

PART 2

Designing climate security strategies and partnerships

Cooling the Cauldron: A Climate Security Intervention Framework

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Abstract

To support strategic and operational decision making, we need to move beyond current thinking of climate change as a conflict multiplier and consider the causal mechanisms that lead from climate change to conflict outcomes. This chapter offers a framework for the design of climate security interventions that may prevent and mitigate climate-related security effects. The framework is based on qualitative and quantitative studies of the climate and conflict nexus, theoretical and empirical studies on early warning and public policy programming, and in-depth case studies. In their combination, these methods inform interventions that can reduce the security risks of climate change and bolster climate adaptation policy and programming. The framework employs an implementation logic based on an integrated and multi-level stakeholder approach, that includes the security sector. Using the case of Iraq, this chapter builds on but goes beyond the current body of academic literature by showcasing concrete intervention options that are conflict-sensitive and inclusive, leveraging local knowledge and capabilities.

Keywords: climate security, climate change, security, military, military conflict, conflict prevention, causality

5.1 Introduction

The role of climate change as a conflict multiplier has been well established in academic literature, but awareness and understanding of how this knowledge can be used to support the development of climate security interventions is still lacking (Buhaug, 2018; Cederman & Weidmann, 2017; de Bruin et al., 2018; Mach et al., 2019; Sakaguchi et al., 2017). This policy gap is a serious challenge for decision makers active in fragile societies, which are often not only climate vulnerable but face great difficulties in coping with climate-related shocks.

This chapter offers a framework for the design of climate security interventions that can help to prevent and mitigate climate-related violent conflict in fragile

countries. For the purpose of this chapter, the authors refer to ‘climate security interventions’ to mean interventions that address the root causes and mediating factors of the climate-conflict nexus and, in this way, support the adaptive capacity and resilience of communities. The framework employs an implementation logic based on an integrated, inclusive, and multi-level stakeholder approach, that includes national and provincial authorities, local civil society, private sector actors, and international organisations. The security sector, including armed forces, has a key role to play in climate security interventions. In conflict-settings, the security sector is an important stakeholder because of its ability to respond to national disasters and resource-related instability. In fragile country contexts, the extent to which security sector services abide by principles of good governance and contribute to social cohesion varies, which the framework takes into consideration.

The framework is applied to assess the situation in Iraq¹. Faced with severe water and climate stress, Iraq’s ability to mitigate and adapt to climate change has been constrained by consecutive wars and prolonged political, social, and economic instability. The United Nations Environmental Programme (UNEP) sixth Global Environmental Outlook ranked Iraq as the fifth most climate-vulnerable country in the world (UN Environment, 2019). Defining climate security interventions to address the causes of climate-related conflict and adaptation challenges in Iraq is thus a key step to supporting the country’s future resilience.

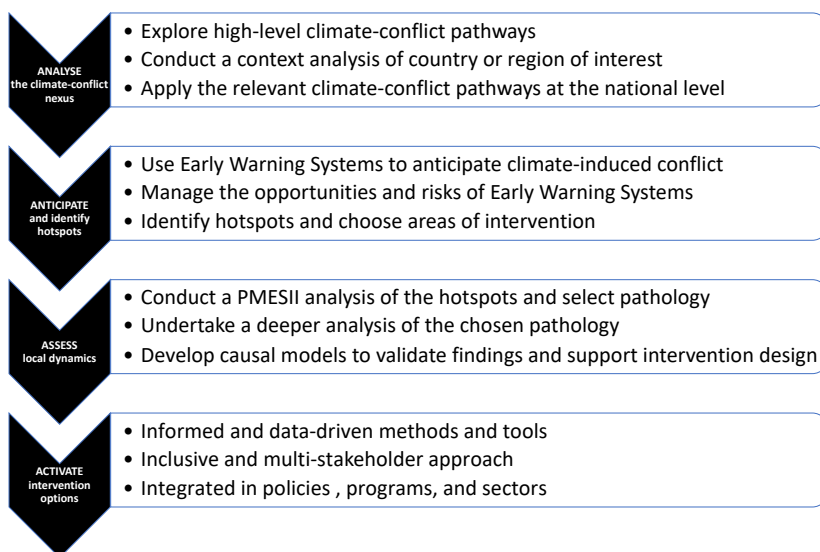
The chapter is structured as follows: following the introduction, section two introduces the intervention framework, provides an in-depth explanation of each of its four stages, and describes how they inform the design of climate security interventions. The framework is based on qualitative and quantitative studies of the climate-conflict nexus, theoretical and empirical studies on early warning and public policy programming, and in-depth case studies. Section three applies the framework to a contemporary case study of Iraq. The case study is used to illustrate the application of intervention options that can leverage climate security practices. Section four summarises key findings and conclusions.

5.2 Climate Security Intervention Framework

The impact of climate change on security is context-specific and determined by local level dynamics and the interactions of multiple factors. In fragile and conflict-affected states, climate change may initiate a series of negative feedback loops that can trigger security challenges. These can foster social unrest, forced migration, organised crime, and violent extremism (United Nations, 2020). In some cases, climate-related security challenges can lead to violent conflict, which is the focus

of this chapter. The intervention framework developed in this chapter consists of four lines of effort: (1) analyse the climate-conflict nexus; (2) anticipate and identify hotspots; (3) assess local dynamics; (4) activate intervention options (see Figure 5.1). They are described in more detail below.

Figure 5.1. Climate security intervention framework.



5.2.1 Analyse: Unpacking the climate and conflict nexus

In order to analyse the different factors that drive climate-related security challenges and the eruption of violent conflict, completing the first step of the framework requires a two-fold analysis: first, the analysis of the context of the area of interest; and second, the application of relevant pathways to the chosen context.

The context analysis provides an understanding of the macro-level dynamics and trends that define the political, socio-cultural, economic, and environmental situation of the chosen area. Based on this situational analysis, pathways of climate-conflict can be identified and analysed. In this way, the context analysis helps to narrow down the research and concentrate on climate-related security dynamics and challenges in a given geography.

To explore the high-level climate-conflict pathways in more detail, the framework makes use of seven *pathologies* identified based on a large literature review conducted in a previous study that connect climate change to conflict (Sweijts et al.,

2022). A climate-related pathology is a specific pathway through which the interaction between climate change and social, economic, political, and environmental factors leads to violent conflict. Each pathology identifies the relevant factors, describes how they interact with climate change, and elucidates the ways through which they lead to different forms of violent conflict. The seven pathologies are summarised in Table 5.1 below.

Table 5.1. Seven climate-related conflict pathologies (Source: Sweijs et al., 2022).

Pathology description	
Climate change-related resource scarcity leads to conflict between pastoralist and stationary communities	Changes in temperature and precipitation cause forms of scarcity that force pastoralist groups to alter their transhumance routes. This precipitates resource competition between groups, infringes on traditional customary regulations, and increases conflict risk.
Climate change-related resource scarcity leads to larger-scale inter-communal violence	Climate change-induced scarcity of water, food, and land resources, in combination with social, political, geographic, and economic variables, can trigger inter-communal tensions.
Climate change precipitates (internal) migration, leading to social unrest	Climate change can lead to migration, whether from rural to urban areas or between rural areas. This can spark social unrest by increasing resource competition and exacerbating feelings of relative deprivation, as well as the severity of inter-cultural clashes.
Climate change-related social unrest empowers nonstate armed groups	Climate change interacts with state fragility and contributes to livelihood deterioration, creating fertile ground for the emergence and expansion of non-state armed groups (NSAGs).
Policies aimed at mitigating the effects of climate change have adverse effects	Climate change policies can trigger political exploitation and marginalization of groups, aggravating existing grievances and tensions.
Climate change-related social unrest precipitates large-scale political movements, provoking a government crackdown	Climate hazards can provoke a window of opportunity for violent and non-violent opposition to further undermine authorities. This erodes state capacity and exacerbates social vulnerability. Conflict arises as a result of the state's (violent) crackdown on dissent.
Disputes over transboundary resources cascade into intrastate conflict	Climate change can foster tensions over transboundary resources in three main ways: 1) water scarcity raises tensions over transboundary freshwater resources; 2) temperature increases create a new frontier for disputes in the Arctic; 3) diplomatic disputes over climate mitigation measures and responsibility.

In combination, the seven pathologies describe climate-conflict patterns at the local, the national, and the transboundary levels. At the local level, we find more straightforward links between resource scarcity and conflict amongst individuals that depend on water, food and land for their livelihoods, including pastoralist groups, as well as individual farmers and fishermen. These micro-conflicts can escalate into inter-communal conflict when tensions merge with ethnic and tribal conditions. At the national level, rural-urban displacement and social unrest result from increased internal migration, weaponisation of resources by non-state armed groups, and broader misappropriation of resources as a result of inadequate or exploitative policies. This puts pressure on governmental bodies that may not be able to respond adequately to the challenges, eroding trust and leaving the door open to violent and non-violent opposition that may undermine state authority. Finally, at the transboundary level, there are disputes over natural resources such as water, food, and energy. These tensions will continue with increased water stress and competition over resources, not least as many of the critical materials needed for the energy transition are located in fragile and vulnerable countries. The seven pathologies are not mutually exclusive. The degree of a country's vulnerability to climate-related conflict rests on the intensity of the pathologies and the ability of government, society, and other actors to cope with and adapt to their dynamics.

The identification of high-level climate-conflict pathways offers a number of benefits that are instrumental for the design of climate security interventions: first, they provide a baseline understanding of the complex interactions between climate change and conflict. The typology can help pinpoint the broader factors and actors that are relevant to consider when dealing with the nexus. Second, the pathologies support the refinement of deep case studies designed to unpack the link between climatic conditions and conflict onset in a specific context (Birkman, Sweijs, et al., 2022). As climate-related security challenges differ across regions and contexts, it is essential to consider the unique vulnerabilities, risks and capacities of different regions and communities. Third, they allow for forward-looking perspectives, risk assessments, and early warning, by exploring potential future trajectories. An advance understanding of the different ways through which climate change might trigger conflict can help decision makers improve their preparedness against climate security risk by targeting the root causes and mediating factors rather than the conflict outcomes.² Fourth, they bring valuable insights for policy formulation. This helps prioritise actions, allocate resources, and develop adaptive strategies that are tailored to the unique circumstances of each pathology. Finally, the pathways support interdisciplinary collaboration among experts from diverse fields. By identifying the various mechanisms which contribute to climate-related security challenges, a combination of expertise may be channelled to facilitate the development of more effective and integrated policy responses. In sum, the seven

pathologies can help to support the development of more effective strategies for climate adaptation, resilience, and conflict prevention. The World Bank recognises the added value of the typology of pathways for policy programming purposes. Section 2 of its 2022 report “Defueling Conflict: Environment and Natural Resource Management as a Pathway to Peace”, extensively references the pathways to inform climate security interventions (Ahmadnia et al., 2022).

5.2.2 *Anticipate: Early warning systems and hotspots of risk*

Given the understanding of the complex dynamics between climate stress and conflict, the second step in the framework is the identification of climate-related hotspots of security risk. Advanced Early Warning Systems (EWS) facilitate this process, employing a combination of climate data, socio-economic indicators, and machine learning approaches. There is no shortage of EWS that can support the identification of climate- or hazard-related areas of risk at different geographical levels³. Similarly, there is a rich collection of conflict EWS that focus mainly on predicting conflict. Despite the availability of climate and conflict EWS, there are still only a few publicly available machine-learning based EWS that focus on predicting climate-related *conflict* risks⁴. These integrated EWS make an important contribution to improving anticipatory action on climate security. A noteworthy example is the Global Early Warning Tool developed by the Water, Peace, and Security (WPS) partnership (*Global Early Warning Tool*, n.d.). The WPS Global Early Warning Tool uses a machine-learning based methodology to forecast conflict over the next 12 months with the aim of identifying conflict hotspots before violence erupts. It makes use of a comprehensive conflict database developed by the Armed Conflict Location & Event Data Project (ACLED) that collects real time data on political violence, including conflicts related to climate change. It has been developed by a consortium of partners, which the authors are part of, and builds on the ACLED database by providing further granularity about the role of water-related stresses.

EWS present a number of opportunities. First, they allow for more timely warnings of conflict risk. With additional domain knowledge, validated data, and historical accuracy, the legitimacy of EWS is further reinforced. This is especially the case when EWS can interact and be deployed at multiple levels. Second, EWS play a pivotal role in early action. If relevant policy and decision makers have access to EWS information, they can use it to take proactive measures to manage conflicts related to climate change. This assumes that EWS can support increased and shared awareness, so that policy efforts can be aligned across national, provincial, and local levels. It also requires effective channels of communication within and across government, non-governmental organisations, and other actors. Third, early-action initiatives brought forward by EWS can spill over into other policy

domains, enhancing the use of data-driven analysis, delivering efficiency gains, and improving transparency and accountability across user groups (Sweijts & Teer, 2022).

Of course, there are also a number of risks associated with EWS. Their inherent complexity makes them difficult to use and maintain. A key challenge is that EWS may suffer from information inaccuracies. They can predict “false positives” (high conflict risk prediction, but the risk is low), or “false negatives” (low conflict risk prediction, but the risk is high), which can lead to a lack of trust in the system, increasing the likelihood that policy and decision makers will not use the EWS, or use it in a limited way. This issue can be mitigated by triangulating the data and models included in EWS. Another (related) risk is the ethical issues that may arise from misuse of data. The potential for exploitative extraction of data in unregulated environments may have enormous repercussions. It is therefore imperative that ethical and legal guidelines are developed to make processes as transparent as possible. Finally, the actions prescribed by EWS to prevent conflict may sometimes worsen or create new forms of conflict if it creates pressures on existing local economic and political dynamics. It is therefore important that any prescriptions are carefully integrated into broader risk assessments (Global Center on Adaptation, 2022).

