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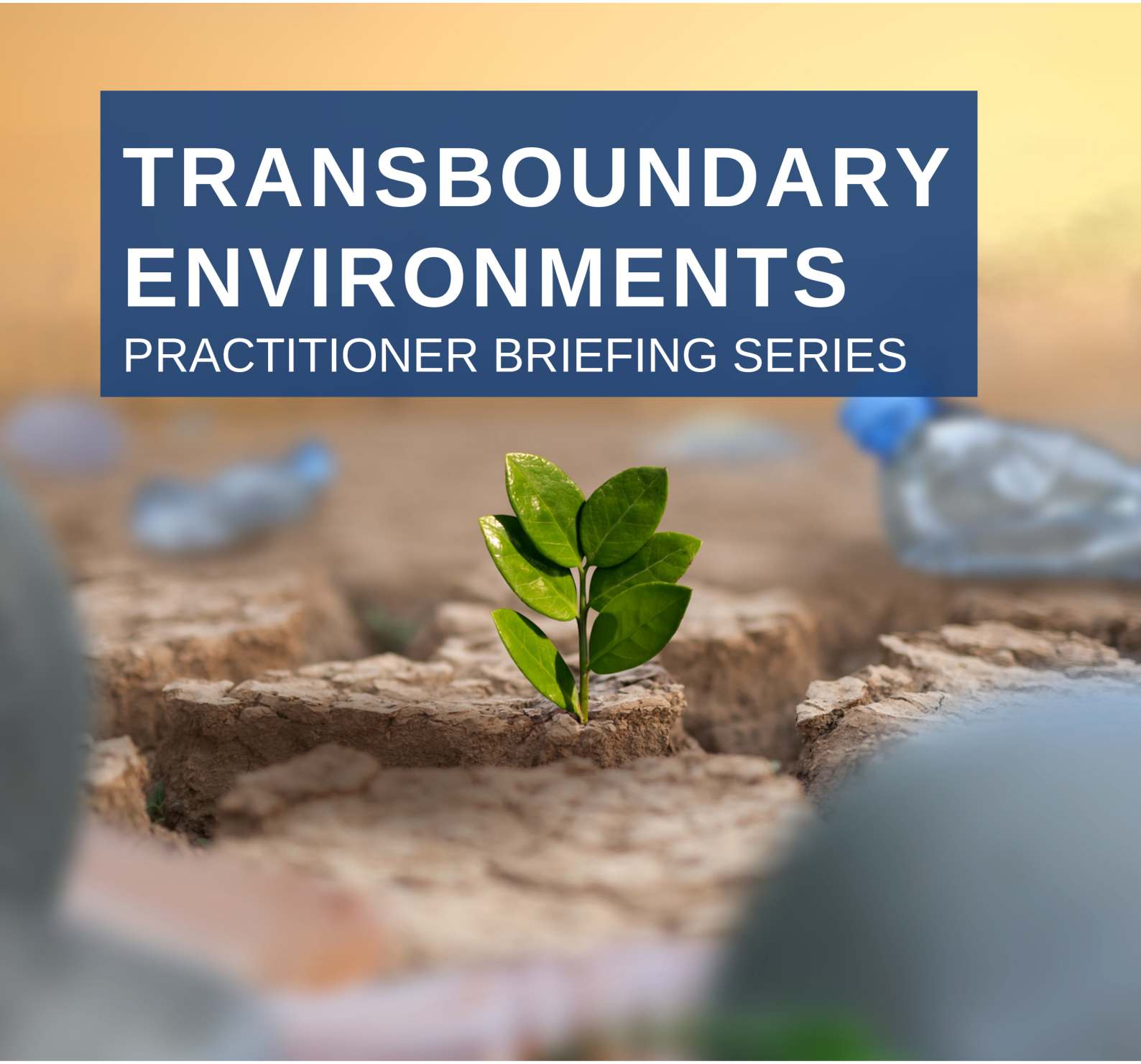

Issue 21

Climate Change-Conflict Nexus: Risks and Considerations for Peace and Security

Climate Change-Conflict Nexus: Risks and Considerations for Peace and Security

As the impacts of climate change intensify across the globe, their influence on security and conflict dynamics is becoming increasingly evident. Environmental stressors such as resource scarcity, water insecurity, and extreme weather events are not only amplifying humanitarian crises but are also fueling instability and competition in already fragile regions. Addressing the complex and interconnected challenges requires integrated strategies that strengthen peace and climate resilience, promote inclusive governance, and natural resource management that supports sustainable peace and climate resilience. Four guest authors offer valuable insights and analysis on the complex links between climate change, peacebuilding, and security:

Chapter I examines the evolving understanding of how climate change intersects with security and conflict. The chapter outlines key international milestones that have raised the profile of climate-security issues and notes the growing integration of climate risks into security policies. The author stresses the complexity of climate-conflict connections and calls for more localized, nuanced research and community-based approaches and the integration of climate considerations into peacebuilding and security strategies.

Chapter II analyzes how climate change shapes conflict prevention, stabilization, and resolution. It explains that climate impacts—such as livelihood loss and resource competition—can trigger or worsen conflict, especially where institutions are weak. Effective responses include community dialogue, transboundary cooperation, and integrating environmental restoration into stabilization efforts. Climate-sensitive peacebuilding can build trust and support lasting agreements, but challenges like data gaps and institutional weaknesses remain. The author emphasizes that addressing climate within conflict strategies is crucial for resilience and sustainable peace.

Chapter III examines how climate change and water scarcity drive conflict by increasing competition and vulnerability, particularly in fragile regions. It shows that armed conflict further damages water resources, worsening crises for vulnerable groups. While water scarcity can fuel violence and unrest, strong governance and inclusive management can reduce these risks. The chapter highlights the need for integrated water governance and peacebuilding to address the climate-water-conflict nexus.

Chapter IV outlines the UN's Climate Security Mechanism (CSM) and its harmonized approach to analyzing climate, peace, and security risks. Using Iraq as an example, it shows how the CSM framework connects climate stressors to security threats and informs practical interventions. The chapter concludes that the CSM's risk assessments strengthen early warning systems enable more targeted and context-specific responses to climate-related security challenges.

Author Biographies

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Andrea Dekrout has worked for the United Nations since 2015. She served as the UNAMI's Climate, Peace and Security Advisor from 2023-2025 helping to identify climate-related risks and opportunities for peacebuilding and inclusive dialogue processes. Andrea has working on issues of environment, climate, peace and security in humanitarian and development settings across Africa, the Middle East, and the Pacific.

I. Climate Change, Security Risks & Conflict

Meryam Al Bouhati

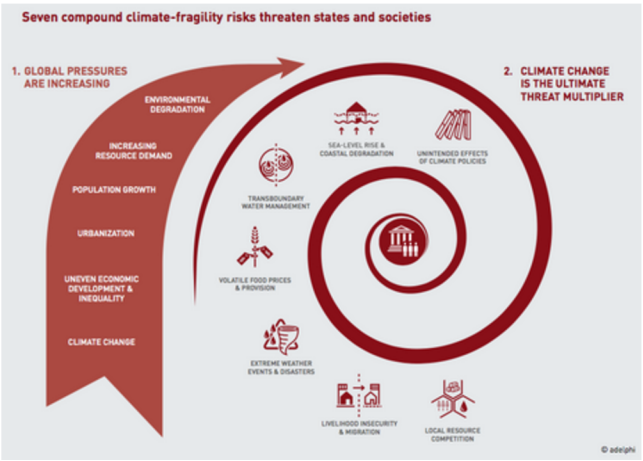
Over the past two decades, the connections between climate change, security risks, and conflict have become increasingly important in both academic and policy discussions. The concept of "environmental security" was first introduced in the Our Common Future report by the World Commission on Environment and Development in 1987. Since then, debates on the relationship between climate change and security have gained momentum, with academic discussions exploring the environment's role in fostering tensions, armed conflict, and (in)security [1] and the potential for the environment to promote peace and cooperation [2].

However, research hasn't been able to show direct connections between climate change and conflict risks, reaching no consensus [3]. In fact, Day and Harper [4] explain that research showing strong correlations between climate events, weather patterns, and violence has been criticized for conflating correlation with causation.

The social and economic effects of the escalating frequency and severity of extreme weather events—such as floods and droughts—resulting in forced migration, loss of livelihoods, and competition over resources (both natural and economic), have also been studied for their influence on tensions and conflict [5]. While some researchers argue that changing weather patterns are already having significant direct effects on vital resources such as drinking water, river systems, arable land, and forests [6], and contend that these patterns, which drove up global food prices, played a role in civil unrest leading to the Arab Spring uprisings [7], others reject this premise. They conclude that climate events only have a minimal effect on conflicts [8]. Additional research has also focused on the management of these resources [9] and the effects of adaptation initiatives on the stability of certain contexts and on security [10].

Regions already vulnerable due to poverty, political instability, and weak governance are especially susceptible to climate stressors [11]. Much of the research on climate, peace, and security has focused on the Global South, particularly regions such as Sub-Saharan Africa, the Sahel, and the Middle East [12]. From a Southern perspective, however, environmental security is often seen as a discourse primarily addressing the security concerns of Northern countries [12]. Reimling and Meijer [11] further note that Southern contexts—where the majority of violent conflicts occur—receive significantly lower levels of climate finance, leaving them poorly equipped to manage climate impacts and build long-term resilience.

As the impacts of climate change on security risks and conflict dynamics continue to grow, the international community and national governments have increasingly recognized the need to address these challenges. This recognition has shaped discussions on stabilization efforts and security policies, marking a shift toward integrating climate change into peace and security frameworks.



Climate-fragility risks to states and societies. Source: adelphi

International and National Recognition of Climate Change Impacts on Conflict Dynamics and Risks to Stabilization and Security

The international recognition of the link between climate change and security has grown significantly. Initially, climate change was framed primarily as an environmental issue, with limited attention given to its implications for international peace and stability. However, as the social, economic, and political effects of climate change have become increasingly evident, the international community has started acknowledging its direct and indirect threats to global security.

Internationally, one of the first major milestones in recognizing the climate-security nexus came in 2007, when the United Nations Security Council (UNSC) held its first debate on the implications of climate change for peace and security. While the session marked an important step, it highlighted divisions among member states. Representatives from the Pacific Islands, for example, argued that climate change posed an existential threat comparable to traditional security risks, while countries like China and Russia insisted that climate change should remain within the purview of developmental and environmental institutions [13].

The Warsaw International Mechanism for Loss and Damage, established in 2011 by the United Nations Framework Convention on Climate Change (UNFCCC), further emphasized the security risks associated with climate change, particularly for low-income and vulnerable nations [14]. The UNFCCC's recognition of the security risks associated with climate change highlights the growing understanding that climate change is not just an environmental issue but also a fundamental threat to global peace and stability. The 2015 Paris Agreement, a landmark international climate accord, further reinforced the need to integrate climate change into the broader security agenda. The agreement recognized the role of climate change in exacerbating risks to security, particularly in fragile states, and called for increased international cooperation to address these risks. The agreement's emphasis on mitigation and adaptation strategies aims at sustaining peace and preventing conflict, especially in regions vulnerable to the destabilizing effects of climate change [15].

Since 2017, the UNSC has adopted resolutions explicitly acknowledging climate change as a risk factor in specific regional contexts. For instance, Resolution 2349 on Lake Chad linked water scarcity and desertification to food insecurity and the recruitment of individuals into violent groups like Boko Haram. Similar resolutions on Somalia, Mali, and the Sahel have highlighted the role of climate stressors in exacerbating existing vulnerabilities [16]. Additionally, initiatives like the Climate Security Mechanism (CSM), established in 2018, represent significant efforts to address the intersection of climate and security. This collaboration between the UN Development Programme (UNDP), the UN Environment Programme (UNEP), and the Departments of Peacebuilding and Peace Operations (UN DPPA and DPO) provides technical and strategic support to nations grappling with climate-related security risks. Key activities include deploying climate advisers to field missions, utilizing satellite imagery and machine learning for early warning systems, and integrating gender-sensitive approaches into conflict resolution. A notable example of the latter can be seen in Yemen, where women's involvement in water management projects has successfully reduced tensions and fostered community resilience [17].

More recently, discussions linking climate change and global security risks gained prominence at COP27 in Egypt, in 2022, though official negotiations largely overlooked these connections. Instead, meaningful discourse took place in side events like Germany's Climate for Peace initiative and the CCCPA, which emphasized integrating peacebuilding into climate strategies. However, significant gaps in formal acknowledgment of the climate-security nexus remained. Wealthy nations have consistently fallen short of the $100 billion annual climate finance pledge to support low-income countries. Developing countries have pushed for the operationalization of a loss and damage fund, aiming to provide financial support for nations least responsible for, but most affected by, climate disasters. Disagreements about structuring this fund have created additional friction [18].

In 2023, a significant development at COP28 was the introduction of the first Relief, Recovery, and Peace Day, which aimed to address the climate resilience needs of regions affected by fragility, conflict, and humanitarian crises. The COP28 Declaration on Climate, Relief, Recovery, and Peace called for bolder, collective action to support vulnerable communities. It emphasized the need for tailored climate actions that integrate humanitarian aid, development, and peacebuilding efforts. Enhanced financial resources, technical support, and local partnerships were deemed critical to effectively building resilience in these high-risk areas. Leaders committed to tripling climate finance, with a particular emphasis on increasing resources for adaptation and resilience in the most vulnerable regions [19].

COP 28, Climate, Relief, Recovery and Peace Day. Source: UNFCCC

At COP29 in Baku, in 2024, the CSM and the Group of Friends on Climate and Security hosted a high-level panel to explore the intersection of climate change, peace, and security. The event, which was part of COP29's Peace, Relief, and Recovery Day, emphasized the need for "practical solutions to advance peace-positive climate action". The event also saw the announcement of a new Climate, Peace, and Security Advisor to be deployed to the Pacific Islands Forum, reflecting the growing focus on climate security in the Pacific. Furthermore, Nauru and other countries underscored the importance of partnerships, including those with the Women, Peace, and Security Fund, which pledged USD 5 million to support women and girls in climate action [20].

At the national level, numerous governments have incorporated climate considerations into their security frameworks. In the United States, the Department of Defense has recognized climate change as a "threat multiplier," highlighting its potential to disrupt military operations and intensify instability in vulnerable regions [21].

Similarly, the European Union's Strategic Compass for Security and Defense acknowledges the security risks posed by climate-induced resource scarcity and displacement, urging greater cooperation and resilience-building measures among member states [22]. At COP29, Simon Stiell, the UN Climate Change Executive Secretary, commended both the UK and Brazil for their stronger climate commitments, underscoring the economic and societal benefits of ambitious climate action [22].

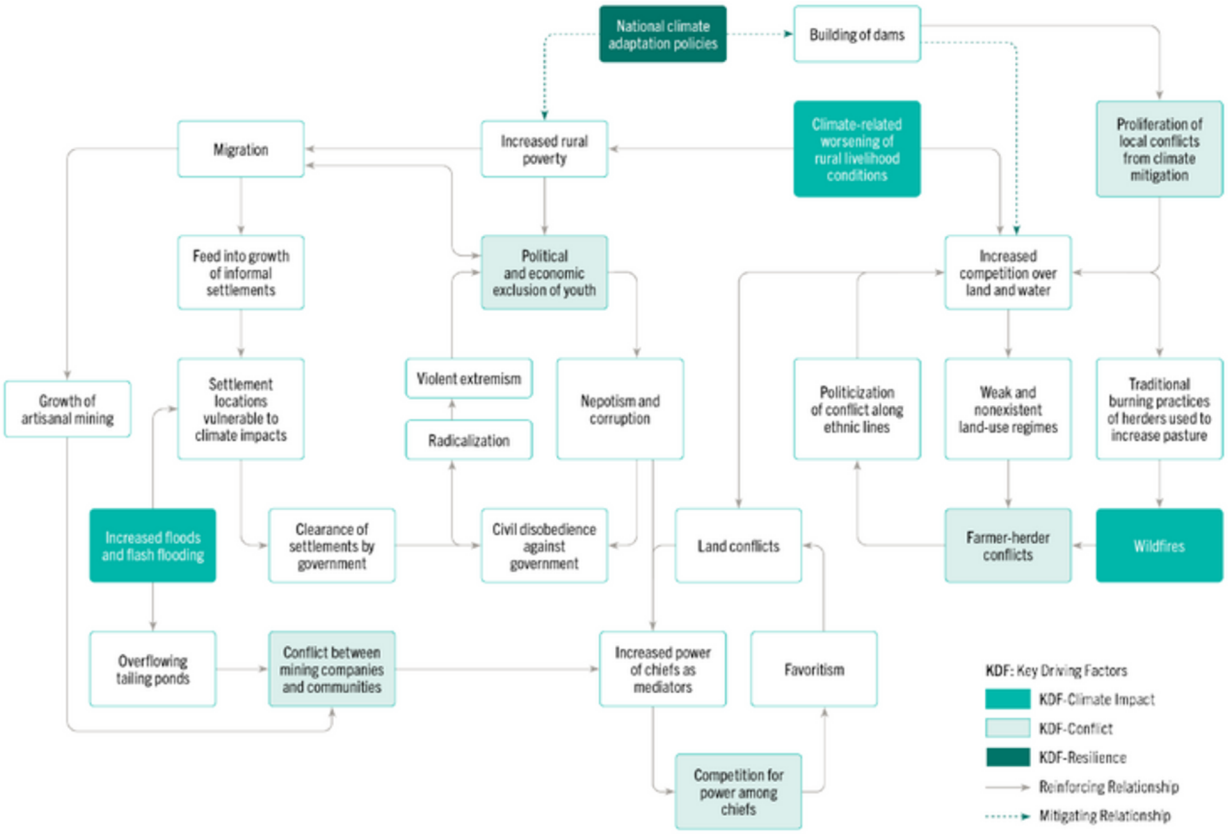
UNFCCC Executive Secretary Simon Stiell at the closing of COP29. Source: Lucia Vasquez/UNFCCC

At the UNSC's 9345th Meeting in June 2023, countries like Gabon have emphasized the need to integrate climate-security considerations into their strategies, particularly in Africa, where 17 of the 20 countries most affected by climate change are located. Despite contributing minimally to global emissions, African nations face acute impacts from desertification, droughts, and flooding. In Colombia, the integration of environmental protections into the historic peace agreement with FARC highlights the role of environmental justice in sustaining peace. By prioritizing the restoration of ecosystems as a pathway to reconciliation, Colombia has demonstrated the importance of linking environmental sustainability with security [23].

Nevertheless, significant challenges persist in addressing the climate-security nexus comprehensively. For instance, in 2023, Ghana's representatives have urged peacekeeping missions to incorporate climate considerations into conflict prevention and mediation efforts, supported by adequate financing. Vulnerable nations like the Marshall Islands and Mozambique have drawn attention to the existential threats posed by rising sea levels, prolonged droughts, and severe storms, which exacerbate displacement, resource competition, and economic fragility [23].

Despite these advancements, some country representatives remain divided on whether climate change and environmental degradation should be considered security issues at all. As a matter of fact, since 2007, Russia has consistently expressed its willingness to address climate change but argues that it lies outside the Security Council's mandate. Russia views the inclusion of climate security discussions as an attempt to address political issues under the guise of environmental concerns, linking them to international security threats and "securitizing the environment," as Stepanov [24] explains. This position is supported by countries like China and Brazil. Although it is clear that climate change intensifies instability, the specific ways in which environmental stressors contribute to conflict are often challenging to pinpoint. A range of other variables socio-economic and political elements must be taken into consideration when analyzing the causal effects between climate, security risk and conflict [25].

Figure 1. Ghana Climate-Conflict Systems Map



The systems map demonstrates how climate interacts with conflict feedback loops in Ghana. Source: Chemonics/CDA

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II. Why Climate Change matters for Conflict Prevention, Stabilization & Resolution

Khiera Tarif

Introduction

Climate change is increasingly recognized as influencing security and stability in fragile contexts worldwide. Its effects—ranging from environmental degradation to extreme weather events—exacerbate vulnerabilities, intensify conflict dynamics and complicate efforts to build and sustain peace. Addressing these interconnected challenges requires a systematic approach that integrates climate considerations into conflict prevention, stabilization, and resolution efforts. This chapter explores why climate change matters for preventing, stabilizing and resolving conflicts and highlights examples of strategies for mitigating these risks across three key domains. The first section focuses on **conflict prevention**, examining how climate-related vulnerabilities such as livelihood deterioration and competition over natural resources can act as conflict triggers. The second section delves into **conflict stabilization**, demonstrating how climate change interacts with ongoing conflicts to worsen humanitarian crises and create new opportunities for armed groups. The third explores **conflict resolution**, emphasizing the potential of climate-sensitive peacebuilding to build trust and promote durable peace agreements.

Conflict Prevention

Proactively addressing climate vulnerabilities is essential for preventing conflicts. Climate-related security risks emerge from factors such as dependence on primary sector economies, high agricultural employment, marginalization, inequality, and unstable political and security contexts. [1] These vulnerabilities are compounded by the environmental degradation caused by rising global temperatures, which disrupt seasonal rainfall patterns and increase the frequency of severe floods and droughts. [2]

Livelihood deterioration is a key pathway through which climate change influences conflict risk. As environmental conditions deteriorate, farmers, pastoralists, and fishers face greater difficulty in sustaining their livelihoods. In the absence of robust institutions to govern the use of shared natural resources, competition intensifies, leading to conflicts over water and pasture. [3] In the Sahel region of West Africa, such dynamics have triggered violent clashes between farmers, herders, and fishers. [4]

The impacts of climate change are not always geographically confined; risks can spill over through migration and displacement. For instance, the degradation of water and pasture in the Sahel has altered patterns of seasonal livestock migration into Central Africa, increasing tensions and violent conflicts between herders and farmers in the Central African Republic. [5]

Transboundary climate risks require transboundary solutions. Climate-sensitive conflict analyses should account for cross-border risks and identify entry points for preventive action. One effective approach to preventing cross-border conflict is fostering community dialogues on shared resource use.

UNISFA returns cattle from a raid in Abyei. Source: UNISFA

The disputed Abyei region along the Sudan-South Sudan border illustrates the potential of such dialogues. Historically marred by tensions between pastoralist groups like the Ngok Dinka and the Misseriyya Arab seasonal migrants, the area has experienced politically motivated conflicts over land and resources. The United Nations Interim Security Force for Abyei (UNISFA) has worked to mitigate these conflicts by organizing pre- and post-migration conferences with pastoralists, farmers, and displaced people. [6] These efforts have successfully reduced violence by fostering local peace agreements that promote “peaceful farming, grazing, and stronger inter-communal ties.” [7]

Conflict Stablization

Climate change intensifies existing conflict dynamics and creates new risks by exacerbating vulnerabilities in ecosystems, economies, and livelihoods. Armed groups often exploit these vulnerabilities to gain legitimacy in communities, particularly where state institutions fail to provide essential services. For instance, in the absence of effective judicial systems, local natural resource disputes may be adjudicated by non-state actors, embedding these disputes into broader political conflicts.

Conflict dynamics, in turn, shape communities' capacities to cope with and adapt to climate change. In Somalia, decades of civil war have left people with limited scope to handle climate shocks like the historic drought of 2021–23. This drought devastated livelihoods through crop failures and livestock deaths, and surging military operations against Al-Shabab further restricted pastoralists' mobility, exacerbating the crisis. By 2022, the combined impacts of conflict and climate displacement had reached record levels, displacing over 1.9 million people.

The short-term effects of climate change increase humanitarian needs, while long-term impacts threaten progress toward sustainable development goals. Addressing the enormous burden of climate change in conflict-affected areas requires a focus on building resilience; even in hard-to-reach and contested regions.

The burden of climate change in conflict-affected areas is enormous. In the short-term, the effects of climate change increase humanitarian needs. In the medium- and long-term, the effects of climate change can undermine sustainable development goals. This points to the need for an increasing emphasis on climate action in conflict-affected areas. Though challenging, there are entry-points for building people's resilience to the effects of climate change in hard-to-reach areas.

Despite challenges, there are viable entry points for climate action in contexts where stabilization remains the primary goal. In south-central Somalia, the International Organization for Migration has advanced stabilization efforts in areas reclaimed from Al-Shabab by integrating environmental restoration and climate resilience projects. [8]

These initiatives emphasize community ownership through co-funding mechanisms, regenerative agricultural practices, and access to renewable solar energy via public-private partnerships. [9] This approach not only mitigates climate impacts but also addresses underlying conflict dynamics.

IDP Camp in Badoia, Somalia Source: Crisis Group

Conflict Resolution

Climate change exacerbates insecurity, including protests, riots, and violent conflicts at both local and national levels. This instability further heightens vulnerability to climate impacts, undermines adaptive capacities, and limits opportunities for sustaining peace processes. These dynamics create a cycle where climate risks and insecurity reinforce each other, posing significant challenges for conflict resolution. [10]

Growing recognition of the links between climate change, conflict, and peace has prompted multilateral organizations and NGOs [11], [12], to advocate for integrating climate considerations into conflict resolution strategies. Effective dialogue, negotiation, and mediation must address climate-related security risks to ensure sustainable outcomes and resilience in conflict-affected regions.

Environmental peacebuilding is a strand of research and practice that highlights how the natural environment holds significant potential for building trust between groups in conflict. [13] This is supported by the number of peace agreements that refer to environmental measures. [14] Climate-sensitive conflict resolution can strengthen the legitimacy and inclusivity of peace processes by engaging under-represented grassroots stakeholders.

Discussing the challenges of climate change can create spaces for trust-building and cooperation between groups. [15] These can foster mutual understanding and pave the way for addressing broader political and social issues. Beyond national constituencies, climate change can facilitate transboundary collaboration on shared challenges and build regional consensus on shared solutions. [16]

To maximize the potential of climate action in conflict resolution, it is essential to embed climate resilience within peace agreements, [17] prioritize adaptation measures with peacebuilding co-benefits, and develop flexible, risk-sensitive financing mechanisms tailored to conflict-affected areas. This requires strengthening institutional capacities to design and implement such projects, streamlining access to climate funds, and fostering partnerships between local, national, and international stakeholders.

Aligning short- and long-term goals, promoting nature-based solutions, and ensuring rigorous monitoring are vital steps toward creating transformative climate finance frameworks. When deployed effectively, climate finance can support sustainable peace and resilience in fragile contexts, bridging the gap between immediate conflict resolution needs and the long-term objectives of climate adaptation.

Challenges

This section highlights some of the gaps and challenges to advancing climate-sensitive approaches to conflict prevention, stabilization and resolution, including: access to data, institutional capacities, political sustainability and engaging with new types of actors.

Conflict prevention efforts are challenged by the need for data and syntheses that can inform early action. Decision-makers often face difficulties in synthesizing climate data into actionable conflict analyses, which limits their ability to anticipate risks and intervene proactively. Therefore, improving access to data, and institutional capacities to use data, is critical for advancing climate-sensitive conflict prevention.
Another challenge to addressing climate-related security risks can be found in institutional architectures.

Many institutions lack the structures and/or resources to facilitate work on cross-cutting risks, which can hamper efforts to collaborate across the climate/environment and peace/security sides of the house. Recognizing this need, many organizations have appointed dedicated advisors to build institutional capacity to identify and respond to climate-related security risks.

While climate action can support greater resilience in conflict-affected areas, there are also significant obstacles to the sustainability of such action. Local-level authorities in conflict-affected areas frequently lack the financial and technical capacity to sustain climate action projects, which also affects the prospects for their long-term viability. [18] The volatility of conflict-affected areas poses a constant threat to climate initiatives, which may be disrupted, damaged, or destroyed at any time. These risks increase costs for donors and implementing organizations, making more stable regions appear as safer investments. [19]

Furthermore, in highly divided societies, climate action also risks being co-opted by powerful groups at the expense of marginalized groups. [20] It can therefore inadvertently contribute to the divisions and grievances that fuel conflicts. [21] While communities may successfully collaborate on projects that yield positive outcomes, these efforts can falter when they try to engage with more contested national politics. [22]

Integrating climate considerations into conflict resolution also presents distinct challenges. Engaging with new stakeholders, such as private-sector actors, is one. The finance and technical know-how of private-sector actors are critical climate mitigation and adaptation, but their interests may not align with efforts to transition economies towards more climate-resilient activities.
Additionally, the effects of climate change are not experienced uniformly across societies and may more often be priorities for rural or grassroots constituencies that rely on the environment, than for the political leaders that represent them in peace processes. Furthermore, in the context of conflict, climate action may require engaging with difficult groups, including armed groups, to support the communities under their control. [23]

This speaks to the tension between normative and pragmatic approaches to advancing climate action goals; for example, an increasing number of NGOs point to the need to engage with the de-facto authorities of Afghanistan to advance climate action. [24]

Despite these challenges, well-designed climate initiatives can serve as powerful tools for conflict resolution. Cooperative climate action can enhance community resilience and foster trust, strengthening the capacity of communities to adapt to climate change. Furthermore, peace agreements that incorporate the long-term impacts of climate change —such as sustainable water resource management— are more likely to deliver lasting and equitable solutions.

