



CONFERENCE EDITION

# EBB AND FLOW

VOLUME 2. WATER IN THE SHADOW  
OF CONFLICT IN THE MIDDLE EAST  
AND NORTH AFRICA

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Edoardo Borgomeo, Anders Jägerskog, Esha Zaveri, Jason Russ,  
Amjad Khan, and Richard Damania



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# EXECUTIVE SUMMARY

When he first arrived in Jordan, Abd was shocked by the lack of water. He fled the Syrian Arab Republic in 2013 out of fear for his children’s lives and the destruction of their house. Since arriving in Jordan, he has grown accustomed to conserving water and using less of it. “Water shortages are a constant risk,” he said, “and with COVID-19, I have had to buy additional water from tankers at great cost for my family.” Abd is one among millions across the Middle East and North Africa who are forcibly displaced and facing water insecurity.

With the region experiencing the highest levels of forced displacement in the world and growing water scarcity under climate change, countries increasingly contend with policy issues at the nexus of water, conflict, and forced displacement. An estimated 7.6 million refugees, around 2.7 million of whom are hosted in the region, and 12.4 million internally displaced persons (IDPs) are fleeing the region’s protracted armed conflicts (both international and noninternational armed conflicts) (UNHCR 2020; IDMC and NRC 2020). The Middle East and North Africa is also the most water-scarce region in the world, with over 60 percent of its population living in areas with high water stress (World Bank 2017a). It also experiences some of the world’s highest levels of interannual hydrological variability, meaning that it is exposed to both long droughts and devastating floods. And while the countries of the Middle East and North Africa have managed to significantly expand access to water services over the past three decades, these achievements are now challenged by groundwater depletion, urban expansion, governance issues, and conflict.

*Ebb and Flow: Volume 2. Water in the Shadow of Conflict in the Middle East and North Africa* examines the links between water risks (harmful outcomes related to water, from droughts and floods to lack of sanitation), conflict, and forced displacement. It aims to increase understanding of how to address the vulnerabilities of forcibly displaced persons and their host communities, and to identify water policies and investment responses. Building on the framework in figure ES.1 and findings presented in *Ebb and Flow: Volume 1. Water, Migration, and Development* (Zaveri et al. 2021)—

**FIGURE ES.1:** Framework to Examine the Interplay of Water, Conflict, and Forced Displacement in the Middle East and North Africa

Why	Who	Where and What
<ul style="list-style-type: none"><li>• Why and in what contexts does water contribute to conflict and forced displacement?</li></ul>	<ul style="list-style-type: none"><li>• Who are the forcibly displaced populations and their host communities?</li></ul>	<ul style="list-style-type: none"><li>• Where do the forcibly displaced populations live?</li><li>• What water risks do they face?</li></ul>

Source: World Bank.

see summary in annex ES.A—this report tackles three key questions: (a) Why and in what contexts does water contribute to conflict and forced displacement? (b) Who are the forcibly displaced populations and their host communities? and (c) Where do forcibly displaced people live and what water risks do they face? To address these questions, the report uses statistical analysis of historical event databases, case studies based on semistructured interviews, and a review of the existing literature.

## WHY AND IN WHAT CONTEXTS DOES WATER CONTRIBUTE TO CONFLICT AND FORCED DISPLACEMENT?

While some research suggests that there is a direct link between water, conflict, and forced displacement, the evidence suggests caution in invoking causal relationships. Particular caution is needed when considering claims that forced displacement is an intervening variable linking water risks with conflict, as suggested for the Syrian crisis. The context-specific nature of the water and displacement relationship holds a few overarching key insights. First, the relationship between water and forced displacement, especially large-scale displacement, is a complex one. While water risks can affect choices to move—as discussed in volume 1 of *Ebb and Flow*—the complexity of interacting factors influencing individual and household choices means that it is not possible to identify water migrants in the Middle East and North Africa. Second, there are local instances of forced displacement in response to water risks (notably lack of basic water services and drought), but this movement is mostly internal and not transnational. Third, research and analysis should focus on the effects that water and agricultural policy might have in exacerbating or mitigating the effects of water risks on vulnerable populations, their livelihoods, and income-generating activities rather than trying to identify “water migrants.”

