Climate change and violent conflict: building capacities in climate and conflict-affected coastal communities

Submitted by

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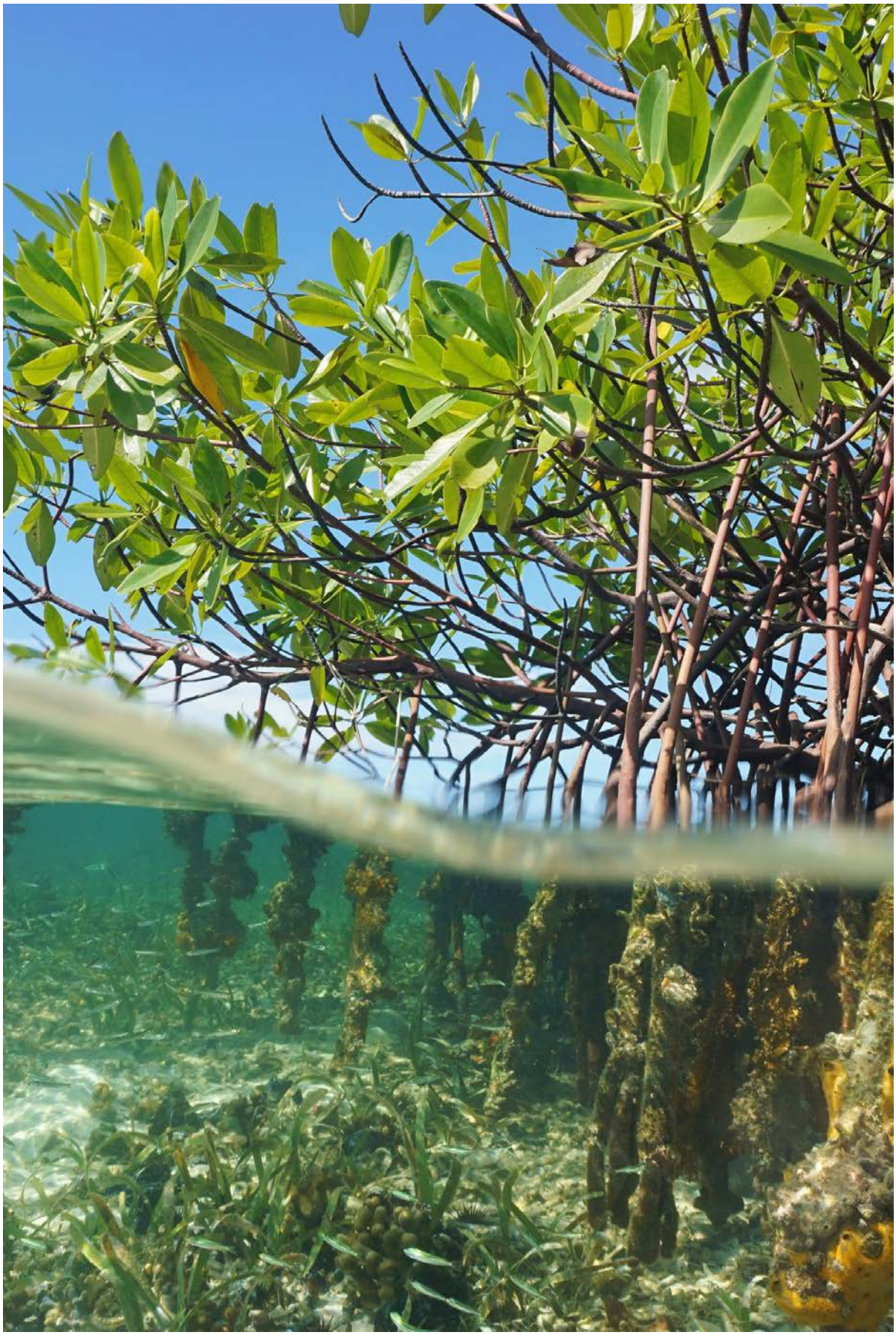
This thesis is dedicated to Colombia's coastal communities affected by violent conflict. The stories of your endurance and resilience have taught me to believe in hope and kindness.

Esta tesis está dedicada a las comunidades costeras afectadas por el conflicto violento en Colombia. Las historias de su resistencia y resiliencia me han enseñado a creer en la esperanza y la amabilidad.



Statement of Originality

I certify that the intellectual content presented in this thesis is the product of my work and the guidance from my supervisors during my Master of Philosophy candidature. All the sources that have helped in writing this thesis have been acknowledged. This thesis has not been submitted for any other degree or other purposes.

Luisa Fernanda Bedoya Taborda

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Peer-reviewed publications

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Other publications during candidature

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Public communications

Restrepo-Yepes, Olga Cecilia; Bedoya Taborda, Luisa Fernanda; Molina Saldarriaga, Cesar Augusto. Spain-FAO Program for Latin America and the Caribbean. [OPINION COLUMN] Challenges of artisanal fisheries and the Right to Food in Colombia.

Abstract

Coastal communities depend on certain social-ecological conditions to secure their livelihoods and well-being. Climate change impacts, such as sea level rise, floods, coastal erosion, and ecosystem degradation, may increase the vulnerability to new conflicts. Yet, the communities that will be most impacted by climate change are already affected by conflict or have been in the recent past. Climate change can force groups of people to displace and strain already conflict-affected communities. Conflict causes social unrest, weakened state capacity, and loss of income, so economic opportunities in conflict-affected communities are limited, resulting in few options for livelihood diversification to respond to climate change impacts.

Climate change adaptation and peacebuilding projects will need to adjust to these circumstances to cope with the cumulative impacts of climate change and conflict. Adaptation and peacebuilding projects typically involve temporary responses to address imminent needs. However, these responses have been insufficient to cope with cumulative impacts. These responses are not deep enough to reduce the risk of climate change impacts and build climate resilience, much less when there is an ongoing or recent violent conflict. Forced displacement, territorial control exercised by armed groups, and the use of strategic ecosystems in military efforts can lead to the inefficient use of natural resources in coastal areas. If the relationship between climate change and violent conflict is not considered in policy, regulation, and practice, governance efforts to support climate change adaptation and peacebuilding may not be effective. Emergent responses that integrate the complexities of climate change and conflict will be essential to build resilience and peace and, importantly, to recognise the relationship between climate change and conflict.

Here, I detail the background and significance of recognising this relationship (**Chapter 1**) and present the results of a bilingual review of research on the current climate-conflict relationship (**Chapter 2**). In the review, I found that several studies (in English and Spanish) focused on the interactions between climate change and violent conflict in conflict-affected communities suggest a climate change-conflict cycle that is negatively reinforcing, whereby violent conflict increases climate change vulnerability and feedback from climate change increases violent conflict vulnerability. While limited in number, such studies provide important insights enabling further conceptual development and empirical examination of how current climate impacts interact with existing violent conflict and how governance efforts can simultaneously support peacebuilding and climate change adaptation.

Drawing this work together and using a case study of a conflict- and climate-affected mangrove community in Colombia, South America, and a two-stage method including semi-structured

interviews (n = 16) and document analysis (n = 45), I found that many of the activities carried out in climate change adaptation and peacebuilding projects overlap (**Chapter 4**). Specifically, I found six key areas of overlap: access to information, education, social networks, employment, environment, and healing. I also found two glaring gaps (i.e., areas that were a major focus in one type of project but were not present or considered in the other) that may undermine or create difficulties for climate change adaptation and peacebuilding: protection and/or safety and socio-cognitive constructs. Building upon these overlaps and gaps, I developed a new synergistic framework to integrate climate change adaptation and peacebuilding in climate and conflict-affected communities. This new framework provides novel insights into how to develop policies and projects that build synergistic capacities and address the cumulative impacts of climate change and conflict in fragile contexts.

Positionality

Positionality describes the perspective of a researcher and their position on the project and its social and political context (Savin-Baden & Howell Major, 2013). This perspective includes ontological assumptions (an individual's beliefs about social reality), epistemological assumptions (an individual's beliefs about knowledge), and assumptions about human behaviours and agency (an individual's assumptions about the way we interact with the environment and relate to it) (Holmes, 2020). These assumptions are influenced by political ideologies, religion, gender, historical and geographical location, ethnicity, social class, and education.

When interviewing key informants or representatives from climate change adaptation and peacebuilding organisations in Colombia, it was essential to be self-aware of these assumptions and how they may influence their responses. Especially because of the long history of armed conflict in Colombia that draws management and government positions into political discussions. I navigated this highly politicised context as a Colombian woman, a lawyer, and a Higher Degree Research student at James Cook University and the Australian Research Council Centre of Excellence for Coral Reef Studies. I was also aware that my personal background—being from a coastal town in Colombia and representing victims of violent conflict in a peacebuilding organisation— influenced my position. However, there was no conflict of interest to declare as the interviewees were key informants whom I have not previously worked with and who were participating in projects implemented in areas where I did not work in the past or with whom I do not have a pre-existing affiliation or relationship.

At the same time, I was aware that the research project involved sensitive topics (climate change adaptation and peacebuilding) as I interviewed key informants participating in climate change adaptation and peacebuilding projects. However, I did not refer to violent groups or interrogate participants about their affinity with the groups. The interviews were strictly focused on implementing a project in the coastal community in Colombia, and I focused substantial attention on finding areas of common ground as part of building rapport. Part of building rapport is being deliberately open and genuinely interested in participants' views, especially when they differ from mine. I was clear about my position as a student and my previous job in Colombia in a peacebuilding organisation. In this job, I participated in training on interviews and ethnic and gender perspectives in legal actions to represent conflict-affected communities. This training helped me to understand their perceptions and build rapport.

I explained to the interviewees that I would be the only one to read the raw interview transcripts, though advisors may review the coding of de-identified manuscripts. During the interviews, I frequently sought to identify and explicitly reference aspects of my identity that my participants could relate to. For example, I would often mention I was from Colombia and sometimes mentioned I had experienced conflict and climate impacts in my coastal town. This was to build a connection with most participants regarding familiarity with living in Colombia and the long history of armed conflict. Although I did aim to build rapport by sharing relevant parts about myself, I tried to avoid providing so much information that it might affect how participants responded to open-ended questions about conflict and climate change. I did not talk about my political affiliation or indicate whether I agreed or disagreed with particular statements.

I frequently repeated back to the participants what they had said, to confirm I had understood it correctly. I also tried to encourage them to get specific. For example, if participants said “they” or “we” I would ask who they meant. If terms such as “resilience” or “conflict situation” were used, I asked for further definitions where possible without disrupting the participants’ thought processes.

In the end, I also informed the interviewees of the benefits of the project in the coastal community, including understanding in detail the difficulties and outcomes of the climate change adaptation and peacebuilding projects implemented in their region, increasing the effectiveness of these projects and the capacity of the institutions and organisations involved in climate change adaptation and peacebuilding projects.

Ethical Considerations of Research in Conflict Settings

The James Cook University Human Research Ethics Committee approved the project on 17 May 2023, No. H9090. The approved research project included semi-structured interviews with key informants participating in climate change adaptation and peacebuilding projects in a politically unstable area (Colombia, South America). However, I did not anticipate any physical harm risk because the semi-structured interviews were online in Microsoft Teams from Australia.

There were some limitations associated with online interviews (e.g., online communication may expose participants and interviewers to digital security risks; participants may have varying knowledge of online tools or technical issues such as outdated hardware and software incompatibility; and there may be difficulties in building rapport online). However, I overcame these difficulties by using secure and encrypted platforms approved by James Cook University, meeting the participants 15 minutes before the interview to help them set up the computer, and doing videoconferences instead of an audio call to build trust and rapport.

I asked all interviewees to sign an informed consent form where each participant consented to be interviewed, to use the interview and the information provided, and for the interview to be audio and videotaped. The interviews were at a time and date convenient for the participants (Bogotá, Colombia time zone). I asked them to be in an enclosed and individual space to support the data quality and privacy, along with the confidentiality of information.

In the consent, I informed the interviewees about the project and emphasized that the interview may cause minor discomfort, distress, or anxiety. Then, I informed them that being part of the study was voluntary and that they could withdraw their consent at any time without explanation or prejudice, including the option to withdraw any unprocessed data. I informed them of the free counselling services in Colombia in case of distress and never asked them to identify groups or conflict parties or express their affinity to the conflict parties. The interviews were strictly focused on implementing projects in the coastal community. I also informed them that the interviews were confidential and that they would not be identified in any way in publications.

The participants recruited into this research project were a) Key project personnel and national institutional representatives involved in climate change adaptation projects and/or peacebuilding projects and/or b) Experts on climate change adaptation projects and/or peacebuilding working on the research institutions or international foundations. That implies I did not recruit participants from any groups outlined in Section C of the Risk Assessment

Checklist as I interviewed organisational representatives – not community members who may have been personally involved with historical conflict. I stated that I have previously worked in the area, speak the language, and understand local sensitivities.

I was aware that the project involved sensitive topics (climate change adaptation and peacebuilding in conflict-affected communities). Yet, I implemented these procedures (and informed the Human Research Committee about it): First, I did not refer to groups or conflict parties or ask participants to indicate their affinity with conflict parties. Second, I applied best practices in qualitative methods, such as putting sensitive questions toward the end of interviews (but not at the very end) after I had had time to build rapport. Third, if, for some reason, participants were hesitant to share information on the record, I considered not using a recorder and instead taking notes.

When analysing the Human Ethics application and this information, the James Cook University Human Research Ethics Committee determined it was low-risk research and approved the project because of the potential benefits to the participants and contributions to the general body of knowledge.

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List of Acronyms

AR	Assessment Report
CCA	Climate change adaptation
IPCC	Intergovernmental Panel on Climate Change
OECD	Organisation for Economic Cooperation and Development
PB	Peacebuilding
PNUD	United Nations Development Programme (in Spanish)
QSR	Qualitative Research Data Analysis Software
SES	Social-Ecological Systems
UN	United Nations
UNDP	United Nations Development Programme
WoS	Web of Science

Introduction

Introduction

Climate change and violent conflict are increasingly discussed as linked to each other (Buhaug, 2015; Programa de las Naciones Unidas para el Desarrollo (PNUD), 2023). Such discussions have, in particular, intensified since the publication of the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4), which identified the potential detrimental impacts of climate change on peace and human security (Intergovernmental Panel on Climate Change, 2007). Afterwards, the IPCC 5th Assessment Report (AR5) dedicated a complete chapter to human security (Chapter 12) to underscore the urgent need for a comprehensive understanding of the climate change-conflict relationship (Adger, 2014). While of increasing interest, analysis of how uncertain structural factors, such as climate change, lead to rare social outcomes, such as violent conflict, are inconclusive. This uncertainty is exacerbated by research practices using different conflict indicators (e.g., civil, communal, armed), measures of climate change (e.g., changes in rainfall and temperature, natural disasters), spatial (e.g., municipalities, countries, or regions), and temporal scales (e.g., months, years), and intermediate variables (e.g., economic growth, agricultural production, migration, land use) (Mach et al., 2019; Salehyan, 2014). Furthermore, even though there are many places already experiencing violent conflict or trying to maintain peace, most studies attempt to establish a direct causal relationship between climate change and violent conflict - instead of trying to understand the indirect relationship or interaction between climate change and violent conflict in already conflict-affected areas.