Conclusions

Climate change is a defining challenge of our time, demanding innovative and integrated solutions. Across the domains of conflict prevention, stabilization, and resolution, addressing climate-related security risks is not only necessary but also an opportunity to foster resilience and sustainable peace.

By strengthening institutions, fostering community resilience, and leveraging climate-sensitive approaches in conflict-affected regions, it is possible to reduce vulnerabilities and mitigate conflict triggers.

From improving natural resource management to fostering trust through cooperative initiatives, addressing climate impacts can serve as a transformative tool for achieving long-lasting peace. However, this requires targeted financing, capacity building, and robust partnerships to ensure sustainable outcomes even in fragile contexts. Policymakers must prioritize these efforts to build a safer, more resilient world in the face of escalating climate challenges.

Together, conflict prevention, stabilization and resolution approaches emphasize that tackling the climate-security nexus requires collaboration across sectors and scales, from local communities to global institutions. By leveraging climate action as a tool for peace, the international community has a unique opportunity to address root causes of conflict, strengthen resilience, and secure a sustainable future for the most vulnerable regions.

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III. Climate Impacts on Conflict: The Role of Water

Stefan Döring

The impacts of climate change—such as prolonged droughts, rising sea levels, extreme storms, and erratic weather patterns—are increasingly undermining livelihoods, destabilizing ecosystems, and heightening social and economic vulnerabilities [1] [2]. These changes are particularly acute in the context of water resources, as climate-driven disruptions degrade both the availability and quality of water in shared river basins. As a critical resource for agriculture, drinking, and sanitation, water becomes even more contested when climate impacts reduce supply or undermine equal access. In fragile regions, declining water availability can exacerbate tensions between communities or nations reliant on the same river systems, increasing the risks of conflict. Integrating climate risks into peacebuilding efforts, particularly those focusing on water management, is essential to mitigate these pressures. Encouraging equitable water sharing and cooperative river basin governance not only helps address immediate water security challenges but also fosters trust. This can reduce the likelihood of resource-driven disputes. By promoting collaborative water access strategies, these interventions strengthen resilience and contribute to long-term peace and stability, ensuring that climate adaptation aligns with conflict prevention.

Unless otherwise specified, the term "conflict" here refers specifically to two forms of violent conflict: civil conflict, where an organized armed group engages in combat with government forces; and non-state conflicts, involving clashes between non-state actors, such as disputes between pastoralist groups over shared resources like water [3]. Inter-state conflicts are excluded due to their limited number in relation to other conflicts. Other forms of non-violent political conflict—such as demonstrations, nonviolent resistance campaigns, or regime changes—fall outside the scope of this brief, although these phenomena can also lead to critical security concerns.

This chapter explores multiple linkages between climate-related events, violent conflict, and water resources. First, climate events, such as droughts or floods, can influence conflict dynamics, potentially escalating tensions over critical resources like water, altering the course of ongoing disputes, or even triggering the use of violence. Second, climate-related disruptions can exacerbate the vulnerabilities of populations already affected by armed conflict, further limiting access to essential resources like water and deepening their exposure to harm. Third, the paper examines how armed conflict itself disrupts access to water resources, both directly and indirectly. Damage to water infrastructure, contamination of supplies, and the neglect of water systems during prolonged conflict compound resource scarcity, undermining livelihoods, public health, and food security. These interconnections underscore the intricate interplay between environmental pressures, conflict scenarios, and water access, particularly in regions where water scarcity is a key factor.

It is important to acknowledge several limitations in this chapter. The focus is restricted to the phenomena described above, drawing primarily on cross-case evidence from quantitative studies. While these studies provide valuable insights, they often lack the contextual detail and reflexivity offered by qualitative research. Additionally, as a concise brief, this piece cannot delve into specific case studies in depth. Finally, peacebuilding measures, while critical to addressing the nexus of climate change, water resources, and conflict, are beyond the scope of this chapter.

Climate Risk, Water Resources, & Conflict

Climate risk arises from the interplay of hazards, exposure, vulnerability, and coping capacity, with impacts evolving over time [1]. Short-term hazards, such as a single year of insufficient rainfall, often differ significantly from the cumulative effects of gradual, persistent changes. For example, repeated droughts can deplete coping strategies—such as selling livestock or exhausting savings—leaving communities less able to recover when conditions improve and increasingly vulnerable to future hazards. These impacts are especially acute in regions dependent on shared water resources, such as river basins, where competing demands for limited supplies exacerbate tensions and strain governance systems.

Water sharing in transboundary river basins exemplifies both the challenges and opportunities presented by climate risks [4]. In water-scarce regions, effective management of shared resources requires coordination to ensure equitable access and mitigate conflict risks. Societies can adapt to gradual climate impacts through technological innovations, shifts in production practices, or institutional agreements. However, when adaptation fails, intensifying competition over water—essential for agriculture, energy, and livelihoods—can deepen socio-economic vulnerabilities and ignite disputes at local levels, often also reaching national levels. This risk is particularly pronounced in fragile governance contexts, where inadequate institutions may fail to mediate disputes, making violent conflict a more likely outcome. Strong water-sharing agreements and integrated basin management strategies are thus critical for reducing climate risks and fostering cooperation in regions vulnerable to water scarcity.

Water Scarcity

In water-stressed regions, water availability significantly shapes the impacts of climate change. Water scarcity arises not only from physical shortages but also through social and cultural factors, where perceptions of scarcity vary based on practices and norms. For instance, a similar reduction in water availability may severely impact farmers in one area while having minimal consequences elsewhere. Fundamentally, water scarcity occurs when available water sources cannot meet the actual needs of communities, highlighting a persistent gap between supply and demand.

Importantly, scarcity is influenced by both physical limitations and subjective factors, such as societal norms, usage behaviors, and attitudes toward water efficiency. Efficient resource management—addressing pollution, salination, and infrastructure issues—plays a critical role in mitigating scarcity. Water use for agriculture, sanitation, or household needs also determines vulnerability to shortages. Communities relying on groundwater for irrigation and livestock face greater risks compared to those using it solely for drinking and sanitation. Extreme water scarcity worsens conditions for farming, herding, and agriculture, threatening subsistence by restricting access to essential nutrition and sanitation, thereby compromising overall living conditions.

Ethiopia's Grand Renaissance Dam has led to tensions with Egypt and Sudan downstream. Source: Getty Images

The Impact of War on Water Resources

Understanding the impacts of war on water resources is critical for breaking vicious cycles of scarcity and conflict, enabling targeted interventions that can foster stability and support conflict prevention [5]. Water scarcity, when exacerbated by armed conflict, can fuel tensions over access and provision, making it a key factor in both humanitarian crises and prolonged instability. By addressing the destruction and disruption caused by war—such as damaged infrastructure, contamination, and reduced access—interventions can mitigate the risk of disputes, reduce vulnerabilities, and strengthen resilience in affected communities.

Armed conflict disrupts water resources both directly and indirectly, impacting water quality, availability, and access.

Deliberate targeting or destruction of water infrastructure—such as dams, reservoirs, and treatment facilities—is a common feature of war, despite international laws safeguarding water as a basic human right [6]. Damage to water systems often results in deteriorated quality, as broken pipes, fuel shortages, and untreated wastewater lead to contamination of surface and groundwater sources. Even outside combat zones, weakened infrastructure and power outages impair water delivery and treatment, exacerbating pollution and resource scarcity.

Conflict-induced water scarcity is further aggravated by long-term neglect of infrastructure maintenance and inefficient resource management. Prolonged conflicts can reduce institutional capacity, increase salination, and allow unregulated water extraction, leading to overuse and environmental degradation. Additionally, unmonitored informal water markets may emerge, exploiting resources and worsening pollution. Over time, such issues can cause desertification, deplete aquifers, and destabilize ecosystems, producing cascading effects on agricultural productivity and societal well-being.

Vulnerable populations suffer the most from these impacts. Displaced persons and refugee communities face extreme water shortages, with available supplies often falling far below daily minimum needs for drinking, sanitation, and hygiene (WASH) [5]. Women and girls bear a disproportionate burden, as they can be responsible for fetching water, sometimes exposing them to health risks and gender-based violence. Extended distances to water sources also contribute to mental stress, domestic disputes, and community tensions, creating a vicious cycle between water scarcity and conflict. Poor water access in conflict settings has severe health consequences, particularly in the WASH sector, where insufficient clean water increases the spread of preventable diseases and infections. This not only worsens public health outcomes but also places additional pressure on weakened healthcare systems. Meanwhile, the degradation of water quality and quantity diminishes agricultural yields, disrupts livelihoods, and threatens entire ecosystems, with long-term implications for food security and economic stability.

Efforts to rebuild water systems post-conflict are vital for recovery, yet the consequences of war on water infrastructure can persist for decades. Strengthening water access is essential for improving public health, reducing mortality, and supporting sustainable development. At the same time, safeguarding water resources during conflict and adopting cooperative management strategies can mitigate the devastating impacts of war, prevent further scarcity, and foster stability in affected regions. Despite these imperatives, systematic research on the long-term effects of conflict on water resources remains limited, highlighting the need for innovative tools, such as remote sensing and surveys, to assess and address water challenges in conflict settings.

The evidence base for understanding the connections between violence and climate factors has grown significantly in recent years, with much more robust evidence now available compared to a decade ago. Numerous comprehensive reviews and meta-analyses e.g. [7] - [10] have advanced our understanding of these complex interactions, with particular emphasis on water resources as a central element of climate-conflict dynamics. Studies examining the relationship between climate change and interstate armed conflict have generally found limited robust evidence directly linking climate-change impacts to violence between countries. However, water scarcity has emerged as a recurring factor in intrastate conflicts, such as civil wars, where organized groups challenge governments. Water scarcity often exacerbates tensions over shared resources, particularly in arid regions where access to water is critical for survival and economic stability. This is true for instance in disputes between pastoralists and farmers that frequently center on competition for water access, as well as violent protests driven by water-related grievances.

Conflict between herders over land and water in the Niger Delta. Source: Wetlands International

Insights into the dynamics of civil war and climate change reveal the disruptive effects of environmental variability, particularly on water availability, in exacerbating existing conflicts. Access to water resources often lies at the core of these disruptions, as changes in rainfall patterns directly impact agricultural productivity and livelihoods. Climate-conflict research has also investigated the role of resource extraction, particularly water, as a key driver of violence. Non-state violence, including social unrest and protests, has similarly been linked to water scarcity and other climate-related pressures. Research on the relationship between water scarcity and rioting has yielded varied results, largely due to differences in methodologies and definitions of unrest. Some studies indicate that local droughts during growing seasons do not significantly affect rioting [11] while others suggest that dry spells may increase riots, particularly in areas with pre-existing water shortages or ethnic tensions [12], [13]. Flooding has been associated with political unrest over water issues, especially in less democratic regimes and countries with politically excluded groups [14]. Protests related to hydro-dam construction further illustrate the tensions between climate adaptation efforts and water resource management. While dams can mitigate downstream climate impacts by regulating water flow, they often threaten the livelihoods of nearby communities [15]. Such projects not only alter water availability but also create long-term socio-economic challenges for affected populations. This emphasizes the dual role of water as both a critical physical resource and a powerful symbol, capable of driving collective action and unrest.

Communal conflict, characterized by violence between informal groups organized around collective identities, adds a crucial dimension to climate-conflict research. Unlike rebel warfare or political clashes, these conflicts often arise from competition over essential resources such as water, land, and livelihoods [3]. Environmental stress, such as water scarcity, intensifies intergroup competition, particularly in regions where access to water is critical for agriculture and survival. However, these relationships are mediated through socioeconomic factors rather than direct environmental impacts. Marginalization and socioeconomic exclusion exacerbate vulnerabilities to environmental shocks, particularly in communities where water access is already precarious.

Institutions play a pivotal role in determining the outcomes of water-related conflicts. Effective local governance can reduce conflict risks by ensuring equitable water distribution and sustainable management. Conversely, overlapping authorities or parallel judicial systems can heighten tensions by creating ambiguity over water rights. Traditional authorities and religious leaders may serve as critical mediators, resolving disputes over water access or other issues. These dynamics underscore the importance of institutional capacity, inclusive governance, and effective management systems in addressing the complex interconnections between water scarcity, climate change, and conflict.

Villagers protest against the rising water level of Omkareshwar Dam, India, forcing their displacement. Source: India Today

Pathway forward

Water scarcity lies at the heart of the complex relationship between climate change and conflict, serving as both a physical necessity and a source of socio-political tension. The evidence highlights that disruptions to water availability—whether through drought, flooding, or mismanaged infrastructure—are key drivers of vulnerability, particularly in fragile or resource-dependent regions. These dynamics exacerbate existing inequalities, intensify competition over shared resources, and fuel grievances that can escalate into violent conflict or collective unrest.

While climate adaptation measures, such as improved water-sharing agreements and technological innovations, offer pathways to mitigate these risks, the role of governance remains critical. Effective and inclusive institutions are essential to ensure equitable water access, manage disputes, and foster cooperation, particularly in transboundary river basins and areas with limited resources[16]. At the same time, inadequate governance, overlapping jurisdictions, and political exclusion often worsen the impacts of water scarcity, leaving communities more vulnerable to conflict and instability.

Understanding the dual role of water—as a critical resource and a driver of social tension—is essential for developing integrated approaches to climate resilience, environmental peacebuilding and conflict prevention[17]. Looking ahead, addressing climate change, water resources, and conflict in a combined way requires targeted actions informed by both research and policy innovation. First, research must go beyond generalized calls for more data by focusing on actionable insights—such as mapping the hotspots where climate-driven water scarcity poses the highest risks of conflict. Integrating tools like remote sensing, geospatial data, and field-based surveys can provide a clearer understanding of how water dynamics intersect with socio-political vulnerabilities at local and regional levels. Studies should also investigate the long-term impacts of climate shocks on water infrastructure and access, with an emphasis on identifying effective adaptation measures under various governance contexts.

