

WATER SCARCITY AS AN ENTRY POINT FOR ENVIRONMENTAL PEACEBUILDING IN THE PERSIAN GULF

MATCHING THE CLIMATE CHALLENGE THROUGH WATER PROCESSES

AUSTRIAN FORUM FOR PEACE WORKING PAPER, NO. 2/2024



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Austrian Forum for Peace Working Paper, NO. 2/2024

Supported by:



Imprint

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Water Scarcity as an Entry Point for Environmental Peacebuilding in the Persian Gulf: Matching the Climate Challenge through Water Processes

1. Introduction

Gulf countries are in a state of acute water insecurity that is being accelerated by climate change and ecologically-unsound technical solutions. Together, **water insecurity, climate change, and water-intensive economic activities represent an existential threat to Gulf region states**. The resulting water insecurity suggests that the Gulf is on its way towards compromising the ecological carrying capacity that sustains its peoples, economies, and climate niche. Water levels are already in acute stress conditions that will rapidly worsen with increasing temperatures and decreasing precipitation. The Gulf may become uninhabitable within two to three decades (Sherif et al. 2023).

Even before the Gulf reaches a point of uninhabitability and non-adaptation, water scarcity poses several serious risks for regional security and peace, such as a heightened potential for social unrest and conflict over scarce water – both locally as well as between states. Failing to act now on water security risks a complete breakdown in security in the coming decades. However, conventional perspectives on water security are falling short – particularly in times of climate change.

An **environmental peacebuilding approach** can add nuance to traditional debates about water management at a time of climate breakdown. Conventionally, these debates have oversimplified the relation between water, peace, and security. Neither

the simplistic axiom that “the next wars will be fought over water” nor the approach that water is merely a “soft” security issue – which can be addressed solely through the successful management of water – have proved sufficient in times of climate change.

Hence, this working paper uses a broader, more dynamic, and more systemic view of water. Water is a connective tissue. It is foundational for human rights as well as any economic activity, including industrial and energy production. Compromised access to quality water threatens failures within societies and economies, which overtime may overwhelm any country’s capacity to adapt. Therefore, environmental peacebuilding approaches require more than just the “management” of water resources today or the use of water as a confidence-building measure. Water security needs to be re-generated. This requires processes that can be used for confidence-building processes. But water security regeneration has become an acutely urgent matter in and of itself that demands immediate attention alongside harder forms of security protraction in the Gulf.

Another simplification has been that traditionally, water resources have been looked at statically via basin lenses – essentially as liquid water. By contrast, this paper considers water in its **full hydrological cycle**, recognizing that it is both a liquid and a gas as well as a force that exists and connects via underground, overground, and atmospheric pathways. As a result, it goes

without saying that water “travels” and so do its accompanying insecurity or security effects.

To analyse the challenges in the Gulf, this paper uses a system analysis methodology. This methodology focuses on the cause-and-effect relationship between different conflict drivers. It shows the reinforcing and balancing dynamics between them and also provides possible entry points for cooperation. In the first part, the working paper discusses how climate changes our purview of water, peace, and security. Next, it analyses the implications of water scarcity on a regional level as well as the double-binds generated by technological solutions applied to water security. The paper then concludes by giving suggestions for opportunities brought by an environmental peacebuilding approach. Using a multi-layered systemic lens, it becomes clear that solutions and progress towards such solutions must duly recognize the complex nature of the water-climate-security nexus. Such a perspective could allow entry points to stop downward spirals of water scarcity and conflict as well as pioneer fundamental change towards peace and sustainability.

2. How Climate Change Changes our Purview of Water, Peace, and Security

In the Gulf region, water scarcity is growing increasingly dire. Groundwater depletion has been unprecedented (Wu et al 2020), so much so that centuries of extraction have made the Gulf peninsula geologically lighter on the surface of the globe. **There are significant uncertainties as to how long these groundwater reserves will last** considering climate change, accelerated water pumping rates, and anthropogenic activities that weaken ecological resilience. Among other factors, temperature rises affect the water capacity of **rivers**. For

instance, in the case of 4°C warming, 25-50% less water will run down the Euphrates and Tigris rivers, with Syria and Iraq being particularly affected (Lahn, Shapland 2022, 35). The rate of population growth across the region has been increasing sharply and is likely to increase further in the next decades (Cordesman 2022). Affluence and population growth together drive demand for natural resources (Luomi 2019, 7).

