

Water, Climate Change and Food Security of the Middle East and North Africa (MENA) regions

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Abstract

This article summarized Protracted conflicts in the Middle East and North Africa (MENA) region have left tens of millions of people in need of humanitarian and development assistance to have access to water. But the capacity of local water service providers (state-owned and private) to maintain adequate levels of services has decreased as conflicts and population movements across the region have continued, mainly towards urban areas. Other actors including United Nations agencies, international organisations, local NGOs and independent – often informal – water providers have played an important role in filling gaps in supply.

This study analyses all these actors' responses to continuing the supply of water during conflicts, focusing on factors of resilience building that particularly concern local service providers.

Key Words: Water, Climate Change, Agriculture; MENA regions

Eau, changement climatique et sécurité alimentaire des régions Moyen-Orient et Afrique du Nord (MENA)

Résumé

Cet article résume les conflits prolongés dans la région du Moyen-Orient et de l'Afrique du Nord (MENA) ont laissé des dizaines de millions de personnes ayant besoin d'aide humanitaire et de développement pour avoir accès à l'eau. Mais la capacité des fournisseurs locaux de services d'eau (étatiques et privés) à maintenir des niveaux de services adéquats a diminué à mesure que les conflits et les mouvements de population dans la région se sont poursuivis, principalement vers les zones urbaines. D'autres acteurs, notamment des agences des Nations Unies, des organisations internationales, des ONG locales et des fournisseurs d'eau indépendants – souvent informels – ont joué un rôle important pour combler les lacunes de l'approvisionnement.

Cette étude analyse toutes les réponses de ces acteurs au maintien de l'approvisionnement en eau pendant les conflits, en se concentrant sur les facteurs de renforcement de la résilience qui concernent particulièrement les prestataires de services locaux.

Mots clés : Eau, Changement Climatique, Agriculture ; Régions MENA.

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FOOD SECURITY SITUATION

Households are food secure when they have year-round access to the amount and variety of safe foods their members need to lead active and healthy lives. Changes in food security, then, are driven mainly by events or conditions that affect families' ability to access safe food. Chief among these are incomes, the working of food markets to ensure food availability, and state public services to ensure food safety. The largest disrupter of these three factors in the region is conflict, which divides the region into two distinct subregions from the point of view of food security – conflict and non-conflict countries. The Prevalence of Undernourishment (PoU) estimates the share of the population of a country facing absolute food deprivation. It is defined as the probability that a randomly selected individual from the reference population is found to consume less than his or her calorie requirement for an active and healthy life. (FAO, 2017c). Table 4.1 shows the prevalence of undernourishment in conflict and non-conflict countries in the MENA region. As a rule of thumb, countries with a PoU of less than 5% are considered to be relatively food secure. As highlighted in Table 4.1, the non-conflict countries of the region are, in fact, relatively food secure. According to the PoU, in 2014-2016, the conflict countries of the MENA region were less food secure than the average level for least developed countries (LDCs). Whereas 28.2% of the population of the MENA conflict countries faced absolute food deprivation, only 24.4% of the population of the LDCs faced such insecurity (FAO, 2017c). Though the high level of food insecurity in the conflict countries accords with expectations, care should be taken in interpreting these data for the prevalence of undernourishment. The PoU is a good indicator of hunger during periods when the income or consumption distribution is relatively constant, but it is not a good indicator of hunger when sharp changes in the distribution of food occur. The PoU likely underestimates the actual prevalence of undernourishment during times of conflict, because the inequality in food consumption parameters used to calculate it are derived from national household survey data, which are usually not available or accurate during times of conflict (FAO, 2017c). Setting aside these caveats for the moment, the level of measured PoU in the conflict countries has been over three times the level in the rest of the MENA countries since 1999-2001, and has been rising gradually vis-à-vis the other countries in the region since 2003 (Table 1). This pattern in the evolution of the PoU in the conflict countries is consistent with it being partially driven by conflict, but it is also clear that they had relatively high levels of food insecurity even before conflict arose.