For policy, prioritizing equitable and cooperative water governance remains key. New policies should focus on creating inclusive frameworks for transboundary water sharing, ensuring that all stakeholders—especially marginalized communities—have a voice in decision-making processes. Strengthening institutional capacity at both local and regional levels is crucial for managing water disputes, including building mechanisms for conflict resolution that prevent disputes from escalating into violence. Investments in infrastructure, such as resilient water storage and distribution systems, can further mitigate the risks posed by extreme weather events and reduce vulnerabilities in fragile regions. Moreover, climate adaptation policies must align with peacebuilding objectives. This means integrating water management into broader strategies for stabilizing conflict-affected areas, including addressing political exclusion and fostering intergroup cooperation over shared resources. By adopting these targeted approaches, we can mitigate the risks of water-related conflicts and promote stability, even in the face of intensifying climate pressures.

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IV. Harmonized and localized climate, peace and security risk analysis for conflict prevention and peacebuilding

Andrea Dekrout

Climate change is a defining global challenge of the 21st century. It interacts with other global issues as a risk-multiplier, creating conditions which undermine worldwide progress on human wellbeing, prosperity, justice and equity. It is increasingly evident that under certain social, economic, and political conditions, climate change also impacts peace and security, exacerbating tensions and increasing the likelihood of disputes and conflict [1] locally, regionally and globally. At the same time, climate action presents opportunities as a catalyst for public participation in environmental governance and peacebuilding at local, national and regional levels. Existing grievances, economic shocks, other environmental degradation, and governance challenges, all play a role in determining the peace and security impacts of climate change [2].

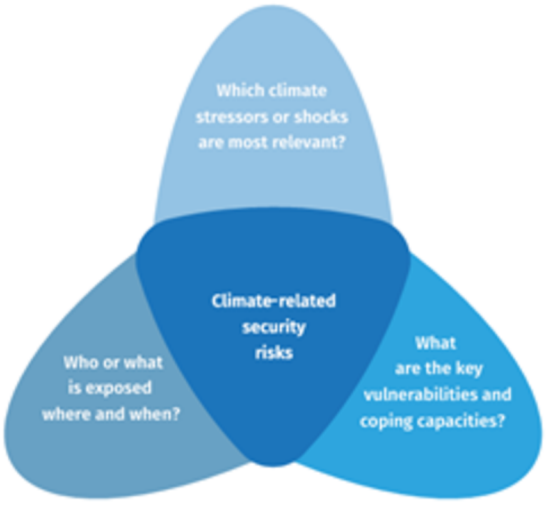
As the interactions between climate change and peace and security have become more evident, so has the need to collaborate and bring together multidisciplinary approaches to address climate, peace and security risks (CPS) and maximize the opportunity to promote peace through climate action. Different organizations from across the environmental, development, humanitarian and peacebuilding sectors, who may not have traditionally worked together, all have a role to play in addressing CPS risks and opportunities.

To facilitate broad collaboration, and to allow climate, peace and security to mature as a distinct area of practice, common definitions and harmonized assessment approaches were needed. Having a common language and methods provides the basis for building knowledge and is essential for effective communication, coordination and resource allocation.

To meet the need for harmonization within the United Nations, and beyond, the United Nations Department of Political and Peacebuilding Affairs (DPPA), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the United Nations Department of Peace Operations (DPO) established the **Climate Security Mechanism** (CSM) in 2018.

Since its inception, the CSM has significantly contributed to the development of a shared language and understanding on climate, peace and security. This has elevated the area of practice and has made it more recognizable and accessible to a greater range of actors. A further aim of the CSM is to enhance systematic, harmonized analysis of the linkages between climate change, peace, and security (CPS).

To facilitate harmonized and comparable risk assessment, the CSM developed a standard conceptual approach and methods for climate, peace and security analysis. The CPS risk analysis approach draws from and connects existing analytical frameworks from across the development, humanitarian and peace and security domains. It considers the peace and security risks that can result from both the direct and indirect effects of climate change and expresses climate-related peace security risks as a function of climate stressors, exposures and vulnerabilities. Results from this analysis approach are framed in terms of interlinkages and impact pathways between climate, peace and security [3].



Climate-related peace security risks as a function of climate stressors, exposures and vulnerabilities. Source: Reproduced from CSM, 2020

Since its introduction the CSM approach to CPS risk analysis has been applied at a national level in numerous highly vulnerable countries. This has allowed for the identification of common impact pathways through which climate change has been found to interact with political, social, and economic factors to compound existing conflict vulnerabilities and tensions. These analyses have been effectively used to inform higher-level advocacy and awareness activities, as well as to guide/prioritize UN programmatic activities. However, to develop more tailored local solutions that can really disrupt conflict pathways, and enhance peace-positive climate actions, down-scaled, localized assessments are also needed. The flexibility of the CSM conceptual approach allows analyses and assessments to be tailored to the appropriate scale.

CPS Risk Analysis in Iraq

The case of Iraq provides an example of how applying a standardized CPS risk analysis approach at multiple scales can effectively generate practical policy and programmatic advice. The UN DPPA initially applied the CPS risk analysis approach to a national level study of Iraq and identified four primary impact pathways [4]. First, an increase in human mobility and rapid urbanization as a result of more extreme weather events was found to be driving inter-group tensions. Second, a reduction of rural livelihoods and natural resources was identified as creating an enabling environment for non-state armed groups to expand their influence. Third, tensions over shared water resources within Iraq as well as throughout the region were found to be increasing. And fourth, the eventual global shift from fossil fuels to renewable energy was proposed as a future risk due to Iraq's economic dependance on oil. The results of this study were used in advocacy programs by the UN and partners to promote climate change adaptation, regional water cooperation and Iraq's efforts to diversify and green its economy. The study also helped make the case for increasing climate, peace and security technical support for the government and the UN in Iraq.

Iraq Wetlands. Source: UNAMI

To build on the national-level study the United Nations Assistance Mission for Iraq (UNAMI) scaled-down the CSM assessment approach for localized analysis at the sub-national level [5]. The climate, peace and security linkages and risks identified in the sub-national analysis were broadly aligned with those reported at the national level. However, the scaled-down analysis provided greater detail, and was able to generate specific, concrete recommendations for local actions and policy improvements.

For example, the localized analysis found that while human movements are associated with inter-group tensions, it is primarily the lack of public services in the receiving communities that is driving conflicts. Like many countries, Iraq currently has no consistent system in place for registering and supporting people internally displaced by climate change. Inconsistent government support has fostered feelings of marginalization and neglect by both the displaced groups and the hosting communities, undermining public trust in authorities and institutions and eroding social cohesion. This provides a clear entry point to reduce climate, peace and security risks by formalizing and improving government services for communities impacted by climate displacement. This more nuanced understanding has improved advocacy on climate-displacement in Iraq and informed new, practical support projects for affected communities delivered by the UN and other partners.

The issue of heightened tensions over shared water resources was also clearly evident in the localized analysis. But, at the local level, water-related conflict was found to have been significantly driven by regulatory inconsistencies and perceptions of corruption, which have hindered effective natural resource governance. In some areas, water regulations are enforced strictly, while in others there is limited enforcement, and in most cases, there are few opportunities for community participation in water resource management. It was found that the lack of transparency and consistency in enforcement has resulted in frustration and occasionally in civil unrest, and the non-participatory management approach has done little to effectively protect water resources.

