Participatory Approaches to Conflict, Climate Change and Environment

—

Case Studies from the Middle East and North Africa

Arab Reform Initiative

Robert Bosch Stiftung

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Foreword

The MENA countries have been confronting profound and far-reaching climate shocks. Experts widely agree that human-driven activity intensely shapes escalating climate stressors—including extreme weather events—dwindling natural resources, and persistent environmental degradation. These climate dynamics are expected to deepen existing conflicts, destabilizing an already fragile landscape. Conflict contributes to further visible environmental deterioration, leaving a trail of devastation in its wake. Despite this intimate interplay, environmental and climate considerations are often ignored during peacebuilding efforts.

More than ever, the situation in the region is shaped by conflict and war. The climate-conflict nexus takes on greater urgency in the Middle East and North Africa. The unpredictable security situation, coupled with rapidly changing conditions on the ground, has presented challenges for this publication: the inclusion of a dedicated chapter on Lebanon had to be reconsidered due to war. Due to unforeseeable events on the ground, some of the chapters in this publication have been rendered outmoded, a testament to the environment's volatility during times of conflict.

This publication marks a collaborative effort between the Arab Reform Initiative and the Robert Bosch Stiftung as part of our joint program, "Conflict, Climate Change and Environment in the Middle East", which we launched in 2021. The program's central aim is to create spaces for exchange and sharing expertise among diverse local, national and regional actors, practitioners, and scholars from the MENA. By fostering these connections across sectors and geographies, we are building networks and alliances that support local actors, amplifying the voices of those most affected by both conflict and environmental change.

We extend our deep gratitude to the dedicated contributors of this publication, particularly Hussam Hussein, Sammy Kayed, and Tobias Zumbraegel, whose commitment has helped bring this work to fruition; and to the authors' meticulous contributions towards each of the chapters. Special thanks go to Zaki Boulos for his careful editorial guidance. Lastly, we are grateful to all the local stakeholders and sources who enriched this publication with their insights and expertise, adding depth and nuance to the analyses.

This publication is both a call to action and a resource, designed to catalyze collaboration and informed action on the complex relationship between climate, conflict, and environment in the MENA.

We look forward to continuing this vital work alongside all those committed to building resilience and fostering sustainable peace in the region.

Beirut/Berlin/Paris/Stuttgart, March 2025

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Introduction

Beneath the Nexus: Connecting Participatory Processes, Conflict, and Environmental Breakdown in MENA

Sammy Kayed, Tobias Zumbraegel, and Hussam Hussein

International policymakers are increasingly convening over environmental breakdown—the combined result of climate change, biodiversity loss, over-extraction, and pollution—in an effort to realize commitments formulated at the 2015 Paris Climate Agreement, the 2022 30-by-30 pledge, and the 2022 resolution on the human right to a clean, healthy, and sustainable environment, under themes such as "investing in a livable planet for all" (climate change COP29), "think globally, act locally" (biodiversity COP 15), and "effective and inclusive solutions" (Sixth United Nations Environment Assembly).[1]

Since the early 1990s, actors disproportionately impacted by environmental degradation—including indigenous groups, local environmentalists, frontline communities, and grassroots resistance movements—have highlighted the injustices and inequalities rooted in political, social, and distributive dimensions of environmental breakdown. And yet, when it comes to inclusive and empowering[2] participation in UN processes, progress has been minimal.[3] These concerns are particularly pronounced in disputes over resource distribution, burden-sharing, and enforceable governance. Despite growing critiques, UN summits and negotiations continue to fall short in incorporating mechanisms and instruments for achieving just transformation across scales.[4]

1 United Nations Environment Assembly (UNEA), "Proceedings of the United Nations Environment Assembly at Its Sixth Session", United Nations Environment Programme (UNEP), 1 March 2024, available at Link

2 Understood as the process through which individuals or communities gain the ability to take control of their lives, achieve their goals, and enhance their quality of life. It involves accessing knowledge and skills, participating in decision-making, and fostering self-efficacy, community involvement, and a sense of control over social, political, economic, and psychological factors as described by Hedayat Allah Nikkhah and Ma'rof Redzuan, "Participation as a Medium of Empowerment in Community Development", European Journal of Social Sciences 11, no. 1 (2009), pp. 170–176, available at http://psasir.upm.edu.my/id/eprint/16050

3 Mary Menton et al., "Environmental Justice and the SDGs: From Synergies to Gaps and Contradictions", Sustainability Science 15, (April 2020), pp. 1621–1636, available at https://doi.org/10.1007/s11625-020-00789-8

4 Understood as the multidimensional process of simultaneously spreading innovations (outscaling) and embedding them within institutional frameworks (upscaling), addressing cross-scale dynamics in power, politics, diffusion, and adaptation to achieve systemic shifts in socio-ecological systems as described by Frans Hermans, Dirk Roep and Laurens Klerkx, "Scale Dynamics of Grassroots Innovations through Parallel Pathways of Transformative Change", Ecological Economics 130 (2016), pp. 285–295, available at https://doi.org/10.1016/j.ecolecon.2016.07.011

Although researchers emphasize a sharper articulation of justice and inclusive participation as crosscutting foundations for effective evidence-based policymaking,[5] deeper reckoning is often considered beyond the scope of UN regimes, sustainable development goals, and much of civil society informed by them.[6] This creates significant contradictions.[7] Participatory approaches are continuously invoked to resolve these inconsistencies or to counter these critiques. However, over past decades, many researchers and civil society organizations (CSOs) have criticized the superficial, performative, and disingenuous application of the participatory approach, arguing that the approach has strayed far from its radical and transformative origins and potentialities.[8] Some CSOs, particularly those with grassroots orientations, are flagging this divergence and demanding genuine inclusion in decision-making processes that generate transformative outcomes, in part by incorporating knowledge, practices, goals, and worldviews of actors disproportionately impacted by environmental breakdown. However, they exert only limited pressure on the inner circle of formal diplomatic processes.[9] Instead, international policymakers and platforms respond to critiques and pressure—often with performative and sometimes extractive involvement of frontline groups—in an effort to signal inclusivity and build credibility.[10] Activism on this divergence has also been taken up in academic circles, enabling significant pressure to be exerted on diplomacy and UN decision-making due to the privileged induction of traditional experts.[11] But this too has not led to just and transformative outcomes.[12]

Difficulties with distributive, procedural, recognitional, and restorative justice[13]—along with their intersectionality and varied interpretations by affected communities[14]—can become significantly more complex, acute, and urgent at the environmental breakdown and conflict nexus. Here, survivors of direct conflict are left to face realities, such as heightened toxicity, damaged or decimated natural resources, faltering

5 Brian Wampler, "Participation, Representation, and Social Justice: Using Participatory Governance to Transform Representative Democracy", Polity 44, no. 4 (October 2012), available at https://doi.org/10.1057/pol.2012.21

6 Joyeeta Gupta and Courtney Vegelin, "Inclusive Development, Leaving No One Behind, Justice and the Sustainable Development Goals", International Environmental Agreements: Politics, Law and Economics 23, no. 2 (2023), pp. 115–121, available at https://doi.org/10.1007/s10784-023-09612-y

7 Wolfgang Obergassel et al., "From Regime-Building to Implementation: Harnessing the UN Climate Conferences to Drive Climate Action", WIREs Climate Change 13, no. 6 (November/December 2022), e797, available at https://doi.org/10.1002/wcc.797; Menton et al., "Environmental Justice and the SDGs".

8 Juan Telleria, "Development and Participation: Whose Participation? A Critical Analysis of the UNDP's Participatory Research Methods", The European Journal of Development Research 33 (2021), pp. 459–481, available at https://doi.org/10.1057/s41287-020-00287-8; Allison Schnable et al., "International Development Buzzwords: Understanding Their Use Among Donors, NGOs, and Academics", The Journal of Development Studies 57, no. 1 (2021), pp. 26-44, available at https://doi.org/10.1080/00220388.2020.1790532

9 Stefan C. Aykut et al., "It's a Performance, Not an Orchestra! Rethinking Soft Coordination in Global Climate Governance", Global Environmental Politics 22, no. 4 (November 2022), pp. 173–96, available at https://doi.org/10.1162/glep_a_00675

10 Joseph Alcamo et al., "Analysing Interactions among the Sustainable Development Goals: Findings and Emerging Issues from Local and Global Studies", Sustainability Science 15 (Special Feature 2020), pp. 1561–1572, available at https://doi.org/10.1007/s11625-020-00875-x

11 Neil J. W. Crawford, Kavya Michael and Michael Mikulewicz (eds.), Climate Justice in the Majority World: Vulnerability, Resistance, and Diverse Knowledges, Routledge, 2023, available at http://doi.org/10.4324/9781003214021; Tahseen Jafry, ed., Routledge Handbook of Climate Justice, Routledge, 2018, available at https://doi.org/10.4324/9781315537689; David Schlosberg and Lisette B. Collins, "From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice", WIREs Climate Change 5, no. 3 (May/June 2014), pp. 359–374, available at https://doi.org/10.1002/wcc.275; Michael Mikulewicz et al., "Intersectionality & Climate Justice: A Call for Synergy in Climate Change Scholarship", Environmental Politics 32, no. 7 (2023), pp. 1275–1286, available at https://doi.org/10.1080/09644016.2023.2172869; David Schlosberg, "Reconceiving Environmental Justice: Global Movements and Political Theories", Environmental Politics 13, no. 3 (2004), pp. 517–540, available at https://doi.org/10.1080/0964401042000229025; Libby Porter et al., "Climate Justice in a Climate Changed World", Planning Theory & Practice 21, no. 2 (2020), pp. 293–321, available at https://doi.org/10.1080/14649357.2020.1748959; Jan Wilkens and Alvine R. C. Datchoua-Tirvaudey, "Researching Climate Justice: A Decolonial Approach to Global Climate Governance", International Affairs 98, no. 1 (January 2022), pp. 125–143, available at https://doi.org/10.1093/ia/iiab209

12 Dawud Ansari et al., "Communicating Climate Change and Biodiversity Loss with Local Populations: Exploring Communicative Utopias in Eight Transdisciplinary Case Studies", UCL Open Environment 5, no. 1 (2023), available at https://doi.org/10.14324/111.444/ucloe.000064

13 Amalia Calderón-Argelich et al., "Tracing and Building Up Environmental Justice Considerations in the Urban Ecosystem Service Literature: A Systematic Review", Landscape and Urban Planning 214 (October 2021), available at https://doi.org/10.1016/j.landurbplan.2021.104130

14 Katinka Wijsman and Marta Berbés-Blázquez, "What Do We Mean by Justice in Sustainability Pathways? Commitments, Dilemmas, and Translations from Theory to Practice in Nature-Based Solutions", Environmental Science & Policy 137 (October 2022), pp. 377–386, available at https://doi.org/10.1016/j.envsci.2022.06.018

public services, environmentally transmitted diseases, disorientation, displacement, helplessness, and the parachuting of foreign aid and interests amidst a backdrop of global environmental disruption. However these marginalized[15] groups also meet nexus challenges with resistance, resilience, adaptation, collectivity, and revival of traditions in the form of grassroot innovations[16] and ecologies of resistance.[17] While academics and policymakers progressively highlight the importance and expanding reach of this critical nexus, research remains fragmented on methodological, epistemological, and ontological grounds, limiting its practical application and ability to incorporate interconnected dimensions of justice.[18]

Furthering this rigidity, thinking around the nexus has traditionally adhered to "classical Westphalia security paradigms".[19] Environmental security has been predominantly defined through a realist and or neoliberal lens, with the majority of studies conventionally emphasizing global power dynamics.[20] This focus tends to encompass the political structuring of states, alliances, territories, and regions, often assuming the inevitability of conflict.[21] Despite recent studies focusing more on complexity, intrastate disputes, and violence rather than establishing a direct causal link between environmental change and conflict, (neo)Malthusian[22] perspectives on interstate—"climate wars",[23] "resource wars",[24] or "water wars"[25]—continue to attract many, especially from outside academic circles. However, a strong case can be made for thoroughly understanding the causes and outcomes of conflict and environmental breakdown through cyclic, mutual, and spiraling causality. Rather than follow direct or linear pathways, causal factors within nexuses can become effects, reverse roles, or operate within one or more feedback loops.[26] This complexity calls for researchers to sometimes question biases toward reductionist determinism. Reckoning

15 Understood as the process by which certain groups are systematically pushed to the periphery of economic, political, and social systems, resulting in reduced access to resources, opportunities, and decision-making power.

16 Elia Apostolopoulou et al., "Radical Social Innovations and the Spatialities of Grassroots Activism: Navigating Pathways for Tackling Inequality and Reinventing the Commons", Journal of Political Ecology 29, no. 1 (2022), pp. 144–188, available at https://doi.org/10.2458/jpe.2292; Hermans, Roep and Klerkx, "Scale Dynamics".

17 Munira Khayyat, A Landscape of War: Ecologies of Resistance and Survival in South Lebanon, University of California Press, 2022.

18 Tobias Ide et al., "The Future of Environmental Peace and Conflict Research", Environmental Politics 32, no. 6 (2023), pp. 1077–1103, available at https://doi.org/10.1080/09644016.2022.2156174

19 Anders Jägerskog, Michael Schulz and Ashok Swain (eds.), Routledge Handbook on Middle East Security, Routledge, 2019.

20 Marwa Daoudy, The Origins of the Syrian Conflict: Climate Change and Human Security, Cambridge University Press, 2020, available at https://doi.org/10.1017/9781108567053; John Vogler, "International Relations Theory and the Environment", in Global Environmental Politics: Concepts, Theories, and Case Studies, Gabriela Kütting and Kyle Herrman (eds.), Routledge, 2018, pp. 11–26.

21 Hans Günter Brauch (ed.), Coping with Global Environmental Change, Disasters and Security: Threats, Challenges, Vulnerabilities and Risks, Hexagon Series on Human and Environmental Security and Peace (HSHES) vol 5, Springer, 2011.

22 In the late eighteenth century, Thomas Malthus postulated that unconstrained exploitation of nature in combination with high population growth will inevitably lead to mass migration. Subsequent works by Thomas Homer-Dixon and Norman Myers during the 1990s postulated an imminent threat and growing risk of future conflicts, mass migration, and war over scarce resources, environmental degradation, and demographic growth. Norman Myers and Jennifer Kent, Environmental Exodus: An Emergent Crisis in the Global Arena Climate Institute, 1995; Thomas F. Homer-Dixon, Environment, Scarcity, and Violence, Princeton University Press, 1999.

23 Harald Welzer, Climate Wars: Why People Will Be Killed in the Twenty-First Century, Patrick Camiller (translator), Polity Press, 2012; Gwynne Dyer, Climate Wars, Random House Canada, 2008.

24 Michael T. Klare, Resource Wars: The New Landscape of Global Conflict, Metropolitan/Owl Book, Henry Holt and Company, 2002; Kathryn Furlong, Nils Petter Gleditsch and Håvard Hegre, "Geographic Opportunity and Neomalthusian Willingness: Boundaries, Shared Rivers, and Conflict", International Interactions 32, no. 1 (2006), pp. 79–108, available at https://doi.org/10.1080/03050620600596421

25 Youssef Wehbe et al., "Rethinking Water Security in a Warming Climate: Rainfall Enhancement as an Innovative Augmentation Technique", npj Climate and Atmospheric Science 6, no. 171 (October, 2023), available at https://doi.org/10.1038/s41612-023-00503-2; Marcus Dubois King (ed.), Water and Conflict in the Middle East, Hurst & Company, 2020; Hussein A. Amery, "Malthus in the Middle East: Scarcity-Induced Water Conflicts", in Water and Conflict in the Middle East, Marcus Dubois King (ed.), Oxford University Press, 2020, pp. 15–40, available at https://doi.org/10.1093/oso/9780197552636.003.0002; Léna Salamé et al., "Water Discourses", in Handbook of Water Resources Management: Discourses, Concepts and Examples, Janos J. Bogardi et al. (eds.), Springer Cham, 2021, pp. 145–214, available at https://doi.org/10.1007/978-3-030-60147-8

26 Tina A. Grotzer, Learning Causality in a Complex World: Understandings of Consequence, Rowman & Littlefield Education, 2012; Daniel Abrahams and Edward R. Carr, "Understanding the Connections between Climate Change and Conflict: Contributions from Geography and Political Ecology", Current Climate Change Reports 3 (2017), pp. 233–242, available at https://doi.org/10.1007/s40641-017-0080-z

with the indeterminacy implied by a given cause and effect analysis may open new and important participatory ways of exploring relationships at the nexus.

This recognition has in part contributed to the emergence of critical studies—from transnational studies to the Paris School—and a heightened emphasis on human security in international relations, shifting attention away from the state as the sole referent object and unit of analysis.[27] Although such studies increasingly focus on individuals and local groups, encompassing their resilience and vulnerability in relation to changes at this nexus—including subtle forms, i.e. "slow violence"[28]—they still reveal little evidence on how to recognize and include local and marginalized actors as active participants, producing diverse processes for better problem framing, knowledge co-production, and changemaking.

The recognized need to better integrate interconnected dimensions of justice and include frontline individuals and groups in UN processes carries significant ethical, human security, and benefit-sharing implications at the environmental breakdown and conflict nexus, where research and action unfold in complex, controversial, and high-risk settings. Participatory processes are usually attributed with building more diverse ways of knowing, improving the actionability of produced knowledge, identifying and building consensus on windows for changemaking, and creating an enabling environment for more informed, equitable, and empowered decision-making.[29] But in areas of conflict and social fracturing, inclusion can also put participants at greater risk of strain, attack, exacerbate power imbalances, and inadvertently incite defeatism.

This collection of papers explores conceptions of the nexus in MENA, its drivers and outcomes, and reflects on participatory processes for research and action at the nexus in response to the UN Environment Programme's recent call for "inclusive assistance" and "collaboration with all stakeholders" at the nexus (UNEP/EA.6/RES.12),[30] and calls at the UN Security Council for "bringing marginalized communities… into decision-making" (UNSC SG/SM/22133).[31] These chapters are the result of a year-long working group on the nexus involving experts from across MENA.

In this publication, conflict is understood as a state of armed or slow violence inflicted on populations by one or more parties—state, non-state, or one-sided in nature.[32] Furthermore, a participatory approach, despite its origins in empowering the marginalized, is understood as any organized action that engages, to varying degrees, people directly affected by a decision(s) in the decision-making process to achieve more relevant and beneficial outcomes for one or more stakeholders. Using limited theoretical and empirical research on this topic, with the disconnect between participatory discourse and outcomes at national and international levels[33] and accounting for local knowledge

27 Vogler, "International Relations Theory and the Environment"; Robyn Eckersley, "Green Theory", in International Relations Theories: Discipline and Diversity, Timothy Dunne, Milja Kurki and Steve Smith (eds.), Oxford University Press, 2013, pp. 266–286, available at https://doi.org/10.1093/hepl/9780198814443.003.0014; Philippe Le Billon and Rosaleen Duffy, "Conflict Ecologies: Connecting Political Ecology and Peace and Conflict Studies", Journal of Political Ecology 25, no. 1 (2018), pp. 239–260, available at https://doi.org/10.2458/v25i1.22704; Rita Floyd and Richard A. Matthew (eds.), Environmental Security: Approaches and Issues, Routledge, 2013.

28 Rob Nixon, Slow Violence and the Environmentalism of the Poor, Harvard University Press, 2011, pp. 1–44; Daoudy, The Origins of the Syrian Conflict; Simon Dalby, "Environmental Insecurities: Geopolitics, Resources and Conflict", Economic and Political Weekly 38, no. 48 (2003), pp. 5073–5079, available at https://www.jstor.org/stable/4414345; Simon Dalby, "Rethinking Geopolitics: Climate Security in the Anthropocene", Global Policy 5, no. 1 (February 2014), pp. 1–9, available at https://doi.org/10.1111/1758-5899.12074

29 Orlando Fals-Borda and Mohammad A. Rahman, Action and Knowledge: Breaking the Monopoly with Participatory Action Research, The Apex Press/Intermediate Technology Publications, 1991.

30 United Nations Environment Assembly (UNEA), "Resolution Adopted by the United Nations Environment Assembly on 1 March 2024", United Nations Environment Programme (UNEP), 5 March 2024, available at Link

31 United Nations Secretary-General, "As Mounting Climate Chaos, Food Crisis Undermine International Peace, Secretary-General Tells Security Council It Must 'Act Now' to Resolve Conflicts, Protect People", UN Security Council Statement SG/SM/22133, 13 February 2024, available at Link

32 Nixon, Slow Violence; Daoudy, The Origins of the Syrian Conflict; Dalby, "Environmental Insecurities"; Dalby, "Rethinking Geopolitics".

33 Carla-Leanne Washbourne, Sarah Bell and Dan Osborn, "Community Responses to Climate Change: Editorial Call for Submissions to UCL Open: Environment Special Series", UCL Open Environment 3 (November 2021), available at https://doi.org/10.14324/111.444/ucloe.000028; Maria del Mar Delgado-Serrano et al. (eds.), "Community-Based Management of Environmental Challenges in Latin America and the Caribbean", Ecology & Society 22, no. 1 (March 2017), available at https://doi.org/10.5751/ES-08924-220104; Elizabeth Jelin, Renata Motta and Sérgio Costa (eds.), Global Entangled Inequalities: Conceptual Debates and Evidence from Latin America, Routledge, 2018.

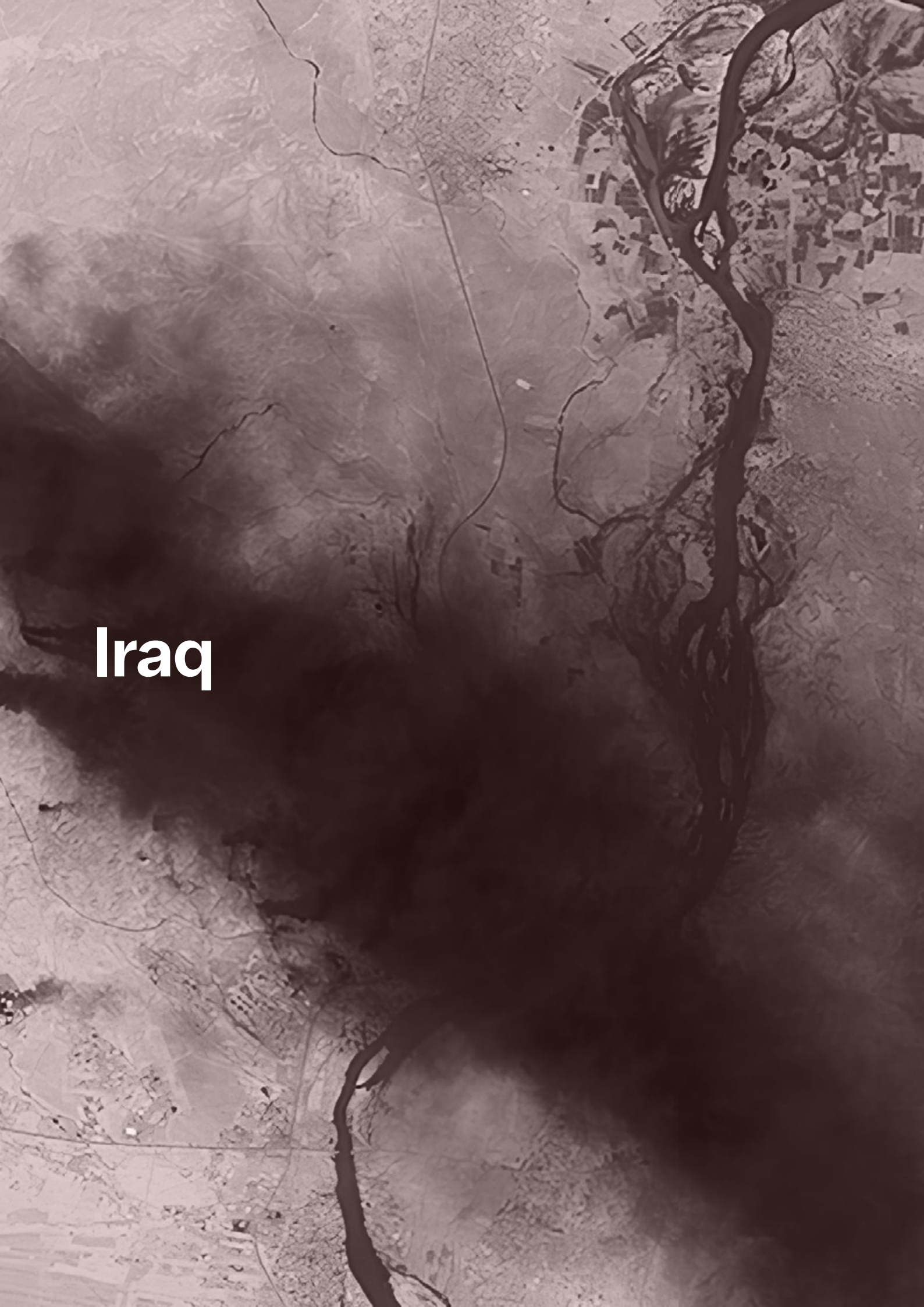
and practices,[34] this collection provides methodological and ethical considerations emerging from a series of case studies across the MENA region. In so doing, we ask the following questions:

- How and when do participatory approaches emerge and address the gaps in traditional environmental governance mechanisms, particularly in the context of the MENA region?
- What are the key ethical and methodological considerations for integrating participatory research and action at the nexus of conflict and environmental breakdown, and how can these be tailored to the diverse sociopolitical contexts of the MENA region?
- How do bottom-up perspectives on the climate-conflict nexus contribute to a more nuanced understanding of environmental insecurity and its implications for human security in the MENA region?

The overarching goal of this compilation is to inform academia and the policy community on the conceptions and outcomes of the conflict-environment nexus in MENA, associated (mis)applications of participatory processes, and practical considerations that may be more suitable to the nexus in the hope of fostering its transformative potential across scales.[35]

34 Rosemary Hill et al., "Knowledge Co-Production for Indigenous Adaptation Pathways: Transform Post-Colonial Articulation Complexes to Empower Local Decision-Making", Global Environmental Change 65 (November 2020), available at https://doi.org/10.1016/j.gloenvcha.2020.102161; Paul Sillitoe, "A Doha Undeclaration, Puzzling over Sustainable Development with Indigenous Knowledge", in Sustainable Development: An Appraisal from the Gulf Region, Paul Sillitoe (ed.), Environmental Anthropology and Ethnobiology vol 19, Berghahn Books, 2017, pp. 497–530, available at https://doi.org/10.3167/9781782383710; Arvin Hadlos, Aaron Opdyke and S. Ali Hadigheh, "Where Does Local and Indigenous Knowledge in Disaster Risk Reduction Go from Here? A Systematic Literature Review", International Journal of Disaster Risk Reduction 79 (September 2022), available at https://doi.org/10.1016/j.ijdrr.2022.103160; Rosemary Hill et al., "Working with Indigenous, Local and Scientific Knowledge in Assessments of Nature and Nature's Linkages with People", Current Opinion in Environmental Sustainability 43 (April 2020), pp. 8–20, available at https://doi.org/10.1016/j.cosust.2019.12.006

35 Hermans, Roep and Klerkx, "Scale Dynamics".


Iraq

Climate Change and Community Perceptions in the Nineveh Province of Iraq

Shivan Fazil

Note: Special recognition for the data-collection team is due at the Tahrir Association for Development. The author would like to extend a special thank you to those who shared their insights and experiences in the household survey, interviews, and community dialogue meetings.

Policy Recommendations

- Local authorities and communities should raise awareness in climate change mitigation measures in everyday actions to save water and energy, sort waste, and reuse plastics and glass, particularly in educational settings.
- The government should reinvest in its local communities' agricultural inputs, such as extension equipment, seeds, fertilizers, and support modern farming techniques to combat climate change's devastating consequences.
- The government must diversify its economy from fossil fuels and its susceptibility to oil price fluctuations. It should invest in green, renewable energy, agriculture, and agritourism initiatives to support job creation and income generation.