5.2.3 Assess: Understanding local dynamics

Following the identification of the geographical area that the climate intervention should target, a deep dive into the local dynamics that drive climate-related conflict represents the next step in the framework. The deep dive makes use of three analytical instruments: the PMESII (Political, Military, Economic, Social, Information, and Infrastructural) framework; empirical analysis of relevant climate-conflict pathways; and causal models.

First, a comprehensive analysis of the PMESII factors is used to understand conflict dynamics and relevant stakeholders within the typology of the seven pathways. The PMESII analysis was developed by the United States military and is a method commonly deployed by militaries to undertake context-specific and case-based assessments.⁵ It is a useful technique to better understand unfamiliar or uncertain environments and helps organise information and develop a strategy (see Box 5.1).

Second, the specific pathways linking climate change to conflict are empirically assessed based on the PMESII analysis. This is done using the seven high-level pathologies, which help to better analyse the local dynamics underpinning climate and conflict dynamics.

Box 5.1. The PMESII analysis framework (Source: PMESII-PT Research Analysis Framework, 2023).

The PMESII factors	
Political	The political factor refers to the distribution of responsibility and influence across levels of governance, including both formal and informal political power.
Military	The military factor assesses the military and paramilitary capabilities of relevant actors.
Economic	The economic factor includes an overview of the sectoral organization of the country's economy (agriculture, manufacturing, technology etc.); unemployment rate; the make-up of international trade; as well as foreign aid and finance system.
Social	The social factor concerns the religious, cultural, ethnic and demographic configuration of a country; inter-group dynamics; values, norms, and belief systems.

Third, the causal linkages between the climate conflict factors are further substantiated through the use of formal causal models. Formal causal models can provide a rigorous validation of qualitative insights in climate conflict research (Malekovic et al., 2023). Specifically, causal models allow for the examination of the statistical significance of the effects of climatic and environmental causes on conflict activity and other security-related risks (Malekovic, 2023). Unlike EWS that identify correlations between variables, machine-learning applications are currently being developed to formally identify and assess causal relationships between variables of interest. These causal models provide a new frontier for analysing and assessing causal dynamics between climate onset and conflict outcomes, and are employed in the fourth step of the framework, described below (Birkman, Sweijs, et al., 2022). The statistical validation of relevant factors and variables identified in the analysis of local dynamics, provides more robustness to the findings of the broader approach, and can support the identification of optimal intervention options. Hence, they are a key instrument to support strategic decision making and operational planning.

5.2.4 Activate: Informed, integrated and inclusive interventions

The previous three steps of the framework – analyse, anticipate, assess – ultimately feed into the development of climate security interventions. Climate security interventions refer to a range of actions, policies, and strategies aimed at addressing the root causes and mediating factors of climate-related security risks and increase the adaptive capacity of communities faced with these risks. Interventions should aim to strengthen the long-term adaptive capacity of at-risk communities which, in the process, would mitigate the likelihood of conflict. Designing informed, integrated,

and inclusive interventions is essential in ensuring long-term sustainability and tangible results. The Water, Peace and Security Partnership's approach provides a prototype to follow in developing interventions that address water-related security risks, but the approach can be expanded to apply more broadly to climate-related risks as well (Meijer et al., 2023).

Informed. Ensuring that the available information can be tailored to local contexts and translated into action is essential (*Locally Led Adaptation – Global Center on Adaptation*, n.d.). The application of data-driven research and models can prove challenging in practice when local knowledge is insufficiently integrated and local leadership is not involved in the process (Global Center on Adaptation, 2022). Most times, the communities that are affected by climate change have already developed local processes and approaches to deal with these risks. Their work can be supplemented by early warning and causal modelling only to the extent to which these local communities are involved in the development and implementation of interventions. Participatory approaches to tool development can ensure local ownership of the process and maximise the effectiveness of such models.

Integrated. Furthermore, interventions must be designed following an integrated approach that includes relevant stakeholders both in and outside of the government, maximises effectiveness, and facilitates the development of synergies. Good governance is essential in mitigating climate security risk. The likelihood of climate change leading to violence depends on a wide range of social, economic, and political factors, and the degree to which good governance can mitigate some of these challenges. Governments in fragile contexts often struggle with corruption, unclear division of responsibility or the inefficient use of public funds and resources. Given that climate security adaptation is closely interconnected with a wide range of governance areas like water, food, energy, biodiversity, health or infrastructure, a whole-of-government approach is essential. Not only should the different relevant departments (agriculture, infrastructure, security) be involved in climate security interventions, but also the various levels of government (local, provincial, national). International players can support capacity development and programming efforts in good governance, natural resource management and climate adaptation.

The security sector, including armed forces, can bring significant contributions to prevent, prepare and respond to climate-related risks (Canyon & Ryan, 2021; Jayaram, 2020; Jayaram & Brisbois, 2021). On the one hand, armed forces themselves are increasingly affected by climate change in terms of their operational capabilities, so their involvement in the climate security realm benefits their awareness and learning (Patrahau et al., 2023). On the other hand, the role of security forces is likely to increase in responding to climate-related security challenges. The International Military Council on Climate and Security (IMCCS) brings together members of militaries and national security communities in order to better

anticipate, analyse, and address the security risks of climate change (*International Military Council on Climate and Security*, n.d.). This global network of security and defence experts operates from the assumption that armed forces have a key role to play in mitigating the security risks of climate change.

The responsibility for climate security interventions does not primarily belong to the security sector, but security actors are often at the forefront of disaster emergency planning and response given their clear and well-established protocols and forward-looking approach. Especially in the Indo-Pacific, the region most vulnerable to natural hazards and sea-level rise in the world, militaries have gained an increasingly large role in Humanitarian Assistance and Disaster Relief (HADR) in the aftermath of climate hazards (Canyon & Ryan, 2021; Jayaram, 2020). The ASEAN Militaries Ready Group on HADR has been established to coordinate regional responses to climate disasters and enhance military-to-military and military-civilian integration (*ASEAN Militaries Ready Group on Humanitarian Assistance and Disaster Relief (AMRG on HADR)*, n.d.; Canyon & Ryan, 2021).

In fragile contexts where civilian violence is prevalent and trust in state authorities is low, the role of the security sector may be questioned and even negated, but solutions such as multi-stakeholder committees that include armed forces may be found. In this way, the civil sector can apply good practices and lessons learned in their planning and collaborate with the security sector in the implementation of climate security adaptation interventions.