Table 1. Prevalence of undernourishment in conflict and non-conflict regions in MENA, 1999-2001 to 2014-16

	1999-2001	2001-2003	2003-2005	2005-2007	2007-2009	2009-2011	2011-2013	2013-2015	2014-2016
All MENA	9.7	9.8	10.0	10.0	9.6	8.9	8.4	8.4	8.8
Non-conflict countries	6.3	6.4	6.5	6.3	6.0	5.5	5.0	4.7	4.7
Conflict countries	29.0	28.4	28.9	29.1	28.5	26.6	25.3	26.1	28.2
Of which:									
--Yemen	29.9	30.7	30.9	28.9	27.1	25.7	24.6	25.2	28.8
--Iraq	28.3	26.6	27.4	29.3	29.6	27.2	25.9	26.7	27.8
--Sudan							25.9	25.7	25.6

Note: Undernourishment data exist for only three of the five conflict countries, and the aggregate is constructed from these data. Source: FAO (2017c). The Middle East has experienced many environmental concerns lately. Water resources are becoming increasingly scarce, especially for the millions there who already lack access to sanitary water. Some of these countries, including Yemen, the United Arab Emirates, Saudi Arabia, and Iraq, are facing unique problems that require global, immediate attention. Beside their neighboring location, one shared factor of all these countries is their lack of water resources and poor water management. The Middle East has some of the largest oil reserves in the world, which produces most of the area's wealth. Even so, the region's climate and environment make living harsh. The Middle East requires water resources and suitable land for agriculture. Much of the land that is available for producing food is destroyed by increasing desertification. Desertification is a sweeping environmental problem, with vast effects in countries such as Syria, Jordan, Iraq, and Iran. Universal causes for a spread of arid environment are unsustainable agriculture practices and overgrazing. Agriculture uses 85 percent of water in this region. It is common to misuse land by heavy irrigation in the Middle East. In the area droughts are more frequent, and contribute to the changing landscape. The overuse of water in agriculture is affecting the countries' already undersized water resources. Jordan, located in the Syrian Desert, and Yemen, on the southern tip of the Arabian Peninsula, both endure severe water scarcity in the Middle East. For example, Jordan's average freshwater withdrawal is less than 10 % of Portugal's average, despite being the same size. The cost of water in Jordan increased 30 % in ten years, due to a quick shortage of groundwater. Yemen has one of the highest worldwide rates of malnutrition; over 30 % of its population does not meet their food needs. In recent years, Yemen has not been able to produce enough food to sustain its populations. Water scarcity has damaged the standard of living for inhabitants of the Middle East. Desalination plants are an overuse of water resources in the Middle East. Seventy % of desalination plants in the world are located in this area, found mostly in Saudi Arabia, the United Arab Emirates, Kuwait, and Bahrain. While the plants produce water needed for the arid region, they can manufacture problems for health and the environment. The seawater used most in desalination plants has high amounts of boron and bromide, and the process can also remove essential minerals like calcium. Also, the concentrated salt is often dumped back into oceans where the increased salinity affects the ocean's environment. The plants harm local wildlife and add pollutants to the region's climate. In addition, desalination is the most energy-costing water resource. The Pacific Institute explains that the high use of energy results in raised energy prices and higher prices on water produced, hurting the consumer.

The water produced can be beneficial towards substituting any lack of freshwater, but these areas have tendencies towards overuse of their natural resources. Concerns with the large amount of desalination plants in the Middle East focus on the improper dependency they will cause, instead of encouraging alternate forms of water and energy and conserving freshwater. The Middle East has numerous struggles with its current water resources, and the region needs more than one solution to generate an optimistic environmental position for the future.

CONFLICT AND FOOD SECURITY IN THE MENA REGION

At the end of 2017, over 30 million people in this region were in need of assistance to satisfy their basic food needs. Among those, the food security situation was most critical in countries with lingering or escalating conflicts: Yemen, Syrian Arab Republic, Iraq and Sudan. In Yemen, according to the latest assessment carried out in March 2017, about 17 million people, corresponding to 60% of the total population, required food assistance. In the Syrian Arab Republic, some 6.5 million are estimated to be food insecure, and an additional 4 million at risk of food insecurity as they are using asset depletion strategies to meet their consumption needs. In Iraq and Sudan, about 3 million are food insecure. Smaller figures are reported for Libya and Mauritania, about 0.4 million each. Residents in conflict zones often have to resort to food coping strategies to cover the severe food shortages they are facing. Households tend to reduce the number of meals and restrict the consumption of adults to prioritise children. If the crisis lingers, households deplete their assets and are no longer able to draw on stocks or other reserves. They resort to child labour, which often includes the withdrawal of children from school to carry out agricultural activities in order to cope. Economic activity, including agricultural production, suffers in a conflict environment and further impairs livelihoods. While agricultural production is often one of the most resilient activities in an economy, those continuing to farm are often confronted with high production costs, lack of inputs and damaged or destroyed infrastructure. Agricultural activities, particularly those related to irrigated crops, suffer when fuel prices are high, with consequent increases in the share of rain fed crops, which in turn bear lower yields. Fertilisers are often subject to international sanctions. Farmers tend to plant seeds saved from the previous harvests, further constraining yields. Many rural households tend to rely on casual labour opportunities as their main source of income. In many conflict-affected areas, hired agricultural labour tends to be replaced by family labour in order to cope with the increased costs of production. While agricultural production improves household and local food availability, limited infrastructure including cold chain and transportation links often prevents deliveries to urban markets. Consequently, prices of local products tend to be low in producing regions, and high in the urban markets, despite availability.

The impact of lower agricultural production on world agricultural markets may be small, but has been dramatic in the affected countries. Before the conflict, Syria – one of the larger producers – produced on average about 4 Mt of wheat, but reached only 1.8 Mt in 2017. In Yemen, total domestic cereal production covers less than 20% of the total utilisation (food, feed and other uses). The country is largely dependent on imports from the international markets to satisfy its domestic consumption requirement for wheat, the main staple. The share of domestic wheat production in total food utilisation in the last ten years is between 5% to 10%, depending on the domestic harvest. While conflict did not substantially increase the country's dependence on imports, conflict-related decrease in production deteriorated livelihoods of farmers and pushed many to food insecurity. The unpredictability of conflict threatens food security and local livelihoods but also livelihoods in the host countries. In addition to the millions who have fled countries due to the conflict, many are on the move internally, many multiple times. Internally displaced people and their host communities are often the most vulnerable to food insecurity. In Syria, about two in five people are on the move inside the country. In Iraq, in the first half of 2017, close to 1 million people were internally displaced, mostly due to the military operations in Mosul, in addition to the 3 million people already displaced by November 2016. As of early February 2018, over 5.5 million refugees were registered in the region covering Egypt, Iraq, Jordan, Lebanon and Turkey. In addition, a large share of the population lives abroad without seeking refugee registration.

When food production is limited by insufficient water resources, the consequences are of high geopolitical relevance. In the MENA region, water and food insecurity tend to lead to a greater rural exodus and therefore higher levels of urbanization. Cities grow much faster in the MENA region than in other world regions, a trend that will intensify if rural livelihoods are threatened due to water scarcity. The future of the MENA region will thus be played out in urban areas requiring substantial domestic and international policy shifts to strategically address specific challenges. These challenges include industrializing economies to obtain sufficient foreign exchange to act as a strong player in global agricultural trade. MENA economies could follow the example of the Mercosur countries to strategically cooperate to achieve improved trading terms. The Syrian conflict can be taken as an example of what happens if high migration to cities due to environmental problems is inadequately addressed. Syria was affected by a severe drought between 2006 and 2010, which led to a decrease in the contribution of agriculture to national gross domestic product (GDP) from 25 to 17 %. This resulted in high urban migration, and farmers being unable to find sufficient job opportunities (Kelley et al. 2015). The rest is history, with climate change and associated water problems as one of the drivers of the Syrian conflict. The social question of agriculture is not exclusive to Syria. Across the MENA region, farmers are living precarious livelihoods. Only those farmers who have off-farm income or access to land enjoying relatively high precipitation levels or irrigation water live in moderate poverty. Thus, the social dimension of agriculture is a crucial issue for governments to address if the lessons from Syria are to be taken seriously.

Water stress or water scarcity does not mean that food production is precluded. Rather, agriculture has to be reformed in a way that livelihoods can be protected and water resources used in the most efficient manner. Agricultural sectors in the MENA

region will have to move to high-value crop production with high-resource efficiency methods and higher water productivity. This requires a shift to integrated water management concepts. For example, lessons can be drawn from the water-energy-food nexus (WEF nexus) to reuse wastewater for food production or desalinated water through the use of renewable energy to grow cash crops. Australia's Sun Drop Farms show, in an arid context, how to grow vegetables using desalinated water through solar energy to cater for the domestic market (Margolis 2012). Researchers at the University of Wageningen have gone further by developing metropolitan food clusters and agroparks where food is grown in urban and peri-urban areas using highly efficient technologies such as hydroponics and precision agriculture to produce more food per drop of water (Buijs et al. 2010). This is especially promising if the life span of water is expanded by utilizing treated wastewater for food production. Another key resource in rainfall-prone areas of the MENA region is the so-called green water – water stored in the soil profile generated from rainfall (Assi et al. 2018). This water has very low opportunity costs as it cannot be pumped or diverted to be used as irrigation water. It is an essential part of any food security strategies in the MENA region.