Keywords: Iraq, Nineveh, communities, awareness, climate change, water, agriculture

Introduction

The UN Environment Programme (UNEP) has ranked Iraq as the fifth most vulnerable country to climate change.[1] In recent years, the country has increasingly witnessed extreme heatwaves with temperatures reaching above 50°C.[2] Iraq's mean annual temperature is also predicted to increase 2°C by 2050. The effects of these trends are clear. Drought and associated environmental degradation have eroded rural livelihoods in Iraq by heightening resource competition and posing severe implications for social cohesion. The impacts of climate change also interact with shortfalls in basic services and economic opportunities, exacerbating several key insecurity drivers in an already fragile state.

Annual rainfall has decreased amidst prolonged periods of drought and diminishing water supplies, taking a toll on agriculture production. Water flows from the Tigris and Euphrates have diminished due to upriver damming in Türkiye and Iran. Rising temperatures and declining rainfall also affect soil moisture. These factors make dust storms more frequent, bringing life to a grinding halt and sending hundreds of people to hospital with respiratory illnesses. Water scarcity aggravates existing tensions and makes riparian communities—especially in the historically poorer South—more vulnerable and a hotspot for anti-government protests. Extreme, perilous weather events are only one aspect of how climate change worsens and compounds existing vulnerabilities in Iraq.

Iraq has already witnessed a breakdown in the social contract with mass protests breaking out across the country over inadequate public services, unemployment, corruption, and poor governance. Climate change further exacerbates these issues, and in turn feeds grievances and drives instability. Moreover, it not only deteriorates rural livelihoods and induces migration, but dwindling water resources exacerbate competition and strain relations between upstream and downstream provincial riparian communities.[3]

Nineveh province is considered Iraq's breadbasket. It was green farmland before the 2003 invasion. After years of conflict with Islamic State (ISIS), the agricultural heart of the country is now an arid waste. In addition to grappling with the ramifications of conflict, various ethnic and religious groups struggle to rebuild and sustain their agricultural livelihoods as the effects of climate change have become critical and more pronounced.[4]

ISIS's three-and-a-half-year reign in northern Iraq caused devastating human suffering and unprecedented destruction. Between 2014 and 2017, hundreds of thousands of Iraqis were killed, and millions more were displaced as a result of their occupation and subsequent military campaign to defeat them. ISIS particularly targeted ethnic and religious minorities living in the Nineveh province—including Christians, Kaka'i, Shabaks, Turkmen, Yezidis, and others.[5] Infrastructure and houses were reduced to rubble, and local livelihoods based on crop and livestock farming were devastated. Given the unprecedented level of destruction, it will take many years and considerable resources before Nineveh and its people can recover from their traumatic experiences. Substantial reconstruction and reconciliation efforts are needed to address ISIS's compounded social, cultural, and economic consequences.

Prior to the ISIS occupation, the share of wheat and barley production in the province represented 23% and 38% of national

1 United Nations Environment Program (UNEP), "GEO-6: Global Environment Outlook: Regional Assessment for West Asia", 16 September 2017, available at Link

2 Cedric De Coning and Florian Kramp (eds.), "Climate, Peace and Security Factsheet: Iraq", Norwegian Institute of International Affairs (NUPI) and Stockholm International Peace Research Institute (SIPRI), 7 April 2022, available at Link

3 Amina Ismail and Maha El Dahan, "Middle East's Fertile Crescent Dries Up as Rains Fail", Reuters, 14 November 2022, available at Link

4 Michael Kranz, "No Water, No Jobs: ISIL Survivors Struggle in Northern Iraq", Aljazeera, 29 May 2021, available at Link

5 Iraqi Christians comprise Assyrians, Chaldeans, and Syriacs. Kaka'i—also known as Yarsan or Ahl-e Haqq—are generally considered ethnically Kurdish with an independent religion; some consider them a subgroup of Islam. Similarly, the Yezidis are deemed a distinct ethnoreligious group; while others a religious Kurdish subgroup. The Shabaks are a distinct ethnic group—neither Arab nor Kurdish—following Shia and Sunni Islam.

production, respectively.[6] Agriculture is the main economic mainstay in the area, and a large number of households rely on crop production and livestock farming. Agricultural activities account for 70% of household income in Nineveh, while livestock and pastoral farming account for 20%.[7] However, adapting to increasing climate variability is a major challenge. Agriculture in Nineveh is particularly susceptible to inconsistent rainfall, and therefore fluctuating levels in water supply.

Findings show that while climate change is not a priority issue, communities across the board report that drought has the highest impact, constituting a major challenge to livelihoods in many households. Drought and the associated environmental degradation have eroded rural revenue sources, intensified competition, and posed complications for social cohesion.[8] Climate change also causes shortfalls in basic services and economic opportunities, exacerbating several key insecurity drivers.

The aim of this paper is to underline the importance of climate adaptation that integrates community perceptions and promotes their involvement. Participatory and community-led approaches to research and action can help communities to correct misconceptions about conflicting issues. Deliberating and facilitating empowers local populations to overcome intercommunal differences in everyday issues. This empowerment could in turn help affected communities find common ground and exert sustained pressure on local authorities, representatives, and political leaders to prioritize their concerns. In Nineveh, participatory action research entails different ethnic and religious groups collaborating to understand community concerns and taking intergroup initiatives to address them. This is particularly important. Given the mosaic of ethnic, religious, and cultural diversity, and Nineveh's large agriculture sector, promoting community involvement is vital to adapt to climate change and mitigate conflict.

Methods and Data

This paper draws on data from a two-year Robert Bosch Stiftung funded project with diverse communities of the Nineveh Plains led by the author.[9] It draws on findings from mixed methods research, specifically household surveys and interviews conducted with community members in 2022 and 2023. Data collection took place in Nineveh Plains—the districts of al-Hamdaniya and Tal Kayf—and Mosul's Bashiqa subdistrict. In addition to seeking gender parity, sampling was also designed to ensure, as much as possible, proportional representation of ethnosectarian groups and geographical balance throughout the data collection process, based on estimated population sizes—in the absence of official census data. Training in research methodology and conducting household surveys and semi-structured interviews were delivered by the author to local enumerators before commencing with data collection. Research participants were given an information sheet that summarized the research purpose and objectives prior to eliciting consent. This paper also builds on twenty local community dialogue proceedings organized between June and December 2022, and fourteen local community dialogues organized between August and December 2023. The research findings were disseminated among the wider community and created space for dialogue participants from different ethnosectarian groups to share their experiences, as well as discuss and develop cooperative solutions to address climate change impacts.

Community Perceptions on Climate Change

Despite being a major issue, climate change is not a priority in the Nineveh Province of Iraq. In the survey, respondents gauged whether or not climate change was a priority—given agriculture's economic heft in the community. They were presented with a list of fifteen options, and asked to select up to three. Two years running, findings show that climate change was not high on the list of respondents' priorities. Instead, the three top answers were youth unemployment and opportunities, reconstruction, and access to basic municipal services (Figure 1).

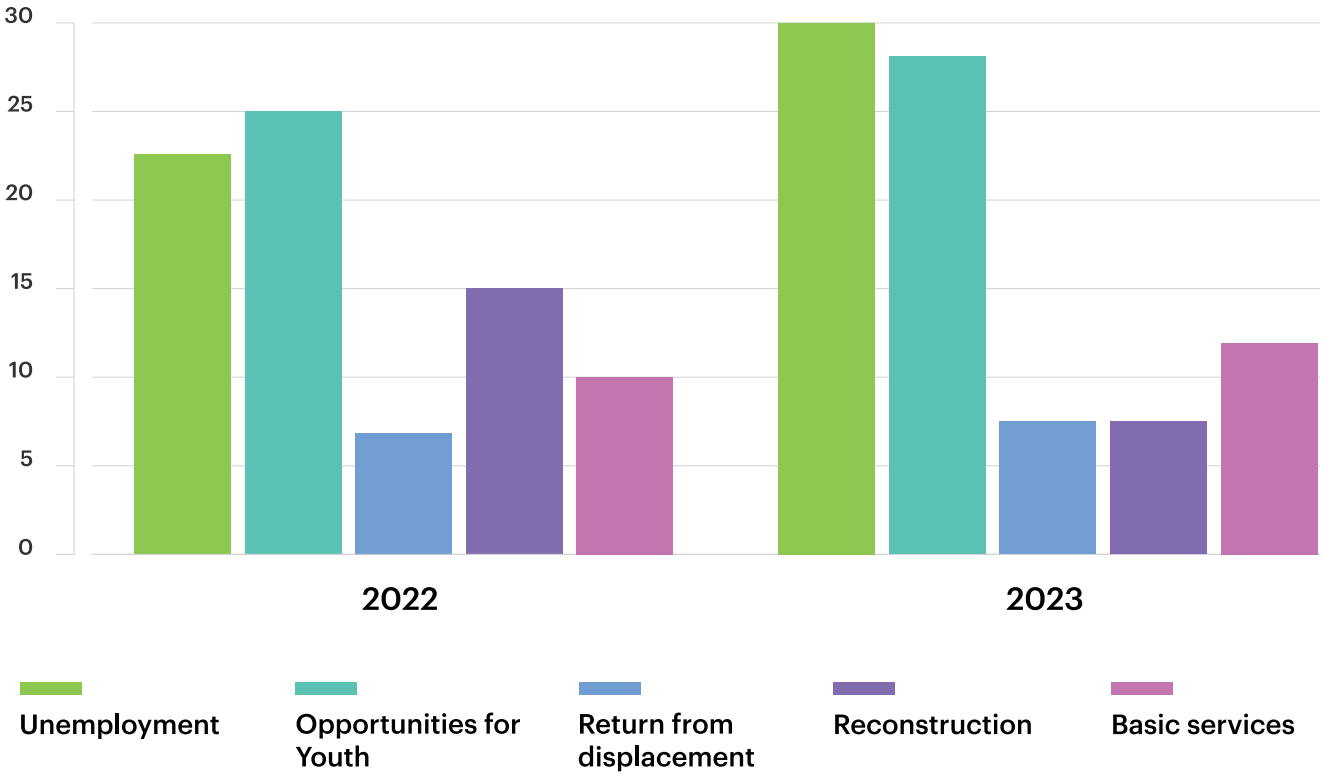
6 Food and Agriculture Organization (FAO), Global Information and Early Warning System (GIEWS) Update: The Republic of Iraq: Drought in the Northern Parts of the Country, June 2021, available at Link

7 International Observatory for Migration (IOM) Iraq, Rural Areas in Ninewa: Legacies of Conflict on Rural Economies and Communities in Sinjar and Ninewa Plains, 28 November 2019, available at Link

8 Caroline Zullo et al., Iraq's Drought Crisis and the Damaging Effects on Communities, Norwegian Refugee Council, 15 December 2021, available at Link

9 Robert Bosch Stiftung, Stockholm International Research Institute (SPIRI) and Al-Tahreer Association for Development (TAD), "Developing Local Peacebuilding Capacity in Ninewa, Iraq: Creating Social Cohesion through Local Community Dialogue", (n.d.), available at Link

Figure 1: Main Issues of Concern for People in the Nineveh Plains



Note. Participants could provide more than one response. Survey respondent periods: February-April 2022 and March-April 2023.

However, when asked directly about climate change and its effects on their communities, respondents primarily emphasized drought and deficient rainfall (41%), followed by increased temperatures (13%), and health issues (16%), with more respondents selecting drought and rainfall shortages in the following year (Figure 2)—the country had faced unprecedented drought, record high temperatures, and surface water evaporation that year.[10] There are some variations in how the effects of climate change are experienced across localities. For example, across the Nineveh Plains, the highest share of respondents who indicated drought and lack of rainfall as having the biggest impact was in Nimrud, a predominantly agricultural land, north of where river Tigris meets its tributary the Great Zab.

The fact that climate change is not high on the list of priorities for respondents may suggest that many do not automatically associate droughts and limited rainfall with climate change, due to limited awareness and knowledge. Drought and lack of precipitation fall under rapid-onset or extreme weather events and take place over short periods of time—typically weeks or months—unlike incremental, slow-onset events over many years. One interviewee explained:

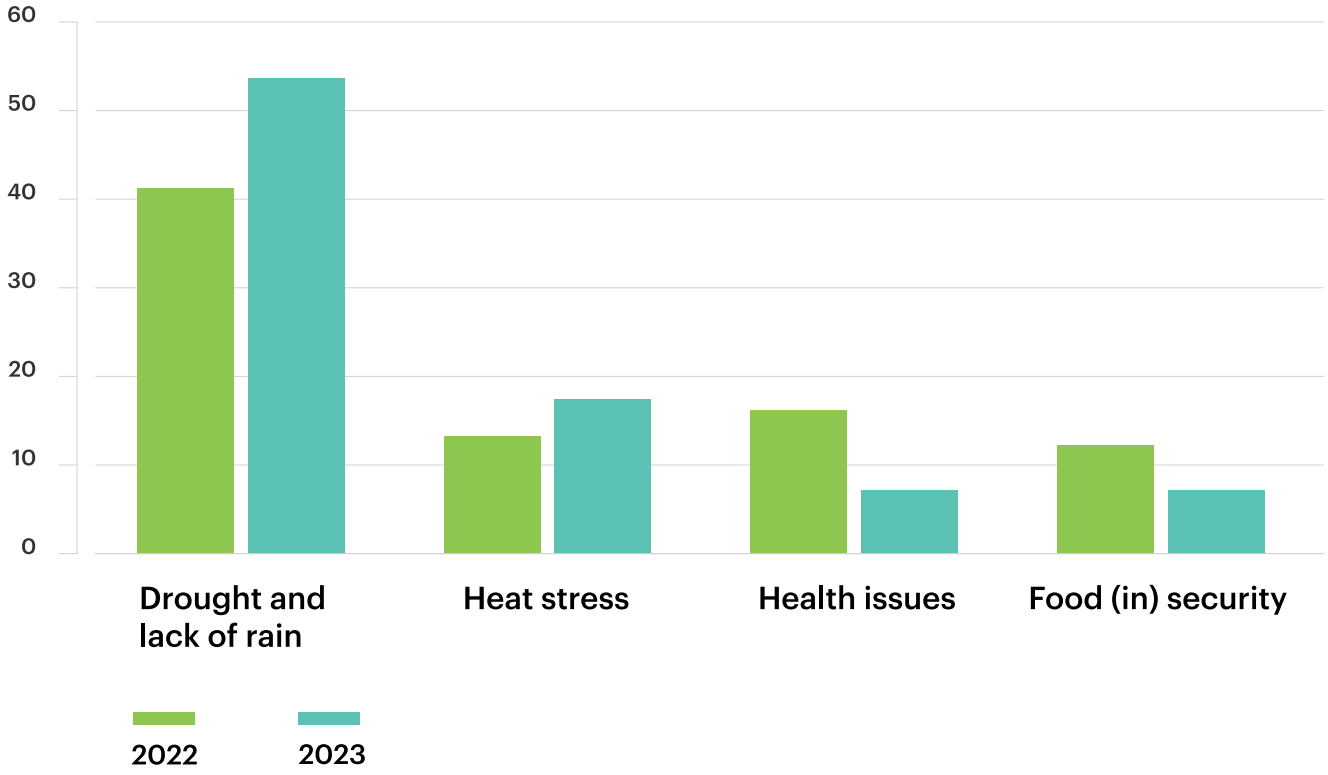
> *The majority in society does not have knowledge about climate change and its impacts. I myself don't have sufficient knowledge despite being a civil society activist. Average citizens do not know, and that is why it is necessary to raise awareness about the effects of climate change.*[11]

The issue of climate awareness was also discussed at length during community dialogues, where participants debated that taking small, everyday actions to save water and energy, sort waste, and reuse plastic and glass can help protect the environment and alleviate the effects of climate change. The importance of raising awareness at schools and educating children about climate change were examined. Many also expressed deep concerns about the deleterious impact of water shortages and recurring droughts on farming activities in a region where agriculture is predominantly rainfed.

10 Alannah Travers, "Extreme Heat Hits Iraq, as Temperatures Exceed 50 Degrees Celsius", Al Jazeera, 4 August 2023, available at Link

11 Male Shabak from Bashiqa, interview with enumerator, March 2022.

Figure 2: Aspects of Climate Change with the Most Impact on People in the Nineveh Plains



Note. Participants could provide more than one response. Survey responded periods: February-April 2022 and March-April 2023.

As crop and livestock farming constitute the main source of income for many households, the deterioration of agriculture in the Nineveh Plains seriously impacts people's livelihoods. When seen through the lens of livelihood sustainability, it becomes clear that climate change is a significant challenge and a pressing concern for all communities. This came across in the interviews with farmers and local administrative authorities. One research participant expressed his concerns about declining economic prospects in the area. He pointed out:

> *If there is no rain, there will be no agriculture. And if the economic situation in the Nineveh Plains is bad, people will start to leave the area, either leaving the village for the city, or heading to Mosul, or heading to the Kurdistan region. Agriculture employs 70-80% of the population, and only a fraction are employees. So, we really depend on agriculture.*[12]

Community members interviewed across different ethnosectarian groups and localities of the Nineveh Plains stressed that climate change is already having a marked impact on agricultural livelihood of many households. Crop failures have hit local food availability, driving up food prices. As a result, gradually rural families are struggling to earn a living. Successive droughts and poor precipitation have forced many to contemplate abandoning farming and moving to urban areas in search of alternative income. As interviewees underlined:

> *If there is no rain in the next few days there will be [a livelihood] problem in the Nineveh Plains as more than half of its people rely on growing cereal crops, especially wheat and barley, for income.*[13]

Another interviewee from Nimrud said:

12 Male Arab Sunni from Qaraqosh, interview with enumerator, April 2022.

13 Male Christian from Qaraqosh, interview with enumerator, April 2022.

> *The area is currently facing a severe drought with potable water becoming scarce, where people do not have access to potable water for up to two weeks. Drought and lack of irrigation has caused substantial losses to farmers.*[14]

Many communities report facing additional challenges associated with farming, as a result of drought and lack of precipitation, from poor access to pastures for livestock breeding to supplementary input costs for fodder, seeds, fertilizers, etc. As one interviewee explained:

> *Most people in my area depend on cattle farming. With pastures becoming harder to find, they are forced to buy fodder, which has become more expensive. The burdens of cattle farming have thus increased.*[15]

In addition to livelihood deterioration, climate change is reported to aggravate existing governance challenges related to the provision and access to essential services, such as electricity, water, etc. Interviewees attributed the increase in extreme weather events—heat stress and dust storms—to environmental degradation, stemming from loss of vegetation cover and arable lands. Rapid urbanization due to arable land expropriation for housing is widely seen to exacerbate extreme weather event frequencies. This came across in both the interviews as well as during the community dialogue meetings, describing how:

> *Agriculture is starting to fade in Nineveh due to land appropriation for construction of residential housing complexes, which compounds existing issues such as the demand for basic services. The new housing projects need access to water and electricity, which the government is already struggling to provide.*[16]

Another interviewee stated:

> *Bashiqa used to have a cool breeze thanks to its olive orchards. We had around 90,000 olive trees but most were burnt by Islamic State. Now its warmer. The orchards were also blocking dust storms, which are more frequent these days.*[17]

A female interviewee expressed how Bashiqa had lost its identity with the new houses being built, adding: "Temperatures are higher now due to loss of the orchards".[18]

Climate-induced migration also has implications for social relations. In Nineveh Plains, perceptions and narratives of demographic change, which have increased alarmingly in recent years, is already a threat to social cohesion. Often pitting communities against each other, these narratives revolve around which communities have the right to reside in which areas, highlighting widespread fears of a loss in cultural identity. One interviewee explained: "People contemplate selling their arable land if it becomes useless due to drought. This could foster more demographic change, which is already an issue in the area".[19]

Climate change is a threat multiplier as it intersects with political, social, economic, and demographic factors.[20] In Nineveh province, deteriorating livelihood conditions can marginalize affected groups and contribute to escalating grievances. There is also a risk that in the absence of alternative sources of income generation, people would resort to violence to protect or access dwindling reserves. The adverse impacts of climate change on agriculture and livestock mean economic hardships are especially challenging for groups directly dependent on these resources. Drought and desertification can heighten competition for water, land, and other income-generating means and could increase the risk of intergroup tensions.[21]

Intercommunity Cooperation for Climate Adaptation

The vast majority of those surveyed reported that they have either good or very good relations with people from other ethnic and religious groups—36% and 62%, respectively. However, these relations remain fragile, as minorities are still reeling from the harrowing ISIS experience as well as the suffering caused by decades of violence and persecution. In post-ISIS Nineveh Plains, one of the main drivers of intercommunity tensions is the perceived inequality in aid and compensation distribution for damages. For one Yezidi respondent, his community suffered from "injustice in compensations, maybe deliberately we don't know. There is injustice towards Bashiqa and its communities by Nineveh local government. Compensation is disproportionate to the

14 Female Arab from Nimrud, interview with enumerator, April 2024.

15 Male Shabak from Bashiqa, interview with enumerator, March 2022.

16 Male Shabak from Bartella, interview with enumerator, March 2022.

17 Male Yezidi from Bashiqa, interview with enumerator, March 2022.

18 Female Shabak from Bashiqa, interview with enumerator, March 2022.

19 Male Christian from Qaraqosh, interview with enumerator, March 2022.

20 UN News, "Climate Change Recognized as 'threat multiplier', UN Security Council Debates Its Impact on Peace", 25 January 2019, available at https://news.un.org/en/story/2019/01/1031322

21 Peace Paradigms Organisation (PPO) and Berghof Foundation, Climate Change Effects on Conflict Dynamics in Iraq: Study of Makhmur, Tal Afar, and Al-Rifai districts, 2023, available at Link

scale of damage caused by theft and destruction."[22] Another threat to social cohesion in the Nineveh Plains pertains to changes in perceptions and demographic narratives that have increased alarmingly in recent years. Often pitting Shabaks against Christians, these narratives revolve around which communities have the right to reside in which areas, highlighting widespread fears of loss in cultural identity.

Despite these underlying issues and tensions, attitudes towards cooperation between the different ethnic and religious communities are generally positive, and there is an openness to collaborate with others to address common concerns. Survey results show that the vast majority of respondents consider this level of coexistence between communities to be either good or very good—41% and 58%, respectively. Research findings also show that while there is a strong collaborative tradition in agriculture, business, and trade, cooperation is largely lacking in other areas, including climate adaptation. In addition, many participants have called to strengthen their cooperation in these areas.

During community dialogue meetings, many participants stressed that several issues in the Nineveh Plains cannot be separated from the broader challenges of governance and the political economy in Iraq, which require strategic and structural reforms. For example, some pointed to how Iraq's continued dependence on hydrocarbons and poor diversification plans and policies have worsened the impacts of climate change, negatively effecting farming and agriculture and undermining the youth's ability to join the labor force.

Others mentioned the state's heavy reliance on the public sector and the deeply-rooted employment expectations, which debilitates private sector growth and erodes youth confidence and entrepreneurial spirit. While recognizing the structural nature of these challenges, participants also maintained there still exists space for cooperative community-driven initiatives to address common concerns. No matter how seemingly small or modest their impact, such local initiatives may help alleviate some of the difficulties, potentially contributing to building peace and strengthening social cohesion in the Nineveh Plains.

Dialogue participants stressed that community-driven actions can contribute to climate change adaptation and mitigation. The proposals ranged from raising awareness about the effects of climate change, water and land conservation, protecting green spaces and afforestation, enhancing farming through sharing best practices, switching to water-efficient crops, and adopting modern irrigation systems. Multiple interviewees explained how: "We need a lot of efforts in raising awareness. The most important thing is to raise citizen's awareness about the impacts of climate change, and then take actions that we can draw… [when] we meet".[23] One interviewee from Bartella said: "The government should enact laws that prohibit expropriation of agricultural land into residential projects to protect the vegetation cover in the area".[24]

Cooperation can also include joint-advocacy efforts where different communities exert sustained pressure on the relevant local authorities and representatives to prioritize their concerns related to climate action. Some interviewees point out: "The different communities must pressure decision-makers to prioritize the needs of the areas by supporting agriculture and farmers, and ensure provision of water for agriculture".[25] Another articulated: "We can ask the local government to prevent building on agricultural lands and work together to save water and start using it in a more efficient way".[26]

Some of these adaptation measures can help protect the environment, however they can only be effective when coupled with adequate support from the relevant government agencies and local and international organizations and donors. They offer opportunities for inclusive and sustainable peacebuilding for they have the potential to bring together diverse communities that struggle to preserve their livelihoods and way of life.

Conclusion

Iraq's over reliance on oil revenues has made its economy susceptible to oil price fluctuations. Successive governments have pledged and failed to wean the country off fossil fuels, address the sector's environmental and public health impacts, and diversify the economy. Agriculture employs 20% of the workforce—third largest after the services sector and public administration—but reels from the combined effects of underinvestment and antiquated methods.[27] Desertification has reduced arable lands, while droughts and variable rainfall have resulted in plummeting production. Crop losses, reduced income, and increases in food prices have combined to threaten the food security of those already living on the breadline.

22 Male Yazidi from Bashiqa, interview with enumerator, April 2022.

23 Male Shabak from Bashiqa, interview with enumerator, March 2022.

24 Female Shabak from Bartella, interview with enumerator, April 2023.

25 Male Shabak from Bartella, interview with enumerator, March 2022.

26 Male Christian from Tal Kayf, interview with enumerator, April 2024.

27 Food and Agriculture Organization (FAO) and World Food Programme (WFP), Agricultural Value Chain Study in Iraq: Dates, Grapes, Tomatoes and Wheat, 31 March 2021, available at Link

This insecurity contributes to climate-induced urban migration and a higher demand for public services in urban areas, thus increasing the risk of social unrest and protest.[28] Iraq's young and steadily growing population has also made unemployment a growing issue, even before a forced move away from hydrocarbons and the onset of climate change on agriculture are fully felt. Climate change's continuing march will only make these issues worse.

In Nineveh province, a decade on from ISIS rule, communities still struggle to restore agricultural activities due to poor financial resources—for agricultural input such as equipment, seeds, and fertilizers—and the severity of climate change's consequences. In an area where agriculture is predominantly rainfed, limited precipitation and drought, coupled with irrigation system restrictions, has resulted in significant income loss and economic hardship.[29]

Despite the scale and speed of these detrimental effects, climate change is not high on the list of concerns for respondents across various ethnic and religious communities in the Nineveh Plains. That being said, when asked directly about climate change, respondents paint a completely different picture.

It is imperative in post-conflict reconstruction and development for actors to integrate community perceptions and promote their involvement in climate adaption. This entails restoring local agricultural activities as an integral part of reconstruction and development efforts. These activities are both economically and culturally important and have implications for intracommunity relations. In restoring agricultural activities, however, it is important to address other pressing issues, such as climate change, which exacerbates governance and existing vulnerabilities. Addressing these needs ensures sustainability and facilitates durable solutions for local communities.

28 International Organisation on Migration (IOM) Iraq, Migration, Environment, and Climate Change in Iraq, 11 August 2022, available at Link

29 Sanar Hasan, "Climate Change Leaves Iraq's 'Breadbasket' with Less Water, Wheat, and Farmers", The New Humanitarian, 6 September 2022, available at Link


Jordan

Participatory Approaches in the Jordanian Water Sector: A Reflection

Hussam Hussein

Policy Recommendations

- Due to inherent slow progress, donors and government officials should manage project expectations when shifting from a top-down to a bottom-up approach in a highly centralized system, which has contributed to past initiative closures.
- To avoid tension and conflict at the national level, Jordan's centralized system must consult with local communities prior to transferring or pumping water from one region to another, especially if it results in reduced or no access to local water resources.
- To provide invaluable insight into environmental pressures, Jordan's government must have a deeper understanding of transboundary water allocation and access—a source of tension and conflict among different sectors, regions, and countries.