This localized analysis has encouraged the UN and the Government of Iraq to upscale their integrated water resource management programmes, and to create new opportunities for public engagement and participation in water management. For example, the UN is supporting the Government in establishing Iraq's National Water Dialogues process, which will engage a wide range of stakeholders in a review of Iraq's water policies and management practices. This will help to better define the roles and responsibilities of all water management stakeholders from the national level to the governorate and community levels.

Combining national-level and local level CPS risk assessments in Iraq allowed for the identification of practical actions to improve governance, migration support and public awareness. These will help to mitigate the existing climate, peace and security risks and prevent new risks from developing. In the future, CPS risk assessments can be scaled up to the regional level, building on the previous assessment to find ways to expand cooperation across borders.

Iraq Wetlands. Source: UNAMI

UNAMI climate-security risk analysis workshops. Source: UNAMI

Conclusion

As can be seen in Iraq, the CSM conceptual approach and methods for risk analysis now regularly underpins the development of evidence-based climate, peace and security advice and interventions by the UN and other partners. As the field of climate, peace and security continues to mature, the harmonized approach to analysis will also provide opportunities for consistent monitoring at local, national and regional levels. Practitioners are already increasingly able to compare different interventions across different contexts and track progress on risk reduction and climate-related peacebuilding activities. Continued uptake and refinement of CSM conceptual approach will ensure a credible basis for sharing lessons learned and good practice across boundaries, sub-nationally, between neighboring countries and across regions.

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[4] DPPA, 2023, The interlinkages between climate, peace and security in Iraq, United Nations Department of Political and Peacebuilding Affairs Report

[5] UNAMI, 2024, Localised interlinkages between climate, peace, and security in Iraq. UNAMI Analysis Report

Conclusions & Key Takeaways

Climate change is an increasingly critical factor shaping the landscape of peace and security, particularly in regions already grappling with conflict, resource scarcity, and systemic inequalities. This briefing demonstrates that while direct causal links between climate change and violent conflict remain contested, the evidence is clear that climate acts as a risk multiplier—exacerbating existing vulnerabilities, intensifying competition over essential resources like water and land, and compounding the challenges faced by marginalized groups. Effective responses to these complex risks require integrated, context-sensitive strategies. Climate adaptation and peacebuilding efforts must be harmonized. The international community's growing recognition of the climate-security nexus—reflected in recent UN Security Council debates, the establishment of mechanisms like the Climate Security Mechanism, and the integration of climate considerations into peace agreements and national security frameworks—marks significant progress. However, persistent gaps remain in financing, institutional capacity, and the political will to implement transformative solutions at scale. Addressing the climate-conflict nexus is not only about mitigating risks but also about seizing opportunities for transformative peacebuilding and sustainable development.

Integrate Climate Risks into Peace and Security Frameworks

Mainstream climate considerations into national and international security, peacebuilding, and stabilization strategies. Recognize climate change as a risk multiplier and ensure that peace agreements, security policies, and development plans reflect climate-related vulnerabilities and risks.

Strengthen Early Warning, Data, and Risk Analysis

Invest in robust, harmonized climate-security risk assessments at national and local levels. Improve data collection and early warning systems that combine climate, social, and conflict indicators to better anticipate and respond to emerging threats.

Promote Cooperative and Equitable Resource Management

Foster inclusive, transparent, and collaborative management of critical resources at local, national, and transboundary levels. Support community dialogues, stakeholder engagement, and the development of fair resource-sharing agreements to reduce tensions and prevent resource-based conflicts.

Build Institutional Capacity and Foster Cross-Sector Collaboration

Enhance the capacity of public institutions to design and implement climate-sensitive interventions. Encourage collaboration across environmental, development, humanitarian, and peacebuilding sectors to address multidimensional climate-security risks.

Support Climate Adaptation and Resilient Livelihoods in Conflict-Affected Areas

Prioritize adaptation projects that restore degraded environments, diversify livelihoods, and strengthen community resilience in fragile and conflict-affected regions. Integrate climate adaptation into stabilization and recovery programs to address both immediate and long-term needs.

Invest in Climate-Resilient Infrastructure and Humanitarian Response

Rebuild and protect water, energy, and agricultural infrastructure to reduce vulnerability to climate shocks. Ensure humanitarian responses to climate disasters in conflict zones include measures to restore basic services and support sustainable recovery.

Address Transboundary and Cross-Border Climate Risks

Develop and implement regional cooperation mechanisms for managing shared resources, particularly in river basins and other transboundary contexts. Facilitate dialogue and joint action to prevent the escalation of cross-border disputes related to climate impacts.

Improve Access to Climate Finance for Fragile States

Advocate for increased, flexible, and targeted climate finance for conflict-affected and highly vulnerable regions. Streamline access to international climate funds and tailor financing mechanisms to the realities of fragile contexts.

Monitor, Evaluate, and Share Lessons Learned

Establish frameworks for monitoring and evaluating the effectiveness of climate-security interventions. Promote knowledge exchange and the scaling up of successful models across regions and sectors.

MEDRC's Transboundary Environments Practitioner Briefing series has been developed for industry practitioners and government officials at the request of MEDRC's member countries. The briefings are meant to be informative and practical, providing an overview of the subject matter material, while remaining accessible to various backgrounds and disciplines. The briefings serve to develop shared knowledge and serve as a basis for further discussions between partners. If you would like to learn more about these subjects, please see the section 'Sources for Further Learning'.

Sources for Further Learning

UNDP, UNEP, DPPA, DPO: Climate Security Mechanism (CSM) Toolbox:
https://dppa.un.org/sites/default/files/csm_toolbox-2-conceptual_approach.pdf

CSM, Climate, Peace & Security Trello Board
https://trello.com/b/gC7Sz1TW/climate-peace-security-board

COP28 Declaration on Climate, Relief, Recovery and Peace
https://www.cop28.com/en/cop28-declaration-on-climate-relief-recovery-and-peace

Climate Responses for Sustaining Peace (CRSP) COP27 Presidency Initiative
https://www.cccpa-eg.org/pdf_read_download.php?type=read&newFileName=Climate+Responses+for+Sustaining+Peace+Initiative&file=4415_17103347.pdf

adelphi, UNSCC: Next steps towards an inclusive Climate, Peace and Security agenda
https://weatheringrisk.org/en/publication/next-steps-towards-inclusive-climate-peace-and-security-agenda

GPPAC: Localising Climate, Peace and Security: A Practical Step-by-Step Guidance Note for Local Peacebuilders
https://gppac.net/resources/localising-climate-peace-and-security-practical-step-step-guidance-note-local

Environment, Climate, Conflict, and Peace Community of Practice: White Paper on the Future of Environmental Peacebuilding
https://www.ecosystemforpeace.org/whitepaper

SIPRI – Insights on Climate, Peace and Security:
https://www.sipri.org/sites/default/files/2023-12/2023_sipri-nupi_insights.pdf

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Briefs in the Series

Developed for water industry practitioners and government officials at the request of MEDRC's member countries, MEDRC's Practitioner Briefing series serve as a guide to trends in transboundary environmental cooperation. The initiative is intended to bridge the academic-practitioner gap in the sector by providing short, accessible and practical overviews, focusing on a different theme.

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Issue 21 - Climate Change - Conflict Nexus

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