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Climate Change and Water Scarcity in the Middle East

A Transitional Approach

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AND REED POWER



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1 Climate Change in the Middle East

Climate change is the great looming threat of the next century. The challenge of climate change impacts every part of life, and it “affects everything from geopolitics to economies to migration. It shapes cities and life expectancies” (The Economist 2023). Countries will require significant resources and innovation to navigate this slow-onset disaster’s current and future pressures successfully. The impacts of climate change are not only misunderstood, but they are also transcending borders, crossing sectors, and influencing every part of human life. Vulnerable and marginalized communities are set to bear the brunt of climate change’s impacts, with the least developed countries facing the greatest uncertainties. Climate change significantly threatens current humanitarian and development practices and norms.

The latest figures suggest that approximately 300 million people require humanitarian assistance, and these numbers are anticipated to grow significantly over the next decade if recent trends continue (OCHA 2023b). Conflict, violence, and instability are on the rise, and in 2022 alone, nearly 110 million people were displaced from their homes as a result (UNHCR 2023). The longevity of these crises adds another layer of complexity. For instance, the average humanitarian appeal in 2018 spanned nine years, nearly doubling from the five-year average in 2014. This pattern of protracted crises can be seen across the Middle East and Africa in countries like Syria, Somalia, Yemen, the Democratic Republic of the Congo, South Sudan, and Sudan and currently consume the majority of humanitarian resources globally (Development Initiatives 2023). By 2030, it’s projected that over 80% of the world’s poorest will live in such fragile contexts, posing immense challenges to traditional humanitarian responses, including the vital field of water, sanitation, and hygiene (WASH), which is critical to addressing climate change in the Middle East (UNICEF 2019b).

Now, two decades into the 21st century, we are seeing rising global conflict and instability, leading to increased forced migration. One of our generations’ most significant challenges lie in addressing the growing complexity of an expanding, mobile population and the rising conflict associated with dwindling natural resources. These challenges are only amplified by the impact of

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global climate change, which particularly impacts marginalized populations living in areas of poverty and instability. This is particularly true in the Middle East and North Africa (MENA), where the effects of climate change and water scarcity are poised to become monumental challenges for both local and national governments in the coming century. The international community, most notably the United Nations, has emphasized the devastating impact climate change will have on depleted regional water supplies and food production, in addition to the potential catalyst for terrorism, violent extremism, and cross-boundary conflict (United Nations 2020). Over the next half-century, the entire region will enter a period of exacerbated fragility, from the wealthier Gulf nations to those in conflict or undergoing post-conflict transitions. The MENA region is already experiencing the signs of the impact of climate change, with average temperatures rising faster than the global rate (Alaaldin 2022). This shift aggravates existing challenges of weakened governance, demographic pressures, economic instability, and the repercussions of recent pandemics. The Intergovernmental Panel on Climate Change predicts a temperature increase of 1.5°C–2°C in the MENA region by 2040, exacerbating water scarcity, heatwaves, droughts, and dust storms, thereby threatening food security and amplifying poverty and social unrest (IPCC 2018).

In response, humanitarian and development practitioners increasingly focus on integrating disaster risk reduction and climate change adaptation into their strategies. This approach acknowledges that disasters are more than disruptive events in the development journey that can be resolved solely by swift emergency responses. Instead, they stem from unaddressed risks inherent in the development process. Disasters occur when events like floods or earthquakes impact areas where people, property, and systems are inadequately protected. However, we can significantly mitigate disaster risks by implementing strategies that minimize vulnerability and the risk of exposure to such hazards and by addressing broader issues like poverty and inequality. This concept, known as disaster risk reduction, involves crafting humanitarian efforts that address immediate crises and safeguard fundamental human rights in the immediate and long-term aftermath (Turnbull, Sterrett, and Hilleboe 2013). Turnbull, Sterrett, and Hilleboe articulated this further, stating that,

to reduce disaster and climate change risk, exposure needs to be minimized, vulnerability reduced, and capacities for resilience strengthened in ways that address both disaster and climate change risk simultaneously, neither approach compromising the other. This is a dynamic process requiring continual effort across economic, social, cultural, environmental, institutional, and political spheres to move from vulnerability to resilience.
(Turnbull, Sterrett, and Hilleboe 2013, 8)

Successfully addressing climate change requires a multisectoral merging of necessary, short-term mitigation and adaptation programing with long-term

resilience building and sustainability frameworks, thus grounding climate change response firmly in humanitarian and development actors' mandates.

