought swept across all of these countries. The focal actors in these conflicts are the Islamic State and other jihadists in Syria and Iraq, Boko Haram in Nigeria, and al-Shabaab in Somalia. Hausa-Fulani militants in Nigeria and the Kurdistan Regional Government (KRG) in Iraq are other subnational actors who play roles in the case studies. Although I argue that violent extremist organizations are responsible for the lion's share of the abuse of water resources during the relevant time frame, internal wars are notoriously messy, and all belligerents bear some culpability. Chapter 5 explores actions that national governments and the international community can take using the tools of defense, development, and diplomacy optimistically to stop water weaponization where it occurs or, at a minimum, to discourage normalization of its use in modern warfare.

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