Historically, water has more frequently been associated with cooperation than conflict, at both the international and national levels. This report draws on well-known event databases of domestic water events—the Water-Related Intrastate Conflict and Cooperation data set (Bernauer et al. 2012)—and international water events—the Transboundary Freshwater Dispute Database of Oregon State University (Wolf 1998; De Stefano et al. 2010)—to build a historical picture of both cooperation and conflict in relation to water in the region. Analysis of historical events reveals that cooperation—ranging from verbal agreements over water sharing to construction of infrastructure—was the most frequent outcome arising from water-related issues in the Middle East and North Africa. This holds both for events related to domestic water issues and for international events, defined as events related to transboundary rivers and aquifers. Interestingly, this finding is confirmed when other key

water-related constraints, such as challenging access to groundwater, are taken into account. In the Middle East and North Africa, water-scarce areas have been found to experience more instances of water cooperation, including in areas where groundwater is difficult to access (Döring 2020). This confirms evidence from other parts of the world suggesting that long-term exposure to water scarcity strengthens water users' preference for cooperation (Nie, Yang, and Tu 2020; Haseeb 2020). While clearly this does not exclude the possibility of water-related disputes in the future, it does suggest that research and policy should focus more on the potential role of water for building cooperation.

Although forced displacement and conflict are uncertain and indirect consequences of water risks, the reverse is a real and concerning outcome of conflict: water is increasingly a casualty and weapon of conflict (Sowers, Weinthal, and Zawahri 2017; Gleick 2019). Water infrastructure and services have even been targets in the conflicts in the region. In Syria, 457 water supply and sanitation assets have been damaged, which includes damage to or destruction of two-thirds of the country's water treatment plants and half of its pumping stations (World Bank 2017b). In addition, long-term effects of damages on water infrastructure in Gaza, Iraq, Libya, and the Republic of Yemen are also putting a heavy burden on those economies, severely hampering the possibilities for reconstruction. Targeting of water infrastructure is perhaps the most concerning trend identified in this report: since 2011, there have been 180 instances of targeting of water infrastructure in the region's conflicts in Libya, Syria, and the Republic of Yemen alone. (Sowers, Weinthal, and Zawahri 2017)

Climate change and soaring demand are adding pressure on economies and livelihoods dependent on already depleted and degraded water resources. This observation suggests that future water, forced displacement, and conflict dynamics might look very different from the historical patterns described in this report. As evidence of the disproportionate effects of climate change on countries and populations enduring conflict grows, so does the need to continue monitoring the dynamics described in this report in light of ever-changing conditions. In the Middle East and North Africa, decades of conflict have increased people's vulnerability to climate change. In places that lack strong governance and inclusive institutions, climate change might further exacerbate vulnerabilities and tensions over water resources, in a vicious cycle of water insecurity and fragility (Sadoff, Borgomeo, and De Waal 2017).

## **LEAST PROTECTED, MOST AFFECTED: WHO ARE THE FORCIBLY DISPLACED POPULATIONS, WHERE DO THEY LIVE, AND WHAT WATER RISKS DO THEY FACE?**

Water is among the main factors determining the vulnerabilities of people who are forcibly displaced. Access to safe and affordable drinking water



services remains a key humanitarian priority in both the short and medium term across the region. Forcibly displaced populations in countries and territories affected by protracted armed conflict (Gaza, Iraq, Libya, Syria, and the Republic of Yemen) all identify drinking water as one of their key priorities alongside food and shelter. Even when this immediate need is met, evidence suggests that displaced populations face additional challenges related to water safety and affordability. Access to adequate sanitation also remains a challenge for forcibly displaced persons in places of both origin and destination, with the exception of some Palestinian refugees in the West Bank and populations living in camps. Marginalized groups within forcibly displaced communities face additional challenges in accessing water services. In camps and host communities, measures to meet the needs of people with disabilities are often lacking. Furthermore, in situations of forced displacement, women and girls are most exposed to adversity, and many of the water risks they face are heightened. Women face a number of water risks, including higher rates of gender-based violence exacerbated by the inadequate access to water and sanitation facilities and the impacts of water shocks on livelihoods and well-being, for example through the effects on food production.