In recent years, the role of water in peace and security has often been simplified in two ways. First, much literature was published – particularly in the 1990s – about how conflict over water might lead to war (“the next wars will be fought over water”) (Turgul et al. 2023, 70). However, data available on water and conflict shows that the connection between water and war is not linear. Oftentimes, shared water resources that are scarce lead to cooperation, particularly in cases of shared river basins between countries. While there were 38 disputes between 1948 and 2008, (De Stefano et al., 2010 in Cooper 2021, 2), 295 water cooperation treaties were signed over the same timeframe (Molnar et al., 2017 in Cooper 2021, 2). Still, it is true that droughts and water scarcity have led and contributed to social conflict in various parts in the world (Unfried et al. 2022). The second simplification is that water security has been defined as the management of the productive aspects of water (sanitation, water supply, irrigation, etc.) and the destructive aspects of water (droughts, storms, floods) (Badoff, Sorgomeo, de Waal 2017, 7). This conceptualizes water in a linear manner (from source to consumer and from input to output) and most of all at a national or local level. This is neither representative of the interactive complexity of water in its full hydrological cycle nor of the climate-focused trends regarding the looming dangers of water shocks and water scarcity.

In the face of climate change, we must reconceptualize the existing narrow frameworks around water, peace, and security. Past literature on water security has shed light on the fact that the relationship between the environment, peace, and security can be both negative and positive (Turgul et al. 2023, 74). On the positive side, water can provide an entry point for cooperation and therefore a platform of peace, as the pressure to act on water scarcity is high and often not as politicized as other conflicting issues. To leverage this cooperation potential, a thorough understanding of how the climate changes our perception of water is needed.

This understanding includes three aspects. First, the fact that **water is relational**, linking ecosystems and moving from ground to surface to atmosphere and back. As such, it serves as a connective tissue and permeates and underpins relations between localities, states, and regions. Second, action on water must take its global dimension into account. **Water is becoming scarcer globally**, with differentiated ramifications in different regions. While visible consequences may be different from one context to another, the scarcity of water is a collective plight that can only be solved or managed via coordinated and ecologically-responsible responses. Third, **water moves fast and furious**: climate change is accelerating its primary impacts on water extraction and water evaporation (which is a powerful greenhouse gas) and is thereby compounding the effects of climate change. This means that water is both a primary “victim” of climate change as well as an active agent. Water security therefore does not entail a linear cause-and-effect relationship but must instead consider various feedback loops and tipping points as well as how to deal with current manifestations *and* prevent far worse in the near future.

3. Water and Risks to Peace and Security in the Gulf Region

In the Gulf region, water scarcity generates risks to peace and security on different levels, but the focus of this analysis will be on a regional level. As Schaar (2019, 3) puts it: “No country is sovereign as far as its water resources are concerned.” As a result, security threats in one country risk spilling over to other countries (Al-Sarihi 2022). Moreover, if a certain country is already under increased social, political, or economic stress, it is more vulnerable to such spillovers. In addition, hydrological cycling does not stop at political borders, but some countries still take unilateral actions, such as damming or using a disproportionate share of common water reservoirs (see reinforcing circle in red, Figure 1).

The reflex for **unilateral action** stems from the need to secure national, economic, and sociopolitical peace and security. Over time, however, unilateral and uncoordinated actions tend to harden security dilemmas. As a result, water is often seen as a zero-sum game (Cooper 2021, 8). Indeed, if a country takes unilateral action over water supplies, conflict is more likely to emerge (Cooper 2021, 3). For example, a decrease in river flows due to upstream damming will likely lead to an increase in water stress and vulnerability for downstream countries (Salameh, Al-Ansari 2021). The resulting threats pose bilateral and regional issues for peace and security, leading to further unilateral action, while unsustainable water outtakes also have negative effects on the development of the hydrological cycle.

One example of this reinforcing cycle of unilateral action is Iraq. Water flowing in the main rivers, the Euphrates and the Tigris, has shrunk by 30% since 1980 and is expected to further decrease by up to 50% until 2030 (Potsdam Institute for Climate

Impact Research 2022, 4). Apart from climate change, heat, and droughts, dam projects in Türkiye and Syria as well as dam projects of inflow rivers in Iran have contributed to this drastic reduction (Salameh, El-Ansari 2021, 167). As a result, Türkiye can use water as a political weapon against Syria and Iraq (Salameh, El-Ansari 2021, 164).

that countries facing complex issues of peace and security can work through in order to transform these issues.