Keywords: Jordan, water, government, centralized, national, transboundary, participatory approach

Introduction

Jordan has gradually become a case study for water policy research since the start of the Arab Spring, the Syrian war, and the resultant influx of refugees into the country. Since 2011, the number of publications and development projects focusing on Jordan has increased, as new challenges to ensure water security have emerged for governmental institutions managing these water resources. However, the issue of water scarcity in Jordan is not new; even before 2011, the country was among the top five most water-scarce nations globally.[1] Today, Jordan ranks as the second most water-scarce country in the world—in 2021, renewable freshwater per capita was at around 61m3.[2]

Water scarcity serves as an entry point for understanding various environmental tensions and conflicts in Jordan and other semi-arid regions. Limited water resources—exacerbated by the growing impacts of climate change—have intensified competition within sectors, regions, and countries for allocation and access. This water-climate-environment-conflict nexus, combined with Jordan's increasing research in water policies over the past decade, makes it an appropriate moment to review and reflect on the country's approaches to water scarcity.

This brief examines the role and extent of participatory approaches in Jordan's water sector. Initial findings indicate that Jordan's water policies and sector are highly centralized. NGOs often promote participatory approaches to raise water issue awareness among local communities and students, targeting the educational sector and religious leaders to promote water conservation, particularly through behavioral change.[3] On a national level, participatory approaches are rarely implemented by the Ministry of Water and Irrigation (MWI); donor agencies, such as USAID and GIZ, often drive these initiatives.

National water policies and strategies are typically developed by MWI in consultation with academics, donor agencies, and the epistemic community, rather than with significant input from local communities, civil society, and NGOs. This paper presents an overview of the governance of Jordan's water sector, explores the conflict dimension within the sector—particularly the environment-climate-conflict nexus in Jordan—examines two case studies of participatory approaches and local community involvement, and discusses the role of civil society and local communities in the national water sector.

Jordan's Water Sector: A Centralized System

In Jordan, the water strategy is aligned with the Economic Modernization Vision, which was introduced in 2022, initiated by the government, and endorsed by the king. This vision sets out the strategic framework for the country's economic transformation and development over the next decade. It aims to transform the economy by fostering innovation, enhancing competitiveness, promoting sustainable growth—particularly in diversifying industry—improving infrastructure, and leveraging technology to create jobs and boost productivity. The vision emphasizes the importance of public-private partnerships, regulatory reforms, and human capital development to build a resilient, inclusive, and dynamic economy that meets the needs of a rapidly changing world.[4]

In line with the spirit of this vision, the National Water Strategy 2023-2040 provides a roadmap for government collaboration and public partnership to ensure water security for health, prosperity, and growth. This updated strategy was formulated in response to environmental challenges, necessitating a comprehensive long-term plan to tackle the issues confronting Jordan.[5]

The Jordanian water sector is centralized, and its key institutions are:

- Ministry of Water and Irrigation: The central authority responsible for water resource management, policy formulation, and planning. MWI oversees the water sector and coordinates with other relevant agencies.

1 Munther J. Haddadin (ed.), Water Resources in Jordan: Evolving Policies for Development, the Environment, and Conflict Resolution, Resources for the Future (RFF) Press, 2006.

2 The Ministry of Water and Irrigation (MWI), National Water Strategy 2023 – 2040: Summary, 2023, available at Link

3 Lexine Tallis Hansen, Shari Dann and John M. Kerr, "A Critical Learning Cycle Model for Sustainability Education: Two Case Studies of Water Conservation Programs in Jordan", Journal of Sustainability Education 3 (March 2012), available at Link; Hussam Hussein, "A Critique of Water Scarcity Discourses in Educational Policy and Textbooks in Jordan", The Journal of Environmental Education 49, no. 3 (2018), pp. 260–271, available at https://doi.org/10.1080/00958964.2017.1373620; Giulia Buccione, Religious Messaging and Adaptation to Water Scarcity: Evidence from Jordan, Centre for Studies in Economics and Finance (CSEF), 30 October 2022, available at https://csef.it/wp-content/uploads/Buccione.pdf

4 Ministry of Planning and International Cooperation, Economic Modernization Vision: Unleashing Potential to Build the Future, Government of Jordan (GoJ), 2022, available at Link

5 MWI, National Water Strategy 2023 – 2040.

- Jordan Valley Authority (JVA): Develops and manages water resources in the Jordan Valley. It handles irrigation projects, dams, and related infrastructure.
- Water Authority of Jordan (WAJ): Provides water and wastewater services across the country, including the operation and maintenance of water supply and sewerage systems. WAJ coordinates with water utility companies to deliver water resources.

In addition, other governmental agencies and institutions—Ministry of Agriculture and the Ministry of Environment—have certain responsibilities over water resources, such as water for irrigation, water and climate change, and environmental protection. Overall, this centralized system implies MWI is responsible for ensuring water security to everyone in the country. Water resources are considered a national asset owned by the state; the government manages this ownership through the institutions mentioned above. Therefore, ensuring water supply to all citizens and regions of the country, MWI has been transferring and pumping water across Jordan, rather than matching water resources to local demand. Today, the people in Amman receive water from different parts of Jordan, including from Disi aquifer's groundwater resources, which is in the southern part of the country, about 300km south of Amman.[6]

The Climate-Water-Environment-Conflict Dimension

Understanding water issues provides valuable insight into environmental tensions and conflicts in Jordan and other semi-arid regions. Due to limited water resources and the increasing effects of climate change, competition for water allocation and access is intensifying among different sectors, regions, and countries. One source of tension and increasing conflictual relations has centered around transboundary water resource allocation. Most surface water resources in Jordan are shared with neighboring countries: The Jordan River is shared with Lebanon, Syria, Israel, and Palestine; while the Yarmouk River is shared with Syria and Israel. In addition, the non-renewable Disi aquifer is shared with Saudi Arabia.[7]

One example is the Jordanian-Syrian hydropolitical relationship. Over past decades, relations between Jordan and Syria have been in conflict over the amount of flow into Jordan from the Yarmouk River. Although the two countries had signed bilateral agreements on the Yarmouk River in 1953 and 1987, Jordan has been complaining about the flow reaching its country.[8] While Syria has cited climate change as the cause of low river flows, the Jordanian government has pointed to the growing number of Syrian dams being constructed upstream. Recent research has also pointed to the agreement itself, which regulates only surface water resources and not the basin's groundwater resources.[9]

Another example of tension and conflict within a national context often occurs when centralized decisions about transferring and pumping water from one region to another are made without consulting or involving local communities, resulting in reduced or no access to local water sources after transfer. For instance, following the 2011 war in Syria, the population in northern Jordan increased due to Syrian refugees moving to Amman and Irbid. This lead MWI to take the decision to pump Disi water from southern Jordan to the North.[10] Local communities like Wadi Rum were not permitted to access Disi water for agricultural purposes, limiting their

6 Hussam Hussein, "Yarmouk, Jordan, and Disi Basins: Examining the Impact of the Discourse of Water Scarcity in Jordan on Transboundary Water Governance", Mediterranean Politics 24, no. 3 (2019), pp. 269–289, available at https://doi.org/10.1080/13629395.2017.1418941

7 Hussam Hussein, "Whose 'Reality'? Discourses and Hydropolitics along the Yarmouk River", Contemporary Levant 2, no. 2 (2017), pp. 103–115, available at https://doi.org/10.1080/20581831.2017.1379493; Eugenia Ferragina and Francesca Greco, "The Disi Project: An Internal/External Analysis", Water International 33, no. 4 (2008), pp. 451–463, available at https://doi.org/10.1080/02508060802504412; Frederick Wojnarowski, "Contested Flows: The Power and Politics of Water in Jordan", LSE (blog), 8 June 2024, available at Link

8 Hussein, "Whose 'Reality'?"; Deepthi Rajsekhar, and Steven M. Gorelick, "Increasing Drought in Jordan: Climate Change and Cascading Syrian Land-Use Impacts On Reducing Transboundary Flow", Science Advances 3, no. 8 (2017), available at https://doi.org/10.1126/sciadv.1700581; Mark Zeitoun et al., "The Yarmouk Tributary to the Jordan River I: Agreements Impeding Equitable Transboundary Water Arrangements", Water Alternatives 12, no. 3 (2019), pp. 1064–1094.

9 Zeitoun et al., "The Yarmouk Tributary to the Jordan River I"; Mark Zeitoun et al., "The Yarmouk Tributary to the Jordan River II: Infrastructure Impeding the Transformation of Equitable Transboundary Water Arrangements", Water Alternatives 12, no. 3 (2019), pp. 1095–1122.

10 Wojnarowski, Contested flows.

overall access to the aquifer.[11] The local communities had mixed reactions to this decision; many residents were concerned about potential local water depletion and their future access to the Disi aquifer. They feared this northbound extraction could reduce their supply, impacting agriculture and daily needs. Overall, there was a perception that the water transfer disproportionately benefits northern regions, Syrian refugees, and urban communities in Amman at the expense of local southern communities.[12] However, there was also a sense of national solidarity, recognizing national water scarcity and the Syrian refugee crisis as priorities, requiring sacrifices from all Jordanians.[13]

Examples of Participatory Approaches

This section analyses examples of participatory approaches in Jordan's water sector, focusing on the Water Users Associations (WUAs) and on the Highland Water Forum (HWF).

WUAs: Twenty Years On

The WUAs were introduced to the Jordan Valley in the early 2000s. In fact, irrigation water management in the Jordan Valley faced challenges due to sectoral competition, which deteriorated in the late 1990s, despite JVA's efforts. To address this, a sustainable system involving farmers and JVA was introduced, focusing on a participative approach that aligned with government and donor recommendations—funded by donors and international organizations like GIZ, the World Bank, and USAID.[14] The initiative aimed to increase efficiency, ensure fair water distribution, and engage local farmers. WUAs were crucial for improving irrigation, distributing water equitably, increasing agricultural productivity, as well as promoting community involvement and sustainable water practices.[15] The latter aspect is especially important. WUAs involve local farmers in water management decisions, which increases ownership and responsibility towards water resources, mediates disputes to ensure fair distribution, and benefits from expert technical assistance and training from organizations like JVA. Farmers in the Jordan Valley initially resisted change due to mistrust from past negative experiences with JVA and concerns over disingenuous transfer of tasks. A history of failed local funding initiatives regarding new water associations compounded their reluctance. Additionally, severe water shortages, with much of the fresh water diverted to Amman, led farmers to believe that irrigation would always be a lower priority. Large farmers also posed a challenge as their influence could disrupt the process, preferring the status quo for their own benefit.[16] As noted, the success of WUAs in the Jordan Valley has been inconsistent, with concerns that they may not survive without continued donor and government support.[17] They argued that elites have appropriated some WUAs due to tribal dominance, while larger farmers sometimes operate outside of them.

Despite these issues, farmers value WUAs for their access to patronage and water, and for the increased transparency in water allocation. In fact, WUAs effectively prevent downstream water theft from pump stations—though they may overlook theft directly from the canal. WUAs also foster a collective identity among farmers, reducing internal theft while maintaining a sense of entitlement toward canals. [18]

11 Helena Wisbech Frid, "'Sabotage' of the Disi Water Conveyance in Rural Southeast Jordan: An Investigation of the Mechanisms Constructing the Phenomenon through the Morphogenetic 'Water' Justice Cycle", Lund University, Master's Thesis, May 2020, available at Link; Elias Salameh, Marwan Alraggad and Arwa Tarawneh, "A Disi Water Use for Irrigation – A False Decision and Its Consequences", CLEAN: Soil, Air, Water 42, no. 12 (December 2014), pp. 1681–1686, available at https://doi.org/10.1002/clen.201300647

12 Frid, "'Sabotage'"; Timothy Liptrot and Hussam Hussein, "Between Regulation and Targeted Expropriation: Rural-to-Urban Groundwater Reallocation in Jordan", Water Alternatives 13, no. 3, pp. 864–885, available at Link

13 Ala' Alrababa'h et al., "Attitudes Toward Migrants in a Highly Impacted Economy: Evidence from the Syrian Refugee Crisis in Jordan", Comparative Political Studies 54, no. 1 (2021), pp. 33–76, available at https://doi.org/10.1177/0010414020919910

14 Deutsche Gesellschaft für Technische Zusammenarbeit (GIZ), Water Users Associations (WUAs): The Story of Participative Irrigation Management in the Jordan Valley, 2010, available at Link

15 GIZ, Water Users Associations.

16 GIZ, Water Users Associations.

17 Daanish Mustafa, Amelia Altz-Stamm and Laura Mapstone Scott, "Water User Associations and the Politics of Water in Jordan", World Development 79 (March 2016), pp. 164–176, available at https://doi.org/10.1016/j.worlddev.2015.11.008

18 Mustafa et al., "Water User Associations".

Highland Water Forum

HWF was established in 2008 and operated until 2015.[19] Its main goal was to facilitate dialogue and trust building between different stakeholders in the Highlands, including farmers. As GIZ reports: "The HWF is a good example of trying participation and a bottom-up approach because top-down approaches have failed repeatedly over the years in reducing overexploitation of groundwater".[20] It managed to bring people and different stakeholders to the same table, to openly discuss expectations and challenges, and to brainstorm possible solutions. In fact, HWF was defined as a roadmap for developing and implementing sustainable groundwater resources management.[21] GIZ further states:

> *The most important direct result from the HWF is the improvement of communication between government and farmers. There was a building up of trust that led to a new level of relationship and increased the available information on both sides. Apart from these atmospheric improvements, several projects that were developed by the Azraq Basin Committee have been implemented. Different donors have shown interest in the priorities of the stakeholders, even before the Action Plan was developed.*[22]

Nevertheless, MWI considered it as ineffective, which lead to its shut down in 2015.[23] With its closure, all channels for dialogue with users were severed, and no efforts have been made to establish a similar project or platform for cross-stakeholder exchanges and learning. In fact, cross-stakeholder learning and bottom-up processes, especially in highly contested arenas like HWF, tend to progress slowly and face setbacks. Whether successful or not, it depends on the perspective and original expectations. HWF's slow pace has contrasted with donor expectations and senior government officials, who view bottom-up approaches and dialogue with farmers as unproductive. Instead, donor project managers, academics, and NGOs evaluated the process more positively, appreciating its role in strengthening and increasing trust and dialogue with farmers in the Highlands, a crucial step toward addressing structural issues of the groundwater crisis.[24]

Reflections on Participatory Approaches in the Water Sector

So far, participatory approaches within Jordan's water sector highlights both the potential and challenges of involving local communities in water management. The centralization of the sector discussed in the first section—dominated by MWI and governmental institutions in Amman—limits the participation and involvement of local stakeholders in policy formulation and implementation. However, NGOs have made notable efforts to engage communities, especially in educational and conservation initiatives. For instance, educational programs for students and schools that raise awareness in water saving measures.[25] Conservation campaigns also target religious leaders, training them to raise awareness during their weekly sermons.[26] Despite these efforts, the overall impact of participatory approaches at the national policy level remains limited.

WUAs and HWF serve as key examples of participatory approaches. WUAs in the Jordan Valley, supported by international donors, have had mixed success. While they have increased local involvement in irrigation management and improved transparency, their sustainability is questionable without continuous donor support. There are still issues such as tribal dominance and inequitable water distribution that highlight the complexity of integrating local practices with formal management structures.

HWF—although initially promising to strengthen dialogue

19 Mathias Polak et al., 40 Years of German-Jordanian Technical Cooperation in the Water Sector, Deutsche Gesellschaft für Technische Zusammenarbeit (GIZ), November 2018, p. 97, available at Link

20 Polak et al., 40 Years of German-Jordanian Technical Cooperation, p. 100.

21 Polak et al., 40 Years of German-Jordanian Technical Cooperation, p. 101.

22 Polak et al., 40 Years of German-Jordanian Technical Cooperation, p. 105.

23 Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Assessment of Groundwater Governance Capacities in Jordan, Unpublished Report, 2020.

24 BGR, Assessment of Groundwater Governance; Valerie Yorke, "Jordan's Shadow State and Water Management: Prospects for Water Security Will Depend on Politics and Regional Cooperation", in Society–Water–Technology: A Critical Appraisal of Major Water Engineering Projects, Reinhard F. Hüttl, Oliver Bens, Christine Bismuth and Sebastian Hoechstetter (eds.), Springer, 2016, pp. 227–251, available at https://doi.org/10.1007/978-3-319-18971-0_15

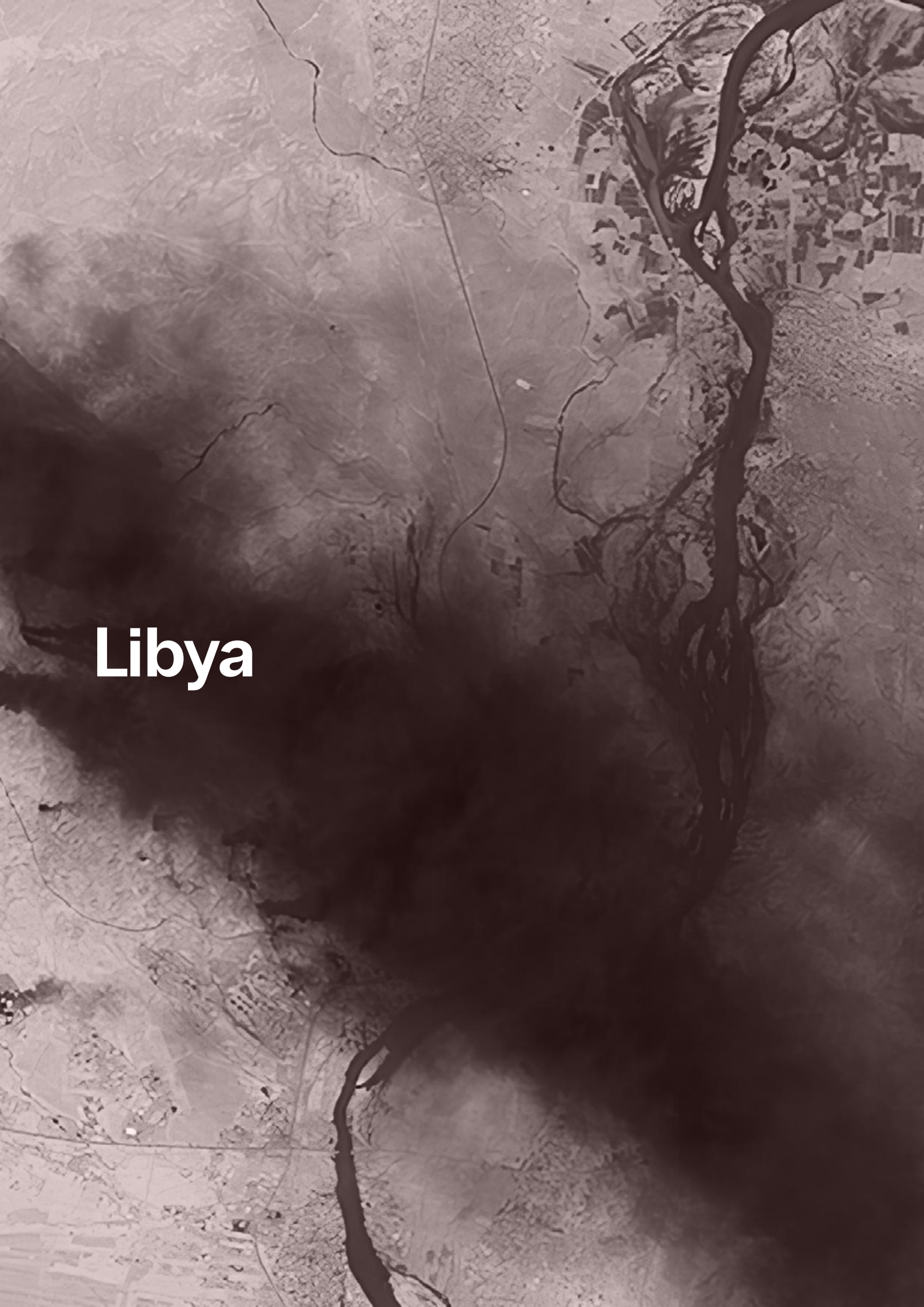
25 Hansen et al., "A Critical Learning Cycle Model"; Hussein, "A Critique of Water Scarcity Discourses".

26 Hussein, "A Critique of Water Scarcity Discourses"; Buccione, Religious Messaging.

and trust between stakeholders and provide a platform for dialogue and open discussions—ultimately failed to meet governmental expectations and was discontinued. This shows the inherent challenges in shifting from a top-down to a bottom-up approach in a highly centralized system. The slow progression and differing expectations between donors and government officials contributed to its eventual closure.

Conclusion

In conclusion, while participatory approaches have shown promise in specific contexts within Jordan, systemic centralization and varying stakeholder expectations undermine their broader application. For future success, it is crucial to ensure sustained support, build trust among all stakeholders, and align local practices with national strategies. Emphasizing genuine involvement and continuous dialogue—having the ability to build trust and dialogue amongst stakeholders—can help address Jordan's structural water management issues, ensuring a more inclusive and effective approach to facing water scarcity's challenges.


Libya

Conflict Securitization of Climate Disasters in Libya

Asma Khalifa

Policy Recommendations

- Accountability mechanisms and institutions must be supported throughout all processes of engagement with Libya's governments. The judiciary must be protected to be able to enforce rulings and take on corrupt officials.
- The government should lift constraints on civil society spaces, restrictions on media, and civic participation that limits communities from holding authorities to account.
- The government should invest heavily in critical infrastructure, public services, and disaster risk-reduction measures that has left many vulnerable communities exposed and unprepared for emergencies.

Keywords: Libya, Derna, climate disaster, government, security, response, community participation

Introduction

The process of securitizing climate disasters involves recognizing and addressing issues that can impact policy responses during conflict. Previous research has explored securitization in the context of armed conflicts, laying theoretical groundwork to specific issues, such as how climate disasters are elevated to security concerns. This elevation can affect the way conflicts are carried out and priorities are set.[1]

This study investigates the contribution of state and non-state actors to climate disasters, with a particular focus on the Derna flood disaster in Libya. Furthermore, it examines the poor participation in governance and security responses that exacerbated this catastrophe. By analyzing existing infrastructure, the institutions responsible for managing the flood, and the non-state actors involved in its response, this study provides a comprehensive understanding of the situation through the lens of participatory approaches.

The paper is divided into three broad sections. The first part outlines governance, participation, and armed non-state actors at the climate-security nexus; and how institutions and structures created through conflict securitization impact disaster management and response.

The second part is a case study of the Derna flood disaster in Libya, examining how ignored early warnings, security crackdowns on communities, and marginalization of local participation exacerbated the humanitarian impacts of the flooding. It then discusses the challenges facing civil society organizations (CSOs) and mobilized communities in their attempt to influence disaster response, exposing the dynamics of conflict securitization.

Finally, the conclusion considers the broader implications of the findings and the importance of adopting humancentric, participatory approaches to disaster management in conflict-affected regions.

1 Alex Arnall, "Climate Change and Security Research: Conflict, Securitisation and Human Agency", PLOS Climate 2, no. 3 (2023), available at https://doi.org/10.1371/journal.pclm.0000072

Governance and Armed Non-State Actors

The division in power, which occurred as a result of post-electoral violence and the ensuing military campaigns—known as Operations Libya Dawn and Libya Dignity in 2014—led to the fragmentation of the central government and the emergence of numerous armed non-state actors.[2] These actors—militias, criminal organizations, and terrorist groups—have taken advantage of the security vacuum to consolidate their control over certain regions and resources. Weak governance has resulted in the neglect of essential infrastructure—including flood control systems—in areas influenced by these armed groups.

Governance models of non-traditional security issues, such as climate disasters, have become increasingly complex with the participation of various state and non-state actors.[3] The eastern region of Libya has its own distinct political and security dynamics, with Derna being an area that has experienced instability and conflict. Various armed non-state actors have controlled the city, including the Islamic Youth Shura Council and Derna Mujahideen Shura Council—they later declared allegiance to the Islamic State in Libya (ISIS-Libya), and exerted influence over local governance and infrastructure.[4]

2 Thijs Jeursen and Chris van der Borgh, "Security Provision after Regime Change: Local Militias and Political Entities in Post-Qaddafi Tripoli", Journal of Intervention and Statebuilding 8, no. 2–3 (2014), pp. 173–191, available at https://doi.org/10.1080/17502977.2014.925249

3 Shahar Hameiri and Lee Jones, "The Politics and Governance of Non-Traditional Security", International Studies Quarterly 57, no. 3 (September 2013), pp. 462–473, available at https://doi.org/10.1111/isqu.12014

4 Mohamed Eljarh, "A Snapshot of the Islamic State's Libyan Stronghold", Foreign Policy, 1 April 2015, available at Link; Cameron Glenn, "Libya's Islamists: Who They Are - And What They Want", Wilson Center, 8 August 2017, available at Link

This section will review whether armed or non-state actors possess or lack a participatory approach to managing disasters in areas under their control, and how securitization affects climate disasters in the region.[5] To that extent, it is crucial to examine the governance system in eastern Libya, the relationship between state and non-state actors, and implications for climate-induced disaster management.

The House of Representative

The House of Representatives (HoR) is a legislative body, elected in 2014. Disagreements between this house and the General National Congress led to civil war in Libya.[6] Since then, it has created multiple rival executive governments, the latest of which is the Government of National Stability (NAS).[7] While HoR is recognized by the international community as legitimate, it has limited control over the eastern region. Its influence largely depends on the support of the Libyan Arab Armed Forces (LAAF), a military alliance led by Khalifa Haftar.[8]

The Government of National Stability

Appointed in 2022, this executive branch of HoR replaced the previous Government of National Unity, after another disagreement with the interim government in Tripoli and the Libyan Political Dialogue Forum (LPDF). This government is located in Sirte, after repeated failures to enter the capital.[9]

The Libyan Arab Armed Forces

General Khalifa Haftar leads this coalition and alliance of various armed groups. LAAF has controlled large parts of eastern Libya since 2014, operating parallel security and governance structures. It has also expanded its control to southern Libya and into parts of the coastal region, including Sirte. There were multiple attempts to take over Tripoli as well, most notably the 2019/2020 military campaign. HoR legitimized LAAF's power by passing a presidential decree in 2015—General Haftar was named commander of the forces—the 2015 anti-terrorism law, and two laws on military investment in 2016 and 2018. LAAF are not only in control of security, but have also been involved in managing infrastructure and resources in the eastern region. Its portfolio expanded to include both public and private sectors.[10]

Local Governance

Local governance institutions (municipalities) in eastern Libya have been managing disasters and infrastructure poorly. Since 2014, HoR and LAAF appoint municipalities, instead of holding elections, depending on the area.[11] LAAF or HoR have dominated most municipal councils in the East, diluting local community influence. LAAF and HoR have also attempted to create local security and service delivery institutions, such as the General Services Authority and the General Transport Company. However, these bodies are LAAF-influenced and remain highly centralized.

Competing security actors and political institutions characterize governance in Libya, limiting the ability of the state to address both traditional and non-traditional security threats. Not to mention collapsing infrastructure and a lack of development policies. Governance is highly centralized in both western and eastern regions, riddled with corruption and nepotism. The rise of armed non-state actors and their expansion means that these actors continue to exert influence and impose security by cracking down on dissent in Libya. This curtails the participation of civilian communities and CSOs.[12]

5 Samantha Jones et al., "Governance Struggles and Policy Processes in Disaster Risk Reduction: A Case Study from Nepal", Geoforum 57 (November 2014), pp. 78–90, available at https://doi.org/10.1016/j.geoforum.2014.07.011; Mikael Eriksson, "A Fratricidal Libya: Making Sense of a Conflict Complex", Small Wars & Insurgencies 27, no. 5 (2016), pp. 817–836, available at https://doi.org/10.1080/09592318.2016.1208794

6 Irene Costantini, "A Solution in Libya: Elections, Mediation, and a Victor's Peace", Middle East Policy 26, no. 4 (Winter 2019), pp. 146–156, available at https://doi.org/10.1111/mepo.12463

7 Moin Kikhia, "A Libyan Solution to a Libyan Challenge", Policy Analysis, Fikra Forum, 14 March 2014, available at https://www.washingtoninstitute.org/policy-analysis/libyan-solution-libyan-challenge

8 Wolfram Lacher, "Social Cleavages and Armed Group Consolidation: The Case of Khalifa Haftar's Libyan Arab Armed Forces", Studies in Conflict & Terrorism 47, no. 9 (2024), pp. 1,065–1,089, available at https://doi.org/10.1080/1057610x.2021.2013757

9 Marefa, "Government of National Stability", accessed 26 April 2024, available at Link

10 Tim Eaton, The Libyan Arab Armed Forces, Chatham House, June 2021, available at Link

11 Hisham Abdel Hamid, "رفض لعسكرة بلديات بالشرق الليبي", Al Jazeera, 6 October 2016, available at Link

12 Asma Khalifa, "The War on Freedoms in Libya", Arab Reform Initiative, 13 July 2023, available at Link

Storm Daniel and the Disaster Response

Storm Daniel struck eastern Libya in September 2023, causing severe flooding, damaging infrastructure, and displacing thousands of residents. The affected areas included several municipalities and localities, such as Soussa, al-Marj, Om al Aranab, Ajdabiya, and others in and around the valley area. The floods destroyed two dams in Derna, devastating a quarter of the city—132 homes were demolished and over 1,200 others were damaged. The dead and missing are yet to be accounted for; however, estimates are around 4,352 dead and 8,000 missing.[13] The storm also caused mass displacement, with around 44,862 residents forced to flee their homes in search of shelter.[14]

No warnings were issued to citizens when the storm hit; early warning systems were nonexistent. The city's municipal council issued a curfew asking two localities on the sea to evacuate. There are some clashing stories about this incident. Some report that the municipal council requested LAAF to conduct an evacuation, which was rejected. Others blamed the municipality for not being able to coordinate in parallel with security institutions and military forces.[15]

The responses to the disaster were highly fragmented and inadequate. It took four days for HoR to convene, while the Libyan Red Crescent, community efforts, and CSOs were the initial responders. It is these localized attempts that provided immediate relief and rescue amidst highly chaotic and reactionary official efforts.[16] International rescue teams and humanitarian aid from several countries were mobilized. The Libyan diaspora created several fundraising campaigns for Derna.

NAS in Sirte stated it had allocated LYD75 million for relief efforts in Derna, and that it had formed a high committee to oversee the response. The Minister of Local Governance chaired the committee, and includes representatives from LAAF and the ministries of Interior, Finance, Health, and Transport. However, there have been major delays and problems in the plan's implementation. The Government of National Unity in Tripoli, which was sidelined, tried to provide support through the Ministry of Local Governance. There have been accusations of mismanagement, delays in aid delivery, favoritism, and politicization of response efforts by both governments. This disaster highlights the challenges of governance fragmentation, poor coordination between parallel security and political institutions, corruption, and the inability of the state to respond to complex emergencies during current conflicts.

Ignored Early Warnings

Existing early warning systems in Libya are extremely weak, under-resourced, and non-functioning. Derna's poor dam conditions have been highlighted for years. A study published in the University of Sebha warned about the deteriorating state in the valley.[17] However, no concrete, timely actions have been taken by local and national authorities to strengthen infrastructure, install early warning systems, or put contingency plans in place.

Furthermore, in the same week as the disaster, the Libyan Audit Bureau highlighted that the Ministry of Water Resources—under Haftar's control at the time—had failed to follow up on letters of guarantee regarding the disbursement of the dam's maintenance in Derna—worth EUR2,286,358—in 2020. These guarantees would have benefited Turkish company "Persil". The report also stated the ministry had neglected contracts signed by the government, including maintaining and rehabilitating "Derna" and "Abu Mansour" dams in December 2020. There were projects since 2012/2013 labeled the "Derna Dam Rehabilitation Project" where the budget was spent but no maintenance was conducted.[18]

Security Crackdown

These reports, coupled with mass public outrage at both the government's response and chronic corruption, mobilized Derna's citizens on 18 September 2023 to protest against

13 Human Rights Watch, "Libya: Derna Flood Response Costs Lives", 6 December 2023, available at https://www.hrw.org/news/2023/12/06/libya-derna-flood-response-costs-lives

14 International Office for Migration (IOM) Libya, The Impact of Storm Daniel, November 2023, available at Link

15 Human Rights Watch, "Libya: Derna Flood Response Costs Lives".

16 The Legal Agenda, "إعصار دانيال وكارثة انهيار سدّي درنة (1): استجابة رسمية مرتبكة", 7 February 2024, available at Link

17 Abdelwanees A. R. Ashoor, "Estimation of the Surface Runoff Depth of Wadi Derna Basin by Integrating the Geographic Information Systems and Soil Conservation Service (SCS-CN) Model", Journal of Pure and Applied Sciences 21, no. 2 (2022), available at https://doi.org/10.51984/jopas.v21i2.2137

18 Alaa Farouq, "قرارات «ارتجالية» أصدرها حفتر بخصوص درنة.. هل أسهم في تفاقم الكارثة؟", Arabi 21, 14 September 2023, available at Link

the lack of disaster relief and to demand accountability.[19] However, LAAF's security forces cracked down on these protests, using live ammunition and tear gas. Protest organizers were arrested and a checkpoint was established to control entry to the city due to the destruction caused by the flood; this meant there was only one route in, while LAAF forces searched and demanded entry authorization. This greatly affected relief work, and underscored the crisis: Diminished civic space, limited regional political participation, and dominant security forces. Soon after, LAAF also imposed restrictions on international media and reporters that traveled to the city to cover the disaster and the authorities' response.[20]

In summary, the devastating floods that hit the city of Derna in Libya's Green Mountain region have exposed the fragility of the country's disaster response and preparedness. The lack of early warning systems, political fragmentation, corruption, and security crackdowns on protesters have hampered an already chaotic and inadequate response to the crisis. The complex political dynamics in Libya continue to severely impact the government's ability to respond to large-scale emergencies, with tragic consequences for Libya's population.

Community Participation

Participatory approaches are defined here as the meaningful involvement of local communities, civil society, and other stakeholders in decision-making processes and disaster management implementation strategies.[21]

Following the devastating floods in Derna, community-based organizations, local NGOs, and the Libyan diaspora have played a significant role in response and relief efforts. These grassroots endeavors have provided critical support, including search and rescue operations; delivering food, shelter, and other essential aid to affected families; and organizing fundraising campaigns. This mass participation inside and outside the eastern region highlights the official response's limitations and Libyan civil society's vital role in addressing the gaps in governance and public service.[22]

However, given their limited resources and capacity, localized community initiatives have been overwhelmed by the scale of disasters. In addition to the dearth of protection, limited coordination channels with security forces, and concerns over politicization and unequal aid distribution along factional lines have constrained the community's ability to mount an effective response.

Disaster Response and Participation Challenges

The situation in Derna following the floods highlights key challenges to disaster response and preparedness in Libya.

- The extreme political and security fragmentation—with parallel institutions, security forces, and disorganized governance—hampers coordination, information sharing, and resource mobilization during crises.
- Corruption, mismanagement, and opaque allocation of resources and aid distribution undermine public trust and equitable access to relief.
- Diminished civil society space, restrictions on media, and civic participation limit community groups and affected populations from participating in emergency responses and holding authorities to account.
- Chronic under-investment in critical infrastructure, public services, and disaster risk-reduction measures leaves many vulnerable communities exposed and unprepared for emergencies.

Conclusion

The devastating floods in Derna once again highlight the fragility of Libya's crisis response mechanisms and its poor governance system to protect vulnerable populations. Considering the country's ongoing complex political, security, and economic challenges, the need to emphasize disaster preparedness, risk reduction, and inclusive emergency management has never been more pertinent. To build-up

19 Deutsche Welle (DW), "ليبيا- مظاهرات في درنة تطالب بمحاسبة المسؤولين بعد الفيضانات", 18 September 2023, available at Link

20 Nadda Osman, "Libya Floods: Derna Silenced by Authorities in Bid to Contain Protests", Middle East Eye, 22 September 2023, available at Link

21 Ndidzulafhi I. Sinthumule and Ntavheleni V. Mudau, "Participatory Approach to Flood Disaster Management in Thohoyandou", Jàmbá: Journal of Disaster Risk Studies 11, no. 3 (2019), available at https://doi.org/10.4102/jamba.v11i3.711

22 Jennifer Holleis and Islam Alatrash, "Libya Flood: Civil Society Unites in Ramping Up Aid", Deutsche Welle (DW), 14 September 2023, available at Link

resilience in future disaster responses, Libya must prioritize centralizing community participation, transparency, and accountability.

Long civil war and division have exacerbated systemic governance failures that perpetuate authoritarian tendencies and security crackdowns, thus inhibiting the state's ability to fulfil its basic functions. Addressing these governance deficiencies and empowering local communities and civil society are essential to ensuring an effective and equitable disaster response. However, this cannot be achieved without addressing Libya's chronic lack of accountability, unchecked corruption, and security force dominance in public affairs.

Had the municipal council and civil defense units been given greater empowerment and extra resources, they could have played a more central role in disaster response. Community-based initiatives also face challenges in coordinating with overwhelmed and politically driven authorities. The case of Derna underscores this urgent need for comprehensive reform that responds to crises and emboldens local communities to participate and invest in their own capabilities.


Palestine

Gaza Under Fire - The Environmental Impact on Agricultural Land

Abeer Butmeh

Note: Due to the excessive and prolonged nature of the war in Gaza, the information contained in this chapter is accounted for until July 2024.

Policy Recommendations

- Demand an immediate ceasefire to save lives, restore the environment, and facilitate the recovery of agricultural land for the rebuilding process to begin.
- Resolve immediate and chronic environmental challenges. This is key to agricultural recovery and must be integrated into reconstruction plans.
- Conduct a full environmental audit—including contamination from munitions and other war-related pollution. This analysis must be incorporated into a master strategy.

Keywords: Gaza, environment, agricultural land, soil, farmers, participatory approach, war, damage

Introduction

The environment is a silent victim in the war against Gaza. As much as 57% of Gaza's agricultural land has been rendered unusable and half of Gaza's trees have also reportedly been destroyed.[1] Since October 2023, more than 2,000 agricultural sites—including farms and greenhouses—have been demolished.[2] Evidence shows that Israel's aggressive nine-month war is having a disastrous and catastrophic effect on nature's global ecosystem. The greenhouse gas (GHG) emissions generated during the first 60 days of Israel's war in Gaza were greater than the annual carbon footprint of more than 20 of the world's most climate-vulnerable nations—according to an analysis released by researchers in the United Kingdom and the United States, 281,000 metric tons of planet-warming gasses were released, the equivalent of 150,000 tons of coal.[3]

This paper outlines and analyzes the impact of the current war against agricultural land in Gaza. It adopts a participatory approach that analyzes specialist data and gives voice to farmers' urgent interventions toward recovery. It also sheds light on farmers' steadfastness and determination, repairing and recovering their land against overwhelming might.

The scale and long-term destructive impact are seen as a complete erasure of all features of life.

The Gaza war affects its citizens and the environment. Israel's offensive is destroying Gaza's ability to grow its own food. Over the past nine months, more than 60% of Gaza's farmland has been damaged, resulting in 96% of the population experiencing food insecurity—a fifth faces starvation.[4]

Normally, at the start of summer, Gaza's fields are bursting with ripe crops and fruits of all colors. Israel's military campaign has seen these abundant harvests give way to devastation. Greenhouses have suffered significant damage, approximately 26.6% (339ha), with North Gaza worst affected.[5] The water and sanitation system has been significantly reduced, delivering less than 5% of its previous output, and at least 100,000m3 of sewage and wastewater are dumped daily onto land or directly into the Mediterranean Sea.[6] Meanwhile, Israeli bombardment has created 37 million tons of debris and 270,000 tons of solid waste that is discarded at informal sites,[7] where hazardous substances can leach into the porous soil, and potentially into the aquifer—Gaza's main source of water. This war is leaving a new layer of toxic chemicals in the soil—phosphorus, cobalt, and cadmium—piling on to the many wars Israel has previously waged on the Gaza Strip.

Approach and Methodology

This paper discusses the findings of a participatory assessment, investigating the environmental impacts and consequences of the current war in the Gaza Strip. It uses the following research methods: a) desktop literature review and networking; b) in-depth interview with experts; and c) focus group discussions with Gazan farmers.

The desktop literature review identified and collected data about the potential war impacts on agriculture. In-depth

1 United Nations Satellite Centre (UNOSAT) and Food and Agriculture Organisation (FAO), "UNOSAT – FAO Gaza Strip Cropland Damage Assessment – May 2024", Factsheet, 13 June 2024, available at https://unosat.org/products/3880

2 Forensic Architecture, "'No Traces of Life': Israel's Ecocide in Gaza 2023–2024", 29 May 2024, available at Link

3 Nina Lakhani, "Emissions from Israel's War in Gaza Have 'Immense' Effect on Climate Catastrophe", The Guardian, 9 January 2024, available at Link

4 The Integrated Food Security Phase Classification (IPC), Gaza Strip: Acute Food Insecurity Situation for 1 May - 15 June and Projection for 16 June - 30 September 2024, 25 June 2024, available at Link

5 Food and Agriculture Organization (FAO), "Geospatial Information for Sustainable Food Systems", Factsheet, 28 February 2024, available at Link

6 United Nations Environment Programme (UNEP), Environmental Impact of the Conflict in Gaza: Preliminary Assessment of Environmental Impacts, 18 June 2024, available at Link

7 UNEP, Environmental Impact of the Conflict in Gaza.

interviews followed, targeting six experts in the field of agriculture and environment. These interviews covered many aspects:

- Geographies, agricultural locations, and communities particularly impacted by the conflict's agricultural damage.
- Soil pollution resulting from bombing, debris accumulation, wastewater floods, and solid waste leakage.
- Direct and long-term impacts of the war on the soil and agricultural land.

Using this information, a list of aspects was discussed in the form of two focus group sessions. Both were held with farmers. Their locations were selected based on the level of agricultural damage or number of farmers displaced. The focus group in the northern part of Gaza included 21 farmers—12 women, nine men. While the second focus group took place in the central governorate with 24 farmers—11 women, 13 men—who were displaced several times throughout the Gaza Strip. The sessions allowed the farmers to tell their versions of the agricultural damage they had suffered during the war, in addition to their current efforts and hopes for the future. The focus groups covered:

- The damages and losses identified in the agricultural sector.
- Environmental impacts noticed on the soil and agricultural crops.
- The important link between Gazan farmers and their land.
- The motivations and power behind Gazan farmers.
- What the future holds for farmers.

Results and Discussion

Potential Implications for People and Agriculture

Based on the assessment during focus group sessions and in-depth interviews with professionals, the following were identified as critical impacts related to Gaza's cropland damage.

Damage and Loss to Agricultural Crops

Croplands form approximately 41% of the Gaza Strip's total area. According to recent estimates by the Food and Agriculture Organization, 60% of the cropland was damaged during the war. Figure 1 shows the cropland damage progression in the governorates of Gaza over different periods throughout the war. The farmers conducted a loss assessment, analyzing the status of their cropland in different locations; mainly in the northern part, where their farmlands consisted of field crops, vegetables, orchards, and other trees.

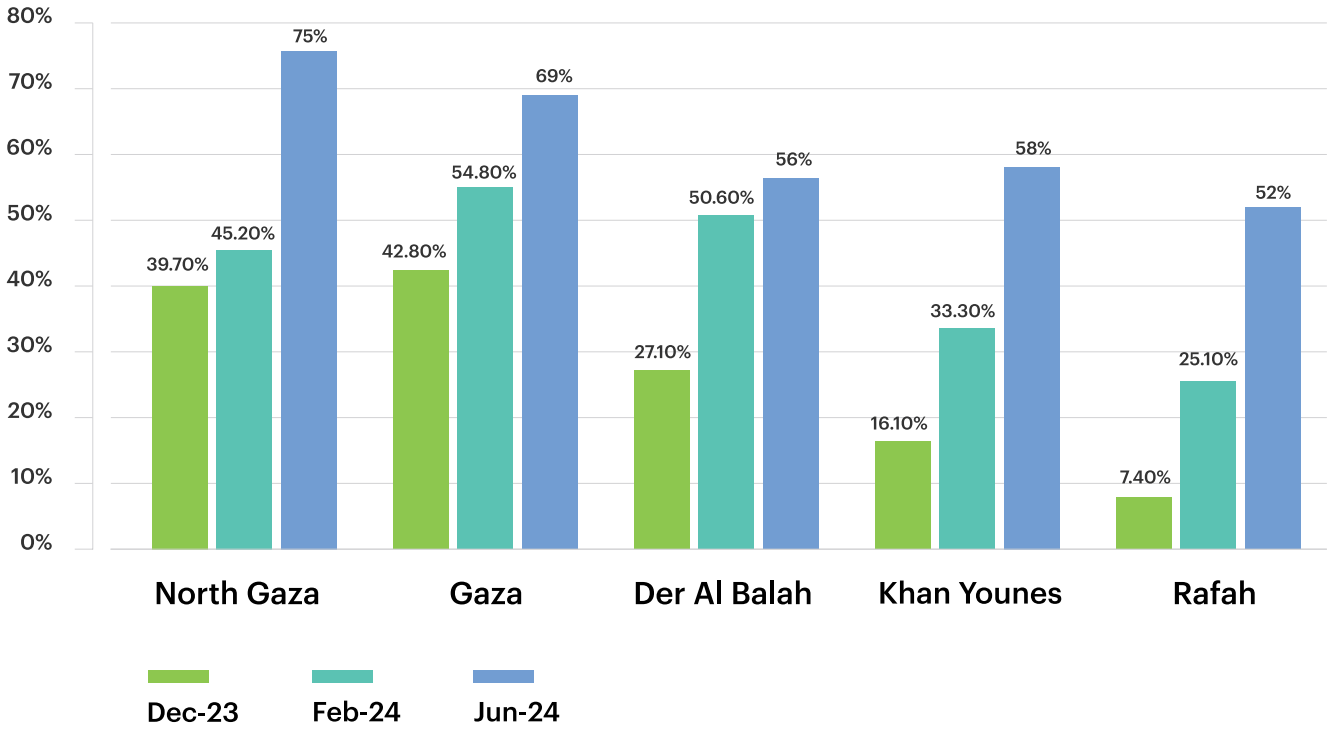
According to focus group assessments, 100% of participant farmers—whose income and food security play a vital role in their survival—have been damaged during the war. Seventy percent of participant farmers had been displaced from their land and were thus denied the opportunity to even see their farmland, causing distress and trauma. The participants described their profound hardships in their current daily life. "Our life now is not a life; it is nothing at all. Israel aims to deprive Gazans of food. They use starvation as a weapon of the war",[8] said one farmer who had left northern Gaza. Another articulated: "We are waiting to return to our farmland. We can't survive without production. We miss the smell of the land, and our passion of waiting for the crop's harvesting time".[9]

Access has been minimized to agricultural land under Israeli bombing that targets all civilians, including farmers. According to focus groups, the scale and long-term destructive impact of agricultural land is in the north of the Gaza Strip. The Israeli army caused unimaginable decimation, leaving behind no land intact and no signs of life. North Gazan steadfastness after nine months of famine and slaughter is evidence of their determination. Gaza's remaining institutions are making every effort to mitigate the damage and repair what they can. Municipalities are trying to collect the solid waste accumulated everywhere and to restore what can be restored, despite the impossible circumstances. Focus group participants described life in Gaza as having two sides; one side is damage and death, the other is determination and life. Once again, people are working on projects and establishing life.

8 Ne'ma al Qaisy, online interview with author, 2 July.2024.

9 Itaf al Khesi, online interview with author, 2 July 2024.

Figure 1: Cropland Damage Progression for Select Governorates during the Gaza Strip War[10]



Damage to Agricultural Infrastructure and Facilities

All the wastewater treatment plants for agricultural use were utterly ruined by Israel's military campaign. In-depth interviews with professionals in Gaza raised the case of one of the largest and most successful infrastructure projects—the Northern Gaza Emergency Sewage Treatment (NGEST) project—which provides a long-term solution to wastewater treatment for Gaza's northern governorate. The project mitigates health and environmental threats to communities surrounding Beit Lahia's effluent lake. This treated wastewater was redirected for use in agricultural land as a sustainable irrigation solution. With its current destruction, Gazans are left questioning what kind of sustainable future has the war left behind?

The Interim Damage Assessment records substantial destruction in the agricultural sector—estimated at US$629 million—relating to the destruction of trees, agricultural holdings, greenhouses, retail establishments, and irrigation

10 United Nations Satellite Centre (UNOSAT), "UNOSAT Gaza Strip Agricultural Damage Assessment - December 2023", Factsheet, 13 December 2023, available at https://unosat.org/products/3772; Food and Agriculture Organization (FAO), "Overview of the Damage to Agricultural Land and Infrastructure due to the Conflict in the Gaza Strip as of 15 February 2024", Factsheet, 28 February 2024, available at Link; United Nations Satellite Centre (UNOSAT) and Food and Agriculture Organisation (FAO), "UNOSAT - FAO Gaza Strip Cropland Damage Assessment - June 2024", Factsheet, 5 July 2024, available at https://unosat.org/products/3895

infrastructure.[11] Figure 2 illustrates with clarity this destruction wrought on Gaza.

Focus group participants identified the following damages to agriculture facilities: Green houses, water pumps, solar panels—used to pump water from wells—agricultural wells and pools, in addition to their seed stores. Hussam Najjar from the Islamic university in Gaza has highlighted:

The direct impact on the agricultural soil is a decrease in green cover due to permanent tree uprooting, such as citrus, olive, and date palm.... the passing of heavy-armed machines over agricultural lands had led to soil compaction and decreased its permeability and infiltration rate. The soil is not suitable anymore for agriculture until it is rehabilitated by deep tillage.[12]

Due to intensive bombing, the soil's profile is disordered. The topsoil is rich in organic matter and nutrient minerals and covers other deeper layers. The bombs also cause heat in excess of 5,000˚C, which leads to burning of organic matter, and the soil loses its fertility. In previous research, an increase in concentration of lead and cadmium in agricultural soil was detected as a result of the heavy bombing.[13]

The war has caused extensive damage to the land, reversing previous successful environmental interventions, farming schools among them. One of the participants was heavily involved in farming schools in northern Gaza—al Shajaya, Jabalia, and Bet Hanoun. She was proud of her role in targeting female farmers in educational agricultural and climate adaptation sessions, and was passionate about her work and the relations she had cultivated with farmers.

Figure 2: Damage Progression to Agricultural Infrastructure during in the Gaza Strip Conflict[14]

December 2023 **February 2024** **June 2024**

11 UNEP, Environmental Impact of the Conflict in Gaza.

12 Hussam al Najjar, personal communication with author, 11 July 2024.

13 UNEP, Environmental Impact of the Conflict in Gaza.

14 UNOSAT, "UNOSAT Gaza Strip Agricultural Damage"; FAO, "Overview of the Damage to Agricultural Land and Infrastructure"; UNOSAT and FAO, "UNOSAT - FAO Gaza Strip Cropland Damage".

Rapidly Increasing Soil Pollution and Irreversible Risks to Agricultural Land

Israel has dropped more than 70,000 tons of bombs on the Gaza Strip in nine months, far surpassing Dresden, Hamburg, and London in World War II, combined. The interviewed experts warned that bombarding agricultural lands with thousands of tons of explosive materials of different types will have a direct and long-term impact on the soil, polluting it with heavy metals, such as chromium, cobalt, cadmium, copper, and lead. The pollution will not be limited to the soil, reaching groundwater reservoirs as well.[15]

It was also clear to the farmers that crop productivity and density across the Gaza Strip have substantially declined. There is a clear deterioration in agricultural land, attributed to razing, heavy vehicle movement, bombing, and shelling. Gaza's bombardment and resulting destruction of buildings, roads, and other infrastructure has generated over 39 million tons of debris, some of which is contaminated with unexploded ordnance (UXO), asbestos, and other hazardous substances. The soil smells different, and there is a superficial gray layer in many of the agricultural areas that had been bombed—a new layer of toxic chemicals in Gaza's soil, adding to those left behind after the many previous wars waged by Israel. Pollution is everywhere. Participant farmers fear the air they breathe is heavy with impurities.

At least 100,000m3 of sewage and wastewater are dumped daily onto land or into the Mediterranean Sea.[16] According to Mohammad Ebweini from Coastal Municipalities Water Utility (CMWU):

> *With the entry of the Israeli war since October 2023, agricultural production in the Gaza Strip has been greatly affected. This impact can be attributed to the bulldozing of agricultural lands, as well as the presence of many agricultural lands within military areas that are also prohibited from access.*

In addition, the lack of water is one of the main reasons for this stoppage, mainly due to the almost complete stoppage of agricultural wells because of the complete power outage and lack of fuel to operate these generators. In addition, the destruction and stoppage of sewage treatment plants were a water source needed for agriculture through recycling. Both the North Central Treatment Plant and the Bureij Treatment Plant have been completely out of service due to partial destruction and location within a dangerous combat zone.[17]

He added:

> *It is worth noting that the Gaza Strip uses approximately 200 million m3 of water annually for agricultural purposes. What is currently available does not exceed 15–20% of extracted groundwater through alternative energy sources, such as solar energy as well as some generators that run on fuel.*[18]

Meanwhile, solid waste is discarded at informally, where hazardous substances can leach into the porous soil. Additionally, during tent construction and daily life practices the surrounding agricultural plots may be exposed to different levels of pollution.

Solar panel destruction is an additional concern as it may leak lead and other heavy metals into Gaza's soil and water, causing a new kind of risk. Before the current escalation, a shift to renewables in Gaza's power sector was underway, contributing to emissions reduction and stability of the power supply—important for environmental management facilities, including wastewater treatment. The residential sector is the primary electricity consumer in Gaza, accounting for 60% of the total. Before October 2023, 20% of households had adopted solar energy, reflecting a growing trend towards renewable sources.[19]

Ironically, during interviews, specialists recounted the laws they had advocated for and established that limits pesticide and chemical fertilizer use. Now they see the huge amount of internationally-banned chemicals—including white phosphorus—that have been dropped on Gaza. These actions make it difficult to hear others in the global community talk about climate justice while Gaza is withstanding its cruelest ecocide yet.

Land Use

Internally displaced residents includes the construction of structures that might affect or change the way land is used. This requires vast areas, roughly 20km2, and involves substantial land surface transformation and disruption to large agricultural or natural areas.

15 Mohammed Abu Odeh, online interview with author, 1 July 2024; Hussam Al Najjar, online interview with author, 2 July 2024.

16 UNEP, Environmental Impact of the Conflict in Gaza.

17 Mohammad Ebweini, personal communication with author, 3 July 2024.

18 Mohammad Ebweini, personal communication with author, 3 July 2024.

19 UNEP, Environmental Impact of the Conflict in Gaza.

Environmental Eradication Reinforces Eco Resilience

In a dilapidated tent in Mawasi, Khan Younes, farmer Ne'ma al Qeisi, 78 years old, is living with more than 20 other family members, displaced from Gaza City. She has moved more than six times in search of a safe haven. When she was asked about her farmland, she answered with tears that her 12 donums—land measurement—were completely destroyed by bombs and bulldozers. This land was planted with okra, cucumber, squash, eggplant, and tomatoes. She cried and said: "My hands miss plowing the soil". Like the rest of Gaza's farmers, Ne'ma trusts that the future lies in the land. She added:

> *There is no doubt there is undeniable proof of genuine danger and catastrophic long-term effects on our farmland, but our role is starting from the beginning hand-by-hand to recover our land, and we are sure that it will return as before or even better.*[20]

Many of the farmers interviewed have been displaced more than ten times since the beginning of the war. At each station, they cannot stay without planting some crops. This is not necessarily for food. It is a tool to keep their strength and t0 be productive. Agriculture is the basis of farmers' lives, wherever they go, wherever they are displaced, and in whatever agricultural condition. The farmers are able to plant in sand, in water, in rock, anywhere. They will not despair because the land is everything to them. As one participant put it: "Our value as farmers lies in our land".[21] Agriculture gives the farmers patience and hope when they see the seeds growing, despite all the obstacles.