Resource use efficiency is not only a technological question. Grafton et al. (2018) showed that higher irrigation efficiency rarely reduces water consumption if public authorities fail to introduce water quotas to strictly allocate water resources among farmers. This means that, before investments in technology are made, a policy shift is called for, to introduce strict water policies. At present, illegal wells are widespread across the MENA region, which may lead to a tragedy of the common's situation in which self-interest of farmers negatively affects common goods such as water resources. The European Union can play a very important role in mitigating the effects of water scarcity in the MENA region. There are several ways in which it can act as a friendly external power to support the transition of agricultural economies to low-resource and high-tech economies. First, the EU could give firm support to governments with better advice on institution-building to regulate water use in the agricultural sector. Second, the EU can provide technology transfer from its agricultural research organizations as well as targeted investment in wastewater treatment facilities and high-tech farming facilities to support MENA economies in their transition from traditional agriculture to high-tech, low-resource input agriculture. Third, MENA economies will be unlikely to grow sufficient cereals for domestic and regional food security. Thus, the region will further have to import cereals from around the world. This can be facilitated by establishing an agricultural customs union between the EU and MENA economies to provide producers of high-value crops in the MENA region with access to the European market. Similarly, MENA importers can be provided with tariff-free access to European cereals and other staple foods to support food and nutrition security in the MENA region. Therefore, the key arena for mitigating water and food management in the MENA region will have to come from policymakers both regionally and internationally.

IMPACT OF CONFLICTS: WATER SERVICES UNDER STRESS

What is water Scarcity?

Different terms exist to refer to the lack of water or water shortages experienced at different scales (eg household, community, city, country or region), and over different timescales (eg temporary due to conflict or long-term due to climate change). In this report, 'water scarcity' refers to the yearly amount of renewable freshwater per capita (in m³) within a country territory. Different levels have been identified: 1,700m³/capita/year being regarded as 'water stressed', 1,000 m³ as 'high scarcity', and 500 m³ 'extreme scarcity'. However, it can be easy to misinterpret these terms outside a given geographic and socio-economic setting. Water is never scarce in absolute terms, but it is perceived as scarce under specific allocative and institutional circumstances (Ioris, 2012). In fact, nearly all major cities produce a sufficient volume of potable water to meet more than satisfactory human health and sanitation needs. Water scarcity goes beyond a sole physical insufficiency of resources: it is also a product of uneven social distribution and unsustainable management practices (Swyngedouw, 2006). Scarcity of water actually results from a combination of physical, institutional and technical factors:

- *Physical scarcity* in availability of freshwater of acceptable quality with respect to aggregated demand, in the simple case of physical water shortage.
- *Scarcity* in access to water services, because of the failure of institutions in place to ensure a reliable supply of water to users, or to the inability of households to afford a connection/the costs of water.
- *Scarcity* due to the lack of adequate infrastructure (irrespective of the level of water resources) due to financial constraints.

In the last two cases, countries may be unable to capture and distribute resources due to limited financial resources, to a lack of institutional willingness or to a lack of capacity to maintain and manage them appropriately.

Water itself has been the cause of many tensions and inequalities in the region. Disputes over transboundary sources have arisen between countries where one side or the other has been accused of taking 'more than their fair share' by their neighbours. Important inequalities within countries have also created tensions, where wealthy users have enjoyed the cleanest and cheapest water, whilst the poor have often lived in polluted areas where water is often both more expensive and of poor quality (Devlin, 2014; Tropp and Jägerskog, 2006).

Water scarcity and climate change

MENA has been one of the most arid regions of the planet for several thousand years (Greenwood, 2014). Today, the region is home to about 6 per cent of the world's population but has access to less than 2 per cent of the world's renewable freshwater resource (Moustakbal, 2009). It includes 14 of the countries that will be the most 'water-stressed' in the world by 2040 and nine of them are identified as 'extremely water scarce'. MENA is considered as the most water-scarce region in the world (Maddocks et al. 2015). While in 2014 Lebanon had an amount of total renewable freshwater resources per capita of 770m³ per year, Jordan had only between 120 and 200m³ of renewable water resources per person per year (FAO, 2014; Mercy Corps 2014). This is approximately a fortieth of the global average and a ninth of the MENA average (ie 7,000–8,900 and 1,150m³/capita/year respectively) (Badran, 2016). Most MENA countries have been facing major institutional challenges to address the physical scarcity they face. Many have relied on modern technologies to supply water, for example through desalination. Added to these, conflicts have led to 'water crises' (ie insufficient access to potable and domestic water for a given period caused by development and/or humanitarian issues). Government policies can play a greater role than so-called natural events in the creation of water scarcity (FAO, 2007; Mercy Corps, 2014; Stewart, 2013). More recent extreme weather events associated with climate change have led to a further decline in the availability of water resources. Particularly in the Upper Jordan River Basin, mean annual temperatures could increase by up to 4.5 degrees Celsius and there could be a 25 per cent decrease in mean annual precipitation by the end of the century. Increased aridity suggests an increase in the number of countries in the region being below the level of absolute scarcity. With currently less than an averaged 200 m³ of renewable freshwater available per capita per year, Jordan is already one of the most water-scarce countries in the world (Greenwood, 2014).

Agriculture has historically played an important role in the economic development of the region and countries' reliance on water has increased, particularly for largescale irrigation. Water has also been used for the production of energy through the construction of dams. For example, Iraq has one of the largest dams of the region in Mosul, which has a water storage capacity of 11.1km³ and produces energy for 1.7 million people (Al-Ansari and Knutsson, 2011). Such dependency has started to pose problems as needs for food, energy and water have continuously increased with the growing population's demand, which in turn has also made countries more vulnerable during times of droughts (Farid et al., 2016). Virtual water imports to make up for freshwater deficits (eg by importing food grown with water elsewhere) have not always been possible for lower-income countries with weak purchasing power (ICRC, 2015).

About 170 million of the region's 300 million people (nearly 57 per cent) reside in urban areas (UN-Habitat, 2016). Except in Egypt, Syria and Yemen, all MENA countries have experienced significant urbanisation over the past 30 years (Madbouly, 2009). The entire country of Lebanon is itself considered as urban (UN-Habitat, 2011). According to UN projections, 280 million people out of 430 million in MENA (65 per cent) could be urban by 2020 (World Bank, 2008). Rapid urbanisation in MENA, like many other regions in the world, is accompanied by inadequate social and infrastructure development to respond to everyone's needs, thereby putting existing services at risk. By the beginning of the twenty-first century, diminishing renewable groundwater resources and population growth pushed countries to develop projects extracting water from new sources. For example, the Disi project in Jordan was developed to extract fossil water from a large aquifer and supply Jordanians with domestic water until 2022. The aquifer's total supply capacity has now been reached, leaving the country's population in need of new water resources. In Gaza, the Palestinian Water Authority (PWA) has initiated the construction of two desalination plants. While these interventions relieve water-supply systems stretched to the maximum, they remain insufficient to meet the needs of the population or to enable the recharge of the strained aquifer on which it relies (EIB, 2016).

Post-2011 revolts and further instabilities

A wave of conflicts started in 2011 in several MENA countries and continue to engulf the region in violence. Wars have physically affected societies through casualties and infrastructure destruction. As the conflicts have continued a range of further social issues have emerged across the entire region. They have caused multiple political and economic instabilities affecting societies and putting barriers to service providers meeting populations' basic needs. In the water sector, such instabilities have increased the strain on utilities' abilities to cope, eventually leading to declines in levels of service, and leaving populations in need of humanitarian assistance. The Syrian war is one of the bloodiest conflicts of the century. Since 2011, attacks have even targeted civilians, humanitarian actors and the facilities necessary for basic service provision. Damage to pumping stations and other water infrastructure has been particularly severe in rural Damascus, Idlib, Homs and al-Raqqa. Six years of continuous conflicts have deepened insecurity, reduced availability of services and led to steady economic decline. Water itself has been used as a 'weapon of war' (DuBois King, 2015). Its use for political negotiations in besieged areas such as Eastern Aleppo led to the loss of control of the network by utilities, and therefore exposed entire populations relying on it. Before the crisis, 96 per cent of the population in Syria had access to water from the main network. In the cities of Aleppo and Homs, coverage was reaching 100 per cent. Today, about 70 per cent of the population in Syria lacks access to sufficient domestic water, and to adequate drinking water (OCHA, 2015).

Another case is that of the Iraqi civil war. Since 2014, it has plunged the country into chaos. Conflicts in Iraq have restricted access to many areas leading to major challenges supplying populations with basic services. Similar to Syria, the strategic weaponisation of water has led to the destruction of water infrastructure, population centres and industrial facilities. During the battle for Mosul that started at the end of 2016, almost 650,000 people were left without access to water from the network

for six weeks following an attack on pipelines. This population was therefore forced to find alternative sources of water, often from poor-quality sources. UNICEF estimates that 10 million people are currently being affected by the war in Iraq, of which 4.7 million are children. Despite a high incidence of population displacement (currently 3 million individuals), many have returned to their homes where public service provision is limited or completely nonexistent (UNICEF, 2016; 2017).

A problem of cumulative impacts

As argued by ICRC (2015), ‘even without recent droughts and ongoing conflicts, many Middle Eastern states would be struggling to meet the basic water needs of growing urban populations. Aligning with this statement, we argue that the accumulation of various issues and the range of unsustainable management practices in MENA are to be considered as having contributed to current problems. Current impacts must be analysed through the way they have affected water-supply mechanisms, here referred to as systems. Systems require inputs in order to function. Therefore, water provision systems are disrupted when one or several inputs (ie resources) are missing or under pressure. Building on ICRC (2015), inputs are categorised here as essential human, physical and economic resources:

- Human resources refer to people and associated operations and planning processes (eg utilities’ staff, small-scale entrepreneurs, contractors).
- Physical resources include hardware and consumables (eg water, electricity, infrastructure, equipment, water treatment material).
- Economic resources relate to the financial input used to invest in staff, material and any other sub-systems (eg capital).

Continuous or persistent deterioration of water-supply mechanisms expose populations to health risks. Extreme cases of cumulative impacts have resulted in disease outbreaks. These can be caused by factors ranging from repeated attacks on treatment plants to the need for a population to rely on water resources of which the quality is not monitored, or which lack protection and are polluted by fecal pathogens. Yemen has suffered from multiple cholera outbreaks since the start of the conflicts. Many people without access to water have become reliant on wells they have dug themselves and from which they extract polluted water. The multitude of impacts, their interconnectedness, and accumulation over time give complex challenges to utilities. Responses often occur as a direct reaction to visible impacts, rather than in addressing root causes of the issues. Since 2011, conflicts have left an estimated 50.25 million people in need of humanitarian water, sanitation and hygiene (WASH) assistance in the entire MENA region. The wave of protracted wars in the region and resulting political and economic crises have physically affected entire societies. They have also caused the displacement of between 22 and 24 million people, corresponding to nearly one third of the total number of displaced people in the world. The conflict in Syria alone has led to 6.5 million IDPs and 4.8 million fleeing as refugees to neighboring countries, whose water systems were already fragile. In Jordan and Lebanon, more than 80 per cent of Syrian refugees have settled in urban areas. ‘Resilience’ refers to the ability of a system to anticipate, absorb, accommodate or recover from shocks and stresses. Water supply will better resist the threats posed by conflicts and further impacts if utilities have stronger resilience capacities. In the water sector, resilient systems are characterized by flexibility, resourcefulness and responsiveness, redundancy (in systems’ design or with the availability of spare resources), modularity (self-organization) and safe failure (minimum damage). Furthermore, we argue that working towards sustainability and equity goals will help build stronger resilience. As per sustainable objectives, protecting a system against damage to social, environmental and economic components is a pre-requisite for resilience. Supplying everyone equitably with water services also helps build a stronger service system. In order to build short and long-term resilience, utilities need to break patterns of growing vulnerability. As such, they need to take into account pre-existing issues, and to consider future development. Their capacities will be reinforced with more efficient resource management and with enhanced relationships with the communities that they serve. In this study, we aim to demonstrate that humanitarian and development interventions are more sustainable and equitable when they are coordinated with local actors, and when they are able to adopt a supporting role as opposed to a substitution role.

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