Conflict-affected areas face the overlapping challenges of reducing the risk of recurring conflict, achieving social and economic development, and ensuring sustainable environmental challenges: all challenges exacerbated by climate change impacts (Sitati et al., 2021; Vivekananda, 2014). That is the reason conflict-affected communities are considered the most vulnerable to the impacts of climate change (Kurtz & Elsamahi, 2023; Smith & Vivekananda, 2007). This vulnerability is largely associated with weakened state capacity and low economic development to respond to increasingly frequent and severe climate change impacts (Morales-Muñoz, 2022). Yet, there is limited understanding among governments, scholars, and practitioners of these interactions and how to respond to conflict in ways that also strengthen communities' adaptive capacity in the face of climate change. To help fill this knowledge gap, this thesis synthesises insights on the relationship between climate change and violent conflict through a case study of Colombia, South America, to understand better this relationship in a mangrove community affected by the long history of armed conflict in Colombia.

The outline or structure of the thesis includes the background and significance of the project (Chapter 1), the literature review (Chapter 2), gaps, research questions, objectives, and methods (Chapter 3), the case study (Chapter 4), and conclusions, with Chapter 3 adapted from a peer-reviewed article in production for publication and Chapter 4 in submission. In **Chapter 1**, I describe the background and importance of studying the relationship between climate change and conflict. In this chapter, I study how the potential links between climate change and conflict have been increasingly discussed in academic and policy circles since the IPCC's 4th Assessment Report in 2007 and the first special session of the United Nations (UN) Security Council, as well as the significance of this interest in understanding such links.

In **Chapter 2,** I present the findings of a bilingual (Spanish and English) systematic literature review of quantitative and qualitative studies on climate change and violent conflict from 2007 to 2023. In the review, I characterise the study of the interactions between climate change and violent conflict in conflict-affected areas as knowledge gaps and sketch out a promising (and underdeveloped) research agenda.

In **Chapter 3**, and building on the literature review findings, I describe the knowledge gaps, objectives, research questions of the project and the overarching methodology. To this end, I describe the use of a case study and a two-stage qualitative data collection method: (1.) document analysis (e.g., government reports) and (2.) semi-structured interviews with key informants (e.g., government institutions representatives). This two-stage data collection method is designed to identify the capacities that conflict-affected areas need to respond to the compounded impacts of climate change and violent conflict.

In **Chapter 4**, and to respond to the research questions, I study how climate change interacts with violent conflict in a conflict-affected mangrove community in Colombia, South America. Drawing on the results of this study, I developed a new framework that can help build peace and resilience in conflict-affected areas.

Finally, in the conclusions, I argue that climate change-induced impacts on human security in communities affected by both climate and conflict are forcing communities to displace, whether internally or across borders, resulting in potential resource-related conflicts. To address these challenges, climate change adaptation and peacebuilding must implement comprehensive projects to build adaptive capacities in synergy. Otherwise, climate change adaptation and peacebuilding may not be effective – and potentially counterproductive - in coping with the cumulative and interactive impacts of climate change and conflict.

Chapter 1 Background and significance

Chapter 1

Climatic impacts that alter the social-ecological conditions where communities secure their livelihoods and well-being may increase instances of resource competition that turn violent and contribute to the onset of conflict (Miles-Novelo & Anderson, 2019; Walby, 2013). Climate change impacts may also force some groups of people to move, becoming either refugees or internally displaced persons. This can lead to violent conflict through a sudden increase in competition for an area's resources (Miles-Novelo & Anderson, 2019).

Climatic conditions leading to violent conflict have been a rising political and policy priority since the first special session of the United Nations Security Council on the topic and the IPCC's 4th Assessment Report in 2007 (Intergovernmental Panel on Climate Change, 2007; United Nations Security Council, 2007). The United Nations Security Council and the IPCC report emphasized that climate change can potentially lead to conflict via competition for water resources. For example, the evidence used in the Security Council and the report showed that drought in Africa was pushing pastoralists to settle on the farmlands of sedentary communities in seek of forage and the use of violence to solve arising disputes (Intergovernmental Panel on Climate Change, 2007). Thus, the United Nations Security Council and the IPCC report constituted starting points for climate change and conflict studies because they marked a new interrogation of contemporary security paradigms (Gleditsch & Nordås, 2014; Smith & Vivekananda, 2007).

Following the Security Council and the publication of the IPCC Report, the relationship between climate change and violent conflict has been interrogated through two distinct types of analysis: (1) identifying direct causal links between climate change and violent conflict and (2) investigating indirect or contextual links between climate change and violent conflict in conflict-affected communities. The indirect or contextual links between climate change and conflict point to the fact that climate change does not exist in isolation from historical forms of social and political organization (Walby, 2013). Studies have shown that climate change interacts with socio-economic and political conditions, such as food insecurity, gender inequalities, land and ocean management, and limited access to basic services and resources to cause violent conflict (Spijkers et al., 2021). In other words, communities and individuals are not tied to meteorological or ecological conditions in a mechanistic way (Walby, 2013). The empirical forms and modalities of violence and conflict thus do not exist in isolation from the social and political organisation; they exist within a social context (Walby, 2013). Climate change will influence environmental stress and cause conflict if other prevalent conflict drivers interact with social structures (Spijkers et al., 2021).

A few studies, for example, evidenced that the armed conflict in the Darfur region in Western Sudan, Africa, which started in 2003, is not a conflict driven by climate change in isolation (Adger et al., 2014). Rather, they argue that climate change interacted with existing socio-economic and political conditions, such as the history of violence, the use of ethnic divisions by groups in Sudan, the loss of traditional conflict resolution mechanisms through government policies, systematic exclusion of local and ethnic groups from political processes; limited economic development; and inadequate provision of public services and social protection (Adger et al., 2014).

This type of analysis (2) suggests that climate change will clearly strain conflict-affected communities (Vivekananda, 2014). Therefore, climate change adaptation regulations, policies, and projects will be necessary to enable communities to adjust to these circumstances and cope with the impacts. Otherwise, regulations and policies may not be effective, worsening the risk of violent conflict and, in turn, reducing communities' ability to adapt (Smith & Vivekananda, 2007).

Conflict-affected communities often face violent conflict and displacement and, at the same time, changing rainfall patterns and increased temperatures due to climate change. These simultaneous impacts lead to the disruption of traditional conflict resolution mechanisms and armed groups' manipulation of tensions between farmers and pastoralists. More than one million people were forced to leave their homes in Mali, Niger and Burkina Faso because of conflict and violence in 2019, and in 2020 those communities were subsequently affected by floods (International Committee of the Red Cross, 2020). While the impacts of climate change strain conflict-affected communities, feedback from conflict increases vulnerability, creating conditions for a vicious circle of violence (Sitati et al., 2021).

Conflict-affected communities also face a lot of difficulties during peace agreement implementation processes or transitional justice mechanisms, including remedying fragile governance structures, sustaining security, and achieving development (Rodriguez Garavito et al., 2017). Added to those difficulties are the impacts of climate change, which could exacerbate instability or fragility. The United Nations General Assembly has stressed that the most vulnerable communities, those post-conflict or relying on degraded or limited natural resource bases, will be greatly impacted by climate change, accelerating the current effects of conflict (Nicoson, 2017). For example, Liberia on the West African coast suffered extreme violent conflict and a dictatorship from 1980 to 2003. In 2007, Liberia faced significant difficulties in trying to consolidate peace (Smith & Vivekananda, 2007). Returning refugees and

internally displaced people settled in rural regions, exacerbating land disputes between ethnic groups. Liberia also faced climate change impacts, such as floods and changes in rainfall patterns, that threatened to destabilize the peace process (Smith & Vivekananda, 2007).

Policies and projects to adjust to these circumstances and cope with climate change impacts will be necessary for maintaining human security in Liberia and other regions. However, the environmental security literature is, in general, centred on finding direct causal links between climate change and violent conflict rather than indirect or contextual links between climate change impacts and violent conflict in conflict-affected communities. Only several studies in the environmental security literature provide empirical evidence of these indirect or contextual links. Given that conflict-affected communities have some of the highest intersectional vulnerabilities to climate change, future research in these areas is needed to identify entry points to strengthen peacebuilding and climate change adaptation projects.

1.1 Peacebuilding and Climate Change Adaptation

Peacebuilding is a complex, long-term process of creating the necessary conditions for sustainable peace and human security (Rodriguez Garavito et al., 2017). Peacebuilding is not limited to post-conflict reconstruction and involves interventions that precede and follow peace agreements to reduce the recurrence of conflict, promote economic recovery, and ensure sustainable environmental management (Rodriguez Garavito et al., 2017). This process includes demining, demobilising, and retraining ex-combatants and interventions needed to achieve sustainable peace, such as land restitution, repairing transport and communications, and reintegrating displaced communities (Rodriguez Garavito et al., 2017). Creating the necessary conditions for sustainable peace and human security also requires work on the structural causes of conflict and the implementation of measures to support local communities' capacities to manage and solve conflicts.

Communities in a peacebuilding process face significant difficulties in solving structural causes of conflict and securing peace. The difficulties include remedying fragile governance structures, sustaining security, and achieving development. Moreover, climate change impacts exacerbate the existing challenges, potentially intensifying instability and fragility. (Sitati et al., 2021; Smith & Vivekananda, 2007; Vivekananda, 2014). For example, Nepal, in South Asia, began a peacebuilding process after a 10-year civil war. The civil war in Nepal was linked to poverty, inequality, arbitrary authority, and corruption (Malamud, 2020; Rodriguez Garavito et al., 2017; Smith & Vivekananda, 2007). The peacebuilding process attempted to alleviate poverty and improve communities' livelihoods. Still, Nepal's communities faced many

difficulties due to the persistence of the underlying social and economic causes of the civil war and due to ongoing climate change impacts. The Midland region was severely deforested and eroded, and there was a shortage of wood and fodder for daily use. Nepal's communities were already facing environmental stress, and climate change exacerbated the risk of conflict reoccurrence (Smith & Vivekananda, 2007).

Policies and projects to integrate peacebuilding and climate change adaptation in conflict-affected communities such as Nepal will likely be necessary. Peacebuilding measures may pose a significant opportunity to simultaneously address security concerns and climate change impacts. Peacebuilding may encompass economic recovery, land reform, supporting livelihoods, improving governance, or facilitating cooperation and reconciliation (Rodriguez Garavito et al., 2017). The United Nations Environmental Program post-conflict assessments illustrate that investment in effective, equitable, and conflict-sensitive strategies for natural resource management may lessen incentives for conflict, reduce the impact on communities and the environment due to conflict outbreaks, and enhance opportunities for durable peace (Nicoson, 2017).

Many of the strategies implemented in peacebuilding processes may also be relevant for building adaptive capacity and resilience to climate change. For example, peacebuilding can contribute to resource restoration, environmental management, and climate change adaptation by eliminating or reducing ways in which environmental stress induced by climate change might contribute to conflict reoccurrence (Nicoson, 2017). However, integrating peacebuilding and climate change adaptation will not be without its challenges. Peacebuilding projects may increase the vulnerability to climate change, and climate change adaptation projects may have substantial conflict effects, as recognised in the "maladaptation" literature (Hendrix et al., 2023).

Climate change adaptation must be conflict-sensitive, and peacebuilding must be climate-sensitive (Matthew, 2014; Smith & Vivekananda, 2007). Though existing research is beginning to recognise these challenges and argue that it is necessary to integrate peacebuilding and climate change adaptation, we still lack empirical research providing direct insight into this topic. Empirical examinations of the interlinkages between peacebuilding and climate change adaptation are urgently necessary to respond to the compounded impacts of violent conflict and climate change. Gaining insight into these interlinkages may inform how to build capacities in conflict-affected areas to respond to violent conflict and climate change.

1.2 Building capacities in conflict-affected coastal communities

Capacities for climate change adaptation refer to the various factors that form the foundation of individuals' capability to prevent and adapt to change, mitigate and recover from its effects, and take advantage of emerging opportunities. (Barnes et al., 2020). These capacities have the potential to address climactic concerns and may also contribute to the prevention of conflict (Nicoson, 2017). Yet, existing research does not provide sufficient evidence of the capacities communities in conflict-affected areas need to respond to the cumulative impacts of climate change and violent conflict.

Understanding how to effectively build capacities to respond to climate change and violent conflict is particularly urgent in coastal communities, which are at the forefront of the climate crisis (Morrison et al., 2019). Coastal communities around the world that depend on marine resources (e.g., mangroves, coral reefs, seagrass meadows, and salt marshes) have high exposure and vulnerability to climate impacts yet often have the lowest capacity to respond (Barnes et al., 2020). Even a moderate sea-level rise of a few decimetres is likely to drive countless inhabitants in coastal areas in Asia, Africa, and Latin America from their homes, making them “sea-level refugees” (Bollmann, 2010).

However, ever-clearer evidence of climate change impacts in coastal areas has not induced the necessary responses. Typical responses are not deep enough to reduce the risk of climate change impacts and build climate resilience, much less when there is an ongoing or recent violent conflict (Morrison et al., 2022). Certain coastal communities are already facing compounded impacts and pressures from ongoing societal disruptions, which complicates governance efforts to develop and implement climate adaptation and peacebuilding projects (Morrison et al., 2017). If the relationship between climate change and violent conflict is not urgently considered in policy and practice, projects to support climate change adaptation and peacebuilding may not be effective. As a result, the risk of violent conflict will rise, and in turn, the ability of coastal communities to adapt will decline (Smith & Vivekananda, 2007).

Chapter 2 Literature Review

Adapted from **Bedoya Taborda, L.**, Barnes, M.L. &, Morrison, T.H. (2024). Adaptation and peace: Extending the agenda for capacity building in climate and conflict-affected communities. *WIREs Climate Change* (**in production for publication**) Adaptation and peace: Extending the agenda for capacity-building in climate and conflict-affected communities. WIREs Climate Change. Submitted 07-September-2023. Re-submitted 15-April-2024.Re-submitted for publication 18-July-2024. Accepted and in production 19-August-2024.

Chapter 2

2.1. Abstract

Climate change impacts on the social-ecological conditions that communities depend on may increase the vulnerabilities to new conflicts. Yet, the communities that will be most impacted by climate change, as noted by the Intergovernmental Panel on Climate Change (IPCC), are already conflict-affected communities. Here, I present the results of a systematic review of quantitative and qualitative studies (n = 212) in Spanish and English on the climate-conflict relationship. I found that most studies are focused on a direct relationship between climate change and violent conflict, and there has been less attention paid to contextual or indirect relationships in conflict-affected communities. Studies on this contextual or indirect relationship suggest a climate change-conflict cycle that is negatively reinforcing, whereby violent conflict increases climate change vulnerability, and feedback from climate change increases violent conflict vulnerability. While limited in number, such studies provide important insights enabling further conceptual development and empirical examination of how climate impacts interact with violent conflict and how governance efforts can simultaneously support peacebuilding and climate change adaptation. Drawing this work together with the latest frameworks in conflict studies and adaptation, I sketch out a promising synthetic agenda, focusing on how to design policies and projects that build synergistic capacities and address cumulative and interactive impacts of climate change and conflict. Without such insight, efforts to treat climate and conflict in parallel may be ineffective or even counterproductive, worsening violent conflict and, in turn, further reducing the capacities of communities to build peace and resilience.