The COVID-19 pandemic has brought additional challenges affecting both affordability and availability of water. COVID-19 means that more water is needed in camps, informal settlements, and host communities to enable adequate handwashing and hygiene. In water-scarce areas with low service coverage where most forcibly displaced persons live, such as in informal settlements or remote refugee camps, these additional water requirements have translated into higher expenditure to fetch water from vendors. Those challenges, coupled with increased economic hardship, further underscore affordability issues. In Jordan, Syrian refugees reported a doubling of their expenses related to water, as they had to purchase more water from tankers and buy soap and hand sanitizers. In addition, water and sanitation facilities in camps and informal settlements are often shared, thereby heightening the risk of infection.

Forcibly displaced populations also face additional water resource risks relating to water scarcity and floods. In the Republic of Yemen, water scarcity is cited by IDPs and returnees as one of the main factors in the decline of their livelihoods and of access to income-generating activities. Increased availability of water for agriculture is one of the most frequently reported requirements for improved livelihoods by both IDPs and host communities. While there is no regionwide assessment of the flood risks faced by forcibly displaced persons, country evidence suggests that flooding is a key determinant of vulnerability. Refugee and IDP camps in Syria and the Republic of Yemen are at a particular risk of flooding, with tens of thousands of forcibly displaced persons having to relocate because of flooding in 2020 alone.

Forced displacement puts an unplanned burden on the water and related services of host communities. An estimated 80 to 90 percent of the forcibly displaced persons in the Middle East and North Africa live outside camps, in towns and cities (World Bank 2017c). This situation can compound difficulties

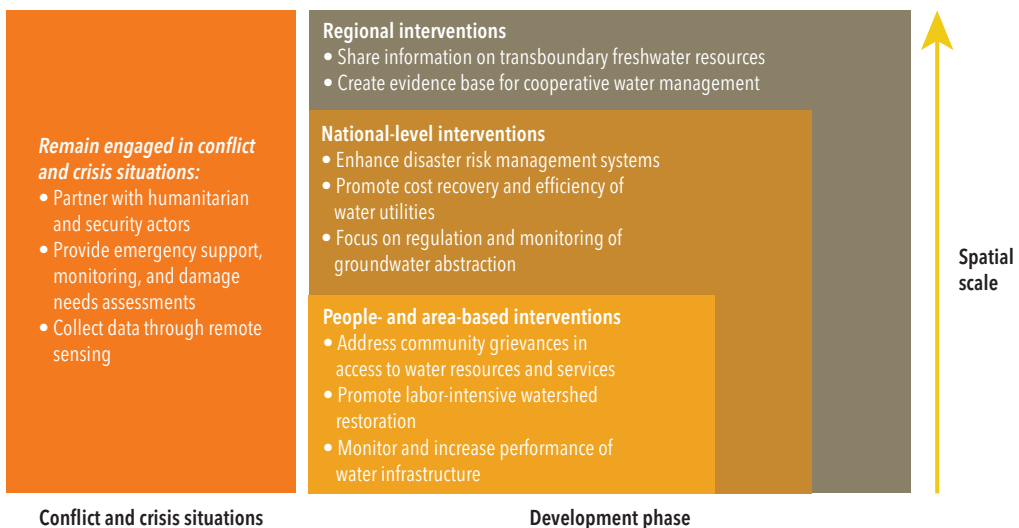
that some cities are already facing in providing basic services, including drinking water supply and wastewater collection and treatment services. The sudden arrival of large numbers of forcibly displaced persons often causes severe stress on public services and environmental impacts on land, water, and other natural resources. The presence of forcibly displaced persons in host communities is also accelerating depletion of water resources and degrading water quality. These impacts mean that communities that host forcibly displaced persons have to increase their investments and ramp up their plans for increasing coverage of water supply and sanitation services and protecting water sources.