There are many agricultural initiatives that arose during the war, including cultivation next to tents, even in sandy soil, while using all available organic nutrients, including snails, egg shells, and plant residues. Other initiatives have also emerged to multiply vegetable seeds, producing a mini-seed bank.

My Wish, My Message to the World

Samar abu Safia, agricultural engineer, who has been displaced 14 times:

> *I participated in collecting soil samples during this war with determination and without hesitation or fear because I want to prove to the world the extent of the crimes and genocide that Israel [has] committed against my people and my land.*[22]

Samar added:

> *Currently I am working hard with full power to complete the environmental sampling research in order to get real results that prove the level of pollution caused by the current war against Gaza. I wish after the war to continue my PhD studies in environmental pollution and wars to show that international law and human right[s] have double standards. I want to play a significant role in agricultural recovery after the war. I want to support Gazan farmers psychologically before supporting them scientifically. I want to stand with them. We are not… ones to surrender. On the contrary, we will rebuild again with correct, deliberate steps, and comprehensive plans to be able to recover our country with a strong and correct foundation.* [23]

Conclusion

This paper reveals the alarming impact of the war on agriculture. This war led to the destruction of agricultural infrastructure, changing the physical, chemical, and biological characteristics of Gaza's agricultural lands. The damage is not limited to destruction, it extends to long-term pollution as well.

After nine months of famine and carnage and despite this environmental disaster unfolding in Gaza, the steadfastness of Gazan farmers and remaining institutions is evidence of their resolve. Gazan people are working on developing projects, finding solutions, and reestablishing life, again.

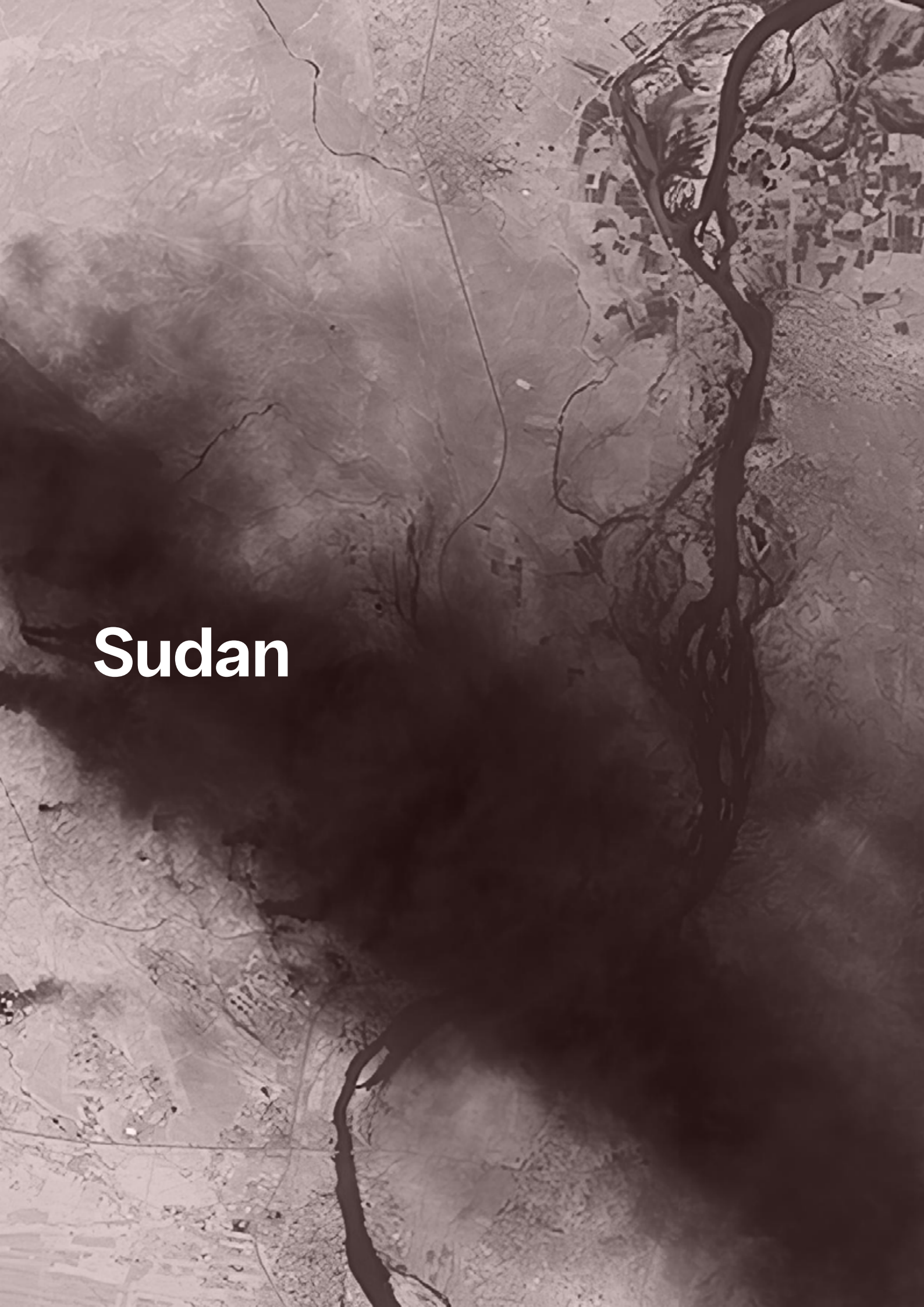
This war has continued to dumbfound in its needless devastation. While it is impossible to fully assess the environmental impacts of Israel's ceaseless bombing, one thing is clear: The ongoing levelling of agricultural land in Gaza will have far reaching consequences.

20 Ne'ma al Qaisy, online interview with author, 2 July.2024.

21 Samir Mansi, online interview with author, 1 July 2024.

22 Samar Abu Safia, online interview with author, 30 June 2024.

23 Samar Abu Safia, online interview with author, 30 June 2024.



Sudan

Case Studies of Participatory Approaches in Sudan

Abdalftah Ali

Policy Recommendations

- Projects should actively address gender barriers and empower marginalized groups. Ensuring that all voices are heard and valued evenly and inclusively reduces power imbalances.
- Respectful integration in local norms and traditions are essential. Empathetic and culturally sensitive staff should work closely with local leaders and the community to ensure socially acceptable interventions.
- Projects should build on and share positive success stories, lessons learned, and best practices. Recognizing and celebrating past experiences can motivate communities to engage more actively in future initiatives.

Keywords: Sudan, development projects, participatory approaches, empowerment, resource management

Introduction

Sudan, with its diverse ecological zones and sociopolitical structures, has been beset by protracted conflicts since independence in 1956. Its residents have been grappling with severe environmental changes and climate impacts, including desertification, erratic rainfall, and extreme temperatures. These environmental stressors, coupled with sociopolitical dynamics, have often fueled conflicts.[1] Studies argue ecological stressors exacerbate social tension, which leads to conflict.[2] In Darfur, a fifty-year drought has led to competition for land and water resources, resulting in what is considered as the world's first climate change war.[3]

In past decades, participatory approaches had been undertaken by non-governmental organizations (NGOs) as a way to address these challenges. They tended to empower local communities and have been applied in various initiatives across the country. They range from land rehabilitation to agricultural services and rural development projects, aiming to ensure sustainability, cultural relevance, and wide acceptance. One successful but less adopted developmental project promotes community involvement that assesses needs and plans.[4]

The participatory approach has faced considerable criticism, particularly regarding community mobilization, capacity building, planning, partnerships, and sustainability.[5] Some experts have raised concerns that it might not be fully realized and it isn't easy to put these principles into practice. However, this language is common in project documents. The constraints are often cultural, particularly regarding the project's target groups or their predominantly ingrained habits. These cultural and gender-based constraints pose challenges to implementing true inclusivity. More must be done to achieve high-quality accuracy and marginalized group participation—such as youth and women, particularly at decision-making levels.

This paper aims to shed light on the complexities of participatory development in Sudan, suggesting ways to improve its practice at the grassroots level. To gain deeper insights, the study relied mainly on project reports, and existing literature. Additionally, seven interviews were conducted with development practitioners[6] directly involved in community projects. They helped understand the practicalities and successes and provided recommendations for future projects.

This paper is structured as follows: the first section provides a detailed review of some projects, highlighting their objectives, methodologies, and outcomes; then follows a section discussing the factors that have influenced community participation, drawing on project documents, the literature, and interviews; finally, the conclusion ties together the various aspects discussed.

The Context and Evolution of Community Participation in Sudan

In development projects, the top-down approach involves planning and decision-making initiated by higher authorities, such as NGOs, governments, and/or external donors. This method has the advantage of efficient resource allocation and alignment with broader strategic goals. However, it often overlooks local communities' unique needs and contexts, leading to ineffective outcomes.[7] In recognition, a shift towards bottom-up participatory approaches emphasizes necessary consultations and empowers local communities.

1 Damian Carrington, "How Water is Helping to End 'the First Climate Change War'", The Guardian, 18 December 2019, available at Link

2 Manzul A. M. Assal, "Sudan: Identity and conflict Over Natural Resources", Development 49 (2006), pp.101–105, available at https://doi.org/10.1057/palgrave.development.1100284

3 Chase Sova, "The First Climate Change Conflict", World Food Program USA, 19 December 2020, available at https://www.wfpusa.org/articles/the-first-climate-change-conflict/#

4 Nawal El-Gack, "Development and Indigenous Systems: Lessons from North Kordofan, Sudan", AlterNative: An International Journal of Indigenous Peoples 8, no. 1 (2012), pp. 99–111, available at https://doi.org/10.1177/117718011200800108

5 El-Gack, "Development and Indigenous Systems".

6 (Semi)structured interviews were conducted with development practitioners and experts directly involved in community participatory projects. Despite reaching out, responses were varied. Some have yet to reply, while others, given the ongoing conflict, could not participate but offered to provide input later. Ultimately, seven interviews were successful.

7 Shahidulla Kaiser, "Are Bottom-Up Approaches in Development more Effective than Top-Down Approaches?", Journal of Asian Social Science Research 2, no. 1 (2020), pp. 91–109, available at https://doi.org/10.15575/jassr.v2i1.20

In Sudan, sustainable development requires actively involving those most affected to drive policies and projects in participatory approaches. Many initiatives claimed to involve and empower local communities—planning, implementation, and monitoring processes—fostering a sense of ownership and ensuring interventions were context-specific and culturally relevant.[8] According to UN Environment Programme (UNEP), this method addresses communities' needs and empowers them to own their development, ensuring interventions are both practical and impactful.[9]

However, while many development projects claim to adopt this approach, detailed information is often lacking online, and responses from organizations can be sparse. Consequently, the following review is based on available online data, one from an expert—unavailable online—and another from an expert highlighting the need for greater transparency and documentation in these initiatives.

Bridging Communities

A notable peacebuilding example is the multi-donor peace and stability program aimed at reducing communal violence and fostering increased cooperation between disputing communities.[10] UN Development Programme (UNDP) community groups engaged in dialogue and conflict resolution sought to build trust and foster peace. Local leaders, youth, and women were actively involved, leading to a more cohesive and peaceful environment.[11]

Engendering Equality

To promote gender equality and contribute to long-term community resilience and peacebuilding in North Kordofan, UNDP, UN Environment, and UN Women initiated a comprehensive gender analysis pilot project that adopts a participatory approach.[12] Community members were actively involved in identifying the factors influencing gender equality and women's empowerment in their locality. According to the report, this led to tailored interventions that addressed specific needs and challenges faced by women in the community. A key element establishes and enhances the Community Management Committee (CMC), which includes 50% female representation.[13]

Empowering Women

Building on the lessons learned, UNEP and UNDP, in collaboration with the government and stakeholders, launched a project to promote climate and livelihood security through women's empowerment in the Blue Nile State,[14] which seeks to address the unique challenges faced by women in natural resource management and conflict resolution. Women, local leaders, and community decision-makers were involved in training programs primarily designed to build women's capacities in leadership, conflict resolution, and sustainable resource management. Though the project is ongoing, it reports positive outcomes regarding enhanced social cohesion and resilience.[15] However, challenges persist in changing deeply entrenched gender norms and ensuring equal participation.

8 Almotalib Ibrahim et al., Participatory Evaluation with Pastoralists in Eastern Sudan, Working Paper Series no. 8, ETC EcoCulture, 2002, available at Link; Margunn I. Alshaikh and Helena P. Larrauri, "Building Resilience through Crisis Mapping, Community Engagement and Recovery Planning in Sudan", in ISCRAM 2012 Conference Proceedings – 9th International Conference on Information Systems for Crisis Response and Management, L. Rothkrantz, J. Ristvej and Z. Franco (eds.), Information Systems for Crisis Response and Management (ISCRAM), April 2012, available at Link

9 Talaat D. Abdel Magid, Lessons Learned and Good Practices in Natural Resource Management, United Nations Environment Programme (UNEP) and UK aid, March 2020, available at Link

10 United Nations Development Programme (UNDP) Sudan, "Darfur Community Peace & Stability Fund (DCPSF)", (n.d.), available at Link

11 Alfonso P. Castro, Resources Economic Security, and Peace in Darfur (RESP—Darfur), Project Assessment: Darfur Community Peace and Stability Fund (DCPSF), Near East Foundation, May 2014, available at https://doi.org/10.13140/2.1.2172.9600; Partners in Development Services (PDS), Promoting Peace in East Darfur State Project State Project: Final Evaluation Report, Care International Sudan, March 2018, available at Link; United Nations Sudan, "Successful UN Environment Project Contributes to Peace and Economic Recovery in North Darfur", 26 November 2018, available at Link

12 United Nations Environment Programme (UNEP) et al., Joint Project in North Kordofan, Sudan: Promoting Gender-Responsive Approaches to Natural Resource Management for Peace, Interim Progress Report, October 2017, available at https://wedocs.unep.org/20.500.11822/31254

13 United Nations Environment Programme (UNEP) et al., Promoting Gender-Responsive Approaches to Natural Resource Management for Peace in North Kordofan, Sudan, March 2019, available at Link

14 UN MPTF Office Partners Gateway, "PBF/SDN/B-1: Supporting Sustainable Peace in Blue Nile State through Gender−Responsive Natural Resource Governance Inclusive Conflict Resolution Mechanisms and Climate−Resilient Livelihoods", July 2021, available at https://mptf.undp.org/project/00128019

15 Abdelmageed M. Yahya and Tamer Abd Elkareem, Gender, Conflict and Environmental Assessment/Analysis: Blue Nile State: Final Report, UN Women, September 2021, available at Link

Improving Sustainable Agriculture

A rural development project that aims to enhance agricultural productivity, improve food security, and increase household incomes in the North Kordofan state.[16] To engage local communities, Village Development Organizations (VDOs) were formed to plan and execute development projects that reflect the community's needs and priorities.[17] Community Training Programs enhance skills and knowledge and focus on sustainable agricultural practices, natural resource management, and financial management. However, this design was complex; it made simplistic assumptions about the implementation capacity of state administration, underestimated risks, and overlooked challenges associated with aligning project implementation in decentralized government directives.[18]

Enhancing Water Resources

The Wadi El Ku Catchment Management Project focused on improving water resource management and contributed to peace and stability in North Darfur.[19] The project aimed to enhance water availability, increase agricultural yields, and reduce conflicts over water resources through community-based interventions. It fostered a sense of ownership and responsibility by involving local communities in planning and implementing water management strategies. Community members participated in designing water harvesting and irrigation systems and integrating local knowledge into project activities and training programs that nurture community capacity for sustainable water management.

Energizing Female-Led Small-Scale Farms

UNDP is building resilience into Sudan's rain-fed farms and pastoral communities, particularly among women-headed households.[20] The project involved several vital activities, including implementing water harvesting techniques, introducing drought-resistant crop varieties, and establishing shelterbelts. Local communities were involved in planning, designing, and implementing adaptation measures. Regular training sessions were conducted to build local capacity, particularly for women. Progress reports were conducted periodically to ensure project sustainability interventions.[21]

Boosting Social Cohesion and Resilience

Catholic Relief Services (CRS) led the Integrating Social Cohesion Sudan (ISCS) project that exemplifies another application of participatory approach.[22] It aimed to alleviate conflict-affected communities by engaging with local leaders, youth, and women. ISCS cultivated stronger community bonds and collective action toward peace and development. It also provided conflict resolution and leadership training that enables community members to take active roles in sustaining peace.[23]

Reducing Communal Violence

The Joint Conflict Reduction Programme aimed to reduce communal violence and promote social cohesion in Sudan's

16 International Fund for Agricultural Development (IFAD), Executive Board – Sixty-Sixth Session: Report and Recommendation of the President to the Executive Board on a Proposed Loan to the Republic of the Sudan for the North Kordofan Rural Development Project, 29 April 1999, available at Link; Project Completion Report Digest (PCRD), "Rural Development: North Kordofan Rural Development Project", International Fund for Agricultural Development (IFAD), 21 January 2010, available at Link

17 Nawal El-Gack, Rural Development and Microfinance Projects in Sudan: With Special Attention To Community Participation, The Edwin Mellen Press, 2012.

18 PCRD, "Rural Development: North Kordofan".

19 Kamaleldin E. Bashar, Integrated Water Resources Management: Good Practices in Sudan - Adapt for Environment and Climate Resilience in Sudan (ADAPT!), United Nations Environment Programme (UNEP) and UK aid, October 2019, available at Link

20 Veronica N. Muthui and Magda Osman, Implementing Priority Adaptation Measures to Build Resilience of Rainfed Farmer and Pastoral Communities of Sudan, Especially Women Headed Households to the Adverse Impacts of Climate Change, United Nations Development Programme (UNDP), Global Environment Facility (GEF) and Canadian International Development Agency (CIDA), accessed 23 July 2024, available at https://erc.undp.org/evaluation/documents/download/10908

21 Muthui and Osman, Implementing Priority Adaptation Measures.

22 Catholic Relief Services (CRS), "Integrating Social Cohesion Sudan: Case Study 4", 2021, available at https://www.crs.org/sites/default/files/cs4_taadoud_sudan.pdf

23 Catholic Relief Services (CRS), "Learning Brief: Integrating Social Cohesion for Enhanced Outcomes: Findings from an Evidence-Mapping Study", Spring 2020, available at Link

conflict-affected regions.[24] Implemented over two phases, the program focused on identifying the root causes and developing locally solutions to the conflict. The participatory approach involved consultations with community members to identify conflict drivers and cultivate outcomes. The methodology incorporated continuous feedback and adaptation, successfully reducing communal violence and enriching social cohesion.[25] However, two experts raised concerns about the program's long-term sustainability because of its reliance on external funding:

> *[However,] once this funding diminishes or stops, there is a real concern about whether local communities have the capacity or resources to sustain their progress. There is a need for local institutional support to ensure that these initiatives don't collapse after the donors pull out.*[26]

Main Factors Influencing Participatory Approaches in Sudan

These projects underscore achieving sustainable and effective outcomes. Actively involving local communities empowers those most affected by climate hazards to define their problems, set priorities, and anticipate risks.[27] Projects like the North Kordofan Rural Development Project (NKRDP) highlight the importance of understanding social, economic, political, and physical environments to ensure effective participation.[28] Yet, some argued that despite their intentions, local community engagement often falls short of achieving true empowerment, as external development providers retain significant control over the decision-making process.[29] A senior expert raised the point that development agencies are incapable of meeting structural and social challenges in Sudan—many are seen as bureaucratic and funding-focused, thereby perpetuating underdevelopment. El-Gack argued that these agencies have a wide presence in Sudan, where not much literature is available and little is known about their actual impact.[30]

Absorbing Regional Customs

Integrating indigenous knowledge and traditions are central to the participatory approach. Projects in Sudan have leveraged local knowledge, particularly in areas like water harvesting and land management. According to UNEP, the Wadi El Ku project utilized community-driven methods to adapt to unreliable rainfall, partially reducing water scarcity.[31] A first phase of the project improved agricultural productivity, tripling millet and sorghum yields and increasing incomes for 70% of participants. Speaking to UNEP, Vice President Youssif Kibir emphasized replicating such initiatives to address climate challenges across Sudan, while Ambassador Jean Dumond praised fostering climate-resilient livelihoods and reducing pressure on resources.[32] UN Environment Country Programme Manager for Sudan Atila Uras highlighted the project's role in reversing environmental degradation and rebuilding cooperation over natural resources.[33]

Despite some success, the exclusion of downstream water users threatens sustainability.[34] Additionally, pastoralists have not been adequately engaged in the project forum, which is dominated by urban residents. However, two

24 Ahmed Gamal Eldin, Sustained Peace for Development: Conflict Prevention and Peace-Building in Sudan through Targeted Interventions in Selected Communities along the 1-1-1956 Border, Millennium Development Goals (MDG) Achievement Fund, July 2013, available at Link

25 Isabel Candela, IOM/UNDP Joint Conflict Reduction Programme: Final Evaluation Report, United Nations Development Programme (UNDP) and International Office for Migration (IOM) with support from the European Union, May 2016, available at Link

26 Anonymous NGO experts, video conference interview with author, 23 July 2024.

27 Mohammed M. Fidiel, "Participatory Development of the Donkey-Drawn Plough in Western Sudan", in Advancing Participatory Technology Development: Case Studies on Integration into Agricultural Research, Extension and Education, Chesha Wettasinha, Laurens van Veldhuizen and Ann Waters-Bayer (eds.), IRR / ETC Ecoculture / CTA, 2003, pp. 139–156, available at Link

28 El-Gack, Rural Development and Microfinance Projects in Sudan.

29 Samer Abdelnour et al., Examining Enterprise Capacity: A Participatory Social Assessment in Darfur and Southern Sudan, Centre for Refugee Studies, York University, 2008, available at Link

30 Nawal El-Gack, "The Power of Non-Governmental Organisations in Sudan: Do Structural Changes Matter?", Australasian Review of African Studies 37, no. 1 (June 2016), pp. 52–72, available at Link

31 United Nations Sudan, "Successful UN Environment Project".

32 United Nations Sudan, "Successful UN Environment Project".

33 United Nations Sudan, "Successful UN Environment Project".

34 United Nations Development Programme (UNDP), Review of the Darfur Development Strategy (2013-2019), Consolidated Review Report vol I, 7 October 2019, available at Link

interviewees raised questions about the scalability and sustainability of these practices, as current conflict and security issues potentially undermine the effectiveness of historical knowledge:

> *[It] creates serious challenges when trying to scale these practices across broader regions. For instance, while local knowledge is valuable, the constant threat of violence often disrupts community-driven initiatives, making it difficult to sustain any long-term development.*[35]

Building Trust through Cultural Sensitivity

The behavior and attitudes of project staff are crucial to influencing community participation. Respectful, empathetic, and culturally sensitive staff can build trust and encourage active community involvement, while dismissive or authoritarian attitudes can deter participation and undermine project objectives.[36] Experts assured that staff who demonstrated respect and understanding towards local customs and traditions were more successful in implementing development participation:

> *Staff members who took the time to learn about and show respect for local traditions were able to gain the community's trust much more quickly. This trust was key in getting people to participate openly and actively in the development projects.*[37]

The NKRDP exemplifies this. Staff cultural alignment and understanding significantly contributed to its success, fostering strong community ties and building trust.[38]

Safeguarding Steady Resource Streams

Resource availability is another critical factor that influences community participation. Adequate funding and resources are essential for capacity-building activities, infrastructure development, and continuous support. Projects such as the Joint Conflict Reduction Programme and the Wadi El Ku Catchment Management Project demonstrated that sufficient resources are necessary to maintaining community engagement.[39] However, resource constraints lead to frustration amongst the community that can reduce participation levels. Interviewees underscore the importance of consistent and reliable resource allocation for sustaining community involvement: "Development programs often falter because the resources promised during planning stages don't always arrive or are delayed, which disrupts the flow of activities and weakens community commitment".[40]

Encouraging Gender Diversity

Additionally, cultural barriers and varying literacy levels among community members have sometimes restricted women's effective participation. According to UN projects that actively include women, such as Supporting Sustainable Peace in Blue Nile State, demonstrated the importance of addressing gender barriers.[41] Speaking to UNDP, Abuelgasim Adam from UNEP's Sudan office further elucidates its importance.[42] This process provides a forum for all stakeholders—including women and youth—to be informed and to build a community-wide consensus on key environmental issues.

Strong community engagement allows marginalized groups to play a leading role in building environmental solutions that contribute to peace. Adam emphasized the essential role of women in supporting families through their participation in natural resource-based livelihoods, including agricultural production, forest crop harvesting, artisanal mining, and water and fuel collection. He noted that women's natural resource-related roles can expose them to elevated risks of violence. Inspiring women to be leaders can create a launch pad for women's empowerment in other governance or peacebuilding mechanisms.[43] However, deeply entrenched

35 Anonymous local experts, telephone and video conference interviews with author, 10-25 July 2024.

36 Nawal E.-G. El Gack, "Participatory Approaches to Development: An Analysis of the Experiences of Development Projects in Sudan", PhD Thesis, Massey University, 2007, available at http://hdl.handle.net/10179/1455

37 NGO expert Razan and anonymous, telephone and video conference interviews with author, 20-23 July 2024.

38 El-Gack, Rural Development and Microfinance Projects in Sudan.

39 European Union and United Nations Environment Programme (UNEP), "Wadi El Ku Integrated Catchment Management Project (Phase 2)", 2 March 2023, available at Link

40 Participatory approach experts, telephone interview with author, July 2024.

41 Yahya and Abd Elkareem, Gender, Conflict and Environmental Assessment/Analysis.

42 United Nations Environment Programme (UNEP), "In Sudan, Conflict and Environmental Decline Go Hand in Hand", 4 November 2022, available at Link

43 Soumaya Ibrahim, Mainstreaming Gender in Development Projects in Middle-East and North Africa: Lessons Learned and Success Stories, International Development Research Centre (IDRC) and International Fund for Development (IFAD), 2009, available at Link

cultural norms do pose challenges. Changing these norms requires culturally sensitive, sustained effort. One expert, who shared thoughts on cultural challenges and marginalized group participation, asserted: "In projects where we actively integrated gender-responsive approaches, such as ensuring that women had equal representation in the processes, we saw more robust community participation and improved social cohesion".[44]

Addressing Community Power Dynamics

Power dynamics within communities significantly influence development project participation. Grassroots organizations—despite often lacking the capacity to initiate large-scale changes—to some extent played a role in representing local people and mobilizing communities effectively. In North Kordofan, voluntary grassroots associations have proven adept at reflecting local concerns and facilitating collective action. This supports the notion that genuine participatory organizations emerge when community members share common concerns and volunteer to act collectively, crucial for overcoming local elites and ensuring broader community involvement. Scholars and interviewees repeatedly mentioned that local elites often dominate participatory processes that marginalizes vulnerable voices and minority groups.[45]

Strategies to empower marginalized groups, such as targeted capacity-building and ensuring representation in decision-making bodies, were found to be effective. Interviewees emphasized the importance of transparency and accountability in managing power relations within communities: "Providing specific training and capacity-building for marginalized groups can boost their skills and give them the confidence to participate, ensuring that their voices are heard and their needs addressed".

They also emphasized intracommunity power relations management, and the need to maintain transparency and accountability to avoid perpetuating existing inequalities.[46]

Past Relations

Previous experiences with development projects significantly shape a community's willingness to participate. Positive experiences build trust that encourage future engagement, while negative experiences lead to skepticism and reluctance. For example, the Wadi El Ku and Darfur Community Peace and Stability Fund benefited from building on previous successful initiatives, which enhanced community trust. Interviewees confirmed that in leveraging positive past experiences and addressing negative ones:

> *Communities that have faced broken promises or poor project management in the past are often reluctant to engage, as they've lost trust in the process.… Leveraging these positive past experiences was key to gaining the community's buy-in for new projects.*[47]

Conclusion

To enhance participatory approaches in Sudanese development, it is essential to implement strategies that genuinely empower targeted communities. Although policymakers and development providers often claim they aim to empower communities with their interventions, further evidence is needed. By involving local communities in planning and implementing adaptation strategies, projects can be tailored to local conditions and needs, extending their practicality and sustainability. However, there is criticism regarding implementing these strategies. Real power and decision-making authority reside in the hands of external agencies. True empowerment requires overcoming these external controls, entrenched social norms, and ensuring scalability. Ultimately, together, these elements will contribute to Sudan's long-term resilience and emancipation.

44 Hieba, expert, telephone interview with interview, 22 July 2024.

45 El-Gack, Rural Development and Microfinance Projects in Sudan.

46 Razan and Muez, experts in Sub-Saharan African development, interview with author, Doha, Qatar, 15 July 2024.

47 Adil, Razan, and anonymous, telephone and video conference interviews with author, 10-25 July 2024.


Syria

Environment and Conflict in Syria: The Case for Participatory Approaches in Agriculture

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Note: Due to the dramatic events with Syria's regime change, the information contained in this chapter is accounted for until August 2024.

Policy Recommendations

- Reinstate subsidies for agricultural products, like fertilizers and pesticides—a major contributor to the 2011 Syrian conflict—and reduce crony market competition in the economy.
- Continue to establish participatory approaches through international organizations that empower local communities in decision-making processes.
- Reinvigorate financial packages for farmers and returnees: reinvest in war-damaged infrastructure and secure land rights using transparent legal frameworks—vital for rebuilding trust, encouraging agricultural investment, and preventing land disputes.

Keywords: Syria, participatory approaches, farmers, agriculture, conflict, government support

Introduction

"The government does not do anything to help the farmers and local communities in Syria since the early stages of the war. We have all the natural resources, yet we are unable to use them, due to government policies and wars". A Syrian food advocate uttered these words,[1] thirteen years after the beginning of the 2011 Syrian conflict, and to date is one of the most devastating wars of the 21st century.

Protests during the Arab Uprising quickly escalated into brutal civil war involving multiple factions, including government forces, opposition groups, and extremist organizations like Islamic State (ISIS). The conflict resulted in over 500,000 deaths and displaced millions. It caused extensive destruction to infrastructure—hospitals, schools, and agricultural facilities—and led to severe economic collapse, widespread poverty, and mass unemployment.[2]

Environmental factors play a significant role in understanding the underlying grievances that contributed to the outbreak of the Syrian war in 2011. In much of the literature, these factors are often closely linked with the immediate triggers of the conflict, as this chapter will demonstrate.

Local agricultural production used to be an essential contributor to Syria's food consumption. Until 2011, it was also the third-largest contributor to the country's gross domestic product.[3]

Economic reforms took place in the early 2000s aimed at promoting a "social market economy model". Formally adopted in 2005 during the Five-Year Plan (FYP) 2006-2010 forum, this model intended to "achieve high growth rates by increasing private and foreign investment in profitable sectors (telecommunications, real estate, banking, tourism, external trade, and high-value-added manufacture) and to reduce government expenditure by cutting subsidies and public investment".[4]

Research Paper Aims

For decades, cereals—especially wheat and barley—"were at the center of the government's self-sufficiency planning strategy".[5] As a result, the State was allocating generous support to producers through subsidies:

> *The heavily subsidised sector was able to provide low-paid employment for a large number of seasonal and low-skilled workers in the poorest regions of Syria, serving as a form of social safety net and a means for government representatives to offer patronage to their local constituencies.*[6]

Therefore, the government's attempt to depart from self-sufficiency objectives and end purchasing harvests commitments in their entirety made producers and workers extremely "vulnerable to austerity measures".[7] In both cases, the state engaged in policies that excluded farmers from decision-making participation, leading to poor representation and poor accountability.[8]

This paper's purpose is to investigate and review the involvement and active participation of local communities in organizing and managing development projects in Syria's agricultural sector, providing post-conflict examples of internationally-funded participatory approaches. The article also shares stories of two women who sought refuge in Lebanon and how they moved away from their lands, alienating them further from the participatory approach process—thus excluding all Syrian community actors.

In this case, participatory approaches must account for how the conflict in Syria led to water shortages, infrastructure damage, and large segments of society to forcibly leave their lands and agriculture. This shift transformed Syria from a regional food-basket into a country lacking the necessary infrastructure to support sustainable agricultural practices. Therefore, understanding public participation and conflict are interlinked.

1 Syrian humanitarian aid agency expert, interview with author, 12 July 2024.

2 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), 2019 Humanitarian Needs Overview: Syrian Arab Republic, March 2019, available at Link

3 Nazier Madi, Cultivating a Crisis: The Political Decline of Agriculture in Syria, European University Institute and Robert Schuman Centre for Advanced Studies, December 2019, available at https://doi.org/10.2870/562441

4 Madi, Cultivating a Crisis, p. 3.

5 Madi, Cultivating a Crisis, p. 6.

6 Madi, Cultivating a Crisis, p. 3.

7 Madi, Cultivating a Crisis, p. 6.

8 Syrian Center for Policy Research, Food Security and Conflict in Syria, June 2019, available at Link

The Agricultural Context in Syria

In 2006, Syria's agricultural sector experienced a decline—its growth rate dropped to an average of 1.3% between 2005 and 2009. Shortly after, from 2007 to 2009, alongside subsidy cuts, the country faced its worst droughts, severely impacting private farmers and consumers. The hardest hit was Syria's northeastern "bread-basket region", where herders lost nearly 85% of their livestock, and 75% of farming families saw complete crop failure in an area responsible for over two-thirds of the country's total crop production.[9] This region, located east of the Euphrates river, was predominantly inhabited by Kurds. By 2010, 55% of the population in northern Syria was Kurdish—though only Kurds made up about 10% of Syria's overall population.

Droughts only exacerbated already tense relations between minorities and the Syrian regime.[10] For instance, in the Jazira region, discriminatory measures were taken against Kurdish farmers to deprive them from accessing agricultural property and ownership. This in turn accelerated "rural exile" and displaced them to the suburbs of Aleppo, Damascus, al Hasakah, Raqqa, and Homs.[11]

Moreover, wheat crops in 2006 and 2007 witnessed infestations, which was attributed to the government's "reduced distribution of subsidised pesticides and fertilizers, both of which are vital for crops to be resistant to infestation".[12] The outbreak of the conflict in 2011 has been partially attributed to the government's inadequate response to this massive crop failure, which provoked food insecurity and lead to significant social turmoil.[13] Water insecurity is widespread in Syria, especially in the Northeast al Hasaka region. According to an Iraqi government report, Syria's main river, the Euphrates, could dry out by 2040.[14]

Even during war, and despite "the stunning effect of the conflict", the government appears to have maintained these policies: the role of public spending changed "from supporting production by subsidising inputs to using price-support schemes to shape both production and market".[15] Shortages in local production were meant to be compensated with imports, further allowing non-state actors to enter competition with the state by buying wheat and asserting their dominance over the market.[16] In reality, a certain number of loyalists and politically-connected businessmen were favored over others in this competitive economic war.

Consequences of Civil War: Environmental and Agricultural Deterioration

Syria's forests have witnessed increased erosion risk, fires, and deforestation as the population fulfilled its need for coal. Moreover, civilians have increased the pressure on water resources as a result of the influx of internally displaced Syrians and refugees, whether for daily consumption or agricultural production.[17] With the unseasonably low levels of rainfall across the eastern region of the Mediterranean basin and the Euphrates, Syria is rated as extremely high risk of regional drought. These circumstances have "negatively impacted several governorates in the northeast of Syria", especially in al Hasakah, "typically the bread-basket of the country".[18]

As a consequence, Syria has been included in the World Food Programme's hunger map since 2013. Today, 10.1 million people—more than 40% of the population—is food

9 Adelphi, International Alert, Woodrow Wilson International Center for Scholars and European Union Institute for Security Studies, A New Climate for Peace: Taking Action on Climate and Fragility Risks, Climate Diplomacy, 2015, p. 30, available at Link

10 Fabrice Balanche, "Rojava's Sustainability and the PKK's Regional Strategy", Policy Watch 2680, The Washington Institute for Near East Policy, 24 August 2016, available at Link

11 Myriam Ababsa, "Crise Agraire, Crise Foncière et Sécheresse en Syrie (2000-2011)", in Développer en Syrie: Retour sur une Expérience Historique, Élisabeth Longuenesse and Cyril Roussel (eds.), Presses de l'Ifpo, pp. 111–134, 2014, available at https://doi.org/10.4000/books.ifpo.6549

12 Madi, Cultivating a Crisis, p. 7.

13 Madi, Cultivating a Crisis.

14 Mina Aldroubi, "Iraq Could Have No Rivers by 2040, Government Report Warns", The National, 2 December 2021, available at Link

15 Madi, Cultivating a Crisis, p. 1.

16 Madi, Cultivating a Crisis.

17 Peter H. Gleick, "Water, Drought, Climate Change, and Conflict in Syria", Weather, Climate, and Society 6, no. 3 (July 2014) pp. 331–340, available at https://doi.org/10.1175/WCAS-D-13-00059.1

18 Food and Agriculture Organization of the United Nations (FAO), "Syrian Arab Republic: Euphrates Water Crisis & Drought Outlook", 17 June 2021, available at Link

deficient, and 27.9% of children under five are chronically malnourished.[19] While currently there is a downward trend, owing to the recent relative stability, Syria remains one of the world's most food insecure countries.[20]

While hunger and thirst are generalized across the country—the northeastern regions are most affected—the conflict continues to rage between Türkiye- and Kurdish-held areas—formerly known as Rojava. In 2016, Türkiye launched "Euphrates Shield", its first invasion on northern Syria, uprooting ISIS and the Syrian Democratic Forces—Rojava's Kurdish-majority army.[21]

Impact on Agriculture and Famine

The war has had a catastrophic impact on Syria's agriculture, leading to widespread food insecurity and famine, particularly in the northern regions—Aleppo and Idlib. The conflict has destroyed vast areas of farmland due to bombing and fighting, while damage to irrigation systems and water infrastructure has led to severe water shortages, critically affecting crop production. Farmers face essential input shortages, such as seeds, fertilizers, and fuel, further hampering agricultural activities.[22]

Displacement has also played a significant role in agricultural decline. Many farmers have been forced to flee their homes, resulting in a loss of labor in the fields and agricultural expertise as communities scatter. Consequently, staple crops like wheat and barley have seen significant decline, and livestock herds have been decimated due to a dearth in feed and veterinary care. The transport and market breakdown has crippled distribution infrastructure for harvest production, further exacerbating food insecurity.[23]

19 World Food Programme (WFP), "HungerMap LIVE", (n.d.), available at https://hungermap.wfp.org/

20 Economist Impact, "Global Food Security Index (2022)", (n.d.), available at Link

21 Ahmed Deeb, "Operation 'Euphrates Shield' Ends ISIL Rule in Jarablus", Al Jazeera, 25 August 2016, available at Link

22 Food and Agriculture Organization of the United Nations (FAO), Counting the Cost: Agriculture in Syria after Six Years of Crisis, 2017, available at https://www.fao.org/family-farming/detail/en/c/880759/

23 Food and Agriculture Organization of the United Nations (FAO) and World Food Programme (WFP), Special Report: FAO/WFP Crop and Food Security Assessment Mission to the Syrian Arab Republic, 5 September 2019, available at Link

Two Syrian Women in Lebanon: The Relevance of Participatory Approach in War

Amina's Story

During a 2015 interview, Amina—a 28-year-old Syrian woman who escaped Raqaa to find refuge in Beirut—shared her lack of interest in becoming a farmer. Both her parents were farmers and she worked with them:

> *For us, being farmers is part of our family's tradition. Both my parents were farmers. How can we return to Syria and cultivate our lands. Our lands are no longer ours; we have lost interest in agriculture and instead I would like a better future for my children and for myself. I don't see myself working in agriculture. It is not profitable as it used to be, given we lack water, our lands have been bombarded, and the infrastructure in Syria is not the same as before the war. Our grandparents and parents have been working in the agricultural sector. It is part of our traditions and culture, but why would I go back to Syria to reclaim my parents' lands. I would have to start all over again and build new irrigation systems [given her parents' house had been bombarded].*[24]

Im Mazen's Story

Another story is with Im Mazen, who is 58 years old:

> *Life in Syria is too expensive. How can we continue to support the farmers? We've lost our homes, and my family has escaped the war to live in Lebanon and others have found refuge in France and Canada. I cannot afford to maintain the land, and I barely have enough to live by myself.*[25]

Can Participatory Approaches Take Place during Conflict?

These two stories highlight how detached their lives are from farming and agricultural traditions. While both feel that agriculture is not part of their present, they are detached

24 Amina, Syrian refugee, interview with author, August 2023.

25 Im Mazen, Syrian refugee, interview with author, July 2024.

from their lands in Syria, despite being the region's breadbasket. The war has affected the participatory nature of involving local communities in decision-making processes. Today, Amina and Im Mazen think of their own security and those of their children, moving away from farming, which is viewed as an unprofitable business due to water shortages and infrastructural damage.

Amina and Im Mazen's stories highlight key challenges related to participatory approaches in Syria's agricultural sector in the context of conflict and the disconnection many Syrians now feel from farming traditions. Amina's interest has shifted, and she no longer sees any interest in going back. The war prohibits participatory approaches; it denies and restricts local community engagement in agricultural projects.

The next section analyzes civil society participation, how international organizations support local communities and involve them in a participatory framework.

Participatory Governance in Syria Post-2011

Smallholder Support Programme

Group work formed an important aspect of the Syria Smallholder Support Programme.[26] EU support contributed to this resilience-building community approach. The program reached a wider audience than its direct program beneficiaries and impacted beyond increases in food security and income generation.

Prior to project implementation, The Food and Agriculture Organization (FAO) undertook a number of important assessments "to identify needs and guide project design and implementation". The assessment identified drivers such as "community level groups, customs, practices and gender".[27]

FAO's 2017 assessment determined that Aleppo, al Hasakah, and Deir-ez-Zor are among the most affected areas in terms of damage and loss to livestock.[28]

There was some sensitivity during program participation regarding the risk of potential tension as a result of selecting some farmers over others from the same village, however, project activities were "often designed to incorporate community activities, for example Farmer Field Schools (FFS) were made accessible to non-beneficiaries to attend".[29]

The report went on to state:

> *The programme successfully piloted group formation such as the WUA [Water User Association] for irrigation, the food processing units and the seed multiplication groups. These community-led initiatives have demonstrated the ability of vulnerable smallholder farmers to contribute to agriculture transformation in the Syrian Arab Republic.*[30]

Supporting Long-Term Resilience

Another project addressed the immediate and long-term challenges facing the agriculture sector in Syria as a result of the ongoing conflict.[31] Its objectives were to assess emergency support, early recovery, and long-term resilience.[32]

According to the evaluation report, among the main challenges faced were applying the vulnerability criteria used—set out in the Humanitarian Response Plan—and adapting it at the community-level as a spatially dynamic criteria, based on district severity rankings: "The challenge is that vulnerability criteria are spatially dynamic; a vulnerable household in Rural Damascus may look very different to a vulnerable household in Deir Ez Zor". Therefore, the same vulnerability criteria are adopted in both areas, without adapting it to the particulars of that community. "Crucial contextual nuances are therefore missed by the way in which vulnerability criteria are centrally designed".[33]

26 Food and Agriculture Organization of the United Nations (FAO), Evaluation of the Project "FAO Syria Smallholder Support Programme for Agriculture Transformation", Project Evaluation Series 14/2024, available at https://doi.org/10.4060/cd0162en

27 FAO, Evaluation of the Project "FAO Syria Smallholder Support Programme", p. 14.

28 FAO, Counting the Cost.

29 FAO, Evaluation of the Project "FAO Syria Smallholder Support Programme", p. 17.

30 FAO, Evaluation of the Project "FAO Syria Smallholder Support Programme", p. 46.

31 Food and Agriculture Organization of the United Nations (FAO), Evaluation of the Project "Supporting Emergency Needs, Early Recovery, and Longer-Term Resilience in the Syrian Arab Republic's Agriculture Sector 2017–2020", Project Evaluation Series 02/2023, available at Link

32 FAO, Evaluation of the Project "Supporting Emergency Needs".

33 FAO, Evaluation of the Project "Supporting Emergency Needs", pp. 9–10.

Another challenge was involving community-based structures in rehabilitating irrigation systems: a key issue with WUAs—intended to manage and oversee community irrigation water distribution networks. Although WUAs are established as community-based structures on paper, their practical effectiveness is limited:

- Injustices amongst landowners: WUAs lack authority or reach, meaning they can't adequately manage conflicts or disagreements between landowners over water allocation. This creates tension as some landowners may receive more water than others, without WUA intervention.
- Lack of governance: WUAs are not sufficiently integrated with formal, national-level governance systems and are, therefore, considered informal. This lack of alignment reduces their ability to enforce regulations or resolve disputes, which does not give them full legitimacy to ensure a participatory approach.

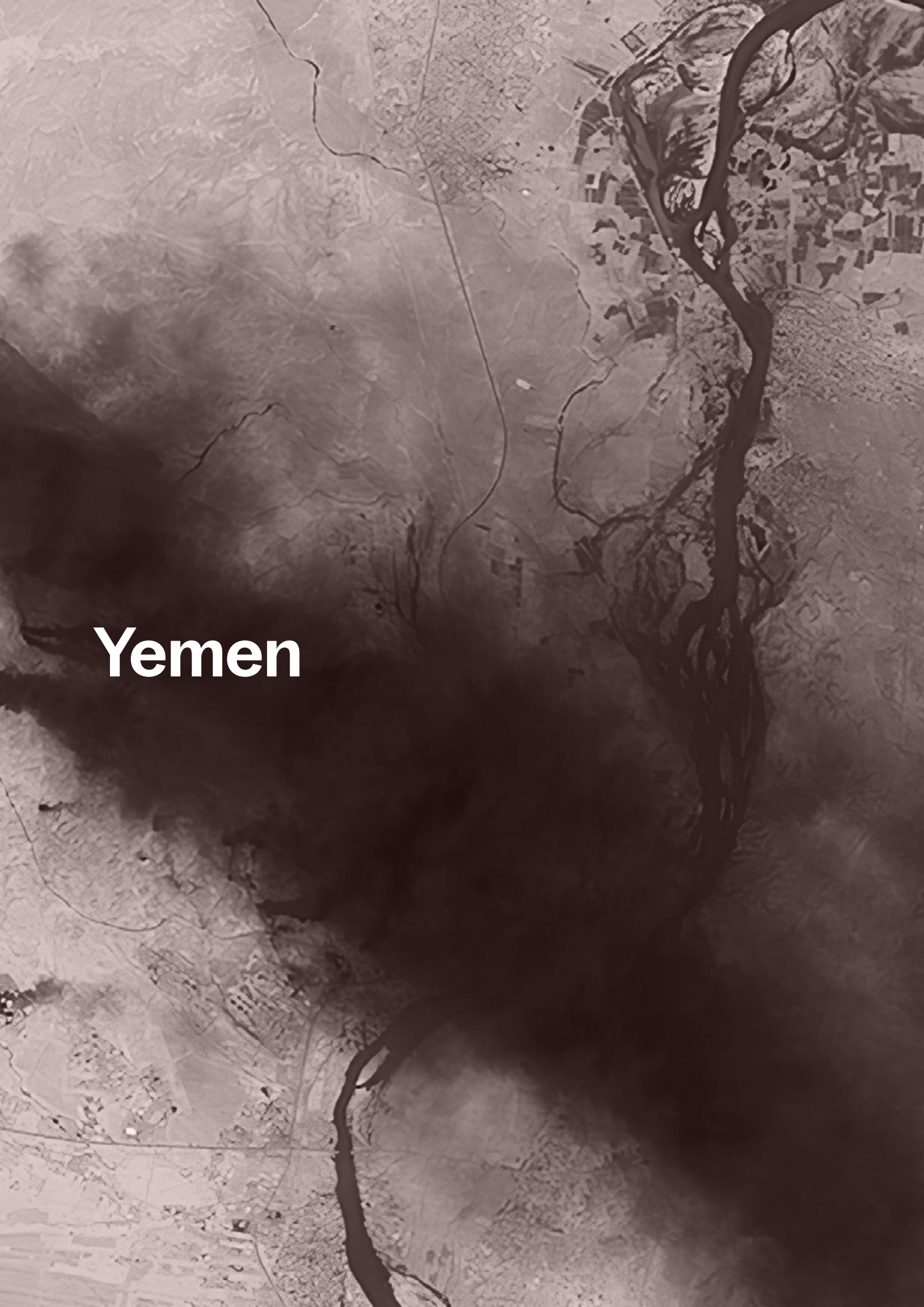
Despite these challenges, the establishment and support of WUAs under the project significantly contributed to the effective management of water resources, enhanced agricultural productivity, and strengthened community resilience in Syria's farming landscape.

This project achieved significant milestones, including successful distribution of agricultural inputs to thousands of farmers, rehabilitation of key agricultural infrastructure, and support for livestock recovery through feed distribution and veterinary care. Additionally, the project strengthened the agricultural sector's resilience by promoting sustainable practices and enhancing local institution capacity. Empowering local communities through active involvement in the recovery process further contributed to building their independence and long-term elasticity.

Conclusion

Syria faces two major policy challenges: a) cuts in subsidies, and b) lack of government support and policies vis-à-vis supporting farmers and their families. At the moment, the government does not have the financial and human resources to support the agriculture sector. Instead, its unjust policies focus on cutting subsidies and fueling market cronyism. Syria's post 2011 governance reflects participatory approaches must account for financial and contextual burdens that local communities face, such as Im Mazen and others in society, to ensure sustainable, inclusive solutions for local communities that would entice and encourage them to return to their farms.

In order to ensure a smooth transition away from conflict, trust needs to be restored for all actors in Syria, including communities residing outside, and a fair, equitable agriculture system needs to be restored, serving all local populations, empowering them to participate in decision-making processes.


Yemen

Community-Based Water and Environment Practices: Yemen's Local Farmers and Water User Associations

Ahmed Al-wadaey

Policy Recommendations

- Water User Associations (WUAs) should encourage and assist farmers in joining its membership and participate in local water resource management. The WUA should guide farmers in promoting effective, safe environmental protection and water quality practices.
- The WUA's working area should be specified on a map, issued by the regulating authority. It should perform maintenance, rehabilitate structures and facilities, and other irrigation supervisions. The government should decentralize its offices across WUA areas.
- WUAs, WUA Unions, and Irrigation Councils should make use of Yemeni farmers' long tradition in self-management, consult with them on a host of issues, and empower them as part of the entire water governance strategy.

Keywords: Yemen, water, Water User Associations, resource management, irrigation, local community, farmers

Introduction

Rapid population growth and extensive governance challenges exacerbate land and water resource-related conflicts, yet the government doesn't appear to have a robust, long-term plan to address these systemic problems. Despite water management efforts, Yemen remains the poorest and most water scarce country in the Arab world.[1] Yemen faces severe environmental degradation—particularly concerning water scarcity, drought, and desertification—leaving millions of Yemenis without sustainable livelihoods.

According to Government of Yemen estimates, violence accompanying land and water disputes results in the deaths of some 4,000 people each year. However, the centrality of land and water in shaping conflict in Yemeni society cannot be overstated. They provide the basis for economic livelihoods for the majority of Yemenis. Yemen suffers from increasingly severe water scarcity. As a result, competition for water resources is common. This often manifests as armed violence; particularly given Yemen's agricultural importance to its economy.[2]

In Yemen, local groups often play a central role in planning and implementing projects, including mobilizing substantial funding for their share of the costs, both for water supply and irrigation.[3] Given the severity and widespread occurrence of water problems—availability of local knowledge deficiency, and limitations in data, expertise, equipment, funding, and extra institutional capacity—there could be considerable potential to develop participatory water resources appraisal. This would help communities to analyze their situation, make decisions on what can be done, and learn from these results to further improve water governance.[4]

To address conflicts over water resources and efficiency, some international agencies, including the Food and Agriculture Organization (FAO), have enhanced institutional development by educating and training farmers and establishing WUAs. Utilizing a participatory approach, WUAs are critical in resolving water resource conflicts.

The Associations and Institutions Law No. 1 of 2001 and Water Law No. 33 of 2002 regulate the work of WUAs. Article No (3) of the Water Law indicates that water users involved in water management are obligated to protect it from depletion and pollution. Article (10) states the goal of associations or groups of water user formations is community participation in resource management.[5]

Efforts are in place to empower national and local water institutions, such as the National Water Resources Authority (NWRA) and WUAs, to manage water resources effectively and transparently. This includes activities such as infrastructure rehabilitation to ensure long-term water availability and the revival of traditional water harvesting mechanisms, which promotes low-cost, sustainable water management practices. Additionally, training WUAs equips them with skills to effectively manage water resources and resolve disputes within their communities.

Government assistance has often been used to improve traditional irrigation systems, however sometimes it has disrupted local institutional arrangements. Some local institutions are unable to practice traditional irrigation systems using indigenous knowledge. This is probably why some WUAs have been deactivated while others still operate.

Incomplete understanding and poor participation can lead to inappropriate designs that may conflict with traditional rights. Thousands of years ago, Yemenis built water structures—such as dams, reservoirs, and terraces. Through maintenance and rehabilitation, some are still there, while

1 Japan Social Development Fund, "Yemen - Communities Organize to Better Manage Scarce Groundwater Resources", World Bank Group, 1 January 2011, available at Link

2 Agriculture dominates Yemen's water use at more than 90%, with around 8% used for municipal water supply, and 2% for industry, see Consultant Engineering Services (CES), Sector Wide Environmental and Social Assessment (SwESA) for the Water Sector Support Program, Republic of Yemen Ministry of Water and Environment and Ministry of Agriculture and Irrigation, December 2008, pp. 5, 55, available at Link

3 Bryan Bruns and Taha Taher, Yemen Water User Association Study: Findings and Recommendations for a Problem-Solving Approach, Research Gate, 19 December 2009, https://doi.org/10.13140/RG.2.1.3710.2329

4 Bruns and Taher, Yemen Water User Association Study.

5 Articles No 3 and No. 10 are Arabic translations, see Republic of Yemen, Water Law No. 33 of 2002, Yemeni Legislation, Food and Agriculture Organization (FAO), 31 August 2002, available at Link

others have been neglected. Developing an understanding of how communities manage their resources during severe water scarcity is useful to better determine how sustainable water and environmental management can be established in the future.

This paper examines Yemen's potential for developing WUAs and local water governance—including international experience—implications of surface water and distribution, forms of water user organization, methods for developing WUAs, and the role of WUAs within the larger water resource management process. This is achieved by examining active and non-active WUAs, describing why some WUAs still exist while others do not or have performed poorly. This paper hypothesizes the reasons behind their ineffectiveness and proposes alternate causes of why WUAs are not able to develop a strategic plan for their water basin, such as war or conflict, financial restrictions, displaced communities, member education levels, etc.

Water Management

Community activists in Yemen are working extremely hard to fill the vacuum left by the collapse in the provision of state services and the almost complete withdrawal of external funding.[6] Mismanagement of Yemen's water resources has been a major underlying contributing factor to social tensions. The development of replicable models—where community groups and associations collectively and sustainably manage their groundwater resources—may offer a potential solution. Such arrangements can improve stakeholder awareness, the benefits derived from more resourceful ways of using water, as well as increasing incomes. This can be a far more efficient way to manage resources rather than through laws enacted by government agencies.

The National Agriculture Sector Strategy (NASS) in Yemen makes the point that institutions and capacities that promote water conservation should be strengthened. This would also incentivize staff improvements in the irrigation sector, encourage community participation in water management promotion, and involve WUAs in the private sector. National water sector strategy support in WUA local community development is a basic water management building block.

The Water By-Law 112 of 2011 prescribes that WUAs, groups, committees, and unions should be formed all over the country. The By-Law provides that beneficiaries and users may establish associations or unions at their own initiative. The law proposes the role of the Ministry of Agriculture and Irrigation (MAI) enabling WUAs to form by themselves, providing training and support.[7] The role of NWRA is regulatory, keeping a WUA register and monitoring their performances, especially in their respective water management jurisdictions. This registry system should hold records of board members, financial records, and geographical area of work. It would allow WUAs to engage in government activities, obtain loans, and have an overview of their performance and ability to maintain minimum requirements.

The Union of WUAs/Irrigation Councils, as are formed, set up basic administration and will prepare operation and maintenance (O&M) plans consisting of in-kind and financial requirements. The financial budget will estimate the resources to be collected from member WUAs, as well as possibly secure financial support from other sources. WUAs will be encouraged to budget themselves for maintenance within their area of control as well as their contribution to the Irrigation Council. At present, an estimated 100–300 WUAs are functional in Yemen.

WUAs represent farmers, communities, and other stakeholders involved in water resource management. Women and youth also participate. They play a vital role in shaping the composition and function of regional and basin water management committees. These WUAs facilitate decentralized water resource management and sustainable rural livelihoods at the sub-basin and basin levels.[8]

Participatory Approach

FAO supports WUAs in achieving optimal natural, basin-level resource management. Since 2020, 62 WUAs have been formed in Sana'a, Lahj, Hadramout, Wadi Hajar, and Abyan.

WUAs are a vital link in water extraction and equitable use in Yemen. They are responsible for managing water distribution, maintaining irrigation infrastructure, resolving conflicts among users, and ensuring water resource sustainability.

6 Middle East and North Africa Programme at Chatham House and Clingendael Institute, "Yemen: Drivers of Conflict and Peace", Workshop Summary, 7–8 November 2016, available at Link

7 Republic of Yemen, "Executive By Law of the Water Law No.33 of 2003 as amended issued by Cabinet Decree No.112 of 2011", Law and Environment Assistance Platform (LEAP), United Nations Environment Programme, 1 January 2011, pp. 201–203, available at Link

8 Hussein Gadain, "Leveraging Water for Peace: FAO's Experience in Yemen", Food and Agriculture Organization (FAO), 3 April 2024, available at Link

These associations allocate water to farmers based on agreed-upon schedules and priorities. In addition, community leaders are trained in conflict resolution mechanisms to help resolve any emerging tensions.

Sustaining these WUAs is key—they may buckle under the weight of the burden they carry. In this regard, WUAs collect fees from users to fund maintenance and operational activities. WUAs receive support and guidance from government agencies, especially NWRA, as they operate under the agency. Additional support comes from non-governmental organizations (NGOs) involved in water resource management. All in all, WUAs are an important instrument that has been used to promote peaceful coexistence and share water resources.

Irrigation Councils (ICs) were established at different periods in three large spate irrigation systems in Yemen: Wadi Zabid, Wadi Abyan, and Lahej. They were set up to manage the spate system, in particular to take care of their operations and maintenance. ICs were set up under Local Administrations (LAs); yet as described above, under the Water Law, they can be formed as WUA Unions and invited to join as members.

Methodology

To ascertain recent and verified data on specific WUA areas and how to improve their effectiveness is necessary for developing a participatory approach. Field data collections and a rapid assessment are needed to publish the outputs from the following sources.

Desk Review

These include analyses and resource materials about local actors, water scarcity, and related community dynamics. Publications from various scientific journals, news agencies, international organizations, NGOs, and academia will be used.

Inception Workshop

This aspect of the project involves a conflict mapping exercise, with relevant stakeholders present. The workshop should focus on a) mapping out major water and other resources for conflict in targeted areas; b) listing the different factors that cause and feed these conflicts; c) looking at the effects such conflicts have on community cohesion; and d) identifying deescalating mechanisms and processes.

Field-Level Baseline Surveys

The idea is that this study can be conducted through rapid assessment that contains questions related to a) local water/land conflicts; and b) water conflict resolution mechanisms. Field assessment identifies existing user associations and analyzes their performance: how are members elected? Are they active members? Do they have financial resources? And how do they manage them? Have they performed activities for peace, such as mediating community conflicts? Provide income sources for associations? Conduct regular meetings? Support innovative ideas in water and environment management, etc.? These survey tools would reflect how WUAs are performing and how their capacity can be built and developed.

The survey would identify and query existing local associations, such as water associations, fisheries, farmers, etc. Are they active or non-active? If not, why not? Do they support local innovation and economic initiatives, etc.?

Technological Tools

New technology—such as Geographic Information System (GIS), Remote Sensing Images, and other technologies—that can assist communities in managing their resources. For example, measuring groundwater depth, performing water quality testing, rehabilitating farming terraces, improving livestock production, refining water harvesting techniques, and using satellite imagery to target areas and compare differences in land use—farming systems, livestock, forestation, etc.; utilizing GIS and image maps for land grazing, for instance, to manage existing and future resources.

Training Programs

Building capacity for local associations and community members based on their priority topics, for example, female training in midwifery, first aid medicine, or local incense production.

Qualitative Data Collection through KIIs and FGDs

Key Informant Interviews (KIIs) should also consider elders and tribal people with vast, practical knowledge. They

should be heard through Focus Group Discussions (FGDs) with local women, men, and youth for the benefit of the entire community. Consultations with relevant people should focus on a) general community dynamics/relations in targeted areas; b) local water conflicts and their resolution mechanisms; and c) general community development project dynamics.

Nature of the Conflict and WUA Development Scenarios

In Yemen, rapid population growth puts massive pressure on limited water resources due to over-extraction of groundwater, changing rainfall patterns, and inadequate water management policies. This scarcity has led to conflicts over agriculture and domestic water supplies, significantly burdening vulnerable populations. In past years, water scarcity has forced many Yemeni families to leave their villages and move to the cities. In some instances, entire villages disappeared due to drought. This rural migration has added stress to cities already running out of water. Furthermore, identity is closely associated with water and land—especially in the northern highlands which maintain strong tribal values. This can escalate quickly to competition over these scarce city resources, spiraling into a complex pattern of conflict—most rural clashes in Yemen are water- or land-related.

The country's water resources are strained due to factors like population growth, urbanization, and the conflict's impact on water infrastructure. While urban areas in Yemen enjoy better access to water compared to rural areas, the decline in water availability is more pronounced in urban settings.

In Yemen's rural areas, well depletion has dire consequences, leading to escalating social tensions that often erupt into local conflicts. Water scarcity—driving mass displacement—further amplifies the risk of broader conflict.[9]

One notable example revolves around enhancing resilience in vulnerable communities by addressing water-related conflicts. Through local authority rehabilitation of water support networks and capacity building, the International Organization for Migration (IOM), for example, exemplifies its commitment to sustainable solutions that address core challenges and provide access to water supplies, sanitation, and livelihoods through irrigation interventions for local farmers, women, and youth. IOM also ensures sustainable investment by enabling local authorities and communities to better operate and maintain these systems.[10]

The following examples highlight some cases of community water- and land-based conflict.

Irrigation during Drought

During droughts, farmers are waiting to use spate irrigation—flood irrigation during rainy seasons. This can lead to conflict and disputes between upstream and downstream farmers, especially if the amount of runoff is not sufficient to irrigate the entire farm. Farmers are trying to get enough water for their crops—usually sorghum, barely, and millet. If they lose this runoff event, they might not get enough yield from their crops for the whole season. However, there is traditional and indigenous local knowledge that regulates water distribution when runoff amount is not sufficient. The new generations have abandoned these rules, even though they have been practiced for hundreds of years.[11]

Sheep Herding and Grazing Seasons

People living in the South Yemen desert—Hadramout, Shabwa governorate—set special rules to regulate sheep herding and grazing seasons. This ensures all shrubs and trees are growing well to protect and conserve their environment. Therefore, they set certain punishments for anyone who cuts trees, kills or hunts wildlife, takes more water than their share, etc. Those traditions and rules will someday disappear.

Through this project, we will try to document traditional knowledge and ownership that regulate the border for each trip, farmer, and sheepherder, and investigate how to apply those rules again. Are they valid or not? What are the alternative options for the next generation? Do they expect conflict over resources to increase or decrease in the future?

9 Muna Luqman and Nadia Al–Sakkaf, Gender, Climate and Security in Yemen: The Linkages and Ways Forward, DCAF (Geneva Centre for Security Sector Governance), 18 May 2022, available at https://www.dcaf.ch/yemen-report-climate-and-gender-2022; Cedric H. de Coning et al., "Climate, Peace and Security Fact Sheet: Yemen", Norwegian Institute of International Affairs (NUPI) and Stockholm International Peace Research Institute (SIPRI), June 2023, p. 4, available at https://www.nupi.no/en/news/climate-peace-and-security-fact-sheet-yemen

10 International Council of Voluntary Agencies (ICVA), Regional Dialogue Report – "Leaving No One Behind – Exploring the NEXUs Approach in Yemen", 13 December 2023, available at Link

11 Ahmed Alwadaey, "Water Harvesting System and Allocation Rules for Grape Plantation in Sadah Basin", Master's Thesis, Soil and Water Department, Sana'a University, 2002.

Permanent Dams

Traditional irrigation often relies on temporary dams, constructed of rocks and logs, which washes out during high tide. These temporary dams are then rebuilt once the flow subsides. Installing permanent concrete dams can make it easier for those upstream to divert larger amounts of water, without depriving those downstream of the water they customarily receive.

Conclusion: Community Participation Advocacy

Yemen has had a rich history of both community participation and grassroots-level community-based institutions. The tribe (Qabilah) is the most prominent informal institution in Yemen and is a crucial element of social, economic, cultural, and politicallife.[12]

Community participation can be understood: "[as] a social process in which specific groups with shared needs living in a defined geographical area take an active part in the process of planning and implementing development activities as well as enjoying their benefits". [13]

Sustainable resource management plays a vital role in preventing conflict and fostering peaceful coexistence. Reaching local Yemeni communities to a peaceful state and realizing that sustainable development goals require a concerted effort to expand access to crucial services and mitigate water-related conflicts.

Social mobilization is the cornerstone of a participatory approach in rural development and poverty alleviation programs. It is a powerful instrument in decentralizing policies and plans aimed at strengthening local human and institutional resource development.

If social mobilization succeeds, it will have the potential to strengthen participation of the rural poor in local decision-making, improve their access to social and production services, and make efficient use of locally available resources. The role can be carried out by a community member who receives government training and support, or from the outside—a donor foundation, NGO, academic, or research organization—who can recruit, fund, and instruct locally.

12 Ayman O. Ali and Stephan Baas, Community-Based Organizations in Yemen: Good Practices and Lessons Learned, Food and Agriculture Organization (FAO), 2005, pp. 6–19, available at Link

13 Sharon Beatty et al., Community Participation Experiences in Yemen: A National Review, Oxfam International, April 2002.

Conclusion

Toward an Actionable Nexus: Conflict, Environmental Breakdown, and the Transformative Potential of Participatory Processes and Innovation in MENA

Sammy Kayed, Tobias Zumbraegel, and Hussam Hussein

Policy Recommendations for Participatory Processes along the Nexus

These policy insights on applying participatory processes and supporting grassroot innovations are practical for current nexus geographies and global interests in preempting and recovering from its widening and intensifying outfalls. They draw from both a synthesis of the working group's contributions along with key definitions and critical literature referred to in this conclusion.

- Representatively understanding local capacities and will for engagement in well-articulated participatory endeavors—not just that of government, power brokers, and local civil society organizations—is paramount.
- When designing participatory support, it is important to appreciate how quickly nexus contexts evolve with causal variability and multiplicity, accounting for this through grounded monitoring, healthy communication with stakeholders, and readily adaptive long-term programming.
- Participatory initiatives for justice and empowerment can benefit from flexible and patient resourcing while dedicating significant time to build elements of trust and a shared language with place-based communities. Recognizing justice and empowerment along the nexus is distinctly challenging yet vital, and the cautious use of terminology can avoid misunderstandings while giving due value to their antecedents.
- Initial respondents to open calls for participation may benefit from rethinking or building on program design. This can include how to motivate more community engagement, share program benefits, and imagine what generative sustainability of those benefits looks like.
- Stakeholders should organize around common-ground solutions, with priority usually given to voices echoing place-based community consensus—from local leaders or other collectively agreed upon representation. Regularly managing program expectations crucially enables small achievements to lift morale, sustain engagement, build trust, and combat defeatism.
- Participatory processes benefit from trust-based relationships and mechanisms that can gradually consider and navigate power asymmetries and contentious politics–if deemed acceptably safe for all—given their pivotal role in shaping how the nexus is locally experienced and hindering genuine participatory action.
- The chapters have demonstrated the power of local practices and knowledge. By providing support to grassroots innovations emerging from ecologies of resistance, participatory facilitators could reduce friction, alleviate stressors, strengthen social safety-nets and self-determination, and contribute to transformative change along nexus geographies.

Introduction

As this collection of papers revealed, the interplay between environmental breakdown and conflict in the MENA region is characterized by high fluidity, variable causality, complexity, stark power asymmetries, and hardship, particularly along social margins. In parallel, innovative and generative grassroots knowledge and practices—with civil society support—enable survival, persistence, and growth through collectivization, traditions, social and ethical capital,[1] and reciprocal relationships with nature.

Environmental breakdown—understood as the combined effects of climate change, biodiversity loss, over-extraction of natural resources, and pollution—both fuels and is fueled by conflict, manifesting as armed struggle and slow less visible violence inflicted upon populations by state and non-state actors. In this view, popular thinking on linear causality—where one singularly leads to the other—at the confluence of conflict and environmental breakdown—referred to as the nexus—is undermined and a nuanced understanding of how phenomena interact becomes warranted.[2]

Resulting from a year-long working group, this collection provided vision on the nexus and evidence-informed insights, drawing from collaborative working relationships between experts and grassroots communities across MENA; an epicenter of conflict, disproportionate climate disruptions, toxicity, and environmental injustice[3] being met with resistance, resilience, adaptation, collectivity, and revival of traditions in the form of localized innovation. Building on literature, this concluding article highlights the importance of participatory grassroots innovation[4] at the nexus, recognizing it as community-led initiatives that strive for autonomy from oppressive powers, revive existing traditions, or create entirely new practices to address evolving and marginalized local needs, potentially generating antecedents of agentic transformation across scales.[5]

The collection delivered nuanced ground perspectives particularly for global policymakers and practitioners that place inclusivity, participation, and collaboration with marginalized[6] communities at the top of the agenda. Catastrophes along nexus geographies blatantly intensify in frequency and magnitude, and the window for averting irreversible ecological tipping points narrows.[7] We directly responded to recent calls by the UN Environment Programme (UNEP) and the UN Security Council (UNSC) for "inclusive assistance" and "collaboration with all stakeholders" (UNEP/EA.6/RES.12) and "bringing marginalized communities… into decision-making" (UNSC SG/SM/22133), specifically at the

1 Understood as trust and reciprocity within social networks guided by ethical norms such as accountability, transparency, and fairness, fostering actions and institutions that uphold the common good and benefit both human and non-human entities as described by Anil K. Gupta, et al., "Mobilizing Grassroots' Technological Innovations and Traditional Knowledge, Values and Institutions: Articulating Social and Ethical Capital", Futures 35, no. 9 (2003), pp. 975–987, available at https://doi.org/10.1016/S0016-3287(03)00053-3

2 Philippe Le Billon and Rosaleen Duffy, "Conflict Ecologies: Connecting Political Ecology and Peace and Conflict Studies", Journal of Political Ecology 25, no. 1 (2018), pp. 239–260, available at https://doi.org/10.2458/v25i1.22704

3 Understood as difficulties with distributive, procedural, recognitional, and restorative justice along with their intersectionality and varied interpretations by affected communities as described by Amalia Calderón-Argelich et al., "Tracing and Building Up Environmental Justice Considerations in the Urban Ecosystem Service Literature: A Systematic Review", Landscape and Urban Planning 214 (2021), available at https://doi.org/10.1016/j.landurbplan.2021.104130; Katinka Wijsman and Marta Berbés-Blázquez, "What Do We Mean by Justice in Sustainability Pathways? Commitments, Dilemmas, and Translations from Theory to Practice in Nature-Based Solutions", Environmental Science & Policy 137 (2022), pp. 377–386, available at https://doi.org/10.1016/j.envsci.2022.06.018

4 Elia Apostolopoulou et al., "Radical Social Innovations and the Spatialities of Grassroots Activism: Navigating Pathways for Tackling Inequality and Reinventing the Commons", Journal of Political Ecology 29, no. 1 (2022), pp. 144–188, available at https://doi.org/10.2458/jpe.2292; Léo-Paul Dana et al., "Success Factors and Challenges of Grassroots Innovations: Learning from Failure", Technological Forecasting and Social Change 164 (2021), available at https://doi.org/10.1016/j.techfore.2019.03.009; Frans Hermans, Dirk Roep and Laurens Klerkx, "Scale Dynamics of Grassroots Innovations through Parallel Pathways of Transformative Change", Ecological Economics 130 (2016), pp. 285–295, available at https://doi.org/10.1016/j.ecolecon.2016.07.011; Adrian Smith, Mariano Fressoli and Hernán Thomas, "Grassroots Innovation Movements: Challenges and Contributions", Journal of Cleaner Production 63 (2014), pp. 114–124, available at https://doi.org/10.1016/j.jclepro.2012.12.025

5 Understood as the multidimensional process of simultaneously spreading innovations (outscaling) and embedding them within institutional frameworks (upscaling), addressing cross-scale dynamics in power, politics, diffusion, and adaptation to achieve systemic shifts in socio-ecological systems as described by Hermans, Roep and Klerkx, "Scale Dynamics".

6 Understood as the process by which certain groups are systematically pushed to the periphery of economic, political, and social systems, resulting in reduced access to resources, opportunities, and decision-making power.

7 Intergovernmental Panel on Climate Change (IPCC), "AR6 Synthesis Report: Climate Change 2023", Sixth Assessment Report of the 58th IPCC Panel Session, Interlaken, Switzerland, 13-19 March 2023, available at https://www.ipcc.ch/report/sixth-assessment-report-cycle/; Paul Robbins, Political Ecology: A Critical Introduction, Wiley-Blackwell, 2020.

nexus of conflict and environmental breakdown.[8]

This conclusion first examines the interconnections and patterns that emerge in how authors conceptualize the nexus across different countries and areas in MENA. It then zooms in to highlight commonalities and divergences in nexus related outcomes. Finally, it provides an overview of participatory processes applied in MENA contexts, critically assessing whether they take unique forms at the nexus, empower[9] communities, reinforce the dominance of powerful actors, or help maintain status quo—among other results.

Conceptualizing an Integrated Nexus

The authors collectively frame the nexus between environmental breakdown and conflict as a complex, intertwined, and evolving set of relationships that become meaningful only when deeply contextualized.[10] However, credible information for nexus contexts in MENA is limited and the need for deeper documentation and analysis is acknowledged but lies outside the scope of this collection.[11]

Authors emphasize a multifaceted interplay where environmental degradation—with climate change taking center stage—and conflict mutually reinforce each other within socio-political geographies.

Context-Specific Analyses

The provided cases shift away from (neo)Malthusianism inevitability, challenging reductionist models that directly link resource degradation or scarcity to conflict, underscoring instead the need for context-specific analyses that consider the wider, historical and socio-political tapestry amplifying conflict.[12] Broadly, environmental breakdown and heightened demand on resources may exacerbate vulnerabilities and socio-economic inequalities contributing to the escalation of conflict, which in turn furthers environmental degradation. But across contexts, these feedback loops differ and may reverse course depending on political economies and ecosystem services with, for example, the presence of inclusive governance, foreign aid, social and ethical capital, access to natural resources, and grassroot cooperation and resistance responding to emergent stressors at the nexus.[13] Reaching tipping points and switching in the nexus from mutually reinforcing to mutually weakening relationships is possible at local, regional, translocal, or larger scales.[14]

8 United Nations Environment Assembly (UNEA), "Resolution Adopted by the United Nations Environment Assembly on 1 March 2024", United Nations Environment Programme (UNEP), 5 March 2024, available at Link; United Nations Secretary-General, "As Mounting Climate Chaos, Food Crisis Undermine International Peace, Secretary-General Tells Security Council It Must 'Act Now' to Resolve Conflicts, Protect People", UN Security Council Statement SG/SM/22133, 13 February 2024, available at Link

9 Understood as the process through which individuals or communities gain the ability to take control of their lives, achieve their goals, and enhance their quality of life. It involves accessing knowledge and skills, participating in decision-making, and fostering self-efficacy, community involvement, and a sense of control over social, political, economic, and psychological factors as described by Hedayat Allah Nikkhah and Ma'rof Redzuan, "Participation as a Medium of Empowerment in Community Development", European Journal of Social Sciences 11, no. 1 (2009), pp. 170–176, available at http://psasir.upm.edu.my/id/eprint/16050

10 Daniel Abrahams and Edward R. Carr, "Understanding the Connections between Climate Change and Conflict: Contributions from Geography and Political Ecology", Current Climate Change Reports 3 (2017), pp. 233–242, available at https://doi.org/10.1007/s40641-017-0080-z; Tina A. Grotzer, Learning Causality in a Complex World: Understandings of Consequence, Rowman & Littlefield Education, 2012.

11 Sharada Srinivasan, "Leveraging Data to Foster Development: Where Does the MENA Region Stand? - Insights from the World Development Report 2021", World Bank, 01 January 2022, available at Link

12 Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases", International Security 19, no. 1 (Summer 1994), pp. 5–40, available at https://doi.org/10.2307/2539147; Tobias Ide et al., "The Future of Environmental Peace and Conflict Research", Environmental Politics 32, no. 6 (2023), pp. 1077–1103, available at https://doi.org/10.1080/09644016.2022.2156174

13 Sändig, Jan et al., "From Climate Conflicts to Environmental Peacebuilding: Exploring Local Dimensions", Environment and Security 2, no. 1 (2024), pp. 3–20, available at https://doi.org/10.1177/27538796241231090; Carmen Esther et al., "Building Community Resilience in a Context of Climate Change: The Role of Social Capital", Ambio 51, no. 6 (2022), pp. 1371–1387, available at https://doi.org/10.1007/s13280-021-01678-9; Kerry Agnitsch, Jan Flora and Vern Ryan, "Bonding and Bridging Social Capital: The Interactive Effects on Community Action", Community Development 37, no. 1 (2006), pp. 36–51, available at https://doi.org/10.1080/15575330609490153

14 Asha Sitati et al., "Climate Change Adaptation in Conflict-Affected Countries: A Systematic Assessment of Evidence", Discovering Sustainability 2 (2021), available at https://doi.org/10.1007/s43621-021-00052-9; Derk Loorbach et al., "Transformative Innovation and Translocal Diffusion", Environmental Innovation and Societal Transitions 35 (June 2020), pp. 251–260, available at https://doi.org/10.1016/j.eist.2020.01.009

Securitization

The authors critically engage with the securitization of environmental issues, highlighting how framing environmental degradation as a security threat can lead to militarized responses that exacerbate tensions. In countries like Libya and Iraq, where governance structures are fragmented and non-state actors wield significant influence, securitized approaches can marginalize local communities and overlook the root causes of both environmental and conflict-related issues.[15] The chapters advocate for moving away from securitization toward prioritizing human security and addressing underlying factors such as inequalities, dependencies, fragmentation, and historic grievances.[16]

Slow Violence

To understand the nexus, the authors argue that slow violence functions as both a fundamental tool of control in armed conflict and a pervasive process in its own right.[17] Harms that are often insidious are inflicted on marginalized communities, enduring the possible preconditions, aftermath, or active phases of armed conflict. Environmental breakdown operates as a slow, cumulative and dynamic force that changes livelihoods, health, and the ability to sustain critical social-ecological relations over time, particularly among marginalized communities.[18] The authors ask how slow violence is exacerbated by policies or actions that weaponize environmental degradation or restrict resource use as a means of repression or control. In the Palestine and Syria chapters, environmental manipulation, such as restrictions on water access or destruction of agricultural land, serves as a tool to further political objectives and maintain control over dissident populations or contested regions.[19] This perspective on the nexus underscores how the effects of environmental breakdown extend beyond immediate social and ecological harm, exploiting them as instruments of long-term oppression.

Ethno-Sectarianism

Another reality in MENA is the pattern of conflict and environmental breakdown being driven by and unfolding along preexisting ethno-sectarian fault lines. [20] Nexus-shaped disputes over access to development funding, public services, and scarce resources, such as water, land, or grazing rights, often are framed or can escalate into broader conflicts through identity-based narratives, as seen particularly in the Iraq, Syria, Sudan, and Yemen chapters. This dynamic can delegitimize efforts to manage resources equitably, as identity politics overshadow cooperative solutions. It can turn initiatives for just representation in decision-making into a battleground for identity-driven claims—both inferred and overtly stated.

That said, actors and initiatives that avoid or underappreciate underlying ethno-sectarianism and associated power asymmetries for more technical development can readily be co-opted, serve to exacerbate these tensions, or fail to be sustained.[21] Although vividly illustrated in studies, these nexus factors are often underrepresented in development programming in MENA, where countless projects that depend on governance for continuity fall apart once final donor

15 Rita Floyd, "Global Climate Security Governance: A Case of Institutional and Ideational Fragmentation", Conflict, Security & Development 15, no. 2 (2022), pp. 119–146, available at https://doi.org/10.1080/14678802.2015.1034452; Thomas Diez, Franziskus von Lucke and Zehra Wellmann, The Securitisation of Climate Change: Actors, Processes and Consequences, Routledge, 2016, available at https://doi.org/10.4324/9781315665757

16 Floyd, "Global Climate Security Governance"; Jon Barnett, "Global Environmental Change II: Political Economies of Vulnerability to Climate Change", Progress in Human Geography 44, no. 6 (2020), pp. 1172–1184, available at https://doi.org/10.1177/0309132519898254

17 Rob Nixon, Slow Violence and the Environmentalism of the Poor, Harvard University Press, 2011.

18 Marcus Taylor, The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change, and the Conflicts of Development, Routledge, 2014, available at https://doi.org/10.4324/9780203762486

19 Hussam Hussein, "Stop Violation of International Water Laws in Gaza", Nature 623, no. 7986 (2023), available at https://doi.org/10.1038/d41586-023-03461-0; Marwa Daoudy, "Water Weaponization in the Syrian Conflict: Strategies of Domination and Cooperation", International Affairs 96, no. 5 (2020), pp. 1347–1366, available at https://doi.org/10.1093/ia/iiaa131

20 Sectarianism can be understood as the contextual and politicized mobilization of communal identities, often tied to religious or ethnic affiliations, to navigate, reinforce, or challenge power structures and access resources within a broader framework of political, social, and economic dynamics as described by Fanar Haddad, "'Sectarianism' and Its Discontents in the Study of the Middle East", Middle East Journal 71, no. 3 (2017), pp. 363–382, available at https://doi.org/10.3751/71.3.12

21 Haddad, "'Sectarianism' and Its Discontents"; Camilla Orjuela, "Corruption and Identity Politics in Divided Societies", Third World Quarterly 35, no. 5 (2014), pp. 753–769, available at https://doi.org/10.1080/01436597.2014.921426; Arturo Escobar, Encountering Development: The Making and Unmaking of the Third World, Princeton University Press, 1994.

reports are submitted—raising questions on what the goal is in the first place and who it serves.[22]

It is unlikely that diffusing treacherous possibilities associated with ethno-sectarianism will happen by neglecting their power. Beneficiaries, in development jargon, could benefit from being more forthright in demanding that initiatives and development actors adequately account for ethno-sectarian considerations.[23] Not doing so can instead amplify the threats they pose as apparent and concealed identity dynamics in discourse, development, and resource distribution go, from underlying to perilously pronounced. But it is important to point out that they do not have to. As the Iraq and Sudan chapters demonstrate, societies organized along ideological fractures—ethno-sectarian or otherwise—can be more inclined to cooperate under severe stress. These geographies can even draw strength from their diversity while addressing nexus challenges.[24] This finding provides some hope in increasingly polarized yet civilizationally-threatened localities across the world.[25]

Building on this, MENA cases in the chapters demonstrated how environmental breakdown and conflict can foster powerful mobilization and grassroots innovations—providing long-term hope and possibly laying the groundwork for transformation—that might not have emerged without the nexus's pervasive stressors.[26] These grassroots innovations not only tackle immediate shared needs. They can also strengthen social networks, encourage mutual support, cultivate collective agency, remain generative even when nexus conditions improve, and engender alternative political imaginaries—core needs for just transformation.[27]

Outcomes of the Nexus in MENA

Commonalities

The nexus outfalls, as conceived, permeate into all matters of lived and imagined life in the countries featured in this collection. Although no one escapes this reality, it is most intense among already marginalized groups.