Graphical/Visual Abstract and Caption

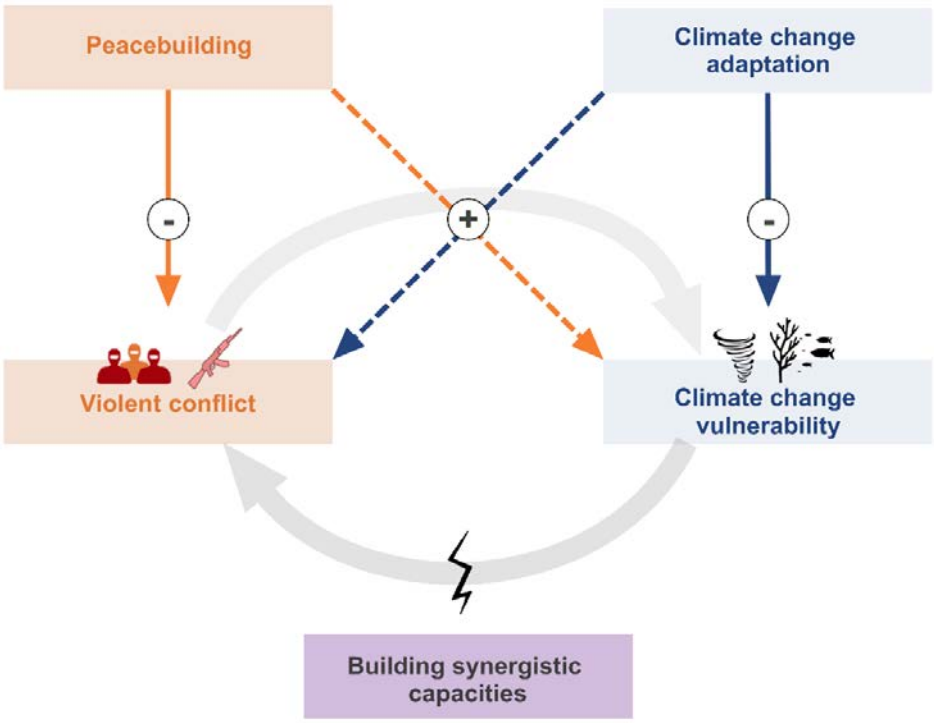


Figure 1. Graphical abstract. Climate change-conflict interaction creates a cycle that is negatively reinforcing. Peacebuilding and climate change adaptation intend to reduce (-) violent conflict and climate change vulnerabilities. However, they are not typically built to withstand the cumulative and interactive impacts of violent conflict and climate change and can thus unintentionally increase (+) communities' vulnerabilities to climate change and violent conflict. I propose that the negative cycle may be disrupted by building synergistic capacities (Original figure).

Keywords

Climate change; conflict; adaptation; peacebuilding; adaptive capacity.

2.2. Introduction

Climate-induced changes will have significant negative effects on human behaviours (Intergovernmental Panel on Climate Change, 2018, 2022) (IPCC). These effects may lead to new resource competition and conflict or put additional strain on already conflict-affected communities (Lhoest et al., 2022; Miles-Novelo & Anderson, 2019; Walby, 2013). Since these climate-induced security implications were highlighted in the IPCC's 4th assessment report in 2007 and the first special session of the United Nations (UN) Security Council in the same

year, scholars have dedicated much attention to establishing the causal links between climate impacts and future and/or past conflict (Bakhsh et al., 2020; Chavunduka & Bromley, 2011; Jones et al., 2017; Koubi et al., 2012; Landis, 2014; Raleigh & Urdal, 2007; Theisen, 2008; von Uexkull et al., 2023). This scholarly focus was built on broader efforts to emphasize stability, human security, and humanitarian concerns that had, until then, primarily been the focus of the practitioner and grey literature (Renner et al., 2007; Smith & Vivekananda, 2007; Stedman, 2007). Despite its growing importance, there is a limited understanding of climate change impacts in communities that are already experiencing violent conflict or engaging in peacebuilding processes and how these cumulative impacts might affect efforts to build adaptive capacities to address climate change (e.g., climate adaptation projects) in the face of violent conflict.

To broaden the understanding of the impacts of climate change in conflict-affected communities, I conducted a review of the limited but growing number of studies focused on how climate change impacts and interacts with existing and/or past violent conflict. To counteract the dominance of English-speaking narratives, I conducted the review in Spanish and English. Importantly, I did not limit the systematic review to literature attempting to find a direct relationship between climate change and violent conflict, as this is already a well-established area of study (Buhaug, 2010; Busby et al., 2018; Hendrix et al., 2022; Ide, 2023; Mach, 2019; Raleigh & Urdal, 2007; Salehyan & Hendrix, 2014; Slettebak, 2012; Theisen, 2008; von Uexkull et al., 2020). Rather, I moved beyond the direct relationship to identify and synthesise studies that are beginning to build a comprehensive understanding of the interactions between the impacts of climate change and conflict in already conflict-affected communities.

Specifically, in the review, I asked: (a) Under what circumstances or intervening factors does the literature suggest climate change interacts with violent conflict? (b) How does climate change adaptation occur in conflict-affected communities? and (c) What new understanding is needed to bridge the gap between peacebuilding and climate adaptation efforts? To answer these questions, I first introduce the parameters of the systematic review method. I then briefly introduce the state of play in understanding climate change impacts and conflict before interrogating the implications for future research and practice. Through the literature review, I lay the groundwork for policymakers and future researchers to understand and improve the interactions between climate change adaptation and peace in already conflict-affected communities.

2.3. Methods

To review the literature on climate change impacts and violent conflict in conflict-affected communities, I conducted a systematic literature review from 2007 to 2023, including a comprehensive citation search of all references cited in the papers initially identified. Systematic reviews comprise an exhaustive and comprehensive search of the literature and synthesis of the existing knowledge on a specific topic with a high degree of precision, clarity, and replicability (Biesbroek et al., 2018). A systematic review includes a set of review questions, inclusion/exclusion criteria, a replicable method, a systematic search to identify papers that would meet the criteria and a synthesis of the characteristics and findings of the included studies (Lasserson et al., 2019). I restricted the review to the papers using the definitions, concepts, and procedures described below in section 2.3.1. in Spanish and English. Spanish is one of the most spoken languages in the world after English and is the official language of more than 20 countries and territories, many of which have experienced both severe climate impacts and violent conflict (Programa de las Naciones Unidas para el Desarrollo (PNUD), 2023). The dominance of English as the common language of climate social science presents a major challenge for increasing the contribution of studies of Spanish-speaking countries and Spanish-speaking authors (Amano et al., 2023; Nolde-Lopez et al., 2023). The included papers in Spanish and English were organised as indicated by the Preferred Reporting Items for Systematic Reviews and Metanalyses (PRISMA) methodology (Page et al., 2021).

2.3.1. Definitions of climate change and violent conflict

The IPCC defines *climate change* as long-term alterations in temperatures and weather patterns (Intergovernmental Panel on Climate Change, 2018). Climate change is not synonymous with *climate variability*, which is defined as the way that climate variables (such as precipitation and temperature) differ from an average (Intergovernmental Panel on Climate Change, 2018). Climate change includes significant changes in decades or longer rather than changes in weather patterns that occur in a month or year. Similarly, climate change is not synonymous with *climate extremes*, which are defined as occurrences of rare climate conditions that can cause devastating impacts on communities (Herring, 2020).

For this review, I was interested in all the potentially important variables of a changing climate that may influence human behaviour, including climate change, climate variability, and climate extremes. Thus, I broadened the review to all climate-related social-ecological system changes. Social-ecological systems (SES) reflect an interconnected relationship between

individuals and/or social groups and ecosystems (Folke, 2006; Ostrom, 2009). SES experience constant changes triggered by ecological, economic, institutional, and social factors that impact communities and ecosystems (Moore et al., 2014). Climate-related social-ecological changes, therefore, refer to climate-induced changes in ecological conditions that impact communities and ecosystems. This understanding formed a useful definition of climate change as I worked through the literature.

Definitions of conflict, by contrast, encompass notions of conflict intensity, level of social organisation, and different actors and drivers. Studies analysing conflict and climate change commonly differentiate between “civil war (>1000 battle-related deaths or casualties) and civil conflict (>25 battle-related deaths or casualties)” (Koubi, 2019). However, as intensity is not consistently used in studies to define conflict, I use the concept of violent conflict to capture both high and low-intensity conflicts. Conflict can be violent [i.e., involves the use of physical or psychological force to act against individuals and/or groups (Galtung, 1969)], armed [i.e., between organised armed groups such as insurgents and state forces (Mach et al., 2019; Mach, 2019)], and/or communal [i.e. between groups that are united “along some communal identity”, such as pastoralists and farmers in Africa (McNeely, 2011; Sebastian Van Baalen & Malin Mobjörk, 2016)]. Here, my interest was in all forms of violent conflict, including (but not limited to) armed conflict, to cover qualitative studies that (commonly) do not use a level of intensity to define conflict. Violent conflict is defined here as a confrontation in which two or more individuals or groups consider their values, interests, or needs as opposite and assume violent actions to impose them (Ide et al., 2016). This excludes other forms of conflict that may be impacted by climate change, such as social conflict (e.g., protests, riots, or livestock theft), targeted assassination of environmental leaders often engaged in climate-related protest (e.g., anti-hydro infrastructure), and/or gang violence in urban contexts. In excluding these types of conflict, I acknowledge my work must not be considered exhaustive. Definitions of conflict-affected areas, ultimately, include areas identified by the presence of conflict, the transition from conflict to peace, severe human rights violations, political and social unrest, and/or institutional instability (Hellin et al., 2018; Sitati et al., 2021; United Nations Development Programme (UNDP), 2021; Vivekananda et al., 2014a).

Table 1. Definitions used in the review.

Term	*Definition*	*Variables included in the review*
Climate-related social-ecological system changes	Changes in ecological conditions that are affected by climate variations that impact communities and ecosystems.	Climate Climate change Climate variability Climate extreme
Violent conflict	Confrontation in which two or more individuals or groups consider their values, interests, or needs as opposite and assume violent actions to impose them	Violent conflict Armed conflict Conflict-affected

2.3.2. Conducting the search

Systematic keyword searches were conducted using two databases: Scopus and Web of Science (WoS). For the search, I used a Boolean search string of keywords about climate-related social-ecological system changes that may influence human behaviour and violent conflict (detailed in Table 2). The initial search generated 694 papers in Scopus and 72,349 in WoS, of which 56 were duplicates. I then removed 148 in Scopus and 46,145 in WoS before screening based on the inclusion/exclusion of the search string in the title, abstract, and/or keywords. As a result, I screened 26,694 papers and removed a further 26,050 that were not directly relevant to the review. For example, papers focused on animal-human conflicts, conflict of interest, gang violence in urban contexts, protests, or riots, or papers that only briefly mentioned climate-related social-ecological system changes without additional analysis were removed.

Table 2. Keywords used in the search.

Strings and combinations
climate OR “climate change” OR “climate variability” OR “climate extreme”
AND
“violent conflict” OR “armed conflict” OR “conflict-affected”

After removing the papers considering the relevance of the study, I attempted to retrieve 644 papers, but 138 were not retrievable from the databases due to access restrictions and regional limitations imposed by publishers. As a result, 506 papers were assessed and included/excluded based on the selection criteria (see Table 3). I excluded studies published before 2007, a year that marked a significant starting point in the climate change-conflict literature. 2007 was selected in the inclusion/exclusion criteria to reflect the increase in the

literature related to the topic after the session of the UN Security Council on climate security and the release of the IPCC 4th assessment report (Scheffran et al., 2012; J. B. Scheffran, Michael; Brauch, Hans Günter; Link, Peter Michael; Schilling, Janpeter, 2012; Weir & Virani, 2011). The review was not limited to studies focused on a specific geographical region but to the reference type and language. For instance, the studies included in the review were books, journal articles, reports, and/or book sections in both Spanish and English. I subsequently excluded studies that were not about a direct relationship between climate change and violent conflict and/or a contextual or indirect relationship between climate change and existing or past violent conflicts. Ultimately, I excluded studies because they focused on non-violent conflicts or environmental hazards not related to climate change.

Table 3. Selection criteria.

Reason	*Inclusion*	*Exclusion*
1. Date of publication	Studies are published on a time scale of 2007 to 2023.	Studies are published before 2007.
2. Reference type	Studies are books, journal articles, reports, or book sections.	Studies are conference papers, editorial letters, notes, and/or commentaries.
3. Language	Studies are in English and/or Spanish to contribute to a solid and inclusive scientific base.	Studies are not in English and/or Spanish.
4. Response to the review questions	Studies focus on a direct relationship between climate change and violent conflict and/or a contextual or indirect relationship between climate change and existing or past violent conflicts.	Studies do not focus on a direct relationship between climate change and violent conflict and/or a contextual or indirect relationship between climate change and existing or past violent conflicts.
5. Relevance to the review	Studies focus on violent conflicts and environmental impacts related to climate change.	Studies focus on non-violent conflicts and environmental hazards not related to climate change.

After applying the selection criteria laid out in Table 3, I identified 152 papers for the analysis. To secure a comprehensive search, I subsequently searched for grey literature and other peer-reviewed papers in the reference lists of the papers found in Scopus and WoS and the papers cited by these papers to create a comprehensive sample (i.e. a citation search). This yielded 60 additional studies and a total of 212 studies to review (see Figure 2. PRISMA flow diagram).

A complete summary of the studies included in the review organised by the attributes: year, title, author, reference type (journal article, book, report, or book section), study type (peer-reviewed or grey literature), language (Spanish or English), location, subregion, region, method (e.g., quantitative, qualitative, or mixed methods) document type (e.g., empirical, review or conceptual) and analysis type (direct or contextual/indirect) can be found in the Appendix to this thesis. Location and subregional groupings of studies are based on the United Nations UN geoscheme Standard M49: Northern Africa, Eastern Africa, Sub-Saharan Africa, Middle Africa, Southern Africa, Western Africa, Caribbean, Central America, South America, Northern America, Central Asia, Eastern Asia, South-Eastern Asa, Southern Asia, Western Asia, Eastern Europe, Northern Europe, Southern Europe, Western Europe, Australia and New Zealand, Melanesia, Micronesia, and Polynesia (United Nations Statistics Division, 1999). Regional groupings are based on the same United Nations UN geoscheme Standard M49: Africa, Asia, Europe, Americas, Oceania, and Antarctica (United Nations Statistics Division, 1999).