In the Gulf, there are several examples of cooperation over environmental issues, such as the recent cooperation between Iran and Iraq to battle the threat of sandstorms (Arab News 2023). However, there has been

— — — time delay

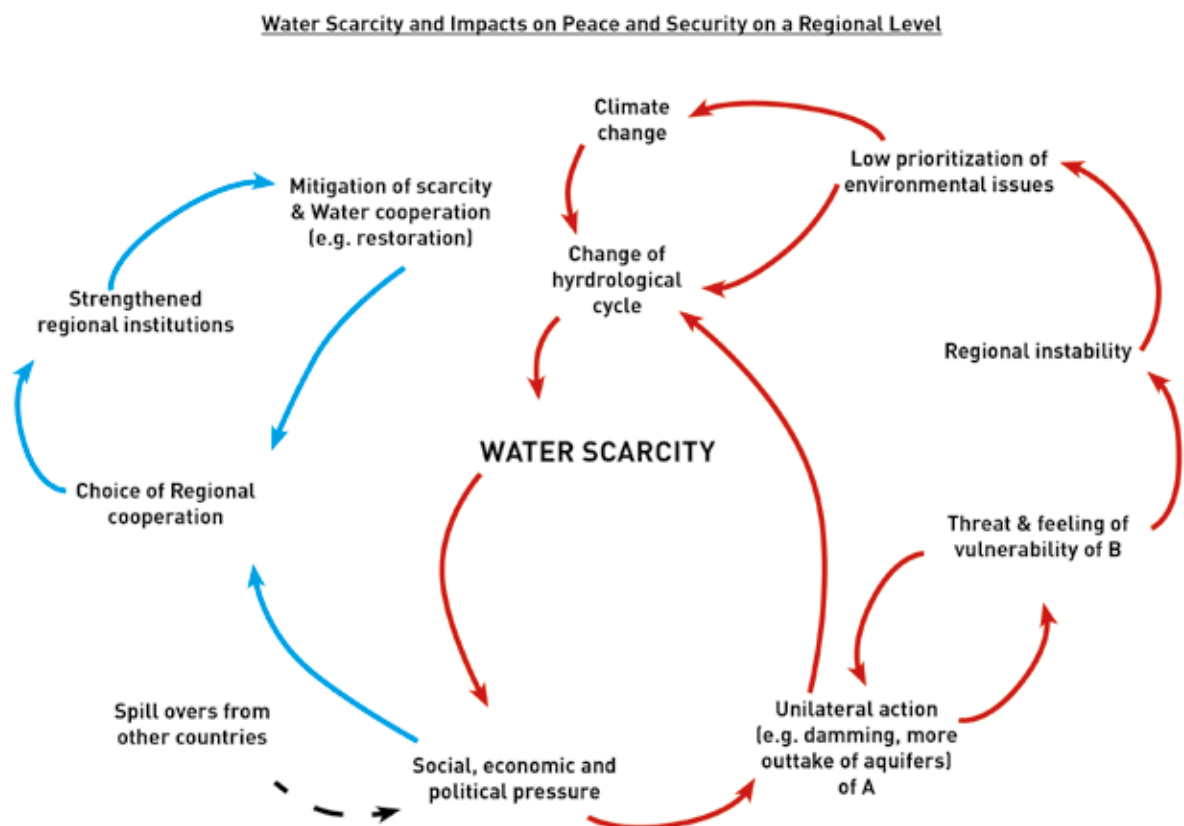


Figure 1: Water Scarcity and Impacts on Peace and Security on a Regional Level

But water scarcity does not necessarily lead to conflict as long as actors choose a cooperative path, as shown in the balancing cycle (in blue) in Figure 1. Environmental issues hold the potential for cooperation in the Gulf, as they are of the utmost importance but are not as politized as other issues (Todman, Youssef, Abdelwahab 2023). In the context of environmental peacebuilding, successful cooperation signifies trying to grow the pie that countries need to share. It is based on creative agreements and actions

no consistency in regional cooperation. Indeed, in some circumstances related to environmental issues, there has even been competition. Such is the case for climate leadership, which has led countries not to spur one another on to further climate change mitigation but rather to block other countries' ambitious plans (e.g. Saudi Arabia pressuring the United Arab Emirates not to sign a major solar energy deal in 2021) (Todman, Youssef, Abdelwahab 2023, 3). What is missing is a regional governmental framework that

provides a platform to discuss environmental and climate security challenges and coordinate common policies as well as public-private responses (Luomi 2019, 20). However, strong institutional responses – including on a regional level – are key to effectively provide environmental peace. They are essential for water management and mitigation measures such as regeneration that do not stop at political borders. At the same time, functioning water management systems can also act as a buffer in times of crisis, preventing further fragility (Sadoff, Borgomeo, DeWaal 2017, 46). And if there is a basis for successful cooperation, this may drive further collaborative initiatives.

4. How Apparent Solutions can Endanger Peace

Risk profiles related to water are not just defined by water scarcity and ensuing hazards or economic difficulties. They can

increase substantially as a result of responses to water scarcity, particularly in the mid- to long-term, as Figure 2 shows. One risk comes from **food imports**, which are increasing and will become even more necessary if there is not enough water available for food production. Many countries in the region are already highly dependent on food imports: in the whole MENA region, 50% of food is imported (Lahn, Shapland 2022, 5), whereas countries like Saudi Arabia import up to 80% of their food (Dargin 2023). Food imports rely on functioning markets, which are becoming more uncertain in a climate-disrupted and geopolitically-fragmented world in which basic commodities such as water and food are subject to preferential treatment according to geopolitical alignment. When geopolitics encroaches upon fragile regions, certain countries may secure preferential import capacity compared to others, which may heighten security dilemmas at regional levels as well as zero-sum competition.