## WATER: AN OPPORTUNITY TO BUILD RESILIENCE

The protracted nature of the forced displacement crisis in the Middle East and North Africa and increasing water scarcity call for a shift from humanitarian support toward long-term pathways for water security. There is an urgent need to develop and implement sustainable long-term solutions to enhance water security and build resilience to future shocks. This report puts forward an integrated framework for development actors to respond to water risks in situations of protracted forced displacement (figure ES.2).

The components of figure ES.2 should be understood as building blocks to enhance water security for forcibly displaced populations and their host communities in the Middle East and North Africa. In phases of development, people- and area-based interventions constitute the first building block toward

**FIGURE ES.2:** Approach for Development Actors to Promote Water Security for Forcibly Displaced People and Their Host Communities



Source: World Bank.

water security. Policies to reconstruct national institutions and components of water resource management are likely to fail without the foundations of a renewed social fabric and trust in institutions, which can be achieved through people- and area-based interventions. People- and area-based approaches can help to address grievances and social inclusion barriers, notably gender gaps, related to access to water resources and services in protracted crisis situations.

In the water sector, people- and area-based interventions focus on ensuring access to water services and protecting livelihood opportunities supported by water. Public work programs to reverse the degradation of watersheds and other labor-intensive approaches to monitor, clean up, and restore degraded water resources enhance water's potential to support livelihoods. People-based interventions can also support activities to empower and build the skills of those who are responsible for water resource management and supplies within forcibly displaced and host communities.

People- and area-based interventions need to be aligned with investments in national-level institutions and infrastructure. These interventions aim at restoring the national-level building blocks that are essential to ensure sustainable water management and service delivery. Institutional interventions can focus on groundwater management and regulation, as well as giving attention to financial sustainability issues for water service providers. Expansion and rehabilitation of water infrastructure are key interventions to restore national building blocks for water security. These interventions will need to plan for potential targeting through, for example, redundancies (replicating elements of infrastructure, designing systems with diversified supply sources), contingency plans (stocking up consumables for water treatment plants, nominating replacement staff), and prioritization of easy-to-operate wastewater treatment solutions with minimal or no need for grid electricity (such as stabilization ponds and constructed wetlands). One example in which a positive development has taken place is in the Kurdistan region of Iraq, where water supply and sanitation coverage has slightly increased following the influx of refugees from Syria and IDPs from other parts of Iraq. This progress suggests that the region's government and its development partners adapted quickly to improve water supply, with indicators for coverage improving since the start of the Syrian crisis.

Finally, a political economy approach that considers a regional perspective complements the national-level and people- and area-based approaches. The Syrian conflict, for example, has led to a number of regional externalities, not just in terms of the tragic numbers of forcibly displaced people, but also in terms of a decrease in cross-border trade (World Bank 2020). These are examples of "public bads" that require regional (and international) coordination if they are to be overcome. Transboundary waters offer another example of cross-border flows and regional issues whose public good benefits can turn into public bads without a concerted effort by regional actors. Therefore, water sector interventions in response to protracted forced displacement need to consider regional issues and the

**FIGURE ES.3: Decision Points in Response to Water Risks Faced by Forcibly Displaced People and Their Host Communities**



Source: World Bank.

potential for coordinated cross-border responses through transboundary water cooperation.