Inclusive. Furthermore, an inclusive multi-stakeholder approach is essential to ensure the long-term sustainability of the intervention as well as avoid maladaptation. Representatives of relevant stakeholder groups that are affected by climate security adaptation interventions should be consulted both in the planning and implementation process. Integrating dialogue processes and public consultations in the development of an intervention ensures that all interests are heard and addressed or at least compensated. Especially the interests of marginalised groups can be overlooked in, for instance, the design of a large-scale infrastructure project. Certain groups may in fact lose at the expense of the well-being of the broader community, leading to long-term inter-group instability and grievances. In order to avoid maladaptation, relevant groups must be taken on board from the early stages of planning an intervention until the end of the implementation period. Moreover, monitoring and evaluation after an intervention has been implemented is essential in ensuring its long-term sustainability and effectiveness.

By adopting the climate security intervention framework, policy makers and operational planners are presented with the opportunity to unpack the factors that lie between a climate-related event and a conflict outcome, enabling them to intervene on the causes of climate-related risks rather than their outcomes. Apart from the obvious benefits this brings for designing more effective adaptation

programmes and projects, it also allows for the development of smarter, security-proof interventions. Ultimately, a climate security intervention framework is a key instrument in a broader climate adaptation toolbox.

5.3 The Case Of Dhi Qar Province, Iraq

This section applies the four steps of the climate security intervention framework to a case study of Dhi Qar province in Iraq. It starts with an overview of Iraq's fragility to climate change; it then identifies Dhi Qar as a climate security hotspot and examines local conflict dynamics. Although the case study is intended to demonstrate the applicability of the intervention framework rather than to develop a comprehensive and in-depth climate security intervention, the section does offer a number of observations that can inform future interventions in Dhi Qar.

5.3.1 *Analyse: Context analysis and climate-conflict pathways in Iraq*

5.3.1.1 Conducting a context analysis: the fragility of Iraq

Iraq is currently facing multiple intersecting risks: a volatile security situation, governance challenges, economic and demographic pressures, extreme weather conditions, and severe environmental degradation. In 2021, the US National Intelligence Estimate on Climate Change identified Iraq as one of eleven countries highly vulnerable to climate change (*US National Intelligence Estimate on Climate Change*, 2021). The 2022 global Fragile States Index measuring conflict risk and vulnerability places Iraq 23rd out of 179 countries (*Fragile States Index*, 2023). This places Iraq in the top tier of countries worldwide deemed particularly likely to face climate-related resource challenges that pose a real risk to water, food, energy, and health security while being vulnerable to the onset of violent conflict.

Water scarcity is a key challenge that the Iraqi population faces, and it is leading to water and food insecurity and loss of livelihoods. The causes of water scarcity include reduced inflow rates from the Euphrates and Tigris rivers and consecutive years of drought, advancing desertification, soil degradation, and increasing salination. Combined with resource-intensive and inefficient agricultural, irrigation, and water management practices, water scarcity is leading to the large-scale abandonment of farming and livestock. This creates food insecurity for many households (Guiu, 2020). Of Iraq's 39 million population, 2.4 million are in acute need of food and livelihood assistance (World Food Programme, Iraq, 2020). This results in an environment conducive to illicit activity, and the aggravation of conflict dynamics along existing fault lines. Women and girls are particularly hit

by the adverse impacts of climate change given pre-existing gender norms and persisting inequalities. At the same time, unemployment is high among youth groups (Norwegian Institute of International Affairs & Stockholm International Peace Research Institute, 2022). About 60% of Iraq's population is under the age of 25, yet young Iraqis continue to be excluded from political decision making (Al-Shakeri, 2022). Hence, climate change acts as a threat multiplier, increasing the risk of destabilisation and escalation of conflicts in Iraq.⁶ The agricultural sector is still the backbone of rural livelihoods, and while remaining an important basis for national food security, it is reportedly using up to 87% of Iraq's water supply (*Water Use in Iraq*, 2022). The water-agriculture-food nexus has thus become one of the core challenges for the stability of Iraq.

Today, the government of Iraq acknowledges the urgent need for action and reform as well as the interdependence of climate change and security. The Iraq National Adaptation Plan (2020) provides a comprehensive overview of actions needed to address the formidable climate change adaptation challenges of the country. The Iraqi Ministry of Environment has embraced the recommendations of the World Bank 2022 Country Report on Climate Change, which provides a roadmap of the required activities by 2030 (World Bank Group, 2022). Moreover, the Office of the National Security Advisor (ONSA) is integrating climate change into Iraq's forthcoming national security strategy. During the Basra Conference in March 2023, the government announced the mobilisation of USD 7 billion in loans to help modernise the agricultural sector.⁷ The government also introduced an initiative to combat desertification as well as other measures to mitigate the physical impacts of climate change. This underscores a political willingness to engage and serves as good foundation for action.

However, Iraq's societal needs to adapt to climate change surpass the current capacities of the government. The pressing climate-related security risks in regions most vulnerable to the escalation of underlying, socio-economic (national and local), communal, ethno-sectarian and tribal tensions, demand immediate action, while larger reform efforts will take at least 5–10 years to materialise. A real challenge for the government is to address the underlying drivers of climate-related instability in an integrated way. To dampen the negative impacts of decreasing agricultural yields and higher food prices, the Iraqi government has for a long time focused on short-term action like the provision of subsidies and compensation instead of investing in long-term adaptation and resilience of its rural population. Lack of timely investments in water storage, wastewater infrastructure, desalination as well as resource efficient water management and usage, has kept Iraq and its agricultural sector from introducing more efficient and effective water management. These developments have affected the country's preparedness for current and future scarcity. The core problem today is not the lack of intent of

the government to act, but to coherently formulate and implement responses to climate change induced challenges across national, governorate, and local levels that contribute to stability.

5.3.1.2 Applying climate-conflict pathways to Iraq

In Iraq, the most important climate-related conflict risk is water scarcity, which in turn impacts the country's food and land systems. Whether these resource stresses lead to a conflict situation depends in large part on the adaptive (resilience) or coping (response) capacity of the government, local communities, and/or individuals to prevent or mitigate the impacts (Birkman, Kool, et al., 2022). There are three main trends that summarise how water-related stresses are contributing to conflict risk in Iraq. They are described below and anchored against the pathologies outlined in Section 5.2.1.