To code the 212 studies, I conducted a thematic analysis (Braun & Clarke, 2006) in the Qualitative Data Analysis Software (QSR) NVivo 20. In finding repeated patterns of meaning or themes from the studies I used an inductive method to determine what are the interactions between climate change impacts and violent conflict. However, my findings should not be considered exhaustive. While I believe that the focus on literature published in Spanish represents an important advance over much of the existing work in this space, which focuses almost exclusively on literature published in English, I do acknowledge that not being able to consider literature published in additional languages beyond Spanish and English remains a limitation of my work.

Once completed the coding process, I summarised and identified dominant patterns in the literature. I also used Excel to map the location of the empirical studies and determine the case study gaps in my understanding of the relationship between climate change and violent conflict. An important point to note is that some of the reviewed studies may focus on direct relationships or pathways while others focus on the contextual or indirect relationships between multiple climate-induced changes and types of conflict. In that case, the type of analysis (i.e., direct and contextual/indirect) has been coded separately. For instance, when a reviewed study is focused on understanding how climate change leads in a direct way to violent conflict, I coded the study as “direct” and reflected it in the bar diagram (Figure 3 b.) presented in the following section.

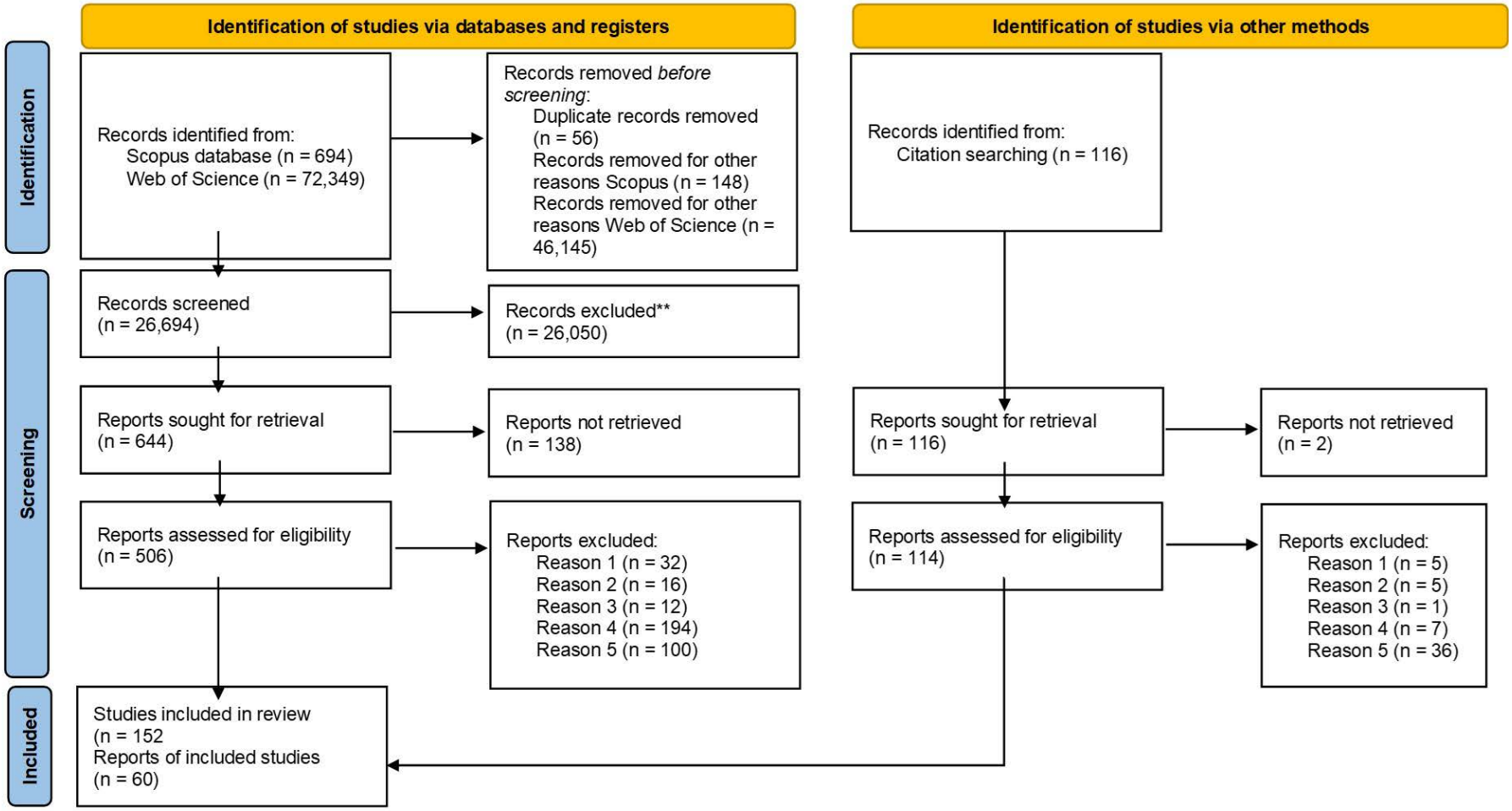


Figure 2 PRISMA flow diagram about the identification of studies via databases and other methods.PRISMA flow diagram derived from (Page et al., 2021)

2.3. Climate change and violent conflict: a brief overview

Overall, I confirmed that existing knowledge of climate change impacts and violent conflict has construed two types of analyses. The first focuses on whether and how climate change impacts cause violent conflict in a direct way (direct analysis), and the second focuses on contextual and indirect ways in which climate change can influence conflict (contextual/indirect analysis). Cutting across these two types of analyses, I found several recurrent key concepts that focused on climate change adaptation, peacebuilding, and adaptive capacity. I discuss and interpret these findings in greater detail in the following sections.

2.3.1. *Climate change as a direct cause of violent conflict (direct analysis)*

The climate change literature has long-analysed direct relationships between climatic variables (temperature, precipitation, and water availability) and conflict variables (number of conflicts or casualties) (Abdi et al., 2023; Breckner & Sunde, 2019; Castro Vargas, 2021; Helman & Zaitchik, 2020; Landis, 2014; Lee et al., 2019; Price & Elu, 2017; Schilling et al., 2014; Tol & Wagner, 2010; Witmer et al., 2017). Isolating the causal impact of climate change on violent behaviours has proven difficult, however, and studies on climate change and conflict argue that there is not a direct causal relationship (Bukari et al., 2018; Busby et al., 2018; Fatima et al., 2022; Hegre et al., 2016; Koubi et al., 2012; Malamud, 2020; Rowhani et al., 2011; Selby & Hoffmann, 2014). Instead, conflict is caused by a number of indirect or intermediate variables, including (but not limited to) local land use [e.g. agricultural or crop production, resource scarcity or abundance, and food production (Benjaminsen et al., 2012; Buhaug et al., 2015; Exenberger & Pondorfer, 2014; Schon et al., 2023; Theisen, 2008; Wischnath & Buhaug, 2014)], communities' vulnerability [e.g. access to water or food, market and price shocks, migration or livelihood pressures (Brown et al., 2013; Marcantonio et al., 2018; Okpara et al., 2017; Raleigh et al., 2015; Sultana & Thompson, 2017)] and the state response [e.g., relief aid or subsidies (Egorova & Hendrix, 2014; Ide, 2023; Renner et al., 2007)].

In studying indirect or intermediate variables, academics have associated the 2011 social and political unrest in Syria and the civil war with the intense drought that impacted the region between 2007 and 2009 (Abel et al., 2019; Daoudy, 2021; Eklund et al., 2022). The indirect or intermediate variables identified are "unemployment and poverty levels, corruption, repression and police brutality, injustice, a growing rural-urban divide, and a lack of political freedom" (Eklund et al., 2022). In analysing these variables in other studies, I found that violent conflict is consistently considered to be structurally influenced by the socio-economic and political

conditions of individuals and communities and is increasingly framed as a “threat multiplier” (Pacillo et al., 2022; Sofuoglu & Ay, 2020) or “contributing factor” (Abdi et al., 2023; Lee et al., 2013). These notions suggest that climate change does not cause conflict in a deterministic way but can exacerbate the risks of a conflict occurring or worsen the impacts of existing conflicts (Buhaug, 2016). For instance, in sub-Saharan African and South American households, socioeconomic vulnerability and conflict interact with climate change since conflict-affected communities with low levels of socio-economic development used to live in areas prone to climate stress, such as flooding. This interaction has led to increased vulnerability to climate change and the risk of relapse into violent conflict (Stein, 2018; Swain et al., 2021). Yet, empirical evidence on how these rapid-onset climate events (e.g., floods, heatwaves, storms) and slow-onset climate changes (e.g., sea-level rise, ocean acidification) may lead to violent conflict is inconclusive and there is no consensus on a general and robust climate-conflict direct causal relationship (Ayana et al., 2016; Cao et al., 2022; Exenberger & Pondorfer, 2014; Ide et al., 2014; Linke et al., 2015; Vivekananda et al., 2014b). This complexity arises, as some scholars have noted because studies use different conflict variables (e.g., civil conflict, communal conflict, armed conflict), climate change measures (e.g., changes in precipitation and temperature, natural disasters), spatial scales (e.g., households, provinces, countries, or regions), and temporal scales (e.g., months, years, decades) and intermediate variables (e.g., economic growth, agricultural production, migration, land use) which makes it difficult to draw general conclusions about the relationship between climate change and conflict (Mach, 2019; Salehyan, 2014).

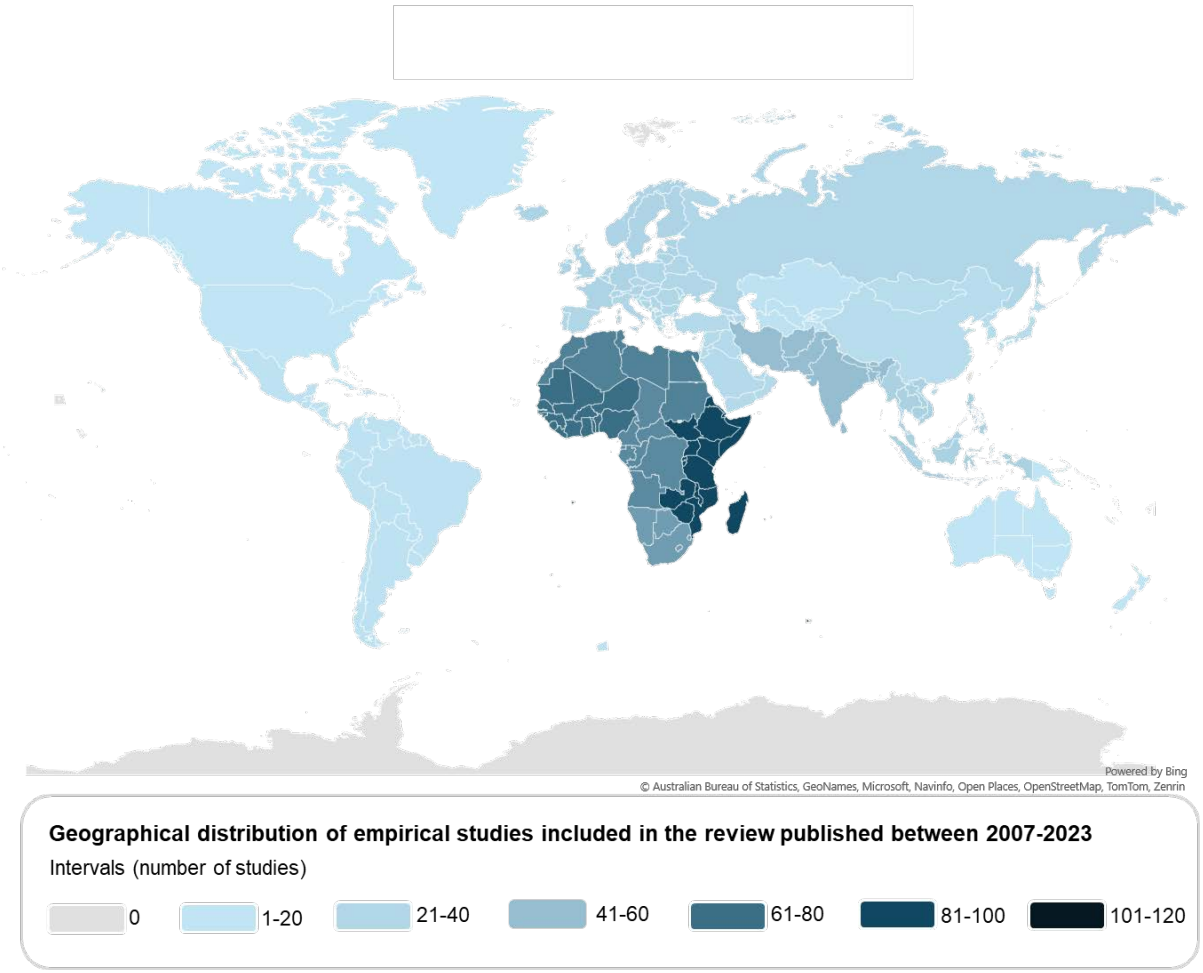
2.3.2. *Climate change impacts in already conflict-affected communities (contextual/indirect analysis)*

Climate change will be especially intense in already conflict-affected communities (Sitati, 2021; Vivekananda, 2014). This is because climate change can exacerbate the consequences of violent conflict, which, in turn, can increase vulnerability to the impacts of climate change (Feola et al., 2015; Martinez & Vergara Tamayo, 2016; Mason et al., 2011; Wischnath & Buhaug, 2014). Conflict-affected communities often face rising violence and displacement and, at the same time, changing rainfall patterns and increased temperatures due to climate change (Crost et al., 2018; Delina et al., 2023; Hellin et al., 2018; Swain et al., 2021). In Niger, Burkina Faso and Mali, communities were displaced because of conflict in 2019, and in 2020 those communities were subsequently affected by floods (International Committee of the Red Cross, 2020).

Conflict-affected communities also face significant difficulties during peace transition processes, including security, institutional capacity building, and achieving development (Brown et al., 2013; Rodriguez Garavito et al., 2017). Added to those difficulties are the impacts of climate change, which may cause responses to conflict to be less effective (Okpara et al., 2017). The United Nations General Assembly has stressed that the most vulnerable communities, those conflict or post-conflict communities, will be greatly impacted by climate change, reinforcing the consequences of violent conflict (Nicoson, 2017).