Yet, the unfortunate reality is that climate change disproportionately affects disadvantaged communities and, most notably, younger populations under the age of 25, who make up half of the entire population of the MENA region (OECD 2022b). The younger generation is forced to deal with the consequences of this insurmountable burden they had no role in bringing about (Alaaldin 2022). In the 2019 UNICEF report *Water Under Fire*, it was noted that in protracted crises, the risk of death for children under 15 from diarrheal diseases due to inadequate WASH services is nearly three times that of dying from direct conflict-related violence. This risk is even more pronounced for children under 5, who are over 20 times more likely to succumb to such diseases than to violence. These realities highlight the critical need to promptly and adequately deliver WASH services in these situations and make it vital for the short-term and long-term survival of the most vulnerable. Regrettably, humanitarian actors often face resource shortages that require them to rely on underdeveloped and unsafe water and sanitation infrastructure (UNICEF 2019a). Water scarcity and climate change compound these issues in the Middle East, increasing the need for a stronger, more integrated response.

Climate Change Dynamics and Conflict

The Middle East is a region currently facing various geo-political and environmental challenges, including the increasing pressures of climate-related water scarcity. These pressures are further exacerbated by regional population growth and economic development (Lelieveld et al. 2012). Internal conflicts and the lack of long-term programming based on sustainability and resilience have considerable consequences, both now and in the future. The consequences include decreasing water resources, soil fertility for food production, land management, and effects along coastal areas and marine resources (Cloern et al. 2016). Data from the region indicate that water scarcity coupled with population growth is greatly increasing the demand for water in the region (Lelieveld et al. 2012; Stavi et al. 2022).

Agriculture accounts for approximately 70% of water use globally, which is a particular issue in the Middle East (Penney and Muyskens 2023). Even in areas where yearly rain and snowfall averages remain consistent, climate-related droughts and floods are still significantly impacting agriculture, and climate change adaptation in the industry is necessary to meet future needs. Penney and Muyskens point to a growing trend of inconstant rainfall, often coming all at once, requiring farmers to rely more on water storage and irrigation than on an even spread of rain over a growing season (Penney and Muyskens 2023). Combining these problems with climate change, desertification, deforestation, overall land degradation, and air pollution, it is clear the

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Middle East faces a long, uphill battle to mitigate current shocks and build adaptive, sustainable, and resilient services capable of meeting future needs (Bayram and Gökırmaklı 2020).

So, how can local, national, and international humanitarian and development actors effectively deal with these issues? The Middle East's complex history and rich sociocultural, environmental, and educational developments have created significant potential for innovations that promote sustainable innovations to these ecological challenges. Biodiversity-friendly farming schemes that increase habitat heterogeneity and the presence of islands or corridor reserves can support local wildlife and minimize the impacts of agriculture on wildlife species. Habitat utilization patterns are examples of progress (Baker et al. 2017). Furthermore, environmental commitment, which involves minimizing waste, using environmentally friendly products, and adhering to governmental politics, has enhanced individual attitudes toward the environment and promoted environmental friendliness (Cop, Alola, and Alola 2020). These, coupled with the increased focus on effective local, national, and regional resource management and continued discussions around sustainability and resilience building, can help Middle Eastern countries, decrease conflict and resource waste, and alleviate further social, economic, and environmental degradation.

Conflict is a significant driver of crisis. Indeed, more countries are experiencing violent conflict now than at any other time since 1989 (Cantor 2023). In conflict, deliberate and indiscriminate attacks destroy infrastructure, injure personnel, and cut off the power that keeps vital systems running (United Nations 2018). These attacks negatively impact the long-term health and economic livelihoods of individuals, families, and communities living in fragile states. Armed conflict also limits access to essential equipment and consumables such as fuel or chlorine, which can be depleted, rationed, diverted, or blocked from delivery. Very often, essential services are intentionally denied or destroyed, particularly in cities, where communities depend on a complex, interconnected set of services. Such attacks on water, sanitation, and power systems can be instantly debilitating and come with long-term consequences, especially for the poorest and most marginalized groups in societies.