In Yemen, the failure of some local institutions to uphold traditional water management practices contributed to under-representation of traditional knowledge holders in formal water governance and reduced effectiveness. In parts of Sudan, women traveling farther and farther to access scarce water and fuel carry elevated risk for gender-based violence. In Iraq's Nineveh province, armed groups targeted ethnic and religious minorities, compromising critical social safety nets for those who live on. In Gaza, Palestinian farmers face severe land access restrictions, a longstanding blockade, and criminal military aggression, leading to virtual collapse in agricultural productivity and often demoralizing reliance on sparse and highly politicized humanitarian aid.

22 Anthony H. Cordesman, The Greater Middle East: From the 'Arab Spring' to the 'Axis of Failed States', Center for Strategic and International Studies (CSIS), 24 August 2020, available at https://www.csis.org/analysis/greater-middle-east-arab-spring-axis-failed-states; Escobar, Encountering Development.

23 Haddad, "'Sectarianism' and Its Discontents"; Ashraf Ghani and Clare Lockhart, Fixing Failed States: A Framework for Rebuilding a Fractured World, Oxford University Press, 2009.

24 Jonathan Benson, "Democracy and the Epistemic Problems of Political Polarization", American Political Science Review 118, no. 4 (2024), pp. 1719–1732, available at https://doi.org/10.1017/S0003055423001089; Esther et al., "Building Community Resilience"; Apostolopoulou et al., "Radical Social Innovations"; Orjuela, "Corruption and Identity Politics in Divided Societies".

25 Benson, "Democracy and the Epistemic Problems of Political Polarization"; Jennifer McCoy, Tahmina Rahman and Murat Somer, "Polarization and the Global Crisis of Democracy: Common Patterns, Dynamics, and Pernicious Consequences for Democratic Polities", American Behavioral Scientist 62, no. 1 (2018), pp. 16–42, available at https://doi.org/10.1177/0002764218759576; IPCC, "AR6 Synthesis Report".

26 Alexander Brem, Nylund A. Petra and Saeed Roshani, "Unpacking the Complexities of Crisis Innovation: A Comprehensive Review of Ecosystem-Level Responses to Exogenous Shocks", Review of Managerial Science 18, no. 8 (2024), pp. 2441–2464, available at https://doi.org/10.1007/s11846-023-00709-x; Apostolopoulou et al., "Radical Social Innovations"; Elsbeth Johnson and Fiona Murray, "What a Crisis Teaches Us About Innovation", MIT Sloan Management Review 62, no. 2 (2020), available at https://sloanreview.mit.edu/article/what-a-crisis-teaches-us-about-innovation/

27 Sophie Chamas, Researching Activism in "Dead Time": Counter-Politics and the Temporality of Failure in Lebanon, World Humanities Report, Consortium of Humanities Centers and Institutes (CHCI), 2023, available at https://worldhumanitiesreport.org/people/sophie-chamas/; Apostolopoulou et al., "Radical Social Innovations"; Hermans, Roep and Klerkx, "Scale Dynamics".

At the nexus, already fragile institutions can easily become overburdened and trust in social contracts is eroded, creating governance vacuums where essential public services falter. Communities navigate gaps on their own and risk growing reliance on influential parties or armed groups to meet essential needs. Or, as noted in the Yemen chapter, decades of weak institutional water management, coupled with shifting rainfall patterns, have resulted in entire villages vanishing due to lack of water access. In Sudan's Darfur region, environmental degradation and reduced rainfall—combined with historical patterns of political exclusion and armed conflict—has broken down governance systems, escalating land and water disputes. Along the frontlines of the nexus, state institutions, or what's left of them, are turned into reactive entities concerned with emergency relief and unlikely to implement long-term policies or mediate growing socio-environmental conflicts.

When social fragmentation intensifies along the nexus, resource scarcity can disrupt traditional resource-sharing processes and peace-building mechanisms, deepening conflict and ethnic, tribal, or class divisions. In Syria's Jazira region, prolonged droughts combined with discriminatory practices led to land dispossession and displacement of a marginalized minority. In Libya, government disintegration deepened after the 2014 military campaigns bolstering the jurisdiction of armed groups. Critical infrastructure, serving politically marginalized groups within those jurisdictions, was neglected and tested by climate change-fueled storms with disastrous and deadly results.

Divergences

A key distinction in how the nexus is experienced stems from the way injustice and opportunities for action emerge, primarily through either episodic shocks, like floods, or chronic challenges, like groundwater depletion. While fast and slow on-set issues at the nexus are deeply interconnected, it is important to distinguish between them. Shocks, as seen in Libya's Derna floods, can be overwhelming and create moments of disruption that powerful actors often exploit to consolidate power over extended periods, sidelining marginalized communities.[28] However, episodic shocks can also expose systemic vulnerabilities and mobilize media, public, and political attention, catalyzing rapid policy shifts and reforms to address underlying structural and governance weaknesses.[29]

In contrast, chronic developments, like groundwater depletion in parts of Yemen, tend to gain less attention and can enable entrenchment of injustices if they aren't met with effective grassroot mobilization. Chronic issues can lead to prolonged suffering with silent socio-economic declines, less media coverage, and less external support when compared to sudden disasters. Changemaking following chronic issues, as seen in Sudan's Wadi El Ku with community-driven water management, differs from responses to sudden shocks. The prolonged nature of chronic challenges, such as reduced rainfall and drought, can allow communities to gradually organize, build networks, and pursue systemic or alleviatory change, fostering grassroots innovations that may be less likely to emerge amidst reactive and time-constrained responses to shocks.[30]

In other words, the cumulative and long-term effects of environmental breakdown and conflict can cause some frontline communities, and the institutions that support them, to see socio-ecological tensions as opportunities for thinking and acting differently rather than mere technical problems or calls for normative humanitarian relief.[31] Both episodic and chronic issues tend to either set the stage for (trans)local change or amplify social injustices.

Mass displacement in MENA is deeply tied to the nexus between environmental breakdown and conflict, reflecting the complex interplay of human vulnerability and systemic challenge. Displacement in the chapters emerges from interconnected factors creating conditions that render life unsustainable or intolerable. Displaced populations are shown to move to areas with already fragile social structures, strained ecosystems, and overstretched public services, where the risk of re-displacement remains high.

Perceived opportunities and survival strategies—responding to the specific constraints of each context—influence their movement pathways and destinations. Some migrate to urban centers, seeking more stable public services and access to humanitarian relief, as observed in movements to Sana'a in response to water scarcity in parts of rural Yemen. In Gaza, options for refuge are severely limited, compounded

28 Naomi Klein, The Shock Doctrine: The Rise of Disaster Capitalism, Metropolitan Books/Henry Holt, 2007.

29 Daniel Nohrstedt, "When Do Disasters Spark Transformative Policy Change and Why?", Policy & Politics 50, no. 3 (2022), pp. 425–441, available at https://doi.org/10.1332/030557321X16508834302815; Thomas Vinod, Climate Change and Natural Disasters: Transforming Economies and Policies for a Sustainable Future, Routledge, 2017, available at https://doi.org/10.4324/9781315081045

30 Apostolopoulou et al., "Radical Social Innovations"; Enayat A. Moallemi et al., "Achieving the Sustainable Development Goals Requires Transdisciplinary Innovation at the Local Scale", One Earth 3, no. 3 (2020), pp. 300–313, available at Link; Hermans, Roep and Klerkx, "Scale Dynamics"; Sarah Burch et al., "Triggering Transformative Change: A Development Path Approach to Climate Change Response in Communities", Climate Policy 14, no. 4 (2014), pp. 467–487, available at https://doi.org/10.1080/14693062.2014.876342

31 J. David Tàbara et al., "Positive Tipping Points in a Rapidly Warming World", Current Opinion in Environmental Sustainability 31 (2018), pp. 120–129, available at https://doi.org/10.1016/j.cosust.2018.01.012; Ross Gillard et al., "Transformational Responses to Climate Change: Beyond a Systems Perspective of Social Change in Mitigation and Adaptation", Wiley Interdisciplinary Reviews (WIREs) Climate Change 7, no. 2 (2016), pp. 251–265, available at https://doi.org/10.1002/wcc.384

by manufactured confusion on the location of safe zones. As the Palestine chapter emphatically demonstrates, this results in a state of endless dislocation for many. When granted greater freedom of movement, displaced populations often relocate along political and ethnic lines, as observed in Syria, where many sought refuge in areas perceived as less likely to provoke political backlash.

Additionally, certain areas are chosen for their geographic or environmental advantages, as in Sudan, where displaced pastoralists migrate to regions with more reliable grazing lands and water sources to sustain their livestock. These movements not only reflect the hardships of decision-making among the displaced but also their profound determination to navigate through severe crises.

Environmental breakdown and conflict are eroding, but in some cases reviving, traditional knowledge and practices that have long sustained MENA communities. In Yemen, ancient temporary dams made from rocks and logs and spate irrigation systems are deteriorating in some areas while showing their multiple values in others. Similarly in Sudan, traditional water harvesting, land management agreements, and conflict-resolution mechanisms have been disrupted by climate change and ongoing violence in some areas and have acted as cornerstones to successful community-led projects in others.

Themes in Current (Mis)Applications of Participatory Processes

Approaches to public participation, with their diverse forms and derivatives, hold significant potential—from alleviating immediate stressors to fostering transformative change at the nexus.[32] Rooted in the desire to coproduce knowledge, democratize development, and empower marginalized communities, participatory methods emerged from what was radical thinking on local agency, collective action, and the dismantling of oppressive power structures.[33]

Although authors recognize there is relatively limited implementation of structured participatory initiatives in MENA, existent cases have led to outcomes ranging from stark deviations from participatory origins to genuine materialization of participatory discourse.

Many authors faced difficulties identifying a sufficient number of participatory applications to investigate. Group discussions on the limited examples of participatory initiatives touched on incompatibility with authoritarianism and monarchies and the avoidance of potential controversy emerging from grassroots engagement at a nexus.

It should be noted that the Gulf countries were not included in this collection, primarily due to governance modalities that limit the scope for participatory initiatives. These nations often operate under centralized, top-down governance frameworks that restrict and/or co-opt public engagement in decision-making processes. Though they have advanced infrastructure and resources for addressing environmental and social challenges, they lack decentralized or inclusive governance structures, curtailing grassroots involvement, civil society engagement, and the cooperative frameworks necessary for meaningful participatory initiatives. This exclusion underscores the importance of governance systems in enabling or constraining the proliferation of participatory approaches and highlights a gap in the broader discourse on adaptive and inclusive responses to environmental and social stressors.[34]

A recurring theme across the chapters is the occurrence of performative and superficial participatory applications by government, power brokers, and civil society, often shaped by the same aforementioned factors that limit attempts in the first place.[35] Additional factors behind token participatory initiatives in MENA included mandates among development actors to spuriously remain apolitical; rigidity in project timelines, activities, and reporting; inability to account for corruption and associated corruption scapegoating; imposition of locally unsuitable participatory models; and insufficient resources dedicated to building elements of trust.[36]

32 Loorbach et al., "Transformative Innovation"; Moallemi et al., "Achieving the Sustainable Development Goals"; Wikke Novalia and Shirin Malekpour, "Theorising the Role of Crisis for Transformative Adaptation", Environmental Science & Policy 112 (October 2020), pp. 361–370, available at https://doi.org/10.1016/j.envsci.2020.07.009; Samuel Hickey and Giles Mohan (eds.), Participation: From Tyranny to Transformation?, Zed Books, 2004.

33 Robert Chambers, Can We Know Better? Reflections for Development, Practical Action Publishing, 2017.

34 Nimah Mazaheri, Hydrocarbon Citizens: How Oil Transformed People and Politics in the Middle East, Oxford University Press, 2023, available at https://doi.org/10.1093/oso/9780197636725.001.0001; Kristian Coates Ulrichsen, Centers of Power in the Arab Gulf States, 2024; Tobias Zumbraegel, Political Power and Environmental Sustainability in Gulf Monarchies, Contemporary Gulf Studies, Springer Nature Singapore, 2022, available at https://doi.org/10.1007/978-981-19-4431-4

35 María Heras and J. David Tàbara, "Let's Play Transformations! Performative Methods for Sustainability", Sustainability Science 9, no. 3 (2014), pp. 379–398, available at https://doi.org/10.1007/s11625-014-0245-9; Bill Cooke and Uma Kothari (eds.), Participation: The New Tyranny?, Zed Books, 2001.

36 Amy E. Lansing et al., "Building Trust: Leadership Reflections on Community Empowerment and Engagement in a Large Urban Initiative", BMC Public Health 23, no. 1 (2023), available at https://doi.org/10.1186/s12889-023-15860-z.

Sometimes, these shortcomings and obstacles are known yet participatory nomenclatures and approaches are used to effectively meet funding priorities and evaluations, enhance the credibility of initiatives, reinforce power imbalances, and act as a tool for control rather than empowerment—a major concern at the nexus.[37] Working group members discussed how critiquing these occurrences in certain areas and circles in MENA can be risky for personal security and career development—a possible factor for why there are so few known critical studies on the matter.

Across the chapters there are cases of participatory initiatives, implemented particularly by international development actors, that provide more color to the above. For instance, in Syria a participatory agricultural initiative by FAO in Aleppo, al Hasakah, and Deir-ez-Zor did not sufficiently engage smallholder farmers—the most at risk farmer group—in the design of the project. Furthermore, participatory water user associations (WUAs), which are established to foster inclusive water management, were rendered powerless due to their disconnect from formal governance systems.

In Jordan's case, preference for centralized decision-making casts participatory projects to the sidelines—compromising community involvement in life altering development projects, particularly around water transfers.[38] Here, participatory WUAs exist in a state of existential precarity, relying on inconsistent external support and reportedly being co-opted by tribal elites.

Similarly, in Sudan, interviewed scholars and practitioners repeatedly stated participatory processes relied heavily on tribal leaders and other local elites to mediate community engagement. While not inherently counterproductive—as it respects local norms—if local elites are not trusted by their communities to represent their voices, relying on them in participatory processes risks perpetuating existing inequalities.

Despite these challenges, instances exist where participatory initiatives implemented by international development organizations, academia, and governments have empowered communities by merging traditional knowledge and practices with scientific advancements, global best practices, and technology and sincerely involving participants in decision making. These include some of the participatory WUAs established in Yemen and Jordan. In Sudan, UNEP's Wadi El Ku project merged global best practices with traditional water harvesting and land management practices to reportedly empower marginalized groups and improve the agricultural incomes for 70% of participants.

Additionally, a noteworthy theme is the emergence of informal and locally grown participatory approaches through communities resisting oppression and injustice, self-organizing, and mobilizing without the support of government or international development actors. This more insular process can be seen as an "ecology of resistance", where communities across MENA reciprocate with surrounding ecosystems to drive participatory grassroots innovation, persist, and grow amidst evolving nexus challenges.[39]

It is important to note, just because these innovations are born in localities, does not mean they don't cross-pollinate with other locations, spread, or benefit from external support. In Iraq's Nineveh Province, multiple ethno-sectarian groups, who despite having suffered decades of violence and persecution, are innovating ideas for bridging social capital[40] to cooperate around the existential threat presented by climate change.

In Yemen, traditional rainwater harvesting, damming techniques, irrigation systems, water right distributions, and conflict resolution mechanisms live on and are being innovated upon, especially by farmers, in order to address evolving stressors along the nexus. In Yemen's Hadramout, community-born informal regulation helps protect the region from added pressures on tree cutting and hunting. In Darfur, community-driven practices to adapt to unreliable rainfall and manage scarce water and grazing resources are improving equitable access to natural resources, resolving tribal conflicts, and are even informing local UN policy makers—reversing the conventional direction of knowledge transfer.

In Gaza, cooperative farming and management of accessible resources helped sustain food production amidst a severe and long-standing blockade. Now interviewed farmers, most of whom cannot access their barely-viable lands, are defiantly engaging in farming practices by any means necessary. Despite having been displaced over 10 times, interviewed Gazan farmers continue to brilliantly exchange knowledge,

37 Heras and Tàbara, "Let's Play Transformations!"; Cooke and Kothari (eds.), Participation; Muhammad Anisur Rahman, "Participatory Development: Toward Liberation or Co-optation", in Community Empowerment: A Reader in Participation and Development, Gary Craig and Marjorie Mayo (eds.), Zed Books, 1995, pp. 24–32.

38 Timothy Liptrot and Hussam Hussein, "Between Regulation and Targeted Expropriation: Rural-to-Urban Groundwater Reallocation in Jordan", Water Alternatives 13, no. 3 (2020), pp. 864–885.

39 Munira Khayyat, A Landscape of War: Ecologies of Resistance and Survival in South Lebanon, University of California Press, 2022; Apostolopoulou et al., "Radical Social Innovations".

40 Bridging social capital refers to the connections and networks formed between diverse or conflicting groups that foster mutual understanding, cooperation, and collaboration across social, ethnic, or ideological divides as described by Agnitsch, Flora and Ryan, "Bonding and Bridging Social Capital".

preserve seeds, and cultivate crops near temporary tent shelters—on sandy soil, among rocks, and using all available organic nutrients.

Celebrating and supporting this kind of persistence, resistance, and grassroot innovation is crucial—not only as we approach the midpoint of what the Intergovernmental Panel on Climate Change (IPCC) calls "the critical decade", but also as global policymaking on environmental breakdown falters, dawdles, and neglects to proportionally respond to institutional science on existential risks of maintaining the current trajectory.

Here in MENA, at the nexus's frontlines, lie translocal lessons for other regions aiming to preempt or recover from episodic and chronic breakdowns in socio-ecological systems.[41] This collection of papers aimed to substantiate why moving beyond mere discourse on justice and empowerment for marginalized groups along nexus geographies involves global policymaking confronting the inescapable reality of structurally and materially rethinking the political-economy of sustainable development.

41 Loorbach et al., "Transformative Innovation".

Biographies

Abdalftah Hamed Ali

Abdalftah Hamed Ali is a junior visiting fellow at the Middle East Council on Global Affairs, working on public policy issues within the realm of sustainability and environment. Ali has contributed insightful columns and op-eds, offering nuanced perspectives on sociopolitical issues. He holds a Master's degree in Public Policy and Electrical Engineering. This interdisciplinary background equips him with a comprehensive understanding of the region's multifaceted challenges. Ali is passionate about fostering constructive dialogue and innovative solutions.

Abeer Butmeh

Abeer M. Butmeh is a water and environmental engineer. Currently, she coordinates PENGON-Foe Palestine. She is a leading woman activist and part of an alliance of environmental justice organizations in Palestine that operate locally and internationally. Butmeh works closely with affected communities, youth, and local government councils, addressing environmental problems facing the country. She has more than 18 years' experience whose research delves into environmental topics, particularly water and climate change, and uses her knowledge as an educator to train future generations.

Ahmed Al-wadaey

Ahmed Al-wadaey is Associate Professor of Soil, Water, and Environment at the Faculty of Agriculture, Sana'a University. He worked for national and international NGOs, overseeing program quality and monitoring evaluation accountability; and as a learning advisor, supervised written proposals for various donors. Practicing across the region, Al-wadaey managed multiple agricultural, soil, and water conservation systems particular to each country's context. He authored and co-authored several publications on watershed management, climate change, and environmental management.

Asma Khalifa

Asma Khalifa is a doctoral researcher investigating how civil war impacts gender relations in politics at GIGA Institute of Middle East Studies. She has been researching the intersection of conflict, gender, and youth since 2016 and has conducted numerous studies. Khalifa collects her data from primary sources and focus groups, applying intersectional and interdisciplinary approaches to all projects. Native to North Africa, Khalifa has been documenting indigenous Libyan communities' cultural heritage. She has collaborated with research institutes and is a regular contributor on conflict indexes. Khalifa was recently appointed as associate fellow at Chatham House.

Hussam Hussein

Dr. Hussam Hussein is an ISC Fellow and senior researcher in environmental politics, based in Jordan. He also serves as a research associate in international relations at the University of Oxford, having previously held positions as a Fulford Junior Research Fellow at Somerville College and an Oxford Martin Fellow. His research is centered on the role of discourses in shaping water policies in the Middle East, with a focus on transboundary water governance and critical hydropolitics. Hussein's work investigates the political economy of environmental governance, exploring the interplay between sociopolitical dynamics and environmental management strategies.

Sammy Kayed

Sammy Kayed is an independent applied researcher and cofounder of the Environment Academy program at the American University of Beirut - Nature Conservation Center. He has 13 years of collaborative leadership experience leveraging transdisciplinary science to address environmental breakdown in fragile contexts. He's created over 40 interdisciplinary projects primarily within academia and managed 25 consultancies focused on environmental sustainability and innovation in MENA and the Mediterranean region. He's authored 12 peer-reviewed works on topics like conflict and environment, reflexive participatory approaches, just transformation, and grassroots innovation.

Sarine Karajerjian

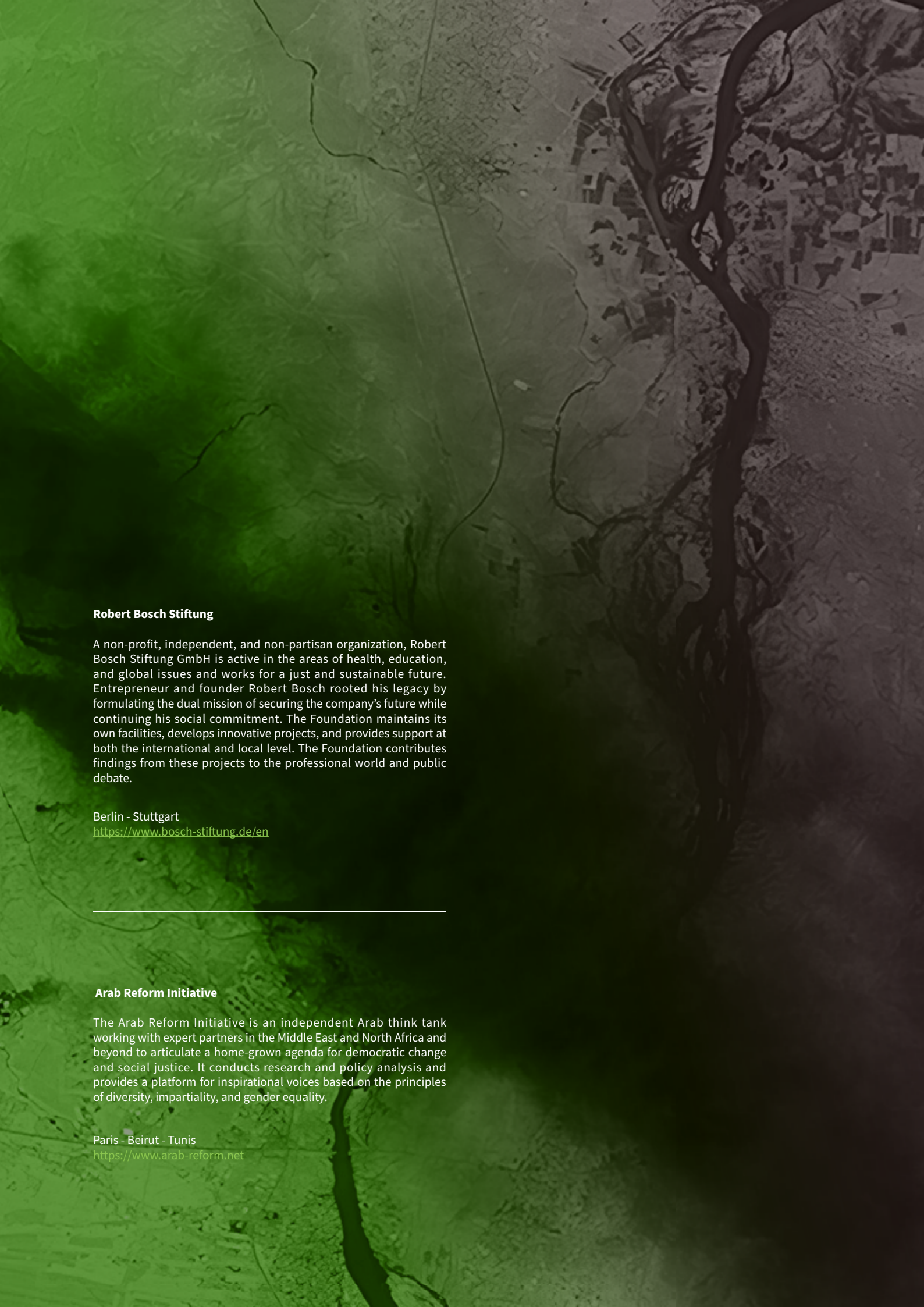
Sarine Karajerjian is Program Director of the Environmental Politics at the Arab Reform Initiative. For 15 years she worked at the Issam Fares Institute for Public Policy and International Affairs, American University of Beirut (AUB), since its inception. Karajerjian currently pursues a PhD in Anthropology at the Ecole des Hautes Etudes en Sciences Sociales (EHESS), Paris. Her dissertation focuses on exile and trauma of Syrian refugee women in Beirut. Karajerjian holds a Master's degree in Environmental Policy Planning and a Bachelor of Science in Environmental Health from AUB.

Shivan Fazil

Shivan Fazil is a PhD student at the Department of Political Science, Boston University, specializing in Middle Eastern comparative politics and international relations. His work focuses on governance, state-society relations, and peace and conflict dynamics. Spanning over a decade, Fazil worked with the Institute of Regional and International Studies at the American University of Iraq, Sulaimani (2024), Stockholm International Peace Research Institute (2020-2024), United States Institute of Peace (2019-2020), among others. He frequently provides expert insights to international news outlets on post-conflict Iraq.

Tobias Zumbraegel

Dr. Tobias Zumbraegel is a senior researcher and lecturer at the department for Human Geography at Heidelberg University. Prior to this, he worked at the center for excellence Climate, Climatic Change and Society (CLICCS) at the University of Hamburg where he is an associate fellow. He is student of history, political science, and the Middle East, and holds a PhD from the Friedrich-Alexander University, Erlangen-Nuremberg. Zumbraegel is the author of Political Power and Environmental Sustainability in Gulf Monarchies (Palgrave, 2022). Zumbraegel's main research focuses on questions of legitimacy, power, and state authority in the Middle East.



Robert Bosch Stiftung

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The Arab Reform Initiative is an independent Arab think tank working with expert partners in the Middle East and North Africa and beyond to articulate a home-grown agenda for democratic change and social justice. It conducts research and policy analysis and provides a platform for inspirational voices based on the principles of diversity, impartiality, and gender equality.

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