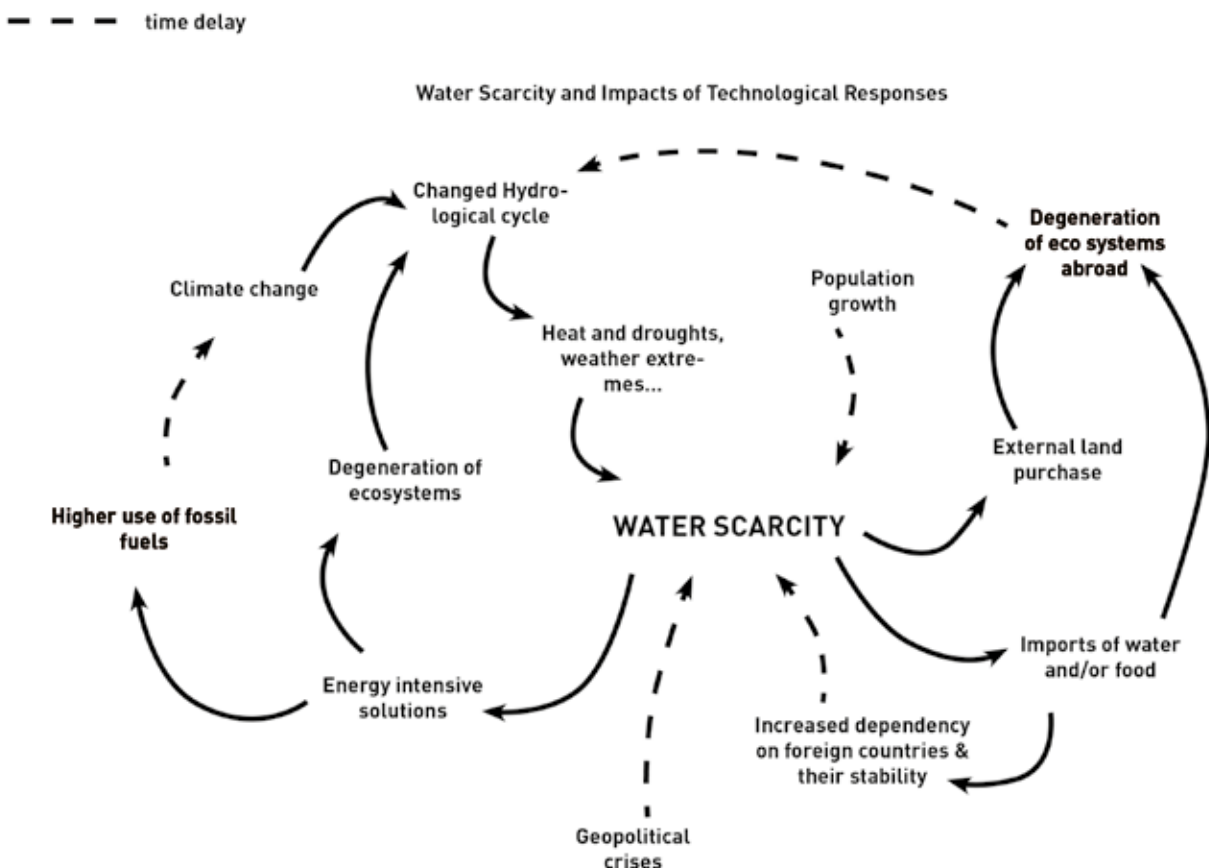


Figure 2: Water Scarcity and Impacts of Technological Responses

Climate change also influences food production in other countries. In addition to geopolitical dependency, high food imports rely on functioning ecosystems elsewhere. However, these ecosystems are equally strained through intensive forms of agriculture that produce temporary food security but accelerate environmental degradation and biodiversity loss. The same logic applies to land purchases by Gulf actors outside of the Gulf region, whereby land grabs displace the same problems to other areas. Global feedback loops can also influence hydrological flows locally and regionally, making water scarcity worse.

Furthermore, Gulf countries tend to resort to infrastructural, and technological fixes for the direct management of their water challenges. Projects like dam constructions, the installation of desalination plants, and other forms of energy- and materially-intensive solutions are common in the Gulf region. They appear promising, particularly for countries with the technological capacity and resources, but bear problematic implications for peace and security in their own right. First, many technologies, such as desalination, are energy-intensive. Up to now, many desalination plants have depended on fossil fuels, which, once in the atmosphere, accelerate climate change and, as a result, water scarcity. Moreover, desalination plants produce negative environmental externalities, including the release of brines that increase the salinity content of coastal waters. In turn, this reduces oxygenation of said waters, which eventually leads to negative impacts on fish stocks and coastal ecological health.

New technologies are also affected by climate change. Existing power grids are vulnerable to heat waves and cannot keep pace with increasing temperatures. For example, in the summers of 2019, 2020, and 2021, widespread power cuts left residents

of the Iraqi cities of Baghdad and Basra without electricity (Potsdam Institute 2022, 16). To summarize, technological solutions often just displace the initial problems and protract drivers of water insecurity rather than offering sustainable solutions.

5. Water as a Platform for Peace?

The lack of both systemic action and regional cooperation in the face of accelerating climate change and increasing natural resource extraction paints a rather grim vision for a future that is approaching Gulf populations much earlier than expected. Does this mean that all is lost? An environmental peacebuilding approach, as supported by the ACP, seeks out potential areas for cooperation to strive towards peace rather than solely focusing on the challenges. As a result, environmental peacebuilding efforts understand conflict not just from the perspective of human dynamics but also from the perspective of **eco-systemic integrity** and the relationships between human societies and their natural environment.

Based on a thorough understanding of these systems, this approach seeks to **design processes and interventions** and **pilot approaches** that help to tackle these issues in integrated solution pathways and adapt to changing environmental circumstances. This includes supporting conflict de-escalation, dialogue, and cooperation, advancing adaptation and resilience efforts, and promoting long-term and sustainable solutions, such as environmental regeneration. These peacebuilding initiatives can be done either on a micro-scale through community participation or at an ecosystems level, which would entail political, social, and economic process design. In this sense, a **healthy environment is seen as an essential part of conflict prevention**. Environmental peacebuilding thus intersects

with sustainable development and envisions building more adaptive, resilient, and sustainable social and ecological systems.

What opportunities does this approach offer for the Gulf region? There are already **some promising examples** that may provide entry points to disrupt the downward trend and which could be followed by more comprehensive approaches. There is significant potential in technical dialogue, as there are already regional institutions producing high-quality work, such as Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR), and platforms trying to foster cooperation, such as the Economic and Social Commission for Western Asia (ESCWA) (Schaar 2019, 15). In addition, there are signs that Gulf states – even rivals – could enter into dialogue to tackle common environmental challenges. These include the increasing number of conferences taking place on a regional level as well as a signed memorandum of understanding between a group of countries that includes Iran, which is often isolated from regional initiatives (Al Sahiri, Shidiq 2023, 119). Initiatives to protect countries from sandstorms in Iran, Iraq, or Kuwait (Arab News 2023, Barhouma 2023) show that regional cooperation is possible and can be a win-win situation. However, these initiatives are still fragile, as they occur in a fragmented manner and oftentimes do not include all littoral Gulf states (Al Sahiri, Shidiq 2023, 119). Recent events of conflict and war in the Middle East also threaten such processes.

It is essential that cooperation initiatives move beyond better managing finite resources. Water security in times of climate change is not only about providing people with water now. It is also about ensuring water access in the future. This requires three overarching avenues for action.

First, this entails reducing, transforming, and, where possible, **phasing out** any unsustainable anthropogenic activities that use and impact water. This may be the most important and yet the most difficult step to take for Gulf states – especially those that depend on fossil fuels for exports and, as a result, for national peace and security. It is becoming increasingly clear that carbon-capture and carbon-offsetting initiatives are both unsuccessful in scope and scale to solve the problems generated by a dependence on fossil fuels, including global warming. The time window for action is quickly closing, and failing to acknowledge this will simply lead to palliative policy design rather than transformative architectures for peace and security.

Second, water security action and cooperation should also incorporate **preparedness** for extreme scarcity and disaster, such as by actively capturing as much flood water as possible when disasters occur and ensuring safety nets and basic human rights access to drinkable water. Building upon initiatives such as those tackling sandstorms provides a blueprint for regional cooperation in this area. This step is likely to be easier, as it leads to immediate political and stabilisation benefits that reinforce relationships between states and their citizens and, as such, may provide better incentives for thorough regional cooperation.

The third avenue for action is the next frontier of environmental peacebuilding and involves experimental approaches. Put simply, it aims to grow the pie, rather than divide a shrinking pie. Thus, the **re-generation** of green waters (water in the soil) is a fundamental aspect of climate and water security action. This would subsequently help to restore carbon-retention capabilities within ecosystems. It also has direct benefits in terms of creating natural carbon sinks as

well as the rebooting of ecological services such as disaster buffering, food productivity, and water cycling.

This approach is needed at the ecosystems level and involves the complex regeneration of water-retention landscapes. In turn, this requires bringing together ecological design, hydrological mapping, and geological competencies together with political process designers. In a collaborative attempt, trigger points for regeneration at a regional level can be identified through overlaying maps of aquifer catchments, river basin flows, and atmospheric river mapping. Equally, bringing in national and local levels for regeneration, helping to enhance services that reinforce food and ecological resilience over time. Such initiatives are rare and few – but, by now, they are critical. Examples include efforts in the Sinai Peninsula to regenerate coastal ecosystems and from there proceed to peninsula-wide regeneration. To launch similar initiatives would be an important step towards peace and water security in the Gulf region.

6. Conclusion

In a context such as the Gulf region, which is one of the first and worst hit areas in the world regarding water capital in the face of climate change, water security goes beyond conventional approaches of water management and quick technological fixes. It encompasses visible water, invisible water, the hydrological cycle, and the production of both food and energy. This working paper demonstrated that water scarcity has varying effects on regional peace and security. In addition, technological solutions risk increasing water insecurity instead of mitigating it when water outtake becomes unsustainable and relies on resource-intensive technologies that are vulnerable to climate change effects, such as extremely high temperatures.

The answers to and prevention of peace and security challenges need to be as complex as the challenges themselves. This includes addressing deep-rooted conflict as well a preventative mechanism in a world fast and furiously disrupted by climate change. An environmental peacebuilding approach, as supported by the ACP, would help to tackle those issues and build platforms for long-term solutions. Looking at how ecosystems regenerate can provide a model for answers. However, this lens is not currently applied at scale in environmental peacebuilding approaches. Climate change is often viewed through the lens of an intractable threat that can mostly be solved via energy- and industry-related transformations towards zero- or lower-carbon-intensive activities. There is no possible equivocation on this point: such transformations are non-negotiable for a relatively climate-safe world, but they are neither exclusive nor sufficient. Accompanying these transformations with natural processes involving complex ecological design innovations at various levels is equally necessary, beneficial, and transformative. These initiatives are especially useful in mediation contexts and in particular for arid and semi-arid regions that are hit faster and deeper by climate change.

Further entry points to counter water-related security dilemmas need to be developed by including different perspectives developed through local, national, and regional processes. By being strategic, systematic, and honest about the mid- and long-term consequences, leverage points can be identified to stop downward spirals and generate cycles of regeneration and resilience.

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