Environmental degradation and climate change impacts significantly compound the issues posed by conflict and have far-reaching implications for human security. Limiting access to the resources necessary for human survival reduces health systems' capacities and increases people's health needs, disrupting livelihoods and reducing the adaptive capacities of individuals, families, and communities. During our interview with Karine Deniel, she stated, "Environmental impacts are many times felt cross-boundary, in that they can exacerbate conflicts, disease outbreaks, and negatively impact livelihoods not only within, but between, countries in the Middle East" (Deniel 2023). In addition, when armed conflict is combined with environmental degradation

and climate change, it can lead to a significant increase in displacement, threatening human security. People who are displaced due to armed conflict, especially those in informal settlements, are particularly vulnerable to climate-related shocks and disasters. A changing climate can harm human security by damaging livelihood systems or the infrastructure and ecosystems that support them (ICRC and NRC 2023).

With these impacts in mind, there is a critical lack of climate-related humanitarian adaptation support for displaced populations or populations at risk of displacement in conflict-affected countries (Sitati et al. 2021). Displacement can be prevented by providing environmental management and climate adaptation support to vulnerable communities already bearing the consequences of armed conflict before they exhaust existing adaptation options or are exposed to extreme weather events. These actions strengthen resilience. Similarly, there is a need for adaptation initiatives geared towards displaced people to help prevent further displacement, especially for those living for protracted periods in camps or informal settlements – built initially as short-term solutions – and thus lack vital reliance contingencies, making them particularly vulnerable to climate risks. Additionally, it is essential to recognize that both in-country mobility and cross-border mobility can be a critical coping adaptation or survival strategy for marginalized groups facing the combined effects of climate change, environmental degradation, and armed conflict. As such, mobility-related considerations should be integrated into adaptation support strategies and approaches, considering the priorities and concerns of those affected (ICRC and NRC 2023).

Across the Middle East, conflicts have been growing in number and length as climate-related water scarcity drives increased conflict over increasingly scarce resources in a region facing rapid urbanization and population growth. Ensor (2011) argued that conflict is gaining more attention in debates around climate change as the realities that climate change poses to scarce resources, particularly water, are only projected to worsen (Ensor 2011). The pressures on water scarcity are particularly acute in the Middle East and lead to the increased migration of marginalized groups, who often lack the adaptive capacity to meet the unique challenges caused by climate change. These migrations, often into cities, place additional stress on weak water infrastructure and WASH services that were never designed for the increased population and lack critical resiliency to current and future anticipated pressures. Migration can also stress areas previously considered safe and create feedback loops that generate downward spirals of resource competition and conflict that sustain ongoing and protracted violence (Wehrey et al. 2023). Long-term institutional weakness has a lasting impact on social trust and can lead to further degradation in security, livelihoods, unpredictable and changing needs across socioeconomic groups, and political instability (Mosel and Levine 2014).

The Role of the Humanitarian, Development, and Peace Nexus

The humanitarian, development, and peace (HDP) nexus refers to the integration of short-term humanitarian and long-term development approaches with local and national institutions as a means of helping crisis-affected populations. This transition involves a shift from solely providing short-term emergency relief towards longer-term sustainable development programming that addresses the underlying causes of protracted crises. This transition aims to improve the efficiency and effectiveness of programs by promoting collaboration, reducing duplication, and addressing challenges that block progress along the humanitarian and development continuum.

At the World Humanitarian Summit 2016, the development of the Grand Bargain and the New Way of Working (NWOW) cemented the need for greater integration and cooperation between humanitarian and development actors. The reality is that global humanitarian crises were growing in length and scope, significantly altering previous conceptions around a short, linear transition between humanitarian and development response. As crises become increasingly protracted, a shift in thinking becomes critical to future disaster and crisis response (Center on International Cooperation 2019; IASC 2021; ICVA 2017; Nakamitsu et al. 2017; OCHA 2017; United Nations 2017). Following the adoption of these new conventions, humanitarian and development actors globally began reevaluating existing frameworks and decision-making structures to allow better integration. The Global WASH Cluster (GWC) in 2019 published its WASH Roadmap 2020–2025, highlighting essential steps linking WASH services to greater social and health outcomes (Global WASH Cluster 2019). In fact, there are strong linkages between WASH services and other sectors like health, nutrition, shelter, education, nutrition, and child protection. These connections make water resource management and WASH programming a critical starting point for addressing the larger outcomes each of these individual sectors wishes to address (Snel and Sorensen 2023b). Yet we note here that the impact climate change has on water, water scarcity, and, by default, WASH services compounds multisectoral outcomes, necessitating greater, multisectoral coordination to create effective and sustainable resilience for at-risk populations, particularly in already water-scarce areas like the Middle East.

More specifically, the humanitarian and development nexus transition is a critical concept in the context of the WASH sector in the Middle East. The region has faced numerous crises in recent years, including conflict, displacement, and natural disasters, which have severely impacted WASH services and infrastructure. As such, successfully transitioning from humanitarian to development programming is essential to ensuring sustainable access to clean water, adequate sanitation, and good hygiene practices in the region. However, this transition is not without its challenges. The region faces unique

political, social, and economic challenges that can hinder the implementation of sustainable and resilient WASH programing. These challenges include limited funding, weak governance, ongoing conflict and instability, and the impact of climate change (OECD 2022a). Effectively addressing these challenges will be essential to achieving the long-term goal of sustainable access to WASH services and infrastructure for all.

The Strengths-based Approach, the Joint Operational Framework, and the Sustainable WASH Model

Although numerous shared principles broadly guide the efforts of humanitarian and development organizations in the WASH sector, there is a lack of alignment in their approach to planning, designing, and implementing interventions, which results in prolonged and ineffective transitions. Shocks and stresses such as climate change, conflict, and COVID-19 have devastated water resource management and WASH services in vulnerable countries worldwide. This is particularly true in the Middle East, where water scarcity drives many local, national, and regional conflicts (Abel et al. 2019; Baxter et al. 2022). Additionally, peace-related aspects are frequently overlooked. This dissonance in the sector coincides with a rise in the frequency and duration of humanitarian crises, impacting larger populations, especially in areas susceptible to protracted and recurring crises (Mason and Mosello 2016). United Nations High Commissioner for Refugees (UNHCR) provides the first guidance manual reflecting on WASH targets in humanitarian, transitional, and protracted crises as a result of growing humanitarian needs and increasing socioeconomic instability (Harvey et al. 2019). Developing effective, integrative, and coordinated responses to climate change, water scarcity, and WASH services that result in sustainable, long-term resiliency for individuals, families, and communities is a work in progress. In the last few years, two critical frameworks have emerged: a strengths-based approach that empowers local decision-makers and communities and the Joint Operational Framework (JOF), which facilitates coordination among HDP actors and institutions. These frameworks prioritize community empowerment, asset mobilization, and strategic coordination, offering pathways to mitigate climate impacts on and enhance community resilience (Grieve 2023a; Grieve, Panzerbieter, and Rück 2023; Winterford, Rhodes, and Dureau 2023).

Strengths-based approaches have been a common concept for decades in many other fields and contexts but have only been applied meaningfully to international development recently (Winterford, Rhodes, and Dureau 2023). Traditional humanitarian and development frameworks look at areas of underdevelopment or crisis through the lens of deficits, allowing need assessments to identify the resources and skills a given person, group, or community is lacking and thereby simplifying response as filling those deficits.

A strengths-based approach flips the narrative and instead focuses on the assets individuals, families, and communities bring to either short-term humanitarian crises or to long-term development programming. It puts local decision-makers in as the drivers of positive change by allowing them to leverage their assets and capabilities to solve complex problems. We must clarify here that deficits are a reality in humanitarian and development contexts, particularly with marginalized groups who often do, in fact, lack the resources, skills, and capabilities to adapt to the unique stresses during disaster effectively. A strength-based, asset-focused approach, however, places individuals, families, and communities, particularly marginalized groups most impacted during a crisis, as the dividers of deciding what assets they have, what deficits need, and how local, national, and international humanitarian and development resources can be utilized to build sustainability and resiliency for the future.

What makes a strengths-based approach unique is how well it connects with other foundational humanitarian and development mandates and philosophies. Winterford, Rhodes, and Dureau (2023) highlight notable clear connections and synergies between a strengths-based approach and other frameworks like Amartya Sen's capabilities approach with its focus on individual freedoms (Sen 1985, 2000, 2001), The Grand Bargain's renewed push for greater localization (IASC 2021; World Humanitarian Summit 2016) and participatory and sustainable livelihoods approaches as developed by Robert Chambers and others (Chambers 1997, 2006, 2017; Chambers and Conway 1992). Yet it is in light of the growing complexity found in increasing numbers of protracted crises that give a strengths-based, asset-focused approach its potential. Winterford, Rhodes, and Dureau stated that

A strengths-based approach does not deny inequalities, injustices, and problems: it offers an alternative perspective on how these issues can be addressed. It seeks to address these through an orientation and focus on action towards preferred futures, rather than defining needs, problems-solving, and filling gaps.

(Winterford, Rhodes, and Dureau 2023, 19)

Or, as we argue here, as complexity increases, outcomes become increasingly difficult to achieve and require a shift in focus away from deficits and towards assets, away from ends and towards means.

A strengths-based approach focuses on the current means of achieving desired outcomes by empowering individuals, families, and communities to become leaders and decision-makers in creating their own sustainable and resilient futures. This process breaks traditional and frankly simpler humanitarian and development action models that rely on a linear progression or transitions from disaster and crisis response to stability and flourishing. These traditional models are simpler for humanitarian and development actors to plan and implement as they rely on a top-down orientation for funding,

program design, and implementation and are, therefore, easier to achieve in short-term funding cycles. Though potentially slower, the strength-based, asset-focus approach builds a stronger long-term foundation for resilience building and sustainability in program outcomes but comes with a critical loss in control by national, regional, and international policymakers. Finding a balance between the top-down resources and bottom-up program design and control is critical to addressing the growing complexities of climate-related water scarcity in the Middle East.

The JOF, which the German WASH Network commissioned with oversight from UNICEF, Sanitation and Water for All (SWA), and the GWC, was released in early 2023 (Grieve 2023a; Grieve, Panzerbieter, and Rück 2023). Though primarily focused on the WASH sector, the JOF is a powerful tool to help HDP actors increase effective coordination across their separate mandates while also ensuring increased reliance on the input of local stakeholders in the development and implementation of WASH services. The JOF assists policymakers, coordinators, and practitioners at the national and sub-national levels to integrate resilience, conflict sensitivity, and peacebuilding capabilities into existing and new WASH programs by leveraging the nexus approach. This integration enables WASH programs to achieve sustainable development, address and reduce humanitarian WASH needs, and contribute to building resilient, inclusive, and peaceful societies. Applying the JOF is particularly relevant in contexts of protracted and recurrent crises.

In this book, we utilized the Sustainable WASH Model, also known as the Financial, Institutional, Environmental, Technical, and Social (FIETS) model, as an analytical lens (WASH Alliance International 2021). Based on lessons learned in the Middle East, the Sustainable WASH Model integrates five key sub-sectors to ensure the sustainability and effectiveness of WASH initiatives. Financial considerations focus on self-sufficiency, underpinned by local funding mechanisms such as taxes and fees versus the need for external subsidies. Institutional considerations aim for clearly defined roles and cooperative engagement among local and national stakeholders, aligning with user needs and promoting transparent governance. Environmental consideration advocates for the harmonious management of natural water and waste systems, recognizing the interdependence of human activities and ecological health. Technical considerations seek to ensure the continual upkeep and modernization of WASH infrastructure through local stewardship. Lastly, social considerations aim for community-led, equitable, and culturally aware practices supporting robust and healthy societies. Using these frameworks and models, we aim to promote stronger alignment within the WASH sector and the larger challenges of climate change and water scarcity. This focus requires greater consistency between the HDP sectors. It also underscores the importance of upholding organizational responsibilities and recognizing that solutions must be tailored to the specific context and driven by local considerations. The strengths-based approach, the JOF, and this book aim to enhance

climate change interventions' efficiency, effectiveness, sustainability, and resilience in humanitarian and development contexts.

Methodology and Findings

In preparing for the book, we utilized the Sustainable WASH Model, as discussed above, as part of a series of qualitative surveys and interviews with WASH practitioners and experts across both the humanitarian and development fields working within a wide range of roles in the WASH sector, including with local, national, regional, and global public and private organizations. Questions were aimed at identifying barriers to effective water resource management and WASH services and, critically, at identifying key innovations and developments to effective climate response. We also sought insights into transitions across the humanitarian-development nexus and the changes needed to facilitate greater integration in regional responses to climate change, water scarcity, conflict, and crisis response. In total, we received 17 qualitative survey responses and conducted 14 interviews. All written and verbal feedback from respondents and interviewees during the survey and interview stage was later transcribed and coded into sub-themes under each core challenge of the core challenges outlined within the Sustainable WASH Model. The following chapters discuss key surveys and interview findings at greater length. We draw on insights from the strengths-based approach and the JOF as lenses to understand findings better and suggest practical future guidance for effective climate change mitigation and adaptation initiatives across the region.

We acknowledge the limitations and bias in this publication. This publication is focused primarily on climate change and water scarcity in the Middle Eastern context and could overlook key environmental debates over climate change, such as pollution. Instead, we have focused our discussion on the challenges that climate change will pose for regional actors and stakeholders. We highlight solutions decision-makers can take to better mitigate and adapt to current and future climate-related pressures. This publication also aims at a specific audience, notably humanitarian and development practitioners who lead the HDP nexus transition and academic thinkers interested in the HDP nexus. We note that WASH practitioners working in the Middle East are a very small group of highly specialized individuals. Not all of them answered our requests to take part in our research. We sought to interview individuals working on all sides of the HDP nexus and from a broad range of individuals working in local, national, and regional positions. The specific nature of the roles targeted could lead to findings that do not fully capture the broader range of challenges faced in all contexts or by all stakeholders. As such, all suggestions here must be fully contextualized by local thinkers and decision-makers and may not be applicable in all contexts.

Furthermore, as a qualitative study, the ideas expressed represent the opinions of individuals and not larger norms. Though experts in their field, the

individuals interviewed are also products of their circumstances and contexts. Their current organizational affiliations and roles could heavily influence them, skewing their response to organizational priorities. As this was not a study of the perspectives of local stakeholders or critically impacted marginalized groups, our findings may not fully capture local contexts and their assets or needs. Finally, we note that these findings represent our interviewees and our opinions and thoughts momentarily. Challenges and contexts change rapidly, particularly in humanitarian settings, and as such, findings can, in some cases, become rapidly outdated.

Using the Sustainable WASH Model as a guide, our survey respondents and interviewees suggested that the greatest challenges to addressing WASH services in the Middle East, ranked from most to least pressing, were institutional, financial, and environmental. Technical and social considerations were deemed important but were not touched on heavily. Interviews were used to probe deeper into the specific institutional, financial, and environmental challenges faced in the WASH sector and how the increasing impacts of water scarcity and climate change in the Middle East complicate WASH programming. Interviewees were also asked to discuss case studies from the region that might highlight potential success stories in mitigating or overcoming these challenges and what role integration across the HDP nexus might play in future adaptation and mitigation efforts. Below, we provide a brief overview of our survey and interview findings. Throughout this book, we draw on the voices of our survey and interview respondents to highlight challenges that connect these voices to ongoing research and to proactively attempt to provide clarity in an integrated path to successful climate change adaptation and resilience building for the future. Below is a summary of the feedback for each challenge based on participant responses and organized according to the FIETs model with no implied ranking of significance.

Financial – Core financial challenges for HDP practitioners include uncertainty and reliance on short-term, external funding that compromises sustainability efforts. Concerns encompass dependency on state subsidies, fluctuating donor and government funding, and corruption, which hinder the financial sustainability needed for climate change resilience. Geo-political instability further complicates these challenges, affecting effective climate-related responses to water scarcity and WASH service needs.

Institutional – HDP actors encounter institutional challenges in the Middle East due to weak governance, fragmented coordination, and the need for climate-specific policy and regulatory reforms. These barriers obstruct the planning and implementation of resilient services. Specifically, unclear institutional mandates necessitate policy changes

and regulatory reforms to enhance institutions' capacity to address water scarcity effectively.

Environmental – The lack of public awareness, poor water management, and insufficient cooperation exacerbate cross-border environmental impacts, limiting progress across sectors and diminishing livelihood capabilities. Key environmental challenges in the Middle East include water scarcity, climate change, population growth, and conflict, intensifying resource competition and threatening infrastructure. Environmental degradation and conflict increase human security risks, disrupt livelihoods, and require a greater emphasis on adaptation, resilience, and sustainability efforts.

Technical – Core technical challenges for HDP practitioners in the Middle East include a lack of specialized skills and capacity that hinder project implementation and management. These gaps limit innovation, sustainability of water systems, and adaptation to climate change. The emphasis on community-led programming and localization highlights the necessity to integrate local mechanisms and capacities. The changing climate change landscape calls for a more integrated, resilient, and sustainable approach, demanding advanced skills, nexus-thinking, and cross-sector collaboration.

Social – Social challenges significantly affect climate change programming and the effectiveness of transitions across the HDP nexus. Geopolitical tensions and conflicts, especially over scarce resources like water, disrupt WASH services and increase vulnerabilities, particularly for children and marginalized groups. The region's lack of social cohesion, worsened by long-standing conflicts, undermines trust essential for resilient infrastructure and institutional systems. Insufficient peace-building efforts and conflict-sensitive approaches impede effective, community-led programming. Collaboration across HDP sectors is crucial to address these intertwined social challenges and achieve sustainable water resource management and WASH outcomes.

Conclusion

The most pressing threats, as identified by respondents, span FIETS domains, with institutional, financial, and environmental challenges being particularly prominent. Such insights are crucial in shaping a more nuanced understanding of the obstacles the WASH sector faces due to water scarcity and climate change and how these challenges impact the critical transition between HDP actors in the Middle East. Delving deeper, the interviews offered a platform for experts to ask deep questions, expound on challenges, and provide valuable contexts and examples from the field. In our interview

with Farah Al-Basha, she summarized some of the questions this book aims to address, stating,

It is clear that several countries are having droughts in the region, and there isn't enough being done to plan and prepare for this change. The question for the WASH sector is, where do we start? Is it establishing early warning systems or understanding groundwater levels? Do we start with establishing preparedness plans? What is the level of resistance from the government in addressing climate change? Is it the role of the government or the UN to create preparedness plans? We cannot do much if we do not ask and answer these questions in advance and simply jump to respond when disasters occur. It is too late.

(Al-Basha 2023)

Finding the answers to these questions requires coordination, collaboration, and planning. Although we do not claim to be the ultimate authority on the topic, we aim here to bring together key actors and thinkers capable of pointing future climate action in the right direction. As such, the following chapters draw heavily from the feedback and input of our survey respondents and interviewees, who provide a deeper, hands-on insights into the barriers they face and the innovations and actions they recommend to improve WASH outcomes in the Middle East despite growing pressures of water scarcity and climate change.

In subsequent chapters, we examine challenges identified through practitioner discussions, leveraging published and found case studies to illustrate potential solutions. Chapter 2 delves into the Middle East's specific vulnerabilities to climate change and water scarcity, emphasizing adaptation and mitigation strategies crucial for addressing present and future impacts on WASH services. Chapter 3 focuses on institutional obstacles identified as primary barriers to effective climate response, exploring local, national, and regional reforms to bolster sustainability and resilience efforts. In Chapter 4, we dive deeper into the HDP nexus, highlighting the complexities of climate change, resource scarcity, conflict, and forced migration, necessitating a paradigm shift for effective and sustainable solutions. Lastly, Chapter 5 discusses the need for HDP actors to adopt a new nexus mentality based on a strengths-based approach and the JOF as a better means of designing, implementing, and achieving climate-related WASH outcomes in the Middle East. We also look briefly at ongoing financial debates that perpetuate silos between humanitarian and development sectors, presenting integrative approaches and summarizing key findings to guide practical action. In the appendices, key definitions can be found in a short glossary (Annex 1), a list of our interviewees is provided (Annex 2) along with three new case studies (Annexes 3–5), which are discussed in Chapter 5.

Climate change is poised to significantly worsen ongoing crises in the Middle East, including forced migration, water scarcity, food insecurity,

pandemics, and protracted conflicts. To address these issues, policymakers must address these challenges by implementing mitigation, adaptation, and resilience measures that reduce the waste of scarce resources. Critically, a paradigm shift is needed to address water scarcity and the provision of WASH services that can effectively and sustainably transition across the HDP nexus while integrating knowledge and resources from various sectors and actors, locally and regionally. Collaboration and nexus thinking are essential for resilience building in the face of climate change and conflict. Only through a holistic approach can the region overcome these challenges and ensure a future of health, dignity, and prosperity.