Report

# Climate change, conflict and fragility

## An evidence review and recommendations for research and action

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# Acronyms

| | |
|---|---|
| **CCAM** | climate change adaptation and mitigation |
| **COP** | Conference of Parties |
| **DECCMA** | Deltas, Vulnerability and Climate Change: Migration and Adaptation |
| **DFID** | Department for International Development |
| **DRR** | disaster risk reduction |
| **FAO** | Food and Agriculture Organization of the United Nations |
| **FCAC** | fragile and conflict-affected contexts |
| **IDRC** | International Development Research Centre |
| **IISD** | International Institute for Sustainable Development |
| **IPBES** | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **NDMA** | national disaster management agency |
| **NGO** | non-governmental organisation |
| **ODA** | official development assistance |
| **ODI** | Overseas Development Institute |
| **OECD** | Organisation for Economic Co-operation and Development |
| **OECD DAC** | OECD Development Assistance Committee |
| **REDD+** | Reducing Emissions from Deforestation and Forest Degradation in Developing Countries |
| **SDG** | Sustainable Development Goal |
| **SIPRI** | Stockholm International Peace Research Institute |
| **UK** | United Kingdom |
| **UNCCD** | United Nations Convention to Combat Desertification |
| **UNDRR** | United Nations Office for Disaster Risk Reduction |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environment Programme |
| **UNESCO** | United Nations Educational, Scientific and Cultural Organization |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **UNSC** | United Nations Security Council |
| **UNSG** | United Nations Secretary-General |
| **USAID** | United States Agency for International Development |
| **WEF** | World Economic Forum |

# Executive summary

Successive waves of research have sought to establish whether climatic factors cause natural resource scarcity, and whether this, in turn, causes poverty, deprivation and discontent, leading to violent conflict. However, there is weak and contradictory evidence attesting to any simple, causal chain between climate change and conflict. The emerging consensus is that climatic factors can be just one of many drivers of conflict. Others are generally present, including very low economic development and social and political instability.

Policy debates have forged ahead of the evidence and leapt to conclusions about the possible role of climate change in driving natural resource-based conflicts in the future. Politicians and international organisations have warned that climate pressures on natural resources – especially water – will be the cause of future conflict. Yet conflicts between countries over renewable resources such as water have not sparked all-out inter-state wars in modern history.[1] Where violent conflicts exist across borders, they tend to be at the level of localised skirmishes, which may merit responses from armed peacekeepers, but not the full military apparatus of states. In the overwhelming majority of cases, where poverty and deprivation are caused by natural resource scarcity – and where climate is a factor – the outcome is depressed development outcomes, rather than overt violent conflict. In these situations, individuals and households may choose to migrate elsewhere, on a permanent or seasonal basis, in order to seek more secure livelihoods and meet their immediate development needs.

There are also repeated claims in policy circles that natural hazard-related disasters, including related to climate, are instigating and escalating social and violent conflict in the post-disaster space. Again, however, the evidence as to whether, where and how hazard events affect the incidence of conflict is mixed. On balance, it appears that disaster events lead to social and in some cases violent conflict, through their indirect impacts on societal conditions and patterns of risk. What is often missed is that disaster events and disaster risk management activities can promote cooperation and collaboration and enhance social cohesion. Whether and how disaster risk management processes can harness opportunities for dealing with climate- and hazard-related disasters in fragile and conflict-affected contexts (FCAC), and whether joint disaster risk reduction (DRR), peacebuilding and conflict prevention outcomes are viable, remains under-explored.

## Applying conflict-sensitive principles to climate-resilient, low-emissions development

Given the tenuous and contradictory relationships between climate and conflict, predictions of future climate-driven conflict should be treated with caution. As noted, scholarship shows that wars over renewable resources are unlikely to merit a massive military response. Rather, the relationships between climate factors, natural resource scarcity and conflict point to a need to integrate stabilisation and peacebuilding principles with climate-resilient development interventions at local and sub-regional levels. The answer is not 'more arms', but the patient and intentional fusion of environmental protection and restoration work with conflict resolution and the cultivation of economic and political stability.

1 Here we omit non-renewable resources such as oil.

The evidence suggests six priorities for action to guide the development investments of national governments, funding agencies and international and multilateral development organisations – including in FCAC. All are already enshrined in global policy frameworks:

1. Keep average global temperature rise as low as possible, to limit the damage caused to land, water, oceans and related ecosystems by climate change. Urgent and worldwide climate change mitigation is imperative, including halting and reversing land degradation and unsustainable land use changes, and phasing out fossil fuel production and consumption.
2. Given the noticeable negative impacts climate change is having on land- and ocean-based ecosystems, adapting to climate change and building climate resilience is vital. This is particularly the case in societies where livelihoods depend heavily on natural resources, as is the case in most FCAC.
3. Climate change is among the drivers of biodiversity loss and ecosystem degradation, but direct changes to land and sea by humans (such as over-fishing and deforestation) play a greater role. Given the reliance of human society on the Earth's biodiversity, protecting and restoring the health of other species and habitats will be instrumental to our own long-term survival. Tackling climate change in ways that also address habitat and species loss is vital to humanity's long-term future.
4. Violent conflict strips individuals and communities of their lives and dignity, and many of the basic elements of development. It also impoverishes people in multiple ways. While development initiatives in FCAC are difficult to establish and take forward, operational difficulties in these contexts apply equally to climate change adaptation and mitigation interventions. Notwithstanding the challenges, climate-resilient development initiatives in these contexts are imperative – and must be undertaken in ways that reduce or avoid emissions, or at a minimum avoid locking in high-emission pathways for the future.
5. Dealing with both sudden- and slow-onset climate- and hazard-related disaster risk requires functioning and effective climate and disaster risk management systems, institutions and capacities. Advancing disaster risk management in FCAC is vital to ensure that climate-related disaster risks do not undermine social stability or governance functioning. To 'leave no one behind', this will require new approaches to enable disaster risk reduction outcomes in contexts where the state is not the primary arbiter, including in areas where non-state armed groups operate.
6. Poorly designed climate change adaptation and mitigation programmes have the potential to exacerbate inequalities in communities and create greater frictions – with social tensions and even the potential for small-scale armed violence. Where such programmes are not conflict-sensitive, they can inadvertently deprive some groups to the benefit of others and inflame social tensions. As a minimum, climate and hazard interventions must 'do no harm' and, to the extent feasible, support conflict prevention and peacebuilding objectives.

Based on these well-established facts, it is recommended that development agencies focus their efforts on the delivery of conflict-sensitive disaster risk reduction, natural resource management and climate change adaptation and mitigation programmes. Most agencies already have robust approaches for delivering development in FCAC. Such frameworks could be readily adapted for use in climate change adaptation and mitigation projects and programmes, in order to cultivate peace and stability at the same time as improved development and environment outcomes. This calls for a focus on:

- Fair power structures that broaden inclusion, accountability and transparency over time, while managing tensions to prevent violence in the short term.
- Effective and legitimate institutions, both state and non-state, that build trust with

those they govern, and which grow more effective over time.
- Inclusive economic development that creates widespread benefits, reduces incentives for conflict and curbs illicit economies.
- Conflict resolution mechanisms, both formal and informal, that help manage conflict, help people cope with the legacies of violent conflict and strengthen women's roles.
- A supportive regional environment that enables communities to become more resilient to transnational stresses and shocks.

Applying these principles to the pursuit of conflict sensitivity should not be limited to new donor programmes and projects. These principles should also be socialised more widely in policy debates concerning ecosystem restoration. These include ongoing programmes for 'regreening', such as large-scale afforestation and land restoration initiatives that aim to achieve climate change adaptation and mitigation, environmental sustainability and human development in FCAC.

## Applying DRR principles and humanitarian response in fragile and conflict settings

DRR approaches for climate-related hazard events (such as severe storms with high winds and/or rainfall or heatwaves) are increasingly being applied in stable governance contexts. However, empirical examples point to the operational challenges of implementing sound disaster risk reduction practices in FCAC. There is as yet no clear picture of the risk management actions that are viable and appropriate in conflict settings.

There is, however, potential for well-designed disaster risk reduction initiatives to support conflict prevention and peacebuilding. This includes using post-disaster reconstruction processes to more intentionally foster reconciliation among social groups and build peace – ensuring that such reconstruction processes do not inadvertently exacerbate social tensions, as well as shielding women and girls from gender-based violence, and other disadvantaged social groups from violent forms of discrimination. This is a nascent area of research, and requires further investigation.

One step towards developing risk reduction programmes that contribute to peacebuilding and conflict prevention would be to establish an integrated cadre of experts from across the climate, disaster, conflict and peace disciplines. Such a cadre could provide guidance and practice notes to programme managers and technical advisors, helping them to design, implement and monitor investment programmes with linked climate, disaster and peace outcomes. This could operate through two complementary mechanisms:

*Establishing a technical assistance and advisory function to enhance the quality and delivery of climate-related disaster risk in conflict contexts*. A technical and advisory service should be established to respond to calls from regional disaster bodies and national disaster management agencies (NDMAs) for technical assistance and guidance on developing and operationalising national disaster risk reduction plans in conflict contexts, and similarly ministries of environment, for climate change strategies. This should be coupled with an action-learning research component to document and improve subsequent guidance to bridge policy and practice through collaboration among climate, disaster and peace actors.

*Formalising a community of practice and establishing in-person and online convening spaces on climate and disaster risk in conflict contexts*. There is a need to formalise the current informal community of practice on climate and disaster risk in conflict contexts. This should be convened by an independent secretariat and bolstered by the establishment of an annual conference – providing a space for sharing empirical evidence and operational lessons – together with an online presence (including newsletters and podcasts). Over time, this could be expanded to include a technical advisory and research component, allowing tailored support to be delivered to members of the community of practice in response to real-time climate and disaster risk reduction challenges.

# 1 Introduction

This report looks at the evidence on the links between violent conflict and climate-related hazards, disasters and natural resources. It explores the relationship between conflict and short-term, extreme weather events (such as tropical storms), and other natural hazards which can trigger humanitarian disasters (such as earthquakes). It also considers slow-onset and long-term changes in natural resources related to the climate (such as drought and land degradation), their impacts on people and livelihoods, and the incidence of violent conflict. The report is based on a review of some 300 literature sources, and is a shortened version of a full technical report (available on request from ODI).

The evidence clearly shows that climate-related natural resource scarcity or extreme weather events are not the sole cause of violent conflict. Rather, for slow- and rapid-onset events, with short- to long-term effects, climate acts as a 'threat multiplier'. In other words, climate factors compound existing stresses to increase the likelihood of violent conflict. Existing stresses and vulnerabilities could include various forms of social, political and economic instability, such as lack of income and job opportunities for young men, or ethnic tensions. When short-term climate shocks or long-term, climate-related degradation of natural resources occur, the most common documented outcome is poverty and suffering, not violent conflict. In fact, in many cases stresses on natural resources can provide an incentive for people to cooperate more.

Migration is one response to natural resource scarcity for people whose livelihoods are heavily dependent on natural resources. There is significant evidence that people have been migrating for centuries as a coping mechanism in resource-scarce environments. In a future where climate change risks and environmental degradation increase, migration may be seen as a form of climate change adaptation. Migration takes diverse forms: in developing countries, it is principally within national borders rather than international, and can be cyclical, seasonal or more permanent.

Just as the nature of the relationships between climate, conflict, disasters and natural resources is unclear – based on past evidence – so too there is no clear, causal relationship between climate-related extremes or climate change and migration. Evidence of a link between migration and conflict is also very weak.

With regard to external interventions to help communities adapt to climate change, or avoid and reduce greenhouse gas emissions (climate change mitigation), the evidence shows that poorly designed and delivered climate programmes can aggravate local conflicts.

There is little consensus in the literature on whether or how hazard events instigate or escalate conflict (Dynes and Quarentelli, 1975; Harris et al., 2013), though the burden of evidence tends towards the finding that 'disasters do not directly lead to social conflict, but can do so indirectly through their adverse impacts on society and by increasing social risk' (Peters et al., 2019b: 9). Moreover 'disasters and related activities do not create or resolve conflicts, especially over the long term … the foundations for peace must already be present' (Kelman et al., 2018, in Peters et al., 2019b: 13).

By contrast, there is considerable potential to use climate change adaptation and mitigation projects and programmes to shore up peace, when they are designed and delivered in a conflict-sensitive way. There is also potential for well-designed disaster risk reduction initiatives to support conflict prevention and peace, although this is a nascent area of research and requires further investigation.

This report looks at the potential to adapt and apply DFID's (2016) Building Stability Framework to donor programming in natural resource-scarce environments, including in climate-related projects and programmes. The framework focuses on fair power structures, effective and legitimate institutions, inclusive economic development and curbing illicit economies, conflict resolution mechanisms and a supportive regional environment. The report explores each of these dimensions through the prism of climate and natural resources.

In this report, there is a strong focus on the human losses and impacts related to climate extremes and events and slow-onset climate change, whether through direct damage to people's health, places of residence and work and access to food and supplies, or through damage to the natural resource base on which people depend for fresh water, crops, fodder, fibre and other ecosystem services. The report begins with evidence on the intersection of hazard- and climate-related disaster and conflict, with a focus on rapid-onset events (chapter 2). Chapter 3 looks at slow-onset changes in the environment and their human impacts. This is followed by an examination of the evidence on the impacts of climate change adaptation and mitigation on conflict, and what we know about making such programmes more conflict sensitive (chapter 4). Each section presents the state of the evidence and elaborates research priorities for future investigation, before concluding with a set of cross-cutting issues (chapter 5).

## 1.1 Methodology

This report draws on a library of over 300 articles collated through ODI's climate change, conflict and security scans (Peters and Mayhew, 2019; Mayhew et al., 2019; Peters et al., 2020). The scans systematically identify and review academic and grey literature, blogs and social media coverage from April 2018–March 2019. This database of literature was drawn on in the initial stages of this review, together with pre-existing analysis of that literature and additional topical literature preceding or following the scan period.

Selected key informant interviews were conducted between November 2019 and February 2020, to supplement and verify the findings from the literature review. The interviews focused on individuals with expertise on climate change adaptation and mitigation finance, and knowledge of current initiatives, as these are rapidly evolving areas of work with the least published material available.[2]

The articles reviewed use diverse definitions and concepts to understand, describe and analyse terms related to climate change and weather/climate-related hazards, natural hazards, disasters, conflict and resilience (see Box 1). We rely on definitions from authoritative sources (namely the IPCC reports and UNDRR) most widely referenced by the articles we reviewed (see Annex 1: Definitions). The acronym 'FCAC' is used for 'Fragile and Conflict Affected Contexts' throughout. This is a reflection that fragility and conflict may affect areas within a country (not the country as a whole), and may cross the borders of two or more countries.

2 Interviews were also conducted with agencies and networks, including the Climate Security Working Group, the Stockholm International Peace Research Institute (SIPRI), the United Nations Office for Disaster Risk Reduction (UNDRR), TMP Systems, the Environmental Law Institute, the Disaster Displacement Task Team, the Environmental Peacebuilding Association and the International Institute for Sustainable Development (IISD), as well as a number of independent consultants.

### Box 1 Attribution and definitional challenges

Throughout this report the terms 'climate-related' or 'climate factor' are used to encompass a spectrum of weather and climate events, from rapid-onset, short-duration extremes (e.g. a severe storm) to slow-onset, long-duration events (e.g. droughts and sea level rise), whether these are entirely within natural variability or where they are thought to be a result of climate change, even if proper attribution analysis is lacking. This flexible definition was necessary given that the literature reviewed lacked rigour in its climate analysis in general. Additionally, some studies attributed all extreme events to climate change without appropriate analysis. It is increasingly possible to ascertain whether, to some extent, a weather or climate event was influenced by anthropogenic climate change through appropriate climate attribution analysis.

Studies have also been inconsistent in their treatment of conflict and violence when investigating the relationship between climate, natural resources, poverty and conflict (e.g. variously looking at inter-personal, inter-group or inter-ethnic violence, terrorism or membership of insurgent groups). This makes it difficult to compare studies. In the past 5–10 years, the issue of different metrics of conflict has become better recognised. However, this review suggests that more consistent, comparable metrics across case study-based research are needed.

Disasters are commonly defined as 'a serious disruption of the functioning of a community or a society at any scale due to hazardous events (such as a drought or earthquake) interacting with the underlying vulnerability, exposure and capacity contexts of various groups, and the infrastructure, services and ecosystems they rely on, leading to one or more of the following: human, material, economic and environmental losses and impacts' (adapted from UNDRR, 2017). It is the intersection of multiple factors that turns a climate-related or other natural hazard into a disaster. Studies purporting to assess the impact of climate-related disasters on the incidence and severity of violent and armed conflict tend to reduce the disaster to its hazard and exposure components, with insufficient regard for hazard- and conflict-related vulnerabilities. Academic literature in the field of disaster risk management tends to pay more attention to vulnerabilities, but does not always take the necessary historical perspective on pre-existing conditions of conflict.

# 2 Hazard- and climate-related disasters and conflict

## 2.1 State of the evidence

Since the 1970s, researchers have explored whether, how and to what extent disasters instigate or escalate violent conflict. Throughout the 2000s, studies on the nexus of climate, security and fragility focused on quantitatively establishing a direct causal link between climate change or weather/climate extremes and conflicts (Busby, 2018; Koubi, 2018), producing ambiguous and often contradictory results. Research has since shifted from attribution to understanding the dynamics between climate-related hazards and the political and socioeconomic drivers of conflict.

The impact of natural climate variability and change on hazard profiles has been elucidated in numerous scientific reports (IPCC, 2012). Conditions of conflict increase exposure and vulnerability to climate-related disasters because capacities and capabilities to cope with current impacts and anticipated risks are typically lower in conflict settings (Harris et al., 2013). For example, exposure to violent conflict can alter and hinder access to livelihood opportunities, such as limiting access to water and grazing land in sub-Saharan Africa. It can displace communities from their livelihoods entirely, putting people at higher risk of experiencing natural and climate-related disasters or violence (Opitz-Stapleton et al., 2019).

The majority of the literature points to context-dependent conditions as leading to variable relationships between conflict and disasters. Some differences in findings are influenced by definitions of conflict at varying spatial scales (interpersonal to transboundary) and the varying timescales of hazard events used in individual analyses. Studies arguing that climate-related disasters are correlated with violent conflict outcomes do not always undertake robust climate analysis or explore shifts in the severity of disaster events over time as a function of climate or socioeconomic and political change. Should more robust climate analysis be applied, different conclusions might be reached. Examples of the broad array of findings include:

- In low- and middle-income countries, disasters may increase the risk of civil conflict in the short to medium term (Nel and Righarts, 2008).
- In the immediate post-disaster context, while emergency activities are under way, cooperation and collaboration may occur, but social conflict can increase later (Carroll et al., 2006; Dynes and Quarantelli, 1975).
- Disasters can accelerate political movements, resulting in socio-political change. For example, in India following the 2014 floods, public anger over inadequate state response to flooding resulted in the ruling parties losing subsequent elections (Venugopal and Yasir, 2017).
- In other cases, disaster events led to an escalation or prolongation of armed conflict where it is already occurring, but may also encourage cooperation and de-escalation of conflict in limited areas for reconstruction purposes (Brzoska, 2018).
- Statistical studies found an increased risk of conflict among certain groups owing to

higher numbers of people with grievances – and that this is more likely in developing countries (Bhavnani, 2006).
- Other studies found 'rapid-onset climate-related disasters, such as storms and floods, appear to have a small impact on civil unrest on average, but closer analysis … reveals that they have a highly variable effect on violent civil unrest through generating both cooperative and conflictual behaviours' (Nardulli et al., 2015, in Peters et al., 2019b: 10).

Note that, by climate science standards, floods and storms have timescales that lend them to be described more as weather-related hazards, but this distinction is lost in many studies, such as Nardulli et al. (2015, in Peters et al., 2019b) – see Box 2.

Other literature indicates that disasters do not universally lead to conflict, although social conflict can occur through disasters' adverse impacts on society and increased social risk. In other cases, cooperation can result (Xu et al., 2016, in Peters et al., 2019b: 9). Literature rarely points to the 'potentially mitigating role of DRR [disaster risk reduction]' or linked climate change adaptation action in reducing or exacerbating conflict risk.

Studies are providing an initial characterisation of the different relationships between climate-related extremes (e.g. shocks such as tropical storms) and trends (e.g. stresses such as seasonal temperature increases) with individual and collective propensity for violence and conflict. These investigations have found that, where disasters coincide with outbreaks of violent conflict, conditions of social, economic and political exclusion and weak institutions are necessary precursors. In these contexts, Koubi et al. (2018) 'strongly and robustly' find that people displaced by environmental stresses are more 'likely to perceive conflict in their destination location' than those displaced by shocks, as over time they become aware of their state of deprivation and low adaptive capacity in relation to better-off people. Linke et al. (2018) found that violence or 'violent attitudes'

**Box 2 The multifaceted relationship between disasters and conflict**

Several studies investigate the variable impacts of disasters on conflict and political stability relative to the political and social systems in place. Rapid-onset disasters have some links with the onset of political instability in some contexts, such as those with weak institutions and undergoing governance transitions (Omelicheva, 2011); climate-related disasters that caused significant economic damage coincided with outbreaks of armed conflict up to three months after the event in highly ethnically fractionalised countries – indicating 'the interplay between the natural disaster occurrence, ethnic fractionalisation and domain-specific factors' (Schleussner et al., 2016). In a study of Haiti after the 2010 earthquake, Marcelin (2011) linked the re-emergence of gangs in the Cité Soleil shantytown with political, social and economic exclusion and the inability of a weak government to address increasing violence in the area. In Chile after the 2010 earthquake, Carlin et al. (2014) found that the disaster eroded a relatively new democracy, and the post-earthquake period led to violent political and social conflicts, alongside strengthened social networks.

There is also evidence that some political regimes may become more repressive following disasters. Wood and Wright (2016) find that disasters can increase regime repression, particularly in areas most affected by disaster, because disasters can provide an opportunity to express grievances, both around the disaster itself and more generally. This in turn can prompt a more assertive government response to suppress threats and maintain control

Source: Peters et al., 2019b: 10.

only moderately increase due to droughts in Kenya in certain underlying social contexts – namely where there were no a priori agreed-upon community rules for sharing resources. Researchers' findings are highly mixed, and the value of specific – especially quantitative – methodological analyses is highly debated. Some studies do not cite violent outcomes from climate-related disasters, noting that such events may foster cooperative behaviours at the local level – again, these are dependent on underlying contexts (Peters, 2019; Peters et al., 2019b).

Beyond the immediate impacts of a disaster, longer-term implications have also been assessed. There is evidence that systemic risk can be reproduced through post-disaster reconstruction processes. For example, following the 2004 Indian Ocean tsunami, coastal land was redeveloped, increasing economic vulnerability for people who previously depended on the sea for their livelihoods, or land was classified as part of a buffer zone but later used for commercial purposes (Kennedy et al., 2008; Human Rights Watch, 2018, in Peters et al., 2019b). Dubbed 'disaster capitalism', examples from Haiti, Sri Lanka, the Philippines and Indonesia repeatedly reveal that crisis situations triggered by natural hazards can be exploited by governments and private entities to pursue unpopular political and economic change (Klein, 2007).

Despite examples pointing to the operational realities and severity of the challenge, what does not yet exist is a clear picture of the types of risk management actions that are viable and appropriate for different conflict settings. Piecemeal efforts have been moving in this direction – such as the recent 'when disasters and conflict collide' research project by ODI – but these are marginal in comparison to the scale of the challenge. The World Economic Forum (WEF), for example, has pointed to the consequences of inaction on linked climate, disaster and conflict risk, including an escalation of compound and complex risk, with warnings of increased poverty and crisis, and the potential for conflict and security risks to be triggered or exacerbated by climate-related disasters (WEF, 2019).

### 2.1.1 Climate-related disasters and security risks, and evidence gaps

Debates regarding the real and potential security implications of climate-related impacts (including those influenced by climate change), and the securitisation of climate change as a result of those debates, have proliferated since the 2007 UN Security Council debate on the climate change agenda (see Box 3). Much analysis focuses on whether or not climate change has been securitised (Trombetta, 2008; Youngs, 2014; Peters and Mayhew, 2016; Warner and Boas, 2017). Peters (2018: 196) finds that climate change has been partially securitised, if securitisation is understood to refer to a 'gradual process wherein political choices are made to frame certain issues in particular ways. Climate change has been reframed from a purely developmental and environmental concern to one that impels foreign policy and security domains.'

The act of citing high-impact disasters was an important discursive instrument in international debates on climate change and linked security risks, and featured heavily in UN Security Council debates (Peters, 2018). Examples of the narratives include 'extreme weather events' leading to 'dangerous security vacuums' (UNSG, 2011), 'climate-change driven migration's potential to incite conflict' (UNSG, 2007) and drought and flooding leading to the 'destabilisation of whole societies' (UNSC, 2007). It should be noted, however, that empirical evidence to support such discourses is limited – particularly robust climate change attribution analysis; and notwithstanding the growing body of evidence that direct links are not likely to be found.

Another common argument is that climate-driven economic downturns can increase perceived inequality and lead to conflict (Koubi, 2018). The Organisation for Economic Co-operation and Development (OECD)'s *States of fragility* report (2016) presents a mixed picture since homicide and battle deaths are largely the same in contexts with moderate and high environmental fragility, and there is no distinct relationship between differing levels of environmental fragility and interpersonal violence. However, armed conflict and terrorism

### Box 3 Reflections on the climate-security literature

The climate-security literature tends to focus particularly on the Levant, the Sahel and the Horn of Africa. While analysis draws from multiple disciplines, insights and analysis from climate scientists is frequently missing from this literature, leading to criticism of the conclusions drawn. For example, Kelley et al. (2015) examine anthropogenic climate change-influenced drought as a primary driver of the Syrian conflict – though this has been disputed through more robust analysis by Selby et al. (2017). Raleigh and Kniveton (2012) conclude that extreme rainfall anomalies in either direction (i.e. drought or too much rainfall) were accompanied by increased communal violence in East Africa (1997–2009) – though the rainfall analysis was not over a statistically long enough period to adequately establish departures from the long-term mean, or of the correct spatial scale to conflict data. One global meta-analysis (Burke et al., 2015) found that deviations from mean temperature and precipitation patterns increase inter-personal and inter-group conflict risk – though the analysis takes a very broad definition of inter-personal (domestic violence, road rage, assault, murder and rape) and inter-group (riots, ethnic violence, land invasions, gang violence, civil war, coups and other forms of political instability) conflict.

Climate change has also been cited as having the potential to increase the risk of civil conflict through its multiplying effects on other mitigating factors (Bergholt and Lujala, 2012; Koubi et al., 2012). This argument echoes suggestions in the literature on disasters and conflict that disasters may exacerbate conflict factors already present within a society (e.g. Omelicheva, 2011; Harris et al., 2013). This overlap is perhaps unsurprising given that these studies often use climate-related disasters (rapid- and/or slow-onset) as a proxy for climate change, even if actual climate change attribution analysis is lacking.

With all of these studies, it is worth pointing out that the robustness and quality of climate analysis is highly variable, potentially affecting the reliability of the conclusions drawn. And even where the climate analysis may seem robust, spatial and temporal aggregation of climate variables can influence analysis and findings. Furthermore, attempts to link conflict outbreaks with climatological indices alone ignore the underlying vulnerability, capacity and exposure contexts.

This is particularly evident in the frequently cited Kelley et al. (2015) study attributing anthropogenic climate change as a significant influence in the Syrian drought, claiming that this contributed to the conflict. However, their analysis is an area-average of whole Fertile Crescent mean temperatures and winter precipitation between 1931 and 2008, not Syria-specific climate analysis, as pointed out by Selby et al. (2017). Nor are Kelley et al. (2015) consistent in their definition of the drought's duration, using three different time periods. As Selby et al. point out, these two discrepancies make it difficult to validate these claims. Additionally, Selby et al. found that not all places in Syria experienced rainfall deficits in 2006–2009, and there is no uniform drying trend (applying appropriate statistical methods) across the Fertile Crescent. Even so, the Kelley et al. study continues to be cited as providing conclusive evidence of the role of climate change in the Syrian drought and conflict.

Similarly, Burke et al. (2015) use an extremely broad definition of climate as encompassing events lasting only a 'few hours', climatic indices such as a Palmer Drought Severity Index, to water variability in order to accommodate a greater number of studies in their meta-review. This makes cross-comparison of studies through meta-analysis problematic, as does their broad definition of conflict. It also ignores the very real differences in timescales and statistical techniques needed for handling extreme events versus seasonal to decadal climate shifts. Uncertainties and errors in the original study's climate analysis propagate into the Burke et al. (2015) study.

Source: Adapted from Peters et al., 2019b: 14, with additional discussion by Opitz-Stapleton.

are more prevalent in moderate and highly environmentally fragile contexts.

The OECD (2016) concludes that 'the relationship between environmental risks and fragility related to violence can be complicated', and that research studies have been contradictory. The OECD cites one meta-analysis of more than 60 studies on the link between climate change and conflict, which finds that 'the magnitude of climate change's influence on conflict is substantial and statistically significant at many levels of geographical aggregation' (Hsiang et al. 2013). Other studies underline the mixed and inconclusive results from scientific research on climate change and conflict (Buhaug et al., 2014). Ide and Scheffran (2014: 265) find that 'statistical investigations on the link between adverse environmental changes and violent conflict are similarly inconclusive'.

Climate and conflict research has tended to focus on the Sahel and East Africa region due to the political significance such contexts have for international donors (Price, 2019). Elsewhere, the Middle East and North Africa faces a range of transboundary threats related to water, food, energy and livelihoods, but there has been little effort to develop a regional approach to these issues (ibid.). The increasing challenges posed by climate change for water, security and development in contexts such as Iraq and Israel and Palestine have been repeatedly stressed (EcoPeace Middle East, 2019; von Lossow, 2018). In countries such as Pakistan and Sri Lanka, efforts have been made to feature climate security within training, and increase resources for disaster response, but more cross-departmental risk analysis and capacity-building is needed to manage climate security risks (Ghazi and Fleishman, 2018). In Africa, climate risk assessments need to be connected to mechanisms for conflict resolution (Amani Africa, 2018), to combat trends such as increasing violence associated with natural resources and livelihood insecurity in north-eastern Nigeria and the Mopti region of the Inner Niger Delta (Ursu, 2018).

### 2.1.2 Can a disaster event provide opportunities to enhance peace?

Literature tends to focus on individual disaster events, exploring changing socio-political outcomes in the immediate post-disaster space. There is no robust analysis of the extent to which disaster events can provide opportunities to enhance peace. Nor has there been a critical analysis of the methodologies employed in academic articles on this topic, and thus whether lessons or findings can be readily applicable elsewhere. As Box 4 shows, findings are mixed.

A body of literature on 'disaster diplomacy' explores whether and how the post-disaster space could offer opportunities for instigating or accelerating cooperative or diplomatic processes. Many of the cases explored are international in scale, focusing on 'formal and public interstate diplomatic interactions after a major natural disaster, and how these interactions can ameliorate international conflict or tension' (Kelman and Koukis, 2000, in Peters et al., 2019b: 12). Often-cited cases include Greek–Turkish relations following the 1999 earthquake; India and Pakistan following the 2005 earthquake; Eritrea and Ethiopia following the 1999–2002 droughts; and the conflicts in Sri Lanka and Aceh following the 2004 Indian Ocean tsunami. Common across the examples is the finding that, in some cases, the post-disaster space can support diplomacy through empathy, building foundations for trust and cooperation, and shared experiences of loss. But where 'conflict structures survive the disaster', limited or no notable progress in peace may result (Rajagopalan, 2006).

Although the empirical evidence is limited, nascent literature suggests that there is potential for DRR approaches to contribute towards conflict prevention and peacebuilding (Stein and Walch, 2017; Mena et al., 2019; Peters et al., 2019e). Such ideas stem from evidence that disasters and violent conflicts that occur in the same location can result from similar vulnerabilities (Wisner, 2009; Harris et al., 2013), and thus that DRR could contribute to some aspects of conflict prevention through the reduction of disaster risk and impacts in conflict contexts, and linked disaster and conflict reduction interventions. This is the case in Afghanistan, for example, where reforestation projects are utilising conflict resolution and management committees to achieve joint disaster reduction and peace outcomes (Mena et al., 2019; Peters, 2019).

Others argue that the Sendai Framework for Disaster Risk Reduction can be used for conflict prevention (Stein and Walch, 2017), while the African Regional Strategy on DRR links climate change adaptation, DRR and conflict prevention (African Union Commission, 2016). Arguments have also been put forward that DRR provides opportunities to address climate-fragility risks and build peace (Rüttinger et al., 2015; Vivekananda, 2018), while Vivekananda et al. (2014) call for 'peace-positive' climate change adaptation efforts. On the whole, the potential to utilise DRR proactively as part of a broader preventive agenda to avert the potential conflict and security risks of climate-related disasters is largely underexplored. This argument has been made recently in the case of Chad (see Peters et al., 2019a).

## 2.2 Addressing gaps in the evidence

The volume of evidence on the disaster–conflict interface is limited, and even more so on the additional complexity of climate variability and change. Thus, there is 'relatively limited understanding of how disasters interact with, and unfold in, conflict-affected areas' (Siddiqi, 2018: S161), and even less for climate-related disaster risks. Moreover, despite decades of research focused on attribution 'we still understand very little about the relationship between disaster and conflict, and there is very little guidance on how to confront and seek to alter this relationship with a view to accelerating disaster resilience' (Peters et al., 2019b: 29). Research is principally post-disaster, with few longitudinal studies that trace decadal changes in vulnerability and exposure to a range of threats and hazards – including climate-related hazards and conflict. Furthermore, 'little scholarship exists on how DRR can effectively be implemented in fragile or conflict-affected contexts (and even less on lessons learned, or what was tried and failed)' (Peters et al., 2019b: 29).

Many communities experiencing disaster, climate and conflict risk are 'off the radar': we know little about them, and they may have vastly different ideas about what disaster resilience does or could look like. This may include experiences of disasters and DRR in areas under the control of non-state armed groups. Deeper understanding is required of how climate- and hazard-related disaster risks are experienced and managed in areas where non-state armed groups operate. Similarly, there has been little research exploring the role of alternative governance mechanisms and parallel governance structures specifically in contexts of violence and armed conflict, the implications for understanding and acting on disasters, and subsequently the opportunities for

**Box 4 Can disasters lead to increased political legitimacy, cooperation or peace?**

'One econometric study of floods and storms between 1980 and 2007 showed that these hydrometeorological disasters did not lead to an increased risk of armed civil conflict, but they did have a significant negative impact on economic growth (Bergholt and Lujala, 2012). Noting that weather/climate-related disasters, such as storms, floods, droughts, extreme temperatures, wildfires and landslides, have become more frequent in recent decades, Slettebak (2012) conducted a global study to see if such disasters led to an increase in the risk of civil war from 1950 to 2012. Using multivariate methods, the study found that disasters, particularly drought, actually decreased the risk of civil war by unifying the population and giving governments an opportunity to display competence. In a study of post-earthquake El Salvador, some political leaders emerged from disaster stronger, due to public perceptions of traits such as capability, competence and compassion (Olson and Gawronski, 2010). In other instances, disasters can serve as 'coordinating devices' for anti-government protests by creating concentrations of displaced people and enabling organisation and coordination, which can in turn threaten a political leader's hold on power (Flores and Smith, 2013: 843).'

Source: Peters et al., 2019b: 11.

and limitations of climate- and hazard-related risk reduction. This requires:

- Undertaking a systematic review of evidence that organises interventions designed to reduce climate-related disaster risk alongside a typology of conflict. Specific emphasis should be placed on understanding the role of conflict in undermining conventional approaches to disaster risk reduction and climate-related disasters – positioning these along a continuum which includes projects working 'around' conflict, through to those with an explicit ambition to positively affect the conditions of conflict. Assessments of whether interventions were 'successful' should reflect the expectations and ambitions of affected communities.
- Normative assumptions about the role of government-led and non-government-led interventions in reducing climate- and hazard-related disaster risk need to be tested, with specific emphasis on understanding how those interventions affect the social contract and citizens' perceptions of the state's role and competence in managing risk. The current evidence base is concentrated on disaster events as the entry-point for analysis, with a focus on local-scale disaster impacts. A longer-term and broader socio-political perspective is required which tracks changes in dynamics of peace and conflict relative to changing climate and hazard risks and impacts.
- Addressing the evidence gaps in understanding individual and community choices and responses to climate- and hazard-related disaster risk in conflict contexts: specifically, of affected populations' perceptions of risk, the various factors that affect their decision-making, the trade-offs associated with prioritising some threats and hazards over others, and risk tolerance (Opitz-Stapleton et al., 2019). Independent research, including longitudinal studies and life histories, could unpack those experiences, with an emphasis on the choices and trade-offs of the actions that people take, and why they take them. This could provide a more grounded starting point from which to design interventions that are complementary to people's coping capacities in the face of disaster and conflict risk.
- Trial unorthodox approaches by exploring how disasters, including climate-related disasters, are experienced and managed in contexts controlled by non-state armed groups (see Peters, 2019). This includes areas such as Taliban-controlled Afghanistan, Mindanao in the Philippines and border areas of Myanmar. In addition, addressing the evidence gap at the subnational scale, for example small commanders, warlords and mid-range authorities (Peters, 2019).
- Dealing with rapid-onset extremes, slow-onset hazards and completely shifted local climates due to anthropogenic climate change. The cyclical shocks that create and maintain crises are routinely met with emergency responses, but new strategies and approaches are needed for dealing with slow-onset and long-duration shocks and stresses and expected shifts in local to global climates, including how to embed risk reduction measures into responses to protracted crises.

## 2.3 Linking evidence to practice

There is a substantial disconnect between evidence and action on natural hazard-related disasters, disasters more broadly (encompassing the breadth of hazards listed under the Sendai Framework, including biological, environmental, geological and geophysical, hydrometeorological and technological hazards), climate variability and change, and issues of violence, conflict and fragility. Given evidence that intersecting vulnerabilities amplify risks, this disconnect is unhelpful, particularly given current and future trends that point towards an amplification of compound and complex risk in FCAC (Peters, 2019; UNDRR, 2019; WEF, 2019).

A deeper understanding of the potential for climate- and hazard-related risk reduction to contribute to peacebuilding, conflict prevention and conflict resolution is required. This could be achieved by establishing an integrated cadre of experts bringing together scientific contributions from across the climate, disaster, conflict and

peace space. This cadre could provide guidance and practice notes to programme managers and technical advisors to enhance cross-fertilisation of expertise, and develop e-learning and training courses as an extension of DFID's current 'learning journey'. Only with upskilled managers and advisors will it be possible to begin exploring ways to design, implement and monitor investment programmes with linked climate, disaster and peace outcomes. Priorities include integrating climate- and hazard-related risk reduction into conflict and post-conflict response and reconstruction initiatives, and conflict analysis and sensitivity into post-disaster response and rehabilitation programmes. This could be achieved through:

- Establishing a technical assistance and advisory function to enhance the quality and delivery of climate-related disaster risk in conflict contexts. A technical and advisory service needs to be established to respond to calls from regional disaster bodies and NDMA for technical assistance and guidance on how to develop and operationalise national disaster risk reduction plans in conflict contexts, and similarly Ministries of Environment for climate change strategies. This should be coupled with an action-learning research component to document and improve subsequent guidance.
- Formalising a community of practice and establishing in-person and online convening spaces on climate and disaster risk in conflict contexts. To respond to calls from policy-makers and practitioners for a convening space to share evidence on reducing climate-related disaster risk in conflict contexts, there is a need to formalise the current informal community of practice on climate and disaster risk in conflict contexts. This should be convened by an independent secretariat and bolstered by the establishment of an annual conference – providing a space for sharing empirical evidence and operational lessons – together with an online presence (including newsletters and podcasts). Over time, this could be expanded to include a technical advisory and research component, allowing tailored support to be delivered to members of the community of practice in response to real-time disaster risk reduction challenges. Given that the evidence base requires significantly more investment, convening an annual conference on this intersection, together with specialised academic journals to increase the quality of research in this area, would be of great benefit. This conference could be linked to the UK's hosting of COP26, and subsequently linked to the convening cycle of the Global Platform on Disaster Risk Reduction.

# 3 Climate-related conflicts over natural resources

## 3.1 State of the evidence

Academic and grey literature, and many global and regional policy fora in the past two decades, have explored the extent to which climate-related factors and their impacts on natural resources (land, water, species, ecosystems) contribute to conflict.

Many studies have sought to establish causal chains among resource scarcity, climate-related factors and conflict. For example, researchers have investigated whether climate-related resource scarcity drives conflict, and whether resource scarcity in one place spurs migration, sparking conflict in migrants' destination. Understanding these relationships better can inform work to halt, manage, mitigate or even reverse resource scarcity, along with other compounding drivers of conflict and fragility in resource-poor contexts.

An equally important but rather separate body of literature, policy and practice asks how fragility and poor governance in contexts of abundant natural resources permits unsustainable levels of resource extraction and associated environmental degradation and conflict. It investigates how this degradation and conflict drives climate change and biodiversity loss, with implications for human equality and well-being. Understanding these relationships better can inform efforts to halt natural resource-related conflict and the misery it creates, while supporting environmental protection that strengthens climate change adaptation and mitigation and human development.

The evidence on links among natural resources, climate factors and conflict can be summarised as follows. Climatic factors affect the condition of ecosystems and 'nature's contributions to people' (IPBES, 2019: 20). Most indicators of global ecosystem health are in decline. However, climate – and climate change specifically – is one of many direct drivers of ecosystem degradation. The Intergovernmental Platform on Biodiversity and Ecosystem Services' Global Assessment finds that the most significant drivers of ecosystem decline globally are changes in land and sea use and direct human exploitation of species, followed by climate change (ibid.).

Regional and local studies, in both academic and grey literature, identify climatic factors as a contributor to ecosystem degradation or a 'magnifier' of existing risks, which compound and interact with other drivers of change. The Intergovernmental Panel on Climate Change's Special Report on Climate Change and Land concludes that human-induced climate change contributes to land degradation, both singly and in combination with other human drivers (IPCC, 2019b).

There is strong evidence in the literature for a correlation between ecosystem degradation and decreased human well-being. This is demonstrated at global scale in the IPBES Global Assessment; meanwhile, the United Nations' GEO6 report finds that environmental degradation is undermining global society's progress towards achieving the Sustainable Development Goals (SDGs) (UNEP, 2019).

At a local scale, slow-onset impacts of climate change are compounding stress on freshwater availability, with implications for human health and livelihoods. These range from erratic riverine

flows in glacier-fed river basins to salinisation and decreased land fertility due to sea level rise on coasts (Dupar, 2019; IPCC, 2019c). Increasing average ocean temperatures are changing the assemblages of species in marine ecosystems, with negative impacts on fisheries productivity in many areas – although the distinct effects of climate change are very difficult to isolate from other direct human drivers of fisheries and marine ecosystem changes, such as over-fishing, destructive practices such as dynamite fishing and other forms of unsustainable environmental management (ibid.).

> Efforts to link increasing natural resource scarcity and consequent poverty with increases in social and political conflict have tended to yield inconclusive or contradictory results.

Research into the interaction among ecosystem services and development, as investigated, for instance, in the Ecosystem Services for Poverty Alleviation programme, finds that people may manage ecosystems (especially in the short term) to improve one or more dimensions of their well-being. However, these immediate benefits – which may include high yields of single crops for trade or industry (including the production of bioenergy feedstock to help tackle climate change) – may come at the expense of other social and ecological benefits: 'it is now clear that trade-offs are more likely than win-wins within and between poverty reduction and environmental management' in these more localised contexts (Schreckenberg et al., 2018: xxi; Gasparatos et al., 2017).

Efforts to link increasing natural resource scarcity and consequent poverty with increases in social and political conflict have tended to yield inconclusive or contradictory results. The foremost reason why increases in resource scarcity and depressed means of livelihood and well-being may not necessarily lead to conflict and violence is that other factors can mitigate (or exacerbate) the risks of violence. Factors cited in the literature include economic development, the presence or absence of mediating community institutions, historic ethnic or inter-group tensions and infrastructure and/or security personnel to allow safe passage, for instance for displaced persons, migrants and seasonal workers.

During the 1990s and 2000s, the possibility of inter-state war over increasingly scarce water resources was widely debated. Climate change pressures on water (as well as increasing population and consumption) were cited as possible factors in water scarcity (Serageldin, 2009a; 2009 b). However, scholarly attempts to determine whether water scarcity in transboundary river basins led to war between states demonstrated that, in fact, the converse was true. River disputes were, in the majority of cases, addressed by cooperative agreements (Swain, 2001). Countries have not gone to war over water (Barnaby, 2009), although there is evidence of cross-border skirmishes among smaller groups related to water scarcity.

Case studies have tended to focus on the contribution of extreme events (e.g. tropical storms or droughts) to resource scarcity, poverty and conflict, not climate change as scientifically defined. On climate change specifically, the IPCC (2019b) finds (with only low confidence due to weak evidence and weak scientific agreement) that climate change and its interaction with land degradation will be a source of conflict in coming decades.

However, notwithstanding weak and contradictory evidence linking resource scarcity and its climate-related factors with subsequent conflict, there is an unimpeachable case for reversing natural resource scarcity and restoring the health and vitality of ecosystems – the fabric of life – to support and sustain human well-being, and to preserve biological diversity, as enshrined in multiple global policy frameworks and evidenced in diverse environments across the world.

Recognising that climatic factors may have contributed to resource scarcity, deprivation, competition and conflict in the past, and that climate change might potentially magnify conflicts in the future, is useful insofar as it concentrates political attention on the urgent need to cut global greenhouse gas emissions – the anthropogenic driver of climate change. Beyond the urgent need for global climate change mitigation, and to support local-to-regional solutions, it is also useful to investigate how

households, communities and societies can cope with resource scarcity in ways that are attuned to current climate variability and future climate change, and which identify and manage the triggers or aggravators of conflict.

Another way of looking at the nexus of natural resource, climate and conflict issues is to turn this perspective on its head and consider resource-rich rather than resource-scarce environments. It is often the case that an abundance of lucrative resources, principally timber, can be a source of competition and violence in fragile contexts where the rule of law is poorly established and corruption and rent-seeking are common. Our focus here is on renewable resources such as timber (which also support species and habitats as part of broader terrestrial and coastal ecosystems) rather than oil and gas, which could form the subject of a different study.

In these cases (e.g., parts of the Amazon region, central Africa, Southeast Asia), fragility and conflict go hand in hand with deforestation and natural resource degradation. Degradation of such carbon-rich environments drives up greenhouse gas emissions and undermines the potential for climate change adaptation and resilience, as well as numerous other development goals (Chaturvedi et al., 2019). Illegal extraction and trade in lucrative timber is particularly relevant, though land use changes associated with other forms of resource extraction such as illegal mining may also be significant in climate terms. These environments pose substantial risks to researchers wishing to investigate and expose these dynamics, as well as for development actors seeking to invest in solutions to ecosystem degradation.

There is increasing evidence that poorly designed climate change adaptation and mitigation interventions can exacerbate inequalities in societies, decrease the well-being of some groups and – sometimes – contribute to conflict. Well-designed climate change adaptation and mitigation actions could be the answer. Frameworks for and approaches to climate change adaptation and mitigation in FCAC that avoid previous mistakes, consider people's intersecting vulnerabilities and development needs and contribute to peace are outlined below (see also chapter 4).

Evidence on the links among migration and climate change, natural resources and conflict is also contested and inconclusive. In international policy arenas, the grey literature, the media and the blogosphere, a causal chain is frequently asserted, whereby climatic factors drive natural resource scarcity, which drives in-situ conflict followed by out-migration; or migration from resource-poor conditions is followed by conflict in the migrants' destination. The empirical evidence in the academic literature does not clearly and conclusively support causal chains of this type. Our review concurs with Brzoska and Fröhlich's (2015) conclusion that 'it has become clear that the links between climate change, migration and conflict are complex and defy simple and sensationalist conclusions'.

> Migration can be a coping mechanism in response to climate-related resource scarcity, and a 'release valve' for the avoidance of conflict in resource-poor, climate-affected environments.

It is difficult to attribute human mobility to climatic factors with precision: people move for a wide range of reasons, and even where (climatic) hazards contribute to this decision, it is underlying socioeconomic, cultural, political and environmental processes that either enable or constrain people's ability to cope where they are, or result in their moving (Opitz-Stapleton et al., 2017). The DECCMA project, which investigated human mobility in Ghana, India and Bangladesh, found that fewer than 3% of respondents singled out an environmental cause as the main reason for migrating. However, 40–80% associated environmental factors with more insecure livelihoods (DECCMA, 2018). The authors conclude that, rather than having a direct effect, climate and environment affect migration because they affect people's ability to earn a living, particularly related to slow-onset environmental hazards such as drought and coastal erosion.

There is accumulating evidence – particularly in the last decade – that migration can be a coping mechanism in response to climate-related resource scarcity, and a 'release valve' for the avoidance of conflict in resource-poor, climate-affected environments. The UK Government's

Foresight Report Migration and global environmental change concludes that migration in the face of global environmental change 'may not be just part of the "problem" but can also be part of the solution'. In particular, 'planned and facilitated approaches to human migration can ease people out of situations of vulnerability' (Black et al., 2011; UK Government, 2011).

Looking now specifically at whether and how migration and natural resource scarcity relate to conflict, two principal questions have been investigated in the academic literature and have carried over into the grey literature and the policy realm:

- Is natural resource-based conflict (in which climate plays a role) in migrants' original location a driver of migration (i.e. can resource scarcity lead to conflict lead to migration)?
- Alternatively, is natural resource-driven migration (in which climate plays a role) a driver of conflict once migrants reach their destination?

Several reviews of existing studies on this causal link have found that it was either not possible to isolate the effect of climate variables from socio-economic and political factors on migration and conflict, or that contextual factors were stronger determinants of conflict than climate variability and change. There is evidence that understanding of popular cases of climate-related migration and conflict may not be as complete as previously thought. Ide (2018) reviews the literature on the drought in Syria between 2006 and 2009, which was popularly believed to be a driver of the civil war. The common understanding is that the drought affected agricultural livelihoods, which then led to mass migration from rural to urban areas, increasing the pressure on services and the availability of resources, leading in turn to conflict. Yet Ide points out that whether or how immigrants may have contributed to conflict is not well understood. Selby et al. (2017) find that 'there is no clear and reliable evidence that drought-related migration was a contributory factor in civil war onset', and that 'there is no good evidence to conclude that global climate change-related drought in Syria was a contributory causal factor in the country's civil war'. The Atlas of Environmental Migration, based on 20 years of work by the International Organization for Migration on the environmental causes and consequences of migration, warns that claims linking climate change, migration and conflict must be treated with caution (Ionesco et al., 2017).

## 3.2 Priorities for research on climate, natural resources and conflict

The review suggests that there are three broad areas where further, interdisciplinary research is needed:

- How can societies halt, manage, mitigate or even reverse resource scarcity along with the other, compounding drivers of conflict and fragility in resource-poor contexts?
- How can societies reduce natural resource-related conflict, while supporting environmental protection that strengthens climate change adaptation, climate change mitigation and human development?
- If people cannot adapt to climate change successfully in their home environments, and they wish to migrate as a form of coping strategy in the face of resource scarcity, how can they be supported to do so in ways that protect and enhance their rights and well-being, and avoid maladaptation?

For a research agenda that is applied in nature and useful in guiding future policy and practice, we suggest using the entry-points provided by DFID's Building Stability Framework (2016). This framework sets out five building blocks for UK aid spending in fragile and conflict-affected states:

1. Fair power structures that broaden inclusion, accountability and transparency over time, while managing tensions to prevent violence in the short term.
2. Effective and legitimate institutions, both state and non-state, that build trust with those they govern, and which grow in effectiveness over time.

3. Inclusive economic development that creates widespread benefits, reduces incentives for conflict and curbs illicit economies.
4. Conflict-resolution mechanisms, both formal and informal, that help manage conflict, help people cope with the legacies of violent conflict and strengthen women's roles.
5. A supportive regional environment that enables communities to become more resilient to transnational stresses and shocks.

These building blocks will be central to supporting societies to address fragility and conflict in both resource-scarce and resource-abundant environments, as well as providing a touchstone for designing and delivering climate change mitigation and adaptation interventions which are conflict-sensitive and avoid creating further tensions. On this basis, we recommend the following specific research questions:

1. How can the governance and management of natural resources use climate-related information and future scenario analysis to create the conditions to avoid natural resource conflict and foster collaboration and peace? (This includes meeting the requirements for robust, reliable, accessible and usable climate and weather data, and could include major regreening and environmental restoration initiatives as well as environmental conservation.)
2. How can effective and legitimate institutions for natural resource management and associated climate risks, both state and non-state, build trust with those they govern and grow in effectiveness over time?
3. How can inclusive economic development that is climate-compatible and natural resource-based reduce the incentive for conflict and curb illicit economies?
4. How can conflict resolution mechanisms help manage conflict over climate-stressed natural resources, help people cope with the legacies of violent conflict and strengthen women's roles?
5. How can supportive regional environments enable communities to become more resilient to transnational stresses and shocks (including those associated with shared transboundary resources such as water)?

Using these as overarching entry-points, it would be particularly useful to commission comparative studies in a single or similar eco-regions or agroecological zones (e.g. with shared environmental/natural resource features and land and water management systems such as pastoralism)[3]. This would be particularly useful because, for slow-onset climate impacts which exacerbate resource scarcity (e.g. land degradation, water stress, salinisation/coastal inundation or declining agricultural production), such research would help to:

- Harness operational learning on the benefits and limitations of climate change adaptation and mitigation in sustaining 'nature's contributions to people' in contexts of fragility, conflict and violence (where the IPBES phrase 'nature's contributions to people' is defined as all the positive contributions or benefits, *and* occasionally negative contributions, losses or detriments, that people obtain from nature; see Pascual et al., 2017). Which technologies, modes of knowledge transfer, financing and institutional arrangements make climate-smart agriculture, forestry, water and ecosystem management more or less viable for fragile contexts? And what can be learned about comparability (and the possibilities for common lessons and recommended approaches) across specific agro-ecological zones in these fragile contexts? Including elements of ecological as well as social-political comparability could provide lessons for the potential replication of climate-resilient systems, for example agroforestry or inter-cropping systems with low water requirements or low susceptibility to pests and livestock and crop diseases. Learn from affected people's experiences and coping

3 An agro-ecological zone is a land resource mapping unit, defined by its climate, landform and soils, and/or land cover, and having a specific range of potentials and constraints for land use (FAO, n.d.).

capacities and how they deal with climate and conflict risk in locations of high natural resource dependency. This could provide a more grounded starting point from which to design policy, investments and interventions that complement people's coping capacities and respond to their self-articulated visions for how to cope with risk.

- Likewise, in addition to the need for more comparative work among case studies with the same or similar ecoregion and agro-ecological type, there is also a need for more evidence on the transboundary nature of natural resource management, climate and conflict, and the implications for donor programming and wider peace and development interventions. This could be undertaken, where feasible, with a view to informing governmental and other actors cooperating bilaterally or regionally (or which have the potential to do so).

From a natural resource management perspective, it will be important to support major initiatives to synthesise evidence and encourage its uptake in regional and global policy fora on regreening and reversing land degradation. Review and synthesis, and possibly new primary investigation, is needed on major regreening/land restoration targets by the governmental, private and voluntary sectors – e.g. in the context of the Land Degradation Neutrality Target of the UN Convention to Combat Desertification (UNCCD) and broader climate change action, such as the Trillion Trees initiative launched at the 2020 World Economic Forum (and the conservation NGO initiatives on which it builds). What lessons should we be capturing from previous reforestation attempts in resource-scarce and degraded environments, which need to be applied to these new initiatives? How can land restoration support local well-being, security and climate resilience as well as global environmental benefits, with a particular focus on FCAC?

There is also a need to support partnership-led research initiatives that create pressure for accountability in resource-rich environments (environments that are subject to the 'resource curse'). How can aid donors work smarter to support research that tracks the flows of resources and money, exposes corruption and resource capture, and thus addresses renewable natural resources such as forests as a source of conflict that is undermining local people's climate resilience and regional-to-global climate mitigation potential? Part of the answer lies in funding networks of academics, NGOs and civil society groups that can distribute and manage the personal risks involved in such work.

# 4 Climate change adaptation and mitigation programmes in FCAC

## 4.1 Evidence gaps

More research is needed to widen both the restricted geographical scope (mostly limited to East Asia and Africa) and the limited depth of evidence for applied conflict-sensitive approaches to climate change adaptation and mitigation (CCAM) in FCAC (Peters and Vivekananda, 2014; Zhang, 2015; UNDP, 2017), including documenting:

- case studies of programmes adapting based on conflict sensitivity;
- instances where conflict-insensitive programming has negative outcomes; and
- assessing the integration of conflict-sensitive thinking and practice within organisations (Peters and Vivekananda, 2014; Zhang, 2015; UNDP, 2017; Conflict Sensitivity Consortium, n.d.).

There is a gulf between those working on conflict sensitivity and those working on CCAM. This needs to be bridged and collaboration built between national, regional and global specialists in conflict sensitivity and climate researchers. Research should have a specific focus on outcomes useful to practitioners or stakeholders working on CCAM in FCAC, and provide evidence of good and bad practice.

More research is needed to better understand gender, inequality, structural violence and marginalisation when applying conflict sensitivity to CCAM projects (Seng Lawn and Naujoks, 2018; International Alert, 2019; Saferworld, 2019). Gender and marginalisation (and power) should be considered alongside climate change and conflict. This will be important in ensuring that approaches are informed by micro- and intra-community (and family) conflict, not just macro conflict, and will ensure that conflict sensitivity is not misinterpreted to mean maintenance of an unjust status quo. Specific topics for research include:

- Understanding the drivers of subnational conflict and marginalisation in dynamic conflict contexts.
- The ways in which conflict changes gender roles domestically, economically, socially and politically over time (including people's climate adaptation potential/climate resilience and roles in natural resource stewardship).
- How to design gender-sensitive CCAM interventions that both address conflict and the specific needs of women.
- Consideration of gendered perspectives in the experiences of men and boys in conflict.
- An enhanced and more nuanced understanding of gender beyond binary considerations and implications in FCAC contexts.

Cross-sectoral, interdisciplinary research is needed to better evidence and understand the ways in which policy choices impact on implementing CCAM in FCACs (Hunsberger and Ponte, 2014; Peters and Vivekananda, 2014), including:

- improving understanding of the complex interaction of social and ecological domains and the spill-over effects of land-based climate change adaptation projects; and
- improved understanding of the adequacy of social and environmental safeguarding systems in internationally, publicly funded projects.

More research is needed into approaches that can and have been used to minimise conflict linked to climate change adaptation and mitigation (Peters and Vivekananda, 2014), such as:

- Institutions and natural resource management governance: clarification of land rights and tenure, dispute resolution processes and harmonisation of laws.
- Sustainable livelihoods: diversification, insurance, support for mitigation and mobility, early warning.
- Rehabilitation of degraded ecosystems and improved management to improve/increase the supply of natural resources through better management and more efficient use and rehabilitation of degraded areas.

## 4.2 Research to improve climate change adaptation and mitigation in FCAC

Research in FCAC can be vital in ensuring that implementation approaches and delivery are conflict sensitive. However, there is currently a gap in the ability of implementers to be able to effectively design and deliver (and for donors to effectively procure and select) implementation activities that will be conflict sensitive. This section provides recommendations to narrow this gap. Some pointers on how to do this can be taken from other fields and specific good practice country examples, but these will need to be tailored to a clear strategy for developing, designing and funding conflict-sensitive programming.

Research should be conflict-sensitive in content, conception and methodology (Swiss Academies of Arts and Sciences, 2017). Research programmes need to ground their questions in and alongside an understanding of the conflict context. Conflict sensitivity is not the same as avoiding upsetting the dominant group – structural violence and oppression is an important dimension of conflict. Donors should not require conflict-sensitive outcomes to be measured in results frameworks: projects should not be penalised for noticing negative impacts on conflict, since this is a core step in conflict sensitivity. Security should be considered both in terms of the impact the research might have on the context, and for the safety of the researchers (ibid.).

Research programmes should build on lessons from other sectors, such as livelihood programming and development practices in FCAC, taking an integrated, holistic approach across sectors to tackle complex interconnected challenges such as climate change and disasters in FCAC (Peters and Vivekananda, 2014; International Alert, 2019; Wolfmaier et al., 2019). The skills and experience within teams carrying out research or implementing projects in FCAC need to be interdisciplinary, ensuring coverage across themes, sectors and institutional types (UNDP, 2017). At least one conflict advisor and a gender and marginalisation expert should be included within teams. An embedded institutional approach to fragility and conflict and technical capacity and expertise is needed within project organisations in order to understand the specific context.

Research should have an inception phase to enable dialogue, develop a collective understanding of the conflict, the intended programming and how and where conflict sensitivity can be most relevant. Changes can be made to the programme before work begins. Donors can help by planning for timelines that enable trust-building, analysis and space for adaptation.

An inclusive and local approach should be taken to project design, including meaningful stakeholder mapping, understanding complex and evolving power dynamics, effective community engagement and collaboration strategies, and an intersectional approach (Zicherman et al., 2011; Swiss Academies of Arts and Sciences, 2017; UNDP, 2017; Orsini and Cleland, 2018; International Alert, 2019).

Research in FCAC should be flexible; researchers will likely need to adapt their behaviour, activities and communication about what they are doing to the changing research environment. Conflict analysis needs to be consultative, iterative, sensitive, monitored and continuous throughout and beyond project implementation (CSC, 2012; UNDP, 2017). Projects should track areas of programming that might escalate conflict. Being aware of and adapting to a particular conflict context entails developing contingencies and recognising limitations to research (Swiss Academies of Arts and Sciences, 2017). Researchers must decide what concessions or trade-offs they want to make, and projects need to have the scope to adapt and respond to context. Decentralising project decision-making and ensuring support from donor funding mechanisms to enable this agility is integral to ensuring conflict sensitivity in research (UNDP, 2017; Orsini and Cleland, 2018).

There are currently no assessments of the amount, modalities and outcomes of climate adaptation finance in fragile and conflict-affected contexts. Mercy Corps is undertaking a study to map OECD Development Assistance Committee (DAC) bilateral and multilateral official development assistance (ODA) flows for climate adaptation purposes to countries that are highly fragile and exposed to climate hazards, to be published later in 2020 (Moran et al., 2018). The research seeks to answer the following questions:

- How much climate adaptation finance is going to FCAC?
- What is the pace of commitment and disbursement?
- Are finance volumes adequate to countries' needs?
- Are finance flows going into risky projects and locations?
- What are the barriers to accessing these funds?

Moreover, climate security is not a budgetary line, leading to siloed funding and responses. Funding to address problems linked to climate and conflict can take a multitude of labels, such as development, peacebuilding, disaster risk reduction, resilience, climate adaptation, trade and investment. In the absence of a coordination mechanism, all these financial flows operate in isolation from each other, increasing the likelihood of incoherence.

## 4.3 Linking evidence to practice

Integrating conflict considerations into DRR and climate change adaptation and mitigation strategies and implementation plans – and vice versa. Governments and agencies wishing to better address issues of violence, conflict and fragility in disaster and climate strategies and plans are, at present, unsupported. Worked examples, guidance notes and best practices are required that can demonstrate the process and changed outputs that result from integrating conflict considerations into such plans. Where measures to work in armed and violent conflict contexts have been integrated into plans – such as in Afghanistan, Lebanon and the Philippines – research is required to explore how this changes implementation practice and disaster resilience outcomes. Where learning processes are ongoing, such as in Guinea Bissau and Cameroon, an accompaniment process would be useful to share lessons with other governments.

Priority should be given to national and regional actors who have already written linked climate, disaster and conflict prevention action into their priorities, as the African Union has done. Translating ambition into action would be a significant step forward in breaking down current policy and practice silos. This will require a range of support mechanisms, including a technical advisory group and call-down capacity. Other entry points include existing disaster risk networks such as the Making Cities Resilient network, to ensure a focus on urban risk profiles. Finally, including aspects of conflict in the Sendai Framework monitoring process would help to institutionalise the tracking of disaster and conflict dynamics.

Investing in DRR and climate change adaptation in FCAC. Several actions could help mature action on climate and disaster risk in FCAC. Donors could review their investment portfolio to systematically understand and identify ways to strengthen climate and disaster resilience. At its simplest, this means increasing investment in such contexts: 'Reviews should aim to provide donors with recommendations for enhancing

investment opportunities in DRR, as well as new or additional safeguards for ensuring that investments do not exacerbate societal tensions; for donors who already systematically consider conflict dynamics in DRR investments this may be minimal work, but for others it may require a substantive overhaul of current processes and protocol' (Peters, 2019: 44).

To mature project and programme design, guidelines and systems are required to ensure that conflict analysis is systematically integrated into climate and disaster portfolios, and vice - versa – natural hazards, hazards more broadly and climate-related hazards inclusive of the growing influence of climate change, need to be systematically integrated into humanitarian, conflict and peace portfolios. More adventurous ideas include a multi-donor pooled fund for disasters and peace to 'provide financial and technical advisory support to governments on policy design, build the capacity of national disaster management agencies, implement projects with improved monitoring processes that link tracking of changes in disaster and conflict risk and pursue independent research to plug evidence gaps' (Peters, 2019: 45).

# 5 Cross-cutting issues

This chapter highlights some cross-cutting recommendations for bridging the evidence gaps identified in prior chapters.

## 5.1 Recommendation: to triangulate methods and have multi-disciplinary teams to build evidence to support policy and programming

Existing quantitative and qualitative tools, models and approaches to support decision-making on climate, disaster and conflict issues could be more widely applied to support policy and programming design and implementation. Robust multi-method approaches employed by multi-disciplinary teams are needed, which combine quantitative and qualitative assessments with clear discussions about the limitations and uncertainties of the tools and analysis produced. Researchers supporting policy-makers and programme designers should utilise quantitative conflict predictive systems in combination with qualitative risk analysis to explore future risk scenarios and emerging conflicts. For example, quantitative risk assessment and early warning tools tend to either under- or overestimate conflict occurrence and risks alone, and must be coupled with qualitative methods to build more complete contextual pictures.

Such tools are already used to assist climate security programming, risk assessment, early warning, post-disaster recovery and reconstruction and decision-making at the municipal and community level. For example, UNEP (2018) presents a practical guide to integrating Strategic Environmental Assessments in post-crisis recovery to minimise environmental impacts and build resilience to disasters, climate impacts and conflict. Focusing on cities, the World Bank and UNESCO have developed the Culture in City Reconstruction and Recovery Framework, which focuses on both physical infrastructure and social capital reconstruction in the aftermath of conflict and natural hazard-related disasters (World Bank, 2018).

Adelphi's *Climate-fragility profile: Lake Chad Basin* combined locally grounded, participatory interviews with more than 200 people – using an intersectional and conflict-sensitive approach with satellite-based hydrological modelling, triangulated by field observations and data from weather stations around the lake. The data was used to analyse the short-term impact of conflicts and the long-term impact of climate change on people's livelihoods, supporting the co-creation of findings and recommendations through workshops and consultations (Nagarajan et al., 2018).

Data gaps around intersectional and differentiated vulnerabilities, exposure, financial flows and programme performance must be filled in order to strengthen the evidence base and inform policy. This includes the need to:

- Champion systematic and longitudinal data collection, disaggregated by sex, age, economic status, ethnicity, caste and disability, and build methodologies and tools to better capture intersecting inequalities and poverty dynamics (and how these shape vulnerability, capacity and exposure).
- Improve existing data sources tracking international financial flows. There is currently no internationally agreed methodology or taxonomy to track and report activities addressing problems created by climate change and conflict, akin to the Rio Markers developed by the OECD-DAC to 'tag' mitigation and adaptation activities in public international finance flows. Thus, while it is possible to have an aggregate picture of finance flows going to FCAC, it is much more difficult to understand the

dynamics (e.g. effectiveness, efficiency) of these flows.

- Design a monitoring and evaluation system that is longitudinal and can continue to function after the programme has ended, to ensure the generation of long-term data and knowledge. This will help capture social changes and the indirect and secondary impacts of climate change, natural hazards and conflict/fragility. It will also support better measurement of the outcomes of programmes.

Climate and environmental science services need to be included in programmes supporting development, disaster risk reduction and climate adaptation and mitigation in FCAC. Weather (sudden-onset, short-duration events like storms) and climate-related hazards (slow-onset, longer duration events from droughts and heat waves and shifting trends in seasons) make up a significant portion of the natural hazard-related disasters reported in databases such as Munich Re's NatCatSERVICE and the Emergency Events Database (EM-DAT) hosted by the Centre for Research on the Epidemiology of Disasters. However, as highlighted throughout this report, appropriate climate analysis is lacking in many of the studies reviewed. Improper climate analysis and/or a failure to conduct climate attribution analysis seriously undermines the validity of findings purporting specific relationships between weather-/climate-related events and trends (including influenced by climate change), conflict, disasters and natural resource management.

The elements of such climate services include embedding climate scientists within multi-disciplinary teams, to conduct robust, appropriate climate analysis in support of research, policy or programming aims. However, a science-driven evidence agenda, in which climate science dominates the research or programme, will not be helpful in identifying who is truly vulnerable or exposed. Climate services must be user-driven – that is, responsive to and supportive of specific research and project needs – while remaining science-informed. Climate scientists must be able to translate information and analysis to fit project aims, articulate the strengths and weaknesses of the weather/climate information and be clear about how it should not be used. Inappropriate use of the information may lead to invalid findings and/or create or exacerbate negative outcomes from the project. This requires that climate scientists have background and experience in various social science techniques (e.g. surveys, interviews, focus groups) and the ability to work with social scientists to scope and assess project stakeholders' perceived needs for specific types of weather and climate analysis and information based on their goals, and balance this against actual capacities to use the information; actual needs as iteratively and adaptively reflected in programming research and activities; and the availability of climate data.

Finally, there needs to be better coordination and integration of environmental scientists in study teams examining the links between natural resource management, conflict and disasters. Biology, biogeochemistry, hydrology and marine biology researchers are some of those whose services might be needed. Monitoring environmental conditions, such as soil erosion or water supplies, is necessary for tracking where human use is putting undue strain on local ecosystems that could have serious repercussions for livelihoods and well-being, and that reduce the capacity of ecosystems to buffer against the impacts of natural hazards. Remote sensing (where conflict prevents in situ monitoring) can provide valuable data on the state of natural resources, and warn when livelihoods and well-being might be affected. This service should also improve understanding of the potential links between environmental degradation, natural resource management and shifting climates and social structures – and how these could contribute to disasters and/or conflict.

## 5.2 Recommendations for collaboration across research, policy and practice

The recommendations above require new, additional and focused effort in the context of addressing climate, conflict and disaster issues and their intersection with natural resource management. In addressing these requirements, it is important not to lose sight of recognised principles and approaches for research and

programme implementation, which still require dedicated expertise and resources. Longitudinal, cross-sectoral and integrated approaches are needed.

When developing programming, donors and governments should:

- Promote comprehensive, long-term, integrated programmes that consider the full disaster risk management cycle in fragile and conflict-affected contexts (Lovell et al., 2019).
- Ensure better data- and lesson-sharing, coherence and coordination, including among sectoral ministries, to enhance the joint analysis and use of data.
- Ensure the continuity of systems and services (including education, health and employment) that are essential for people's well-being and development outcomes, and which will support people's capacity to manage shocks and stresses (Diwakar et al., 2019).
- Promote an inclusive and human rights-based approach to the design and delivery of policies and programmes.
- Ensure a cross-sectoral approach to development planning, including more effective vertical integration between national, sub-national and local levels of government and organisations, and horizontal lesson-sharing, and scale up action on inclusive climate change adaptation and disaster risk management in fragile and conflict-affected contexts (Lovell et al., 2019).
- Strengthen cooperation between non-state, state and multilateral actors to enhance attainment of rights, accountability and peacebuilding, and climate resilience, adaptation and mitigation.
- Enhance the role of local and informal actors in supporting a better understanding of the local context and in developing appropriate local development solutions.

## 5.3 Recommendations for funding

Fund more qualitative and comparative research and focus on understudied thematic areas where violence and conflict dynamics exist or are emerging. Many of the mechanisms (e.g. migration, livelihoods) through which climate change indirectly influences conflicts are still not well understood. Many cases of conflict would benefit from more on-the-ground, qualitative research to unpack further the dynamics between the climate and the social, economic and political drivers that engendered the conflict. Comparative studies between societies experiencing the same climatic shock but facing different outcomes in terms of conflict, for instance the drought in Jordan and Syria, could perhaps help tease out why certain socio-economic factors lead to violence and others do not. There is also a need to research conflict dynamics in understudied areas, including climate mitigation technologies and approaches (i.e. conventional renewable energy, solar radiation management and REDD+); consequences of unjust climate transition; climate-compatible trade and supply chains; fishery and marine management; and adaptation programmes in locations under the control of non-state actors.

Continue funding research in areas of high interest. The Sahel and East Africa remain two important areas of focus, given increasing violence associated with natural resources and livelihood security and the lack of management strategies and strong shared institutions and mechanisms for conflict resolution (Amani Africa, 2018; Ursu, 2018). However, analysis is overly concentrated in a subset of contexts (Syria, Mali, Niger, Iraq etc.). Donors should consider funding research in other geographies to test assumptions and broaden the evidence base, including the Middle East and North Africa, South Asia (Pakistan, India, Bangladesh, Afghanistan), South America (Venezuela) and the Asia-Pacific (i.e. the Solomon Islands, Tuvalu). This would help in understanding local and regional differences in the definition and interpretation of climate security. For instance, some Western actors have a more traditional view of climate security as implying state or military security, encompassing issues of migration, displacement and violent conflict, whereas some Asian and African actors tend to identify it more with livelihood and development risks (Krampe and Mobjörk, 2018).

Fund studies to assess the climate adaptation funding going to FCAC countries, including

volumes and effectiveness, whether funding is reaching the most vulnerable and addressing the right problems and barriers to access and deployment. Since current funding to address problems linked to climate and conflict exist under different labels, such as adaptation, DRR or investment, international mechanisms and processes should be supported to create methodologies and taxonomies to clearly identify these activities in all international financial flows. This would allow more reliable estimates of funding flows linked to climate and conflict going to developing and FCAC countries.

Funding in FCAC is more likely to be short term, which does not allow for analysis or capacity-building. Programming that encourages competition among local organisations does not create space for collaboration. Donors should require and support programming which is conflict-sensitive and longer-term, with a built-in inception phase, allowing time for conflict analysis and consultative project adaptation (Midgley et al., 2012; Peters and Vivekananda, 2014; Levine et al., 2014 ; UNDP 2017). Programming for uncertainty (in relation to conflict and climate change) should be built into the funding set-up, allowing for adaptability and flexibility in response to change (Swiss Academies of Arts and Sciences, 2017). Innovative approaches to funding include providing non-project-based funds for technical advice on conflict sensitivity and space for cross-project and cross-organisational learning which is non-project-based (UNDP, 2017). The newly created UN Climate Security Mechanism could play a coordinating role here.

This report has explored how FCAC are facing multiple concurrent shocks and stressors whose impacts depend on underlying vulnerability, capacity and exposure contexts. Policies and programmes aiming to promote peacebuilding, security, disaster risk reduction, climate adaptation and stronger natural resource management need to incorporate consideration of these multiple challenges in their design and implementation. This requires intersectional and risk-informed strategies in research, policy and programming (see Opitz-Stapleton et al., 2019).

Donors, researchers and policy-makers alike must resist the urge to simplify connections and impacts that are complex, multifaceted and rooted in the historical context of each FCAC. Climate variability and change, and climate-related hazards, are already having adverse impacts on social and violent conflict, but so too will ill-developed climate change adaptation and mitigation initiatives.

To prevent policy debates from running ahead of the evidence, scrutiny of the evidence is required, and innovation to exploit positive opportunities for pursuing linked conflict prevention, conflict resolution and peacebuilding outcomes from any climate change adaptation and mitigation, natural resource management and disaster risk management action in FCAC. Positive discourses and options for policy and practice are out there. We need to be scrupulous in finding them.

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# Annex 1 Definitions

**Table A1 Definitions: conflict and fragility**

| On conflict and fragility | |
|---|---|
| Armed conflict | 'Various definitions of "armed conflict" have been proposed, but there is no consensus on an operational definition. The Geneva Conventions define an international armed conflict as any form of armed violence by one state against another, whether declared or not. No specific definition for internal armed conflict is offered beyond the stipulation that it is non-international in character. Other definitions use a proxy of battle-related deaths to define the threshold at which an armed conflict can be said to exist (the Uppsala Conflict Data Program and the Peace Research Institute Oslo (UCDP/PRIO)) suggests in excess of 25 deaths in a calendar year), but defining what precisely constitutes a battle-related death is contentious' (Peters, 2019: 14). |
| Conflict | We filtered specifically for instances of violent conflict in the literature review and followed the definition used in DFID's 2010 report *Building peaceful states and societies: a DFID practice paper* and its 2007 policy paper, *Preventing violent conflict*. Thus: 'non-violent conflict is normal and healthy in a pluralistic society. But without mechanisms to resolve conflict, it can easily lead to violence' (DFID, 2010: 15).<br>In addition: Conflict is the pursuit of contrary or seemingly incompatible interests – whether between individuals, groups or countries ... In states with good governance, strong civil society and robust political and social systems where human rights are protected, conflicting interests are managed, and ways found for groups to pursue their goals peacefully. Where there is poor governance, however, grievances, disillusionment, competition for resources and disputes are more likely to become violent (DFID, 2007: 6–7). |
| Fragility | Based on the team's initial scan of the literature, we adopted the definition of fragility and its relation to violence as given in the OECD report States of fragility 2016: understanding violence (OECD, 2016: 21) as: 'the combination of exposure to risk and insufficient coping capacity of the state, system and/or communities to manage, absorb or mitigate those risks. Fragility can lead to negative outcomes including violence, the breakdown of institutions, displacement, humanitarian crises or other emergencies … The calculations reflect a systems-based conceptualisation of fragility. Risks and capacities are measured in five dimensions: economic, environmental, political, security and societal'. However, we also note that our review may occasionally take us into bodies of literature slightly outside the fragile states listed there. For example, for countries such as Colombia and Mexico, there may be germane literature on the nexus of climate change and climate risks, natural resource bases and conflict, even though these countries do not fall within the OECD definition of fragile and conflict-affected states. This, and the fact that conflicts are often sub-national and not directly affecting an entire state, that we opt to use the acronym 'FCAC' for fragile and conflict-affected contexts. |
| Violence | For the purposes of this review, we adopted the definition of violence given in the OECD report, which incorporates both 'political violence' and 'social violence', referring to 'a broader manifestation of grievances, criminal behaviours and interpersonal violence in society' (OECD, 2016: 20). |

Note: in terms of *geographic scope*, the above working definitions also allow us to go beyond a country-level approach in the review and incorporate sub-national contexts. Sub-national literature and case studies are important because they provide insights into climate and conflict dynamics, which may not always stand out in a country-level view. Sub-national case studies may also provide evidence that can inform efforts to scale-up resilience measures.

**Table A2 Definitions: climate and weather**

| On climate and weather | |
|---|---|
| Climate | Climate, in a narrow sense, is usually defined as the average weather or, more rigorously, as the statistical description in terms of the mean and variability of relevant quantities (e.g. precipitation, minimum temperatures) over a period of time ranging from months to thousands or millions of years. The classic period for averaging these variables is 30 years, as defined by the World Meteorological Organization (adapted from IPCC, 2019a: 807). |
| Climate change | Climate change refers to a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties and that persist for an extended period, typically decades or longer. The United Nations Framework Convention on Climate Change (UNFCCC), in Article 1, defines climate change as 'a change of climate which is attributed directly or indirectly to human activity … [and] … is in addition to natural climate variability observed over comparable time periods' (IPCC, 2019a: 808). |
| Climate variability | In our review, this refers to the variations in the means and other statistics (extremes, standard deviations, etc.) of the climate on all spatial and temporal timescales beyond those of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability) such as El Niño, or influenced by anthropogenic climate change and/or natural external forces, such as shifts in solar cycles (adapted from IPCC, 2019a: 809). |
| Disaster | We have used the commonly employed UNDRR (2020) definition of disaster as: 'A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts'.<br>Annotations: The effect of the disaster can be immediate and localised, but is often widespread and could last for a long time. The effect may test or exceed the capacity of a community or society to cope using its own resources, and therefore may require assistance from external sources, which could include neighbouring jurisdictions, or those at the national or international levels. |
| Extreme weather event | Extreme weather events and their relation to conflict, fragility and resilience figure prominently in this review. These are defined as an event that is statistically rare, as rare or rarer than the 10th or 90th percentile of the probability distribution estimated from observations. Persistence of an extreme weather event over a season or more may be called an extreme climate event (definition adapted from IPCC, 2019a: 813). |

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