When working toward the integrated approach shown in figure ES.2, policy makers will likely face trade-offs between short-term uncoordinated measures to respond to immediate water needs and long-term measures needed to address structural water sector issues. These trade-offs are time specific, meaning that they can create path dependencies and lock-in, thus influencing the ability of countries to achieve water security over the long term. Hence, at different stages of a protracted forced displacement crisis, policy makers need to be cognizant of the fact that their efforts can undermine or support long-term water security objectives, as shown in figure ES.3. The figure shows three decision points at which specific trade-offs shape which paths are taken: (1) prevention and precrisis coordination and planning, (2) the response to protracted forced displacement, and (3) preparation for recovery and return. Countries might end up in very different water security situations depending on the choices their leaders make at each of these points. Unless these trade-offs are recognized and managed, water risks are likely to undermine progress toward recovery and sustainable peace, in a vicious cycle of water insecurity and fragility. The intersection of water resources, conflict, and forced displacement in the Middle East and North Africa is summarized in figure ES.4.

To conclude, this report suggests that rather than trying to unpack complex causal linkages between water, forced displacement, and conflict, development policy and analysis should focus on designing interventions to address the water risks faced by forcibly displaced people and host communities now and in the future. Looking ahead, water has the potential to enable post-conflict reconstruction and cooperation efforts. To capture this potential, water interventions need to promote (1) close coordination between all actors (security, humanitarian and development) and (2) trust in institutions and a renewed social fabric, which can be achieved through people- and area-based water sector interventions.



FIGURE ES.4: Water in the Shadow of Conflict

# WATER IN THE SHADOW OF CONFLICT

Given the **unprecedented** levels of forced displacement and conflict in the **Middle East and North Africa (MENA)**, water policy needs to address the vulnerabilities of the forcibly displaced people and host communities. Water can exacerbate risks of conflict and forced displacement, but it can also create **opportunities for cooperation**.

## WATER CAN BE A SOURCE OF CONFLICT... OR COOPERATION

Historically water has more often led to cooperation than conflict. However, the **relationship between water, conflict, and cooperation** may change in the future.

### WATER IS A VICTIM OF CONFLICT

**Infrastructure targeting:** 180 instances of intentional targeting of water infrastructure in **Libya**, **the Syrian Arab Republic**, and **the Republic of Yemen** since 2011.

### WATER IS A WEAPON OF CONFLICT

**Armed groups** take control of water infrastructure to threaten opponents and deliver basic water services to delegitimize state and complicate peacebuilding efforts.

## 1 THE COLLISION OF WATER SCARCITY, CONFLICT AND FORCED DISPLACEMENT IS UNPRECEDENTED

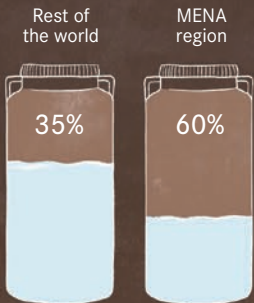
An estimated **7.6 million** refugees, around **2.7 million** of whom are hosted in the region, and

**12.4 million** internally displaced people are fleeing the region's protracted armed conflicts.

**1 person out of 4** in Lebanon is a refugee.

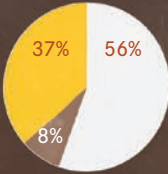
**70% of MENA's GDP** is generated in areas with **high or very high water stress** compared to 22% in the rest of the world.

Population living in areas with high water stress:



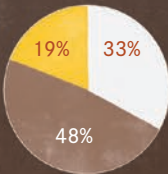
### INTERNATIONAL

Out of the 975 water-related events recorded in the region, most are **cooperative**.



### DOMESTIC

Out of 1,317 water-related events recorded in the region, most were **cooperative** or **neutral**.



# WATER IS A DAILY STRUGGLE FOR FORCIBLY DISPLACED PEOPLE AND THEIR HOST COMMUNITIES

## IN CONFLICT-AFFECTED AREAS

In the Republic of Yemen, 2 out of 3 forcibly displaced people do not have access to a safe and functioning latrine.

25% of displaced people inside the Syrian Arab Republic share sanitation facilities with at least 6 people.

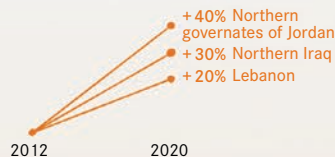
In the Republic of Yemen, 18 million people do not have access to safe drinking water supplies.

## IN HOST COMMUNITIES

64% of Syrians in Jordan are highly vulnerable to water and sanitation risk.

In 50% of Libya's municipalities, forcibly displaced people find water to be unaffordable.

Demand for water since the arrival of Syrian refugees in 2012:



## IN CAMPS AND INFORMAL SETTLEMENTS

In Jordan, households with disability report lower rates of access to sanitation services.

1 in 4 international migrant in Libya does not have enough water to drink.

At least a quarter of all Syrian refugee households in informal settlements in Lebanon are accessing very highly contaminated drinking water.

Every year, flash flooding inflicts extensive damage to camps and informal settlements.

Water from the camp's taps is too salty to drink, especially in the summer.

Mohammad, Palestinian refugee in Lebanon

I am very concerned that water shortage will happen in Jordan. Since I arrived in Mafraq water cuts have happened constantly.

Rama, Syrian refugee in Jordan

COVID-19 has caused water shortages here, and now we have to buy more expensive water from water tankers.

Samar, Syrian refugee in Jordan





## ANNEX ES.A: MAIN FINDINGS FROM *EBB AND FLOW: VOLUME 1*

*Ebb and Flow: Volume 1. Water, Migration, and Development* (Zaveri et al. 2021) examines the effect of water shocks (defined as rainfall that is at least 1 standard deviation below or above long-term averages) on internal migration and finds that cumulative dry water shocks play a significant role in influencing migration, with water deficits resulting in five times as much migration as water excess. Internal migration responses to water differ systematically between low-income and middle-income settings. Where there is extreme poverty and migration is costly, water deficits are more likely to trap people than induce them to migrate. Water shocks affect not only the number of people who move, but also the skills they bring with them. For example, workers who leave regions because of water deficits tend to be lower skilled. Cities are the destination of most internal migrants, yet even in cities water scarcity can haunt them. Depending on the size of the water shock, city growth can slow by up to 12 percent during a water deficit, enough to reverse critical development progress.

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The Middle East and North Africa Region encapsulates many of the issues surrounding water and human mobility. It is the most water-scarce region in the world and is experiencing unprecedented levels of forced displacement. *Ebb and Flow: Volume 2. Water in the Shadow of Conflict in the Middle East and North Africa* examines the links between water risks (harmful outcomes related to water, from droughts and floods to lack of sanitation), conflict, and forced displacement. It aims to better explain how to address the vulnerabilities of forcibly displaced persons and their host communities, and to identify water policy and investment responses. Contrary to common belief, the report finds that the evidence linking water risks with conflict and forced displacement in the region is not unequivocal. Water risks are more frequently related to cooperation than to conflict at both domestic and international levels. But while conflict is not necessarily a consequence of water risks, the reverse is a real and concerning phenomenon: conflict amplifies water risks. Since 2011, there have been at least 180 instances of intentional targeting of water infrastructure in conflicts in Gaza, Libya, the Syrian Arab Republic, and the Republic of Yemen.

Forcibly displaced persons and their host communities face myriad water risks. Access to safe drinking water is a daily struggle for millions of forcibly displaced Iraqis, Libyans, Palestinians, Syrians, Yemenis, and international migrants in the region, heightening public health risks. Tanker trucks often help fill the gap; however, significant issues of water quality, reliability, and affordability remain. Host communities also face localized declines in water availability and quality as well as unplanned burdens on water services following the arrival of forcibly displaced persons. The reality of protracted forced displacement requires a shift from humanitarian support toward a development approach for water security, including structured yet flexible planning to deliver water services and sustain water resources for forcibly displaced persons and their host communities.

SKU 33465