First, persistent drought stress and water scarcity lead to increased competition over natural resources enhancing instability, displacement, and reinforcing conflict dynamics at the local and community level. Violent confrontations between farmers and pastoralists are increasingly taking place over access to water and land (pathology 1). Individual conflicts can escalate into inter-communal violence and social unrest where they erupt along existing ethnic-sectarian fault lines (pathology 2). Tensions between groups practicing the same livelihoods (e.g. farmers) may also turn into violent conflict where no dispute settlement is facilitated. This is especially the case between farmers from different tribes, but even members of the same tribe or ethnoreligious identity are increasingly involved in direct conflict over resources (International Organization for Migration, 2023). While tribal courts can resolve disputes in the short term, the sustainability of these agreements is often put into question. Where violent confrontation is avoided, climate-related stresses including acute water scarcity and desertification are forcing more and more rural families to abandon their livelihoods for alternative sources of income. This has led to an enormous proliferation of rural-urban displacement in addition to the already very high numbers of Internally Displaced Persons (IDPs) in Iraq (pathology 3). In 2019, 21,314 IDPs in central and southern Iraq were forced to migrate due to the lack of water associated with high salinity content and/or water disease outbreaks in both urban and rural communities (International Organization for Migration & Deltares, 2020). Once displaced, women and youth moving from rural to urban areas are especially at risk of turning to informal networks to survive, as employment opportunities are increasingly limited, and competition for jobs is fierce. Local government is not able to deal with the additional burdens on existing infrastructure, so criminal groups and militias are increasingly taking advantage of these vulnerabilities and informal settlements to consolidate their power in both

rural and urban areas. Moreover, where land is abandoned because of desertification, security vacuums are reinforced, creating so-called ‘no man’s lands’ where militias and other armed groups have a free hand at drug trafficking and other illicit activities, and government rule is absent.

Second, there are increasing tensions between national and governorate authorities and between different governorates over water allocation and distribution, inhibiting effective and decisive action on climate adaptation. While the government of Iraq is putting an enormous effort into managing its transboundary water challenges with Turkey, Syria and Iran, national and inter-governorate water issues are not sufficiently addressed (pathology 4). Government and governorate tensions over water management, while prevalent across Iraq as a whole, are especially pronounced in the south of Iraq (Birkman, Kool, et al., 2022). Located downstream of the Euphrates and Tigris rivers, the southern Iraqi governorates suffer from the lowest levels and poorest quality of water. They rely heavily on upstream governorates for their water supply. This is putting enormous pressure on existing water allocation and distribution systems and causing tensions between neighbouring governorates. Climate change is making this situation worse, as the south of Iraq is the hottest and driest of the country and increasingly hit by a multitude of extreme weather events (heat waves, dust storms, drought stress), depletion of water reservoirs, and water salinisation. According to local experts, the ability to recover from these acute water stresses has been seriously affected because of years of war,⁸ outdated water infrastructure, the focus of reconstruction efforts in central and north Iraq, and the additional burdens on urban water supplies caused by the enormous numbers of internally displaced persons. Much more needs to be done to make the water management system in Iraq more adaptive and resilient to climate change. While tackling transboundary issues can help to reduce some of the acute water supply issues, these are unlikely to be resolved in the short term (pathology 7), nor will they resolve the deeper national, provincial, and local level water challenges.

Third, policies aimed at managing the negative effects of climate change can have adverse effects and aggravate existing grievances between the government and local communities, leading to escalating protests and eroding government authority. Dissatisfaction with government services is straining relations between the government of Iraq and Iraqi citizens (pathology 5). The increasing degradation of Iraq’s natural environment in general and agricultural sector in particular has made Iraq highly dependent on food imports and thus vulnerable to global food price fluctuations. While food security is still not an immediate concern, the government has struggled to maintain its subsidy schemes, not least in the wake of the Covid-19 crisis when Iraq’s oil revenues reached an all-time low (Kool et al., 2021). This problem is exacerbated by the broader tendency to solve the country’s unemployment crisis by increasing public sector jobs (Mahmoud et al., 2023) at the

cost of government revenues and a shrinking private sector (*The World Bank in Iraq*, 2022). This further inhibits Iraq's ability and potential to develop market-based solutions and innovations for the agriculture sector. The government's inability to respond to fluctuating food prices and broader needs of the agricultural sector with effective interventions serves to further erode citizen trust and could lead to large-scale anti-government protests. A lack of government response to water, food and energy challenges has led to mass protests before. In Basra alone, during the water quality emergency (2018), when at least 118,000 Iraqis were hospitalised due to symptoms related to drinking polluted water ('Iraq', 2019), and the 2022 heat wave electricity crisis, when, amid temperatures exceeding 50 degrees, the government was unable to secure a reliable flow of electricity and people demanded authorities to resolve the blackouts and power cuts (*Iraqis Protest against Third Consecutive Day of Power Cuts amid Extreme Heat*, 2022). Overall, lack of trust and dissatisfaction with government services serves to strengthen informal and local power structures, further eroding government legitimacy in favour of local militias and tribes who are better able to respond to needs on the ground (pathology 6).

The above developments point to the relevance of climate change as a trigger and multiplier of security risks in Iraq. More specifically, it is noteworthy that not one, but *all* seven climate-conflict pathologies can be observed in Iraq, to greater or lesser degrees. This suggests that the escalation of climate-related risks into conflict risks has already reached an advanced stage, and that the physical impacts of climate change are progressively interacting with social, economic, and political factors to increase conflict potential.

5.3.2 Anticipate: Identifying climate-conflict hotspots in Iraq

Using the WPS early warning tool, we consider the following three provinces in Iraq that contain districts that are identified as high risk: Qadissiya, Dhi Qar and Missan. These provinces are also highlighted in the recent Climate Vulnerability Assessment of Iraq developed by the International Organisation for Migration (IOM) (International Organization for Migration, 2023, p. 3).

What these provinces have in common is that they are highly dependent on agriculture and locally organised along strong tribal and ethno-sectarian lines. The main drivers of displacement in 2022 were low rainfall and low levels of water in rivers and their tributaries. Additional factors include low ground water levels, water salinisation, disputes over water allocation, and restrictions on the use of water.

Dhi Qar has the highest number of climate-induced displacements in Iraq, with five out of a total of ten locations in Iraq that are fully abandoned as a result of displacement situated in this province. For this reason, Dhi Qar ranks as one of the key climate security hotspots in Iraq (see Figure 5.2).

Figure 5.2. Dhi Qar province in Iraq.



5.3.3 Assess: Understanding local climate-conflict dynamics in Dhi Qar province

This section describes in more detail the factors that underpin resource-induced inter-communal violence in Dhi Qar.

5.3.3.1 PMESII analysis of Dhi Qar

The PMESII results – summarised in Table 5.2 – suggest that the most prominent pathway driving the climate and conflict nexus in the Dhi Qar region involves

disputes arising from clashes over access to water, often involving members of different tribes or other ethno-sectarian affiliations, leading to broader inter-communal violence (pathology 2).

Table 5.2. PMESII framework applied to the case of Dhi Qar.

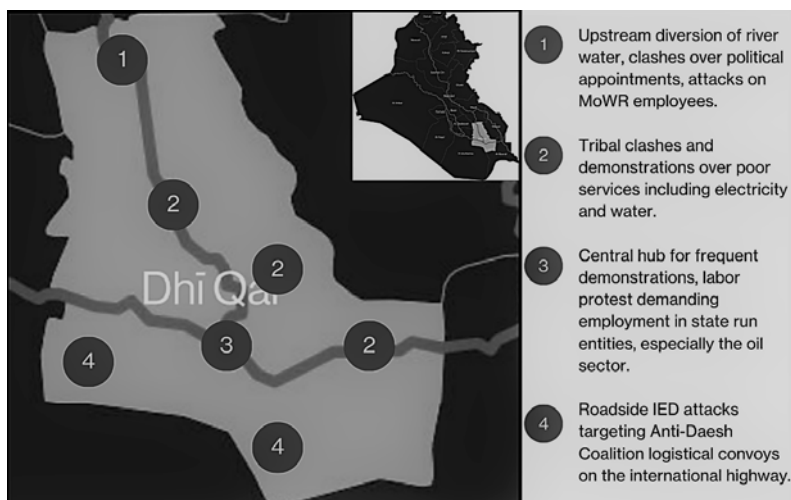
PMESII Analysis of Dhi Qar	
Political	Re-Tribalisation of political identities at the expense of national identity
	Distrust of federal authorities
	Popular Mobilisation Forces commander is Badr-aligned
Military	Many tribal fighters are also members of the Popular Mobilisation Forces
	Proliferation of heavy weapons
	Tribal militias have targeted state security forces and employees
Economic	One of the poorest provinces in Iraq
	High unemployment rate
	Significant agricultural sector
Social	Strong tribal identities and structures
	Shia-majority province
	Tribal courts have an important role in facilitating dispute resolution and enforcing agreements
Information	Misinformation prevalent on social media. Old clashes are sometimes falsely reported as new. Attacks are sometimes attributed incorrectly.
	Tribal violence under reported in media
Infrastructure	Traditional and inefficient irrigation methods are pervasive

5.3.3.2 Empirical analysis of climate-conflict pathways in Dhi Qar

The risk of climate events leading to conflict is not direct but determined by various mediating factors. These factors are context specific and can help policymakers identify how to intervene in a climate-conflict pathway. In Dhi Qar, climate change is increasing the scarcity of water and nurturing violence between tribes reliant on agriculture for their livelihoods. The most important mediating factors in this context are (1) the dependence on river water for irrigation, (2) high poverty rates, (3) re-tribalisation of political identities, (4) power sharing agreements, and (5) the efficiency of dispute resolution mechanisms.

These mediating factors manifest themselves in Dhi Qar in the following manner. Climate change creates deviations in rainfall and increases evaporation, resulting in less water availability downstream on the Tigris and Euphrates rivers. Socio-economic conditions influence how locals respond to this change. Groups struggling with low socio-economic levels in Dhi Qar – particularly in the form of high unemployment and poverty rates – are more vulnerable to water scarcity and the associated lost productivity in the agricultural sector. They also have a weaker adaptive capacity due to the low availability of funds to invest in modern agricultural equipment. Migration in search of alternative employment is also a less reliable coping strategy because of increased competition over a small number of jobs. Federal and local governments may not be capable of adequately responding to these changes due to political instability. Challenges to state authorities – especially in the form of violence between tribal militias and the government – limit the efficacy and legitimacy of state-based water sharing mechanisms. As a result, tribal leaders negotiate and create new power sharing arrangements. These arrangements are then enforced by highly armed tribal militias. The historically unprecedented droughts facing Dhi Qar place more strain on these new power sharing arrangements and have resulted in an increased number of clashes between tribal militants and between tribes and state security forces. When tensions escalate, community members rely on existing dispute resolution mechanisms to resolve the issue. This is commonly done through tribal courts in Dhi Qar. However, the courts do not have unlimited power to enforce agreements. Tribal groups in Dhi Qar are now increasingly violent and in competition with each other over key government positions and even militarily resisting government interference in water management (see Figure 5.3).

Figure 5.3. Overview of security incidents in Dhi Qar 2020-2023. Source: HCSS.



Below is a detailed overview of how these factors manifest themselves in Dhi Qar to provide a more granular understanding of the climate-conflict nexus.

First, Dhi Qar is economically dependent on river water irrigation. Its geographic position and long-standing inefficient water use practices make it particularly vulnerable to water scarcity. The Euphrates River and the Gharraf Canal – a distributary of the Tigris River – join in the provincial capital Nassriya before entering Basrah province and flowing in the Persian Gulf. As a result, Dhi Qar's water supply is particularly vulnerable to water diversions by upstream provinces. Inefficient water use is pervasive despite this vulnerability. The Ministry of Water Resources allocates water quotas to each province based on the previous year's consumptions (Von Lossow et al., 2022). Dhi Qar receives one of the largest water quotas because it is the largest agricultural producer and thus consumer of water in Iraq (Al-Furaiji et al., 2015). This almost-guaranteed high water quota has created distorted water use incentives for farmers. Consuming less water or using it more efficiently may result in a lower share of the quota the following year. As a result, inefficient irrigation methods such as traditional flood irrigation are pervasive in Dhi Qar. Taken together, the downstream position and inefficient water use create outsized water scarcity in Dhi Qar. Upstream dams in neighbouring countries and upstream provinces reduce the overall quantity of water reaching the province. The lower quantity is also used inefficiently, further exacerbating the scarcity of irrigation and drinking water.

Second, high poverty and unemployment rates reduce adaptive capacity in Dhi Qar. The government of Iraq is planning to make modern irrigation techniques a requirement for future shares of the quota to incentivise farmers to use water more efficiently. However, these modernisation requirements are expensive, and farmers have varying degrees of capacity to adopt them. As one the poorest provinces in Iraq (Vishwanath et al., 2015), farmers may not possess the necessary financial capital to effectively transition into modern irrigation methods. Reduced incomes from agriculture further degrade this adaptive capacity. As a result, farmers engage in urban migration to cope with their financial situation (Mahmoud et al., 2023) and sending household members to another location to seek employment is the most common response to climate pressures in Dhi Qar (International Organization for Migration, 2023). Between January 2016 and October 2022, 2,578 families migrated due to climate pressures in Dhi Qar (International Organization for Migration, 2023, p. 3). However, urban migration does not guarantee employment due to the high unemployment rate in the province and results in increased competition for scarce job opportunities. This further increases tensions especially in the provincial capital where protests and riots demanding job opportunities in state-run companies are common.

Third, tribal networks have gained legitimacy at the expense of the central authorities in Baghdad, leading to the re-tribalisation of political identities in Iraq. The state's failure to provide key services has resulted in the re-tribalisation of political identities at the expense of a common Iraqi national identity (Bar, 2020). Since October 2019 Iraq has experienced nationwide demonstrations against the government. The protesters had a range of high-level political demands, but key demands included basic services such as water services and job opportunities. The government responded with violent repression. State security forces and factions of the Popular Mobilisation Forces (PMF) targeted protesters in Baghdad's Tahrir Square and other major cities (*Iraq's Tishreen Uprising: From Barricades to Ballot Box*, 2021). Tribal dynamics were a key reason the protest movement relocated from Baghdad to Nasiriyah, the capital of Dhi Qar. The tribes supported the demonstrations, facilitated negotiations, and provided security (Al-Salhy, 2020; Robin D'Cruz, 2021; Smyth, 2019). The absence of the state has begun to change the patterns of violence. Dhi Qar, Missan, and Basrah account for more than half of all tribal violence incidents and about one-third of fatalities from tribal violence in Iraq since 2020 (Badawi, 2020).

Fourth, tribal competition and power sharing agreements have become a key water allocation mechanism in Dhi Qar. District Commissioners or *Qaymaqams* may choose to allocate water based on their tribal affiliation. In 2021, the Dhi Qar Director of Water Resources stated a District Commissioner in northern Dhi Qar was regularly interfering with the Water Directorate's work and providing extra water for farmers in his district at the expense of downstream districts (سید دخیل, 2021). Provincial authorities have mixed results when intervening to correct these misallocations. A District Commissioner may nominally agree to follow instructions by provincial authorities, but members of the tribe may bypass them. Dhi Qar police who patrol waterways to prevent the construction of illegal water diversions regularly come under attack by armed groups. Similarly, tribal militants have used machine guns and rocket propelled grenades (RPGs) to target employees of the Ministry of Water Resources and their security escorts to remove the illegal water diversion (تعرض دورية أمنية إلى حادث إطلاق نار شمال محافظة ذي قار, 2021; ضمن حملة إزالة التجاوزات عن النظام الإروائي .. إغلاق الدوار لنهر السالبة بقضاء الرفاعي, 2021). Irrigation Directors have also been assassinated because of their tribal affiliations.

Fifth, tribal courts are a critical dispute resolution mechanism that may prevent the escalation of a conflict to violence. Only a small subset of the water disputes serious enough to escalate to the tribal level leads to violent conflict. The vast majority are resolved by tribal courts. However, tribal conflict resolution mechanisms are not always sufficient to address resource competition. Exploiting strong tribal connections to secure favourable water quotas at the district level is likely to foster resentment. This increases a community's risk of being dragged

into disputes by reducing other communities' willingness to assume that it is acting in good faith. This erodes trust, which is a vital component of inter-tribal negotiations. The perception of preferential treatment has resulted in riots and clashes between rival tribes. Rioters have occupied government buildings and demanded the dismissal of District Commissioners accused of giving preferential treatment to their kinsmen when allocating water services. Tribal clashes in Al Islah are an example of how these tensions can escalate violence. It is meant to illustrate a known manifestation of the pathway from climate-change to conflict and is not representative of all possible cases.

Box 5.2. Illustrating the inter-communal violence pathology in Al Islah, Dhi Qar.

Source: معركة حقيقية وفشل للمحافظ والقوات الأمنية.. هذا ما حدث في إصلاح ذي قار | إنفوبلاس (n.d.).

In March 2023, the drying up of the Abu Lahiya river water used to feed the water purification stations triggered an acute water shortage. The stations went offline due to insufficient water input and the lack of irrigation water damaged crops. Protesters blamed illegal water use and denounced the District Commissioner from the Rumaid tribe for failing to crackdown on the illegal water use. The riots escalated into clashes between riots and police resulting in injuries. Several of the riots were arrested under Article 4 of the Terrorism law. Tribally motivated violence is prosecuted under this article. Tribal Sheikhs and other notables met to negotiate and agreed the District Commissioner would resign in six months. After the agreement, a kinsman of the District Commissioner praised his actions on Facebook. This led to an online argument between the kinsman and a member of the Omari tribe critical of the Qaymaqam. The argument escalated and one of the men went to the house of the other and killed him. A member of the Omari tribe then shot and killed a member of the Rumaid tribe in revenge. The situation then escalated into fatal clashes between the Rumaid and Omar tribes. A member of the Iraqi National Security Service who is also a son of one of the Omari sheikhs attempted to negotiate with the Rumaid tribe but was ambushed and killed. Federal and local police, army, and Counter-Terrorism Service deployed to Al Islah to stop the clash and made arrests. Elsewhere on the day of the clashes, Rumaid tribal militants ambushed and killed the irrigation director of Suq Al Shoyok district who is from the Omari tribe.

5.3.3.3 Development of causal models

The third part of understanding local climate-conflict pathways can be fulfilled through the development of causal models that can offer strategic and analytical clarity on why the situation is deteriorating and how to intervene.⁹

5.3.4 Activate: Initial views for climate security interventions in Dhi Qar province

Building on the previous analysis, there are a range of actions, policies and strategies that can help state and non-state actors prevent, mitigate, and respond

to climate and resource-related conflict outcomes in Dhi Qar. To leverage these intervention options for the specific context of Dhi Qar, it is critical to identify the root causes of climate-related instability, target the mediating factors responsible for triggering inter-communal tensions, and mobilise the right level of government and local leadership to ensure the intervention is effective.

Dhi Qar is economically dependent on agriculture, which is highly inefficient due to its reliance on river water for irrigation. At the local level, tribes are competing with each other over access and control over water resources. More efficient irrigation practices need to be introduced in Dhi Qar to address the acute water shortages that lead to tensions and violence between farmers, pastoralists, and tribes. Implementing policies geared towards reducing farming communities' dependence on river water – for example, through the erection of additional groundwater pumps – is likely to go a long way to reducing the (perceived) impact of upstream shocks, thus reducing their propensity to take actions which might cascade into conflict in response. To ensure these interventions are successful, it is critical the provincial authorities responsible for implementing water infrastructure projects engage local community or tribal leaders to identify, monitor and evaluate the effectiveness of these measures.

At national level, the federal Ministry of Water Resources is currently updating the Strategy for Water and Land Resource Management in Iraq (SWLRI) and developing implementation projects in hotspot areas such as Dhi Qar, including plans to modernise irrigation infrastructure and practices. This updated strategy needs to be implemented in close consultation with the Ministries of Agriculture and Operational Planning to ensure any water infrastructure interventions are aligned with broader rural development and adaptation plans. Current plans to tie water management and allocation at provincial and local level to the adoption and use of modern irrigation techniques should be carefully managed. While it may reduce water inefficiencies, it could lead to further inequalities and tensions, and should therefore be implemented in a way that does not alienate vulnerable or marginalised groups. Moreover, modern irrigation cannot solve all climate-related and man-made pressures on water availability and should therefore not be judged as a silver bullet that solves all water problems.

Government capacities need to be further strengthened so that the governing bodies responsible for implementing improved water and agriculture systems are better equipped to prevent, prepare, and respond to climate- and water-related emergencies. To avoid a further deterioration of the security situation in the region, it is critical that interventions take into account where and how quickly hotspots of risk are developing. Local communities should be included in the development of early warning systems that inform about emerging hotspot areas of risk, and when planning and prioritising adaptation projects (Global Center on Adaptation, 2022).

These activities should be supported with causal methods and models provided by academic and other research institutions, so that the driving factors can be further validated, providing a data-driven basis for intervention. These activities can be bolstered with practical knowledge on sustainable and efficient agricultural and water management practices.

For greater chances of success, inclusive approaches are essential. Federal action plans and provincial implementation plans should be shared at the local level to get buy-in from the community. Supporting vulnerable groups will pay off. Women are the de-facto head of households in rural areas of Dhi Qar, responsible for the majority of farming activities, and key to food security at community level. Targeting women does not just increase the likelihood that more sustainable farming practices are adopted, but also passed on to the next generation. Young farmers should be especially supported to play a role in adaptation projects. Developing their capacities can bolster a generation of new farmers that do not need to unlearn old farming practices. Finally, by providing a perspective and incentive to stay in rural areas, further migratory pressures in Dhi Qar may be dampened, which is essential to the long term stability of the region.

The key question remains how the government of Iraq will manage climate security interventions in a way that strengthens collaboration between national and provincial level authorities, builds trust with local communities, and keeps all relevant actors engaged in the process, supportive of the required measures, and capable of adapting to new irrigation practices. Ineffective, fragmented, and untransparent action will likely lead to further frustrations and tensions, as local communities are left with uncertainties about the impacts on their livelihoods. Interventions should be designed in a conflict sensitive manner to avoid unintended impacts on local communities that may lead to further distrust and tension.

5.4 Conclusion

The urgency to respond to the effects of climate change has led to the proliferation of quantitative and qualitative research in an effort to support fragile regions in mitigating climate-related security risks. This chapter offers an action-oriented framework for the development of successful climate security intervention options.

High level pathologies linking climate change to conflict offer an understanding of mediating factors – social, political, and economic dynamics – that determine whether climate stress may lead to conflict. The pathway approach allows policy-makers to take timely action to mitigate conflict risk by addressing root causes and mediating factors rather than outcomes. Moreover, a comprehensive understanding of the various pathways provides insights into the dynamic interactions between

relevant actors across different social, economic, and cultural backgrounds. This ensures that interventions in one area will not have negative unintended consequences that may lead to conflict through a different set of mediating factors.

By using early warning tools, the analysis can be further refined toward climate-conflict hotspots, i.e., the areas that are at most risk of climate related violence and conflict. After identifying an area of intervention, a deep dive into the hotspot of risk using frameworks like PMESII and qualitative and quantitative causal methods offers a good understanding of local dynamics and the different ways in which climate stress can exacerbate security risks.

The analysis of climate-conflict pathways and identification of hotspots also offers opportunities to develop integrated, inclusive, and informed interventions. Employing participatory methods to the development of tools and models maximises the effectiveness of the intervention. Moreover, whole-of-government approaches ensuring cross-disciplinary (climate, water, food, agriculture, welfare, private sector) and inter-departmental (international, national, provincial, local) coordination is essential for the success of interventions. Multi-stakeholder engagement and dialogue ensures that all the relevant perspectives are taken into account and that interventions do not lead to distributional effects across different social, economic, or ethnic groups.

The security sector is becoming increasingly recognised as a key actor in the development and implementation of these interventions. Security actors are impacted by climate change in their operational environment but can also bring important contributions to civil sector climate adaptation plans. The military's ability to anticipate, plan and respond to crises can serve climate action. In certain fragile areas, militaries are not trusted by communities and their involvement in adaptation planning may be controversial. However, it is important to understand the role the security sector can play to address climate-conflict dynamics and how they can be involved in the design, planning, and implementation of interventions. More research is needed on the ways in which the security sector may support climate action in various social, economic, and political environments.

While some of the steps presented in this framework tend to be performed in isolation of each other, a forward-looking plan that tailors its efforts according to the ultimate goal of developing and implementing integrated climate security interventions is essential for maximising the success of research and development efforts and ensures that adaptation-based development funds and assistance are targeted to long-term action from the very beginning.

Notes

- ¹ The methodology presented here draws on insights generated in the context of the Hague Centre for Strategic Studies (HCSS) five-year research and engagement in Iraq on behalf of the Water, Peace and Security partnership, its climate-related causality research in the Middle East and Africa, and broader work as a founding member of the International Military Council on Climate and Security.
- ² Root causes are causes that do not depend on other factors to exist, while mediating factors are effects of root causes as well as causes or mediators of causes on other effects. If causation is direct (climate change has a direct effect), there are no mediating factors. If causation is indirect (climate change has an indirect effect), there are mediating factors.
- ³ For example, The UN has developed the Global Disaster Alert and Coordination System (GDACS) that combines climate hazard data on cyclones, floods, earthquakes, and tsunamis, to provide alerts and impact assessments for specific regions to help them prepare against potential disasters. The European Flood Awareness System (EFAS) operated by the European Centre for Medium-Range Weather Forecasts (ECMWF) combines weather forecasts, river flow observations and hydrological models to identify flood-prone regions and issue alerts. The Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS) developed by the University of California, combines satellite imagery with ground station data to provide rainfall projections.
- ⁴ Predictive EWS models primarily focus on correlations between variables to determine the likelihood of risk. Correlations reveal patterns, dependencies, and potential risks within the data. By leveraging these correlations, these systems can detect early signals and provide valuable insights about the onset of conflict.
- ⁵ Developed by the US military, the PMESII or PMESII-PT framework was originally designed to support the analysis of political, military, economic, social information, infrastructure, physical environment, and time variables while preparing for operations in foreign countries. Source: <https://pavilion.dinfos.edu/Template/Article/2156908/pmesii-pt-research-analysis-framework/>
- ⁶ Our definition of conflict includes non-violent forms of conflict that may lead to further instability. When conflict erupts, it can range from disputes between a few people to a full-blown crisis between entire communities that may or may not involve physical violence.
- ⁷ The amount was cited by numerous high-level government officials during a climate security appraisal mission to Iraq conducted by HCSS at the request of GIZ in February 2023. It is not yet clear what falls under this budget, and to what extent this amount consists of additional financial resources or reallocated/reattributed funds from already existing budget lines.
- ⁸ In the 1990s, Saddam Hussein dammed and drained the marshes in the 1990s to flush out rebels hiding in the reeds.
- ⁹ Examples of causal models and related intervention designs for Iraq have been developed by HCSS for the Water, Peace and Security partnership and will be available for publication in early 2024.

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