In analysing empirical studies, I found that when interacting, climate change and existing conflicts may generate cumulative effects, deepen vulnerabilities to climate change and increase the probabilities of the onset of conflict. In Afghanistan, the interactions of conflict and droughts intensified the levels of conflict and insecurity, preventing communities from accessing humanitarian aid and basic services (Prívara & Prívarová, 2019). As mentioned before, while it may not be possible to directly link climate change to violent conflict in general, climate change impacts may disproportionally affect vulnerable regions that are already experiencing conflict or have experienced it in the past, and conflict can make responses to climate change less effective or resourced (Gilmore et al., 2018), constituting a promising area of study.

a)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Geographical distribution of empirical studies included in the review published between 2007-2023
Intervals (number of studies)
0
1-20
21-40
41-60
61-80
81-100
101-120

b)

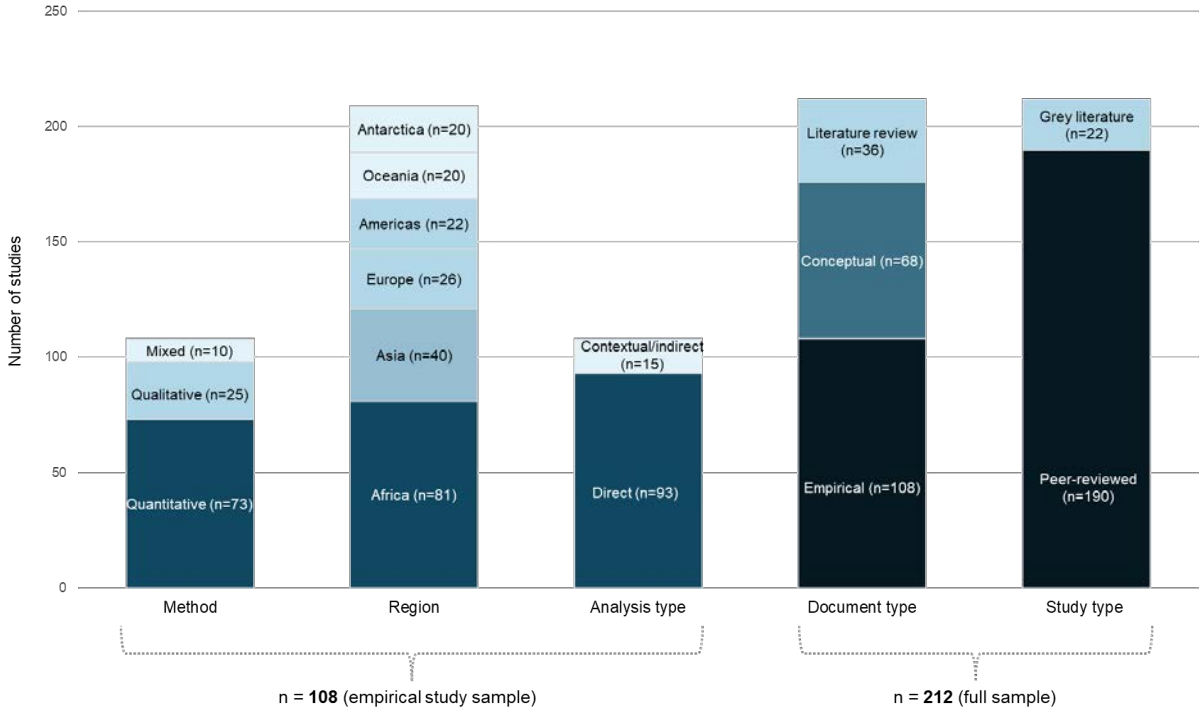

Figure 3. Geographic distribution and attributes of climate change-conflict studies included in this review published from 2007 to 2023. a) Geographic distribution of study locations of empirical studies [n = 108 (empirical study sample)]. The interval distribution of the number of studies in the all-time series (2007-2023) is grey: 0 empirical studies, very light sky blue: 1-20 empirical studies, light sky blue: 21-40 empirical studies, sky blue: 41-60 empirical studies, navy blue: 61-80 studies, dark navy blue: 81-100 empirical studies and very dark blue: 101-120 empirical studies. **b)** Attributes of the climate change-conflict studies included in this review are Method, Region, Analysis type [n = 108 (empirical study sample)], Document type, and Study type [n = 212 (full sample)].

The results support previous conclusions (Adams et al., 2018; Buhaug, 2016; Hendrix & Salehyan, 2012; Sharifi, Simangan, & Kaneko, 2021) that climate change and conflict studies tend to concentrate on certain areas and that several communities (e.g., South America and South-East Asia) that have experienced various conflicts and/or are intensely vulnerable to climate change impacts are understudied. In the map (Figure 3, a) I observe that most empirical studies are in the East and South-East of Africa. The dominant study of these regions is usually justified by the high vulnerabilities in the Lake Chad Basin (Okpara et al., 2017, 2018; Sharifi, Simangan, Lee, et al., 2021), and the number of pastoral-herder and other conflicts in the Horn of Africa (Hoch et al., 2021; Solomon et al., 2018; van Weezel, 2019). But other regions with significant vulnerabilities to climate change and prone to violent conflict (or already

conflict-affected regions), such as Southeast Asia and South America, are understudied. This knowledge gap, sometimes referred to in the literature as the “streetlight effect” (Adams et al., 2018), may suggest that scholars tend to focus on areas for reasons of convenience. This can be problematic if case selection (and therefore knowledge production) is driven by convenience rather than practical relevance (Adams et al., 2018). Moreover, the dominance of studies in English (see Figure 3) suggests that if journals and studies in other languages (Spanish or Portuguese) were adequately captured in the databases I used for this review, there might have been a shift in the geographical focus of the literature on climate change and violent conflict (Adams et al., 2018; Nolde-Lopez et al., 2023).

In Figure 3 b), I observe that quantitative methods (e.g., large-N studies) are also the primary methods in climate change and conflict studies and that the analysis tends to be dominated by direct correlations between climate change and violent conflict (direct analysis). Only a handful of studies provide evidence on contextual and indirect ways in which climate change can influence conflict in conflict-affected areas (contextual/indirect analysis) (see Figure 4). These studies indicate that in conflict-affected areas, social instability and conflict may reinforce the causal loop even if projects or actions focused on improving the resilience of the area are being implemented (Abrahams, 2021; Delina et al., 2023; Hellin et al., 2018; Renner et al., 2007). As a result, communities in conflict-affected areas are highly vulnerable to climate change impacts (Ide, 2021; Programa de las Naciones Unidas para el Desarrollo (PNUD), 2023) and yet, there is limited understanding of how to respond to compounded and interactive climate change and conflict effects. This underscores the need for comprehensive studies about the interactions between climate change and violent conflict in conflict-affected communities situated in understudied regions, as well as using qualitative and quantitative methods to better understand the socioeconomic and political conditions of this interaction.

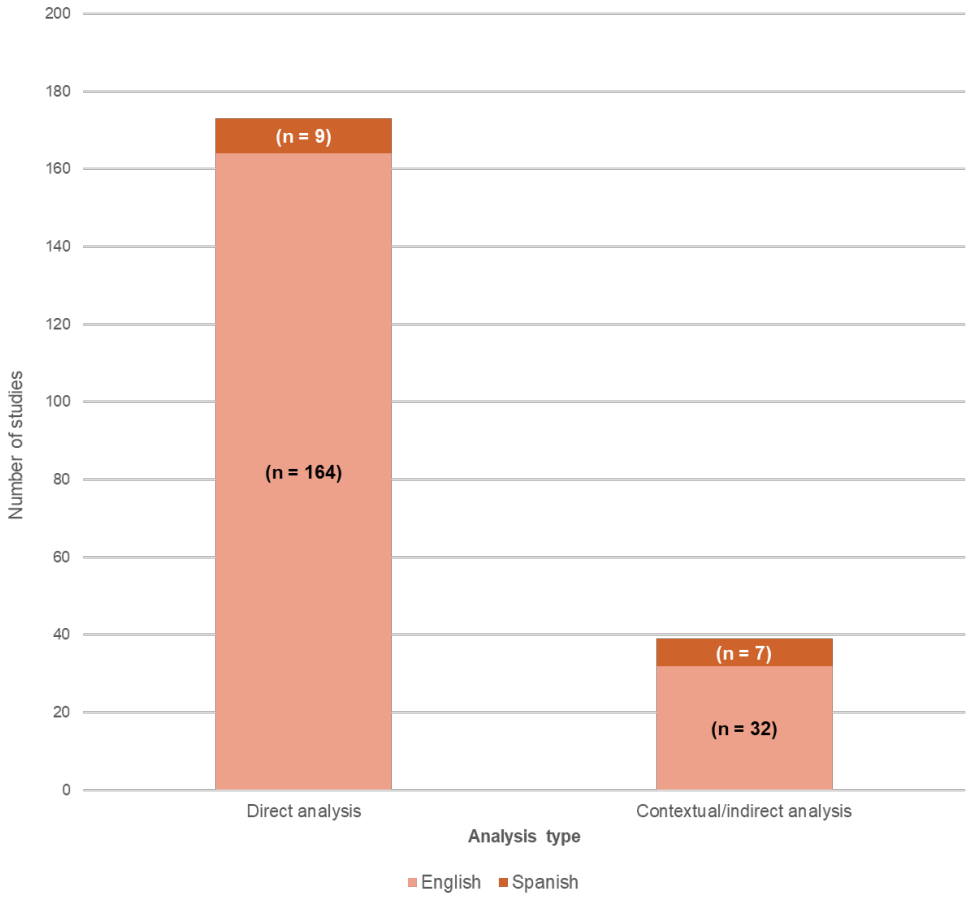

Figure 4. Studies identified in the review examining a direct causal relationship (direct analysis) and a contextual or indirect relationship between climate change impacts and violent conflict (contextual/indirect analysis). Only 18.3% of the studies (39 out of 212) analyse contextual and indirect ways in which climate change can influence conflict in conflict-affected areas, and 81.7% of the studies (173 out of 212) analyse direct causality. Of these studies, only 7.547% (16 out of 212) are in Spanish.

2.3.3. *Unanswered questions in climate-conflict relations*

Climate change adaptation policies and projects need to carefully consider the socio-economic and political conditions of conflict-affected communities. Policies and projects to adjust to these circumstances and cope with climate change impacts will be necessary for maintaining human security in many regions. However, the climate change-conflict literature is in general centered on a direct causal relationship between climate change and violent conflict, rather than how climate change impacts play out in conflict-affected communities (see Figure 4). Indeed, only 39 studies out of 212 (18.3%) analysed the interactions between climate change impacts and violent conflict in conflict-affected communities. The other studies (81.7%) analysed how to establish or prove direct causality between climate change and violent conflict. Given that

communities in conflict-affected contexts have some of the “highest intersectional vulnerabilities to climate change” (Sharifi, Simangan, & Kaneko, 2021), more studies focused on these interactions are needed. There is also a need to broaden the search for studies in languages other than English because this may reveal understudied interactions between climate change and violent conflict.

2.4. Implications for future research and practice

This review of the climate change-conflict literature from 2007 to 2023 highlighted important findings, concepts, and gaps. I found that most of the high-level existing research related to climate change and conflict remains focused on determining whether and how climate-related social-ecological changes cause conflict in a direct way in particular places. Even the systematic review studies (in Spanish and English) included in the review focused on empirical studies establishing a direct causal relationship between climate change and conflict (Abrahams & Carr, 2017; Augsten et al., 2022; Gleditsch, 2012; Hsiang et al., 2013; Morales-Muñoz, 2022; Scheffran et al., 2012; van Baalen & Mobjörk, 2018). The analysis of climate change causing conflict and violence in a direct way has led to the initial formulations of a body of literature that has continued to shape many discussions since. Yet, I found that the evidence is inconsistent as to whether climate change is causally associated with violent conflict (Buhaug, 2014; Meierding, 2013; Scheffran & Battaglini, 2011; Theisen et al., 2013). While some empirical studies have found a direct causal relationship between climate change and conflict (Abdi et al., 2023; Ani & Uwizeyimana, 2020; Hoch et al., 2021; Lee et al., 2013; Wang et al., 2023), others find no causal relation (Crawford, 2021; Mohamed & Nageye, 2019; Tol & Wagner, 2010) or an indirect one (Pacillo et al., 2022; Rowhani et al., 2011; J. B. Scheffran, M.; Kominek, J.; Link, P. M.; Schilling, J., 2012; Weir & Virani, 2011; Wuebbles et al., 2014; Yang et al., 2020).

Likely due to the disparities in the published literature, more recent research has argued that climate change does not cause violent conflict in a direct or deterministic way (Feitelson & Tubi, 2017; Serdeczny et al., 2017; Temudo & Cabral, 2023; S. van Baalen & M. Mobjörk, 2016). Rather, it is argued that climate change likely increases the possibility of the onset of violent conflict through its interactions with social conditions, such as food insecurity, gender inequalities, land and ocean management, and limited access to resources (Gemenne et al., 2014; Mesjasz et al., 2011; Salehyan, 2008; J. B. Scheffran, Michael; Brauch, Hans Günter;

Link, Peter Michael; Schilling, Janpeter, 2012; Spijkers et al., 2021). Communities experiencing social instability and conflict thus face a double or combined problem: climate change and violent conflict, which are mutually and negatively reinforcing. In these situations, climate change is likely to compound the consequences of violent conflict which, in turn, can increase vulnerability to the impacts of climate change (Buhaug & von Uexkull, 2021; Furini, 2019; Morello & Rizk, 2022; Solomon et al., 2018). Yet I found that only a handful of studies provide empirical evidence of the interactions between climate change impacts and violent conflict in conflict-affected areas. These studies indicate that in conflict-affected areas social instability and conflict may reinforce a causal loop of conflict leading to climate change vulnerability and climate change to conflict vulnerability (Cappelli et al., 2023). As a result, communities in fragile, conflict-affected areas are highly vulnerable to climate change impacts (Kurtz & Elsamahi, 2023), and yet, there is limited understanding of how to respond to compounded and interactive climate change and conflict effects in peacebuilding and climate change adaptation.

Peacebuilding is a complex, long-term process to facilitate conditions for human security (Vivekananda, 2014). This process is not limited to post-conflict reconstruction; it involves interventions that may precede and follow peace agreements to reduce the recurrence of conflict, promote economic recovery, and ensure sustainable environmental management (Rodriguez Garavito et al., 2017). However, communities tend to face significant difficulties during peacebuilding processes in solving structural causes of conflict and implementing measures to manage and solve conflicts (Krampe, 2019). The difficulties include sustaining security, finding financial support, and achieving development. Added to those difficulties are now the impacts posed by climate change, which could lead to greater instability or vulnerability (Hammill & Matthew, 2010). For example, Nepal, in Southern Asia, began a peacebuilding process after a 10-year civil war. The civil war in Nepal was linked to poverty, inequality, and corruption (Matthew, 2010). The peacebuilding process attempted to lessen poverty and improve communities' livelihoods, but Nepal's communities faced significant difficulties due to the persistence of the underlying causes of the civil war combined with climate change impacts. The Midland region was severely deforested and there was a shortage of wood and food (Vivekananda, 2014).

Climate change adaptation, in contrast, is the process of coping with climate change to reduce the negative impacts and build resilience (Intergovernmental Panel on Climate Change, 2018). *Climate change adaptation* constitutes an important entry point for adjusting to climate change

impacts and even building peace to avoid or reduce conflicts (Tänzler et al., 2010). For instance, climate change adaptation projects in Bangladesh have contributed to the "preservation of local ecosystems, livelihood, and political stability" and cross-case studies find that transnational water management and conservation provisions in post-conflict agreements increase the probability of peace (Ide, 2020).

Peacebuilding may also pose a significant opportunity to address security concerns and climate change impacts simultaneously, as recognised in the developing field of environmental peacebuilding (Ide, 2020; Leonardsson et al., 2021; Simangan et al., 2021; Swain & Øjendal, 2018). Peacebuilding may encompass economic aid, land reform, implementing natural resource measures, or facilitating reconciliation (Kurtz & Elsamahi, 2023). The United Nations Environmental Program post-conflict assessments illustrate that investment in equitable environmental-sensitive strategies during peace transition processes may lessen incentives for conflict and enhance opportunities for durable and sustainable peace (Nicoson, 2017; Programa de las Naciones Unidas para el Desarrollo (PNUD), 2023; Stedman, 2007).

Peacebuilding can contribute to resource restoration, environmental management, and climate change adaptation by eliminating or reducing ways in which environmental stress induced by climate change might increase the risk of conflict reoccurrence (Matthew, 2014). However, integrating peacebuilding and climate change adaptation will not be without its challenges. The long-term nature of climate change adaptation may be problematic in the search for a peace agreement that has short-term objectives and the need to find an immediate end to violence (Leonardsson et al., 2021). For example, as the civil war in 1994 ended, the government of Rwanda had to relocate displaced communities. During this process, protected forest areas, marshes, and hills were destined for settlement and farming. However, the relocation of displaced communities in these lands increased the communities' vulnerability to climate change as their exposure to climate extremes, such as landslips and floods, increased. Added to that, the relocation of protected lands may compromise environmental sustainability, which can undermine the ability of ecosystems to support human communities over longer timeframes (Hammill & Matthew, 2010).

The studies reviewed indicate then that "climate change adaptation must be conflict-sensitive" and "peacebuilding must be climate-sensitive" (Abdenur & Tripathi, 2022; Okpara et al., 2017; Witmer et al., 2017). However, peacebuilding and climate change adaptation are siloed in practice in that their projects, actions, and goals are not conflict-sensitive or climate-sensitive (Buhaug & von Uexkull, 2021) (see Figure 5). For example, peacebuilding projects (e.g., land

restitution projects) typically do not have a climate change component and are therefore not built to withstand the impacts of climate change (represented as a disruption in Figure 4) (Eklöw & Krampe, 2019; Krampe, 2019). Likewise, climate change adaptation projects (e.g., blue carbon projects) do not typically have a conflict risk component and, thus, are not built to respond to the consequences of violent conflict (represented as a disruption in Figure 4). There may also be negative feedback or loops from climate change adaptation that create or exacerbate violent conflict, and that need to be considered by policymakers and academics (see section 2.4.1).

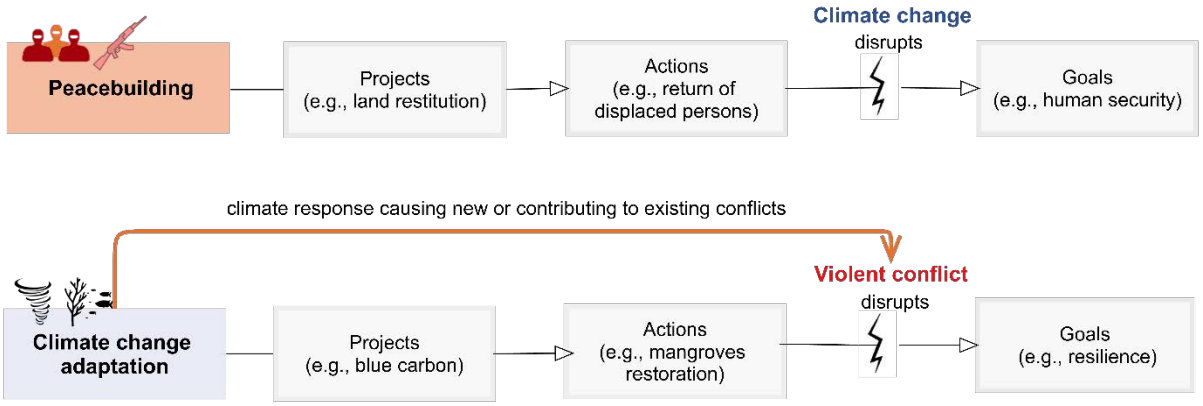

Figure 5. Peacebuilding and climate change adaptation projects. In practice, peacebuilding and climate change adaptation are siloed, which can make it difficult to achieve human security and resilience. For example, peacebuilding projects (e.g., land restitution projects) do not tend to have a climate change component, and then climate change impacts in the areas where the projects are implemented may disrupt (lightning bolt in the Figure) the implementation of projects to respond to conflict and achieve human security. Similarly, climate change adaptation projects (e.g., blue carbon projects) do not tend to have a conflict risk component, and then new or existing conflicts may disrupt (lightning bolt in the Figure) the implementation of adaptation projects to build resilience. In addition, sometimes there is counterproductive feedback or loops on climate response, causing new conflicts or contributing to existing conflicts (represented with the orange arrow in the Figure).

Although existing research is beginning to recognise these dynamics and argue that it is necessary to integrate peacebuilding and climate change adaptation, we still need more empirical research providing direct insight into this topic. Empirical examinations of the interlinkages between peacebuilding and climate change adaptation are urgently necessary to respond to the compounded impacts of violent conflict and climate change. Gaining insight into these interlinkages will inform how to build capacities in conflict-affected communities to respond to violent conflict and climate change simultaneously, as well as to prevent unintended consequences, counterproductive feedback, or loops.

2.4.1. Unintended consequences, feedback, or loops of peacebuilding and climate change adaptation

Peacebuilding and climate change adaptation are implemented to reduce fragility, prevent conflict, and build resilience and peace (Matthew, 2014). Yet, if designed and implemented without considering broader socioeconomic and political conditions, these projects may create unintended consequences or loops (also known as “maladaptation” or “boomerang effects”) (Ide, 2021; Rüttinger et al., 2015). For example, peacebuilding and climate change adaptation projects may aggravate existing inequalities or marginalisation, limit access to land or water, increase environmental degradation and biodiversity loss, and/or undermine critical aspects of human security (Adger et al., 2014). These consequences often arise due to the absence of “cross-sectoral coordination” and climate-sensitive or conflict-sensitive implementation of policies and projects (Okpara et al., 2018). For instance, the provision of financial aid in payment for ecosystem services as part of projects of Reduced Emissions from Deforestation and Forest Degradation (REDD) has the potential to cause conflicts and increase insecurity (Swatuk et al., 2021). In Tanzania and the Congo basin, communities are opposing REDD projects because of the loss of communal access to the forests and the outbreak of two social conflicts: the conflict between communities whose livelihood is based on the forest and the government and the conflict between local chiefs who are perceived as prioritising private interests over communal needs, and the community members (Froese & Schilling, 2019). Similarly, the conservation regime of the Peace Park (“Parque de la Paz” in Spanish) established in the “Cordillera del Cóndor” region (Condor Range) as part of the Peace Agreement achieved between Ecuador and Peru in 1998 has been controversial because of the loss of communal access to food and medicinal plants and the outbreak of a natural resource conflict between Indigenous communities and mining companies (Ide, 2021). Peacebuilding and climate change adaptation certainly do not always create unintended consequences or feedback. Studies included in this review provide insights into how peacebuilding and climate change adaptation can have substantial peace effects and build resilience (Fondo Colombia en Paz, 2023). Still, academics, policymakers, and practitioners must know peacebuilding and climate change adaptation projects may cause exclusion, inequality, and conflict if the broader context is not considered. Also, I acknowledge that not being able to consider the unintended consequences or loops of mitigation projects [to avoid and/or reduce “emissions of greenhouse gases into the atmosphere” (Intergovernmental Panel on Climate Change, 2018)] in this review remains a limitation of my work and should be considered in future research.

2.4.2. A promising and underdeveloped research agenda. Building capacities in conflict-affected communities

Climate change impacts in conflict-affected communities and the capacities they need to respond to the simultaneous impacts of climate change and conflict remain critical gaps in the studies I have reviewed. There is a prominent body of literature from political ecology and development studies establishing that violent conflict "undermines human security and the *capacity* of individuals, communities, and government institutions to cope with changes" (Blattman, 2010; Leonardsson et al., 2021; Stewart & Fitzgerald, 2000). Thus, a focus on human security and climate change impacts naturally leads to a focus on ways of reducing vulnerability, which is often addressed by building capacities (Cinner & Barnes, 2019; Ide, 2021). In this review, I found that various contextual factors causing or escalating violent conflict (when not considered in peacebuilding and climate change adaptation) are underlying elements that indicate a lack of capacities. This points to the importance of developing projects and policies to build capacities for peace and adaptation, including (but not limited to) consolidating the administrative and political capacity of institutions, providing financial and technological assets, and diversifying livelihood options (Adger, 2014). Yet climate change in conflict-affected communities and how to build adaptive capacities remain critical gaps in the literature. Therefore, I stress the need to understand capacity-building in conflict-affected areas as an implication for future research and practice. Such capacities are broadly defined as the conditions to anticipate and respond to changes (Barnes et al., 2020). These conditions can be driven by different related factors: assets, learning, agency, flexibility, organisation, and socio-cognitive constructs in climate change adaptation (Barnes et al., 2020; Cinner et al., 2018; Cinner & Barnes, 2019) and social, economic, and environmental conditions, governance and political, security, and truth and reconciliation in peacebuilding (Hammill & Matthew, 2010). Such capacities have the potential to build resilience to climate change and may also contribute to the prevention of conflict (Ide, 2021). Yet, existing research does not provide sufficient evidence of the capacities that communities in conflict-affected areas need to respond to the cumulative impacts of climate change and violent conflict.

The need to understand how to effectively build capacities to respond to climate change and violent conflict is particularly urgent since conflict-affected communities have typically fewer resources to respond, reduce, or recover from climate change impacts. Public services, such as health care, security, and food systems, are often absent or deteriorated, increasing the vulnerability to climate change while impeding recovery and development (Abrahams & Carr,

2017; Morales-Muñoz, 2022; Stein, 2018). Key assets (e.g., infrastructure, economic aids) and social networks are also disrupted, especially when there are movement restrictions, resulting in limited sources of income (Fernández Arribas, 2023; Martinez & Vergara Tamayo, 2016; Sitati et al., 2021).

Peacebuilding and climate change adaptation actors need to identify better ways to respond to these challenges using integrated approaches. Places that are impacted by violent conflict and climate change face the overlapping issues of reducing the risk of relapsing into violent conflict, promoting economic recovery, and adapting to climate change (Castro Vargas, 2021; Rodriguez Garavito et al., 2017). Because of these overlaps, the same project or action may be a peacebuilding or climate change adaptation policy or plan in these places (Buhaug & von Uexkull, 2021). For example, peacebuilding projects to consolidate the capacity and effectiveness of the institutions (i.e., through functioning meteorological services) contribute to reducing conflict reoccurrence and to preparing for and reducing the impact of climate extreme events (e.g., storms and floods), forming overlaps. There are also gaps, as peacebuilding projects do not tend to include actions to respond to climate change and climate change adaptation projects are not built to respond to the consequences of violent conflict.

Drawing on the overlaps and gaps, I consider that identifying the capacities that conflict-affected communities need to simultaneously respond to both climate change and conflict may maximise the synergies between climate change adaptation and peacebuilding. Applying theories and concepts of peacebuilding and climate change adaptation, it is possible to define the capacities that build resilience and eliminate or reduce ways in which environmental stress induced by climate change might contribute to conflict reoccurrence (see Figure 6). Instead of being directed by possible risks, peacebuilding may use climate change adaptation as an opportunity to build a durable and sustainable peace, and climate change may use peacebuilding as an opportunity to build long-term resilience. A promising (and underdeveloped) research agenda that intends to build capacities in conflict-affected communities may maximise synergies between climate change adaptation and peacebuilding to sustain peace and resilience, strengthen governance, institutional and justice systems and achieve broader social and economic development.

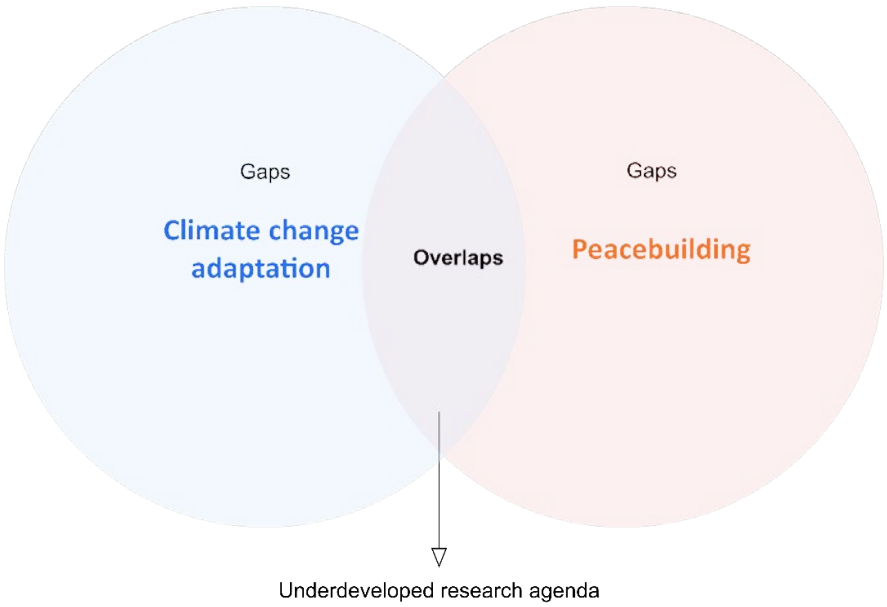

Figure 6.A promising and underdeveloped research agenda. Building capacities in conflict-affected communities to maximise synergies between climate change and peacebuilding.

Climate change impacts that may drive or aggravate violent conflict are likely to become more common in the future, increasing concerns about the challenges of developing a research agenda in conflict-affected communities. The access to climate and conflict-affected communities in dangerous settings and the intervening variables and indirect effects of climate-conflict relations (climate change impacts in one area may cause conflict in another) constitute significant challenges to developing this research agenda. Meaningful research about climate change-conflict relations requires then, to consider the ways in which these impacts and local communities interact in different contexts and across scales.

2.5. Conclusion

Climate change will have significant negative effects on social-ecological systems (Intergovernmental Panel on Climate Change, 2022). These negative effects may cause violent responses in many regions and increase the risk of conflict outbreaks (Walby, 2013). Conflict can force local people to move onto marginal lands, disrupt conservation projects, increase losses of biodiversity, and create livelihood crises (Lhoest et al., 2022).

Since the IPCC's 4th assessment report in 2007 and the first special session of the United Nations (UN) Security Council in the same year highlighted the risk of climate-related social-ecological changes causing violent conflict, scholars have dedicated much attention to

establishing a direct causal relationship between climate impacts and the onset of conflict (J. B. Scheffran, M.; Kominek, J.; Link, P. M.; Schilling, J., 2012; J. B. Scheffran, Michael; Brauch, Hans Günter; Link, Peter Michael; Schilling, Janpeter, 2012; Weir & Virani, 2011). However, there remains a broader understanding of climate impacts in communities that are already experiencing violent conflict or engaging in peacebuilding processes and how these cumulative impacts might affect efforts to build adaptive capacities to address climate change (e.g., climate adaptation projects) in the face of violent conflict.

This review highlights the urgent need to study climate change impacts in conflict-affected communities, and their socio-economic and political conditions. I also argue that there is an urgent need to provide empirical evidence of the interactions and synergies between climate change adaptation and peacebuilding. The study of these interactions will help to better understand how to design policies and projects that can help to build the necessary capacities to address the cumulative and synergistic impacts of climate change and conflict and to sustain peace.

Climate change will be a major driver of human security in the 21st century and beyond. A changing climate that significantly affects the social-ecological conditions where communities secure their livelihoods has the potential to create and escalate conflict. Climate change adaptation and peacebuilding projects will need to adjust to these circumstances to cope with the cumulative impacts of climate change and conflict. Otherwise, climate change adaptation and/or peacebuilding may not be effective, worsening security risks and, in turn, further reducing communities' ability to adapt to climate change.

Chapter 3 Gaps, research questions, objectives and methods

Chapter 3

Drawing on the conceptualisations in Chapter 1 and the studies analysing the two-way interactions between climate change and violent conflict in Chapter 2, I identified two critical knowledge gaps where further investigation is needed to contribute to climate change adaptation and peacebuilding efforts: a.) Understanding the capacities that climate and conflict-affected coastal communities need to address the simultaneous impacts of climate change and violent conflict; and b.) Understanding the overlaps and gaps in climate change adaptation and peacebuilding projects.

Based on these gaps, this project formulated a broad research question (1.) and three narrow questions (1.1, 1.2., 1.3):

1. What capacities do climate and conflict-affected coastal communities need to address the simultaneous impacts of climate change and violent conflict?
    1.1. What capacities are climate change adaptation projects building in climate and conflict-affected coastal communities?
    1.2. What capacities are peacebuilding projects building in conflict-affected coastal communities facing climate change impacts?
    1.3. What are the overlaps (i.e., synergies) and gaps in climate change adaptation and peacebuilding projects?

These research questions were formulated to provide analytical and conceptual insights for broader applications in peacebuilding and climate change adaptation in coastal communities. In doing so, I intended to identify the capacities needed by climate- and conflict-affected coastal communities to support the development of peacebuilding and climate change adaptation projects to sustain peace and resilience in coastal communities. Such questions formed the basis for the formulation of the overall objective and the three specific objectives listed in Table 4:

Table 4: Research objectives

Research objective	*Research objective statement*	*Related research question*
General	Identify the capacities coastal communities need to adapt and respond to violent conflict and climate change.	1. What capacities do climate and conflict-affected coastal communities need to address the simultaneous impacts of climate change and violent conflict?

Specific No. 1.	Identify the capacities the climate change adaptation projects are building in the coastal community.	1.1.	What capacities are climate change adaptation projects building in the climate and conflict-affected coastal community?
Specific No. 2.	Identify the capacities that peacebuilding projects are building in the coastal community.	1.2.	What capacities are peacebuilding projects building in the climate and conflict-affected coastal community?
Specific No. 3.	Identify potential synergies between climate change adaptation and peacebuilding projects.	1.3.	What are the overlaps and gaps in climate change adaptation and peacebuilding projects in the in the climate and conflict-affected coastal community?

To respond to the research questions, I used an in-depth case study and a two-stage qualitative data collection method: (1.) document analysis (e.g., government reports) and (2.) semi-structured interviews with key informants (e.g., government institutions representatives). The two-stage data collection method intended to identify the capacities that climate change adaptation and peacebuilding projects were building (or intending to build) to respond to the compounded impacts of climate change and violent conflict. Each stage comprised two steps. The document analysis comprised (1.1.) a document analysis of climate change adaptation projects and (1.2.) peacebuilding projects. The semi-structured interviews comprised these steps: (2.1.) interviews with key informants of climate change adaptation projects and (2.2.) key informants of peacebuilding projects.

2.1. Case study

The project included a cross-sectional case study in South America in Cispatá Bay in the Caribbean Sea, Colombia (see Figure 7). To select the case, I considered five key factors: impacts of climate change in the area, the presence of a violent conflict or peace agreement (which is reflective of recent conflict), projects in climate change adaptation and peacebuilding, geographical underrepresentation in the existing literature on climate change and conflict, and logistical capacity or necessary cultural knowledge and awareness amongst the research team to undertake the case study in a given location. South America fit the first three criteria, and at the time I undertook the literature review, climate change and conflict studies were concentrated on certain regions of the world (e.g., Lake Chad Basin and Horn of Africa) and

several major regions (e.g., Central America and South America) that have experienced numerous conflicts and/or are intensely vulnerable to climate change impacts are understudied (thus also filling the fourth criteria). Finally, I have experience in peacebuilding and extensive local networks in Colombia, and I am fluent in the local language, which fills the fifth criterion.

Cispatá Bay covers a 27,000-acre mangrove forest (11,000-hectare) connected to the Sinú River by canals and marshes (see Figure 7). This Bay is an ecosystem of high productivity that provides food and protection from storm surges (Conservation International, 2021). The Bay is inhabited by indigenous, afro-descendant coastal communities (almost 11.653 inhabitants) that have an economy based on small-scale fishing, agriculture, and livestock. 90% of the population in Cispatá Bay are local communities, and 10% are communities that were forced to be displaced from other areas as a consequence of the armed conflict in Colombia (Regional Autonomous Corporation of the Sinú and San Jorge Valleys CVS & Marine and Coastal Research Institute INVEMAR, 2010).

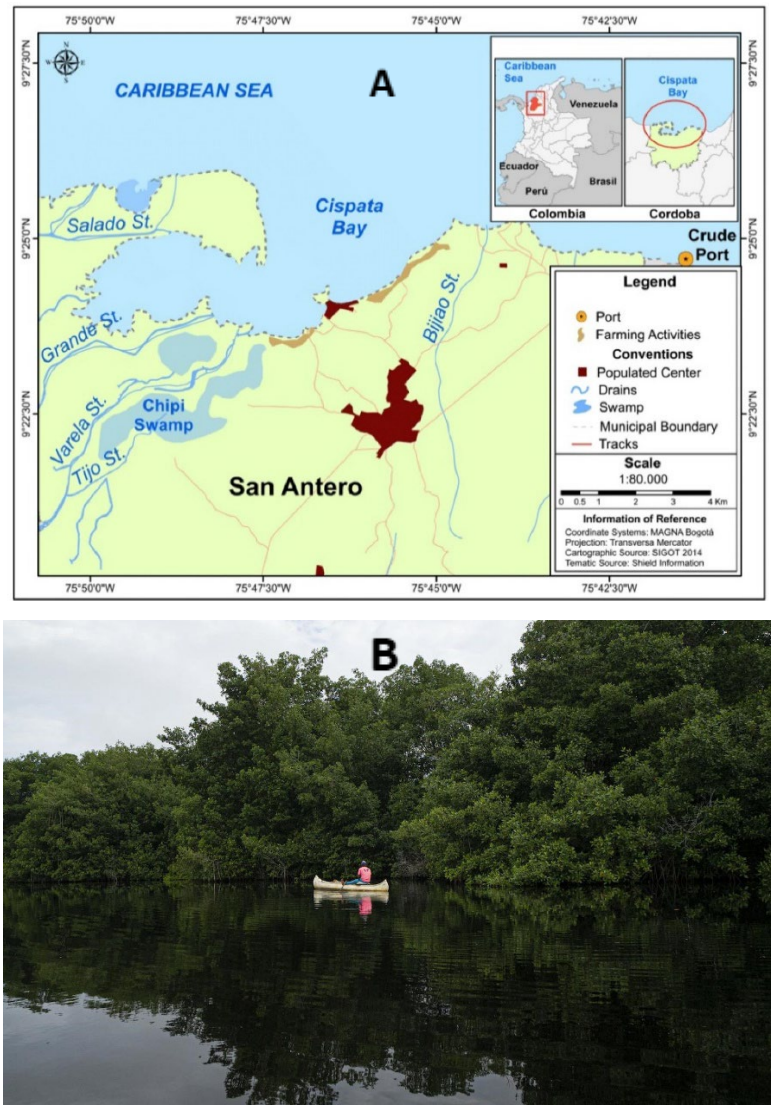

Figure 7. Study context: Cispatá Bay in the Caribbean Sea. **A.** Map of Cispatá Bay showing the mangrove forest, canals, and marshes adapted from (Marrugo-Negrete et al., 2021) and **B.** Local fisherman in Cispatá Bay navigates the canals that lead into and out of the mangroves (Conservation International, 2021).

During the armed conflict along the Caribbean coasts in Colombia since about 1950, armed groups (i.e., guerillas, government factions, and paramilitary groups) settled in the Bay and exercised territorial control, leading to land dispossession, social network disruption, and limiting access to marine fishery resources (Regional Autonomous Corporation of the Sinú and San Jorge Valleys CVS & Marine and Coastal Research Institute INVEMAR, 2010). The end of the decades-long conflict and the peace agreement process in Colombia in 2016 generated a decrease in violence and the development of peacebuilding projects (e.g., land restitution

projects) (Rodriguez Garavito et al., 2017). Yet, coastal communities of Cispatá Bay have been facing many difficulties in implementing peacebuilding projects, including sustaining security, reducing the onset of conflict, finding economic resources, and achieving development. Added to those difficulties are extensive climate change impacts (e.g., ecosystem loss, floods, and high temperatures), which have placed significant strain on the coastal communities inhabiting the Bay (Conservation International, 2021). Coastal communities of Cispatá Bay thus have been experiencing a double (combined) problem: climate change and conflict.

To respond to the combined problem, government institutions, non-government organisations, and international foundations (e.g., Land Restitution Unit and Conservation International) have implemented separated or "siloed" climate change adaptation and peacebuilding projects (Feola et al., 2015), which have included restoring degraded mangroves and restituting lands. To gain an understanding of the capacities that these projects have built or intend to build and potential overlaps and gaps between them, I conducted 16 semi-structured interviews, reviewed 45 supporting documents, and analysed the secondary data contained within.

2.2. Semi-structured interviews

I conducted confidential, semi-structured interviews with 16 participants who were asked to represent their organisation or group, which was classified as either a 'climate change adaptation organisation' or a 'peacebuilding organisation' by analysing their responsibilities and corporate declaration. 'Climate change adaptation organisation' includes both state and non-state groups involved in and/or influencing responses to -or in anticipation of- changing climate conditions (Intergovernmental Panel on Climate Change, 2018) and 'Peacebuilding organisation' the groups involved in capacity building to reduce levels of violence, reconciliation, and social transformation in conflict-affected communities (United Nations, 2010). I bounded the study participants by focusing on: (a.) Key project personnel and institutional representatives involved in climate change adaptation and/or peacebuilding projects implemented in Cispatá Bay; and (b.) Experts on climate change adaptation and/or peacebuilding working with research institutions or foundations with local experience in the Cispatá Bay.

The 16 participants included 9 representatives of climate change adaptation organisations and 7 representatives of peacebuilding organisations most involved in strategic projects. In selecting participants, I considered criteria such as direct participation in the design and implementation of projects, fieldwork, engagement with the coastal community, and whether individuals directly drafted content in the reports. I contacted 24 representatives but 8 turned

down the interview due to a stated, perceived lack of expertise in the relevant area. The other participants (n=16) had extensive experience working with different sectors and groups in Cispatá Bay, but to ensure that key actors from the following groups were represented, I stratified the interviews by Judicial system (n=1), Research Institutes (n=1), International Foundations (n=1), National Foundations (n=1), National and Local government (n=4), Environmental authorities (n=1), and Community associations (n=6) (see appendix to this thesis). The predominant involvement of government and community associations can be attributed to the specific focus of the projects implemented in the area. These projects were exclusively implemented at the local level, specifically within the Bay area, and were adapted to benefit associations of mangrove farmers and fishers. Consequently, the primary participants in the interviews were local government and community-based associations.

Interviews were conducted in June and July of 2022 in Microsoft Teams from Australia and were recorded. The sample contained a relative balance of representatives across gender and age dimensions, likely due to the extensive participation of women and men in different age ranges in the climate change adaptation and peacebuilding organisations in the study region. I conducted the interviews in Spanish as this was the primary language of respondents. Interviews lasted 30 to 45 min and covered climate change adaptation and peacebuilding projects in the coastal community. To identify the capacities climate change adaptation and peacebuilding projects have built or intend to build, I asked the participants about the goals, projects, and actions (e.g., training, infrastructure, restoration practices) implemented in the area, the difficulties they encountered due to the context of violent conflict and climate change impacts, and their recommendations for overcoming these difficulties. All interviews were transcribed verbatim using the transcription notes from Microsoft Teams and translated from Spanish to English. I developed the coding framework and coded all interviews using QSR NVivo 20 qualitative data analysis software. Interviews were coded deductively to generate key themes as detailed in section 2.4. Data analysis. Then, the interviews were combined with the document analysis to cross-validate the results.

2.3. Document and secondary data analysis

Documentary review (n = 45) included relevant institutional reports, assessments, and organisational documents (qualitative and quantitative) in Spanish and English from peacebuilding and climate change adaptation projects in the selected coastal community published between 2010 and 2023. To supplement the qualitative analysis and gain a picture of the broader context, secondary demographic, economic, and employment data was also

extracted from these documents, enabling process-tracing of changes in the livelihoods and economy of the coastal community. The types of documents that I consulted are summarized in Table 5.

Table 5. Documentary material consulted in the case study

Category	Examples
Official documents	Policies or policy directives Official statements and declarations Statistical surveys or publications
Operation documents	Training manuals Midterm/final reports or evaluations Financial analyses Operational plans Project proposals Funding requests
Legal documents	Laws Regulations Cooperation agreements
Working documents	Meeting reports or minutes Draft documents
Scholarly work	Scientific or peer-reviewed publications Master's or doctoral dissertations
Media and communications	Newspaper and magazine articles Newsletters, bulletins, blogs, and web pages
Other	Maps and outlines

This data collection method entailed an initial examination, a more thorough examination, and then an interpretation of 45 documentary materials. Documents were coded deductively and inductively to generate key themes, as detailed in Section 2.4. Data analysis.

2.4. Data analysis

Data analysis consisted of identifying, analysing, and reporting patterns (themes) within the data (Braun & Clarke, 2006), which was organised in the QSR NVivo 20. I used a deductive or theory-driven method (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Hyde, 2000) to predefine themes and sub-themes and code the interviews and documents (see Table 6). The themes and subthemes were deduced from the climate change adaptation and peacebuilding domains or components (see Figure 9). I then used an inductive method to find repeated patterns of meaning or themes from the participant's responses to identify their difficulties and group their recommendations. The inductive themes that emerged are presented in the sections on *difficulties when implementing adaptation and peacebuilding projects*, *integrating climate change adaptation and peacebuilding,* and *breaking the silos*.

Table 6. Deductive themes used to code the interviews and documents.

Climate change adaptation		**Peacebuilding**	
Learning	Access to information	**Social, economic, and environmental**	Infrastructure
	Experimental processes		Public services
	Beliefs		Employment
	Memory		Technical and financial
	Education		Environmental
Organisation	Institutions	**Truth and reconciliation**	Dispute resolution
	Social networks		Memory
			Healing
			Return and relocation
Assets	Financial	**Governance and political**	Institutions
	Technology		Participatory processes
	Social investments		Anti-corruption
Agency	Active in decision-making	**Security**	Protection and safety
	Self-efficacy		Justice system
Flexibility	Livelihood diversification		
	Diverse practices		
Socio-cognitive constructs	Risk attitudes		
	Personal experience		
	Social norms		
	Cognitive biases		

To analyse the capacities that climate change adaptation and peacebuilding projects have developed or intend to develop in the area, I assigned coding stripes to each project based on the factors associated with them (e.g., institutions, access to information, healing). These factors were linked to different domains or components of climate change adaptation and peacebuilding, such as learning, organisation, and security. For example, if the project was focused on education, I assigned a coding stripe to *learning,* or if it was focused on disarmament, I assigned a coding stripe to *security*. This was particularly important to identify any overlaps and gaps (see Figure 11), so if the same project or action could be coded for a factor related to peacebuilding and climate change adaptation simultaneously, this would enable me to identify the overlap. These interactions between climate change adaptation and peacebuilding will be covered in Chapter 4.

I also assigned attributes to the cases or data to analyse the relationships between climate change adaptation and peacebuilding organisations. This was important to determine whether there are synergies when climate adaptation and peacebuilding projects overlap. The attributes included the area of expertise (climate change adaptation or peacebuilding), position within the organisation, organisation, organisation's geographical scope, experience in the area, social connectivity (level of interaction, connection, and engagement among climate change and peacebuilding organisations), and social exposure to other organisations (extent to which individuals or groups interact and engage with different organisations) (see appendix to this thesis). Based on these attributes, I identified the various relationships between climate change adaptation and peacebuilding organisations in the Bay. To illustrate these relationships and potential synergies, I elaborated a sociogram using NVivo 20 (see Figure 12).

As a last point, it is important to note that the theories and concepts applied, and knowledge gaps of this study were deduced from the literature reviewed included in Chapter 2. The literature review included studies on climate change and violent conflict published from 2007 to 2023 in Scopus and Web of Science databases.

Chapter 4 Case Study in Colombia, South America

Adapted from **Bedoya Taborda, L.**, Barnes, M.L. &, Morrison, T.H. (2024). Building capacities in climate and conflict-affected communities. *Global Environmental Change* (in submission).

Chapter 4

4.1. Abstract

Climate change impacts and conflicts have significant adverse and combined effects on coastal communities, yet they are studied and addressed by separate projects. While adaptation projects focus on addressing climate-related risks, peacebuilding projects aim to reduce violence and establish peace. This study examines the integration of these projects and their impacts on a mangrove community in Colombia, South America. Using a two-stage method including semi-structured interviews (n=16) and document analysis (n=45), I demonstrate that many of the activities carried out in climate change adaptation and peacebuilding projects overlap in potentially synergistic ways. Specifically, I found six key areas of overlap: access to information, education, social networks, employment, environment, and healing. I also found two glaring gaps (i.e., areas that were a major focus in one type of project but were not present or considered in the other) that may undermine or create difficulties for climate change adaptation and peacebuilding: protection and/or safety and socio-cognitive constructs. Building upon these overlaps and gaps, I developed a new synergistic framework to further integrate climate change adaptation and peacebuilding in climate and conflict-affected communities. This new framework provides novel insights into how to develop policies and projects that build synergistic capacities and address the cumulative impacts of climate change and conflict in fragile contexts.

Keywords
Climate change; conflict; adaptation; peacebuilding; mangrove; coastal community.

4.2. Introduction

Conflict-affected communities are more vulnerable to climate-related impacts and extreme events, while also being less prepared to effectively adapt to these impacts (Kurtz & Elsamahi, 2023; Sitati et al., 2021; Vivekananda, 2014). Conflict leads to societal instability, weakened governmental capacity, and loss of income, thus economic opportunities in conflict-affected communities are limited, resulting in few options for adapting to current and predicted climate change impacts (Adger, 2014; Buhaug & von Uexkull, 2021; Smith & Vivekananda, 2007). In addition, those communities exposed to the intersection of climate and conflict experience displacement and movement restrictions that limit the capacity to recover from long-term climate change impacts and sudden or extreme events such as floods, storms, or droughts

(Martinez & Vergara Tamayo, 2016). These intersecting vulnerabilities and extreme climate events can have compounding impacts on conflict-affected communities (Abrahams, 2021; Delina et al., 2023; Prívara & Prívarová, 2019).

Climate change adaptation and peacebuilding organisations implement projects to be prepared for and minimise the intersecting vulnerabilities (Fernández Arribas, 2023; Ide, 2021; Pérez Marulanda & Castro, 2022). However, these projects are usually implemented in separate policy sectors and hardly interact across sectoral silos (Buhaug & von Uexkull, 2021; Ide et al., 2023; Vivekananda, 2014). In conflict-affected communities, protection, re-establishing public services, and economic aid are prioritised in peacebuilding; and climate change impacts are not typically considered (Matthew, 2014; Mobaied & Rudant, 2019). Similarly, climate change adaptation projects focus on actions to prevent, minimise, and adapt to climate impacts, typically without considering the risk of violent conflict (Hoch et al., 2021; O'Brien et al., 2008). Climate change adaptation and peacebuilding, although not integrated, do however have areas of overlap (Abrahams, 2021; Abrahams & Carr, 2017; Barnett, 2019). For example, peacebuilding projects to consolidate the legitimacy, capacity, and effectiveness of institutions (i.e., through functioning meteorological services) also help communities to prepare for -and minimise- the impact of climate extreme events (i.e., storms and floods). There are also gaps, as peacebuilding projects do not tend to include actions to minimise climate risks, and climate change adaptation projects do not tend to include actions to secure the protection and personal safety of local communities.

The understanding of these intersections (i.e., overlaps and gaps) between climate change adaptation and peacebuilding projects is limited in the literature (Hammill & Matthew, 2010; Matthew, 2014). Existing research on climate change and conflict has long-analysed relations between changing temperature and rainfall patterns and conflict-related variables (number of armed conflicts or casualties) (Buhaug, 2010; Busby et al., 2018; Hendrix et al., 2022; Ide, 2023; Mach, 2019; Raleigh & Urdal, 2007; Salehyan & Hendrix, 2014; Slettebak, 2012; Theisen, 2008; von Uexkull et al., 2020). Despite its growing importance, there remains a broader understanding of climate impacts in conflict-affected communities and the capacities these communities need to respond to climate change and conflict. To contribute toward filling this gap, here I draw on climate change adaptation and peacebuilding theories to empirically analyse the capacities that climate change adaptation and peacebuilding projects are building and uncover how they overlap. I first clarify my theoretical assumptions about the overarching

domains or components that climate change adaptation and peacebuilding focus on to build capacities. I then introduce the Colombian case study and methodological approach, which includes a qualitative analysis of climate change adaptation and peacebuilding projects to gain a more holistic perspective of the overlaps and gaps between these two interactions. The result from the analysis is then used to lay the groundwork for an integrated framework that I propose for building resilience and peace in conflict-affected areas.

4.3. Conceptual foundation: climate change adaptation and peacebuilding theories

Climate change adaptation and peacebuilding involve a range of projects focused on preparing communities for climate change impacts and minimising the risk of conflict by building capacities (Cinner & Barnes, 2019; Hammill & Matthew, 2010). These capacities focus on the underlying conditions that underpin the ability of communities to prepare for and respond to climate change and conflict impacts (Barnett et al., 2007; Coning, 2008; Grothmann & Patt, 2005; Mortreux & Barnett, 2017; Smit & Wandel, 2006; Smith, 2004; United Nations Environment Programme, 2009). The climate change adaptation literature refers to this holistically as *adaptive capacity*, the foundations of which have been organised into different factors and concepts (Adger, 2003; Alkire, 2005; Bandura, 2006; Brown & Westaway, 2011; Coulthard, 2012; Grothmann & Patt, 2005; Hinkel, 2011; Pelling & High, 2005; Sen, 1999; Smit & Wandel, 2006; Yohe & Tol, 2002). Here, I draw on the six domains for building adaptive capacity to climate change used in Barnes and Cinner's conceptualisation (2020; 2018; 2019) as it was specifically developed for coastal communities, and it also drew on a large body of literature on the determinants of adaptation or adaptive capacity from across disciplines. These six domains are (see Figure 9): (1) the a*ssets* (i.e., financial, technological) that people have access to; (2) the *flexibility* of individuals and institutions to deal with changes; (3) the ability to *organise* (i.e., social networks and institutions) and share knowledge, cooperate, and access resources; (4) *learning* to recognise change, attribute this change to causal factors, and respond; (5) s*ocio-cognitive* constructs (i.e., personal experiences, perceived social norms, and cognitive biases) that enable or limit human behaviour; and (6) the *agency* to determine whether to change or not (Barnes et al., 2020; Cinner et al., 2018; Cinner & Barnes, 2019).

Peacebuilding literature also isolates different areas or components to build capacities (Barnett et al., 2007; Coning, 2008; Organisation for Economic Cooperation and Development, 2008; Smith, 2004; United Nations Environment Programme, 2009). I used the four components identified in the study led by the Peace Research Institute of Oslo in 2004 because it considers

an extensive range of peacebuilding projects around the world and is used in a variety of documents by the Organisation for Economic Cooperation and Development (OECD) (2008) and the United Nations Environment Programme (2009). These four components are (see Figure 9): (1) *social, economic, and environmental;* (2) *governance and political*; (3) *security*; and (4) *truth and reconciliation* (see Figure 1) (Hammill & Matthew, 2010). *The social, economic, and environmental component* comprises projects and associated activities to find a solution to the socioeconomic drivers of conflict (i.e., the marginalisation of social groups, environmental degradation, and competition over natural resources). These projects may be reintegrating refugees and displaced persons, constructing or repairing infrastructure, providing public services (i.e., water and sanitation, education, and healthcare), generating employment, and finding international assistance to build technical and financial capacity (Hammill & Matthew, 2010). The *governance and political component* comprise projects and associated activities to consolidate the legitimacy, capacity, and effectiveness of institutions. These projects include strengthening political authority and administrative capacity, introducing participatory processes, capacity development for civil society, and anti-corruption projects (Hammill & Matthew, 2010). The *security component* includes projects to ensure the protection and provision of state and personal security. These projects can be the disarmament, demobilization, and reintegration of combatants into civil society, humanitarian mine action, and security and justice systems including military, police, judiciary, and penal areas. Last of all, the *truth and reconciliation component* comprises projects to ensure dialogue, peaceful resolution of disputes, healing, and justice (Hammill & Matthew, 2010).

Both climate change adaptation and peacebuilding conceptualisations are about bringing about change by building capacities to respond to shocks. Because of the common object, there are logical overlaps in these conceptualisations. For example, loans to fishermen living in a climate- and conflict-affected community to buy artisanal fishing gear or boats may be a *social, economic, and environmental* project—peacebuilding component, because they provide financial support to conflict-affected fishermen. Simultaneously, they may be an *assets* project —domain for building adaptive capacity to climate change because they increase the resources that fishermen have access to. In the same community, projects to build the administrative capacity of city councils may be part of the *governance and political* —peacebuilding component because they consolidate the effectiveness of institutions and at the same time of *organisation* —domain for building adaptive capacity to climate change, because they provide social support and access to resources. Here, I draw on these conceptual

frameworks and logical overlaps to help guide the empirical analysis, described further in Section 4.5.

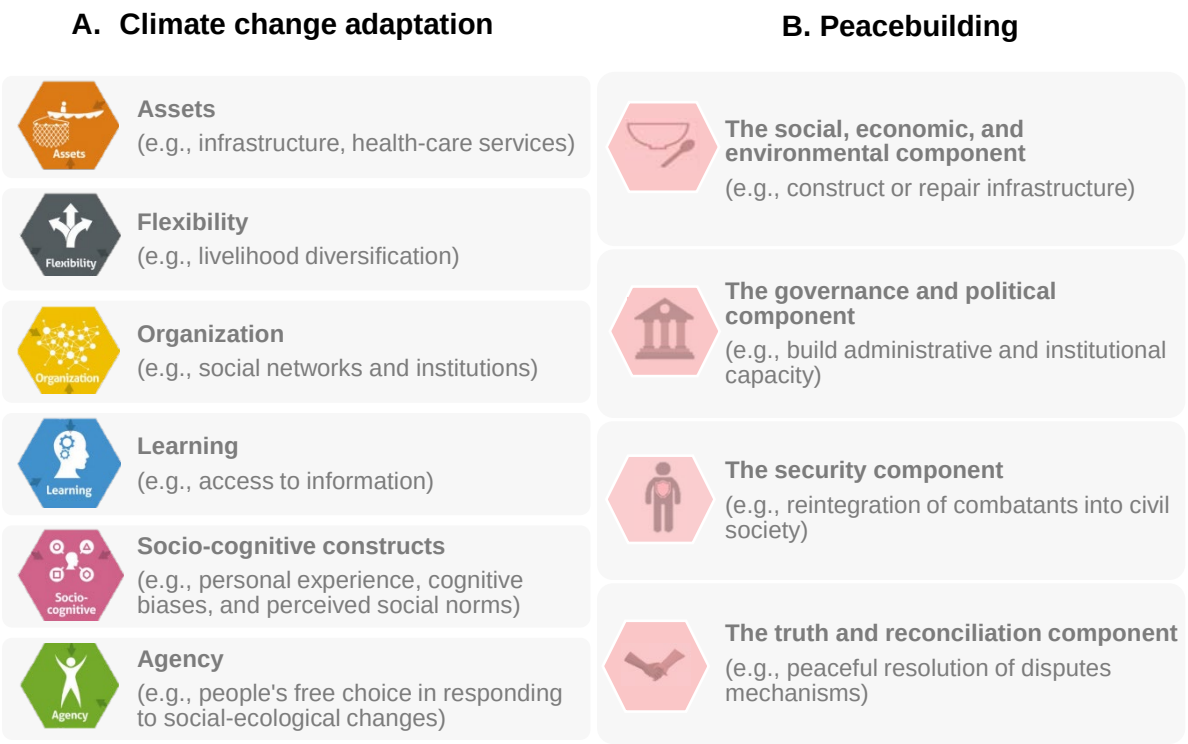

Figure 8. **Domains of adaptive capacity and components of peacebuilding.**.**A.** Domains for building adaptive capacity to climate change (Cinner & Barnes, 2019). **B.** Components for building capacity in Peacebuilding (Hammill & Matthew, 2010). Icons used for climate change adaptation are adapted from Cinner & Barnes (2019).

4.4. Methods

I used an in-depth case study and two data collection methods to identify the capacities climate change adaptation and peacebuilding projects were building and how they overlap: (a) semi-structured interviews with key informants from climate change adaptation and peacebuilding organisations and (b) document analysis of climate change adaptation and peacebuilding documents elaborated in the project.

4.5. Results and discussion

The coastal community in which the research was conducted has been actively engaged in climate change adaptation and peacebuilding projects for over three decades (Conservation

International, 2021). Supported by Colombia's Marine and Coastal Research Institute, environmental authorities, local NGO foundations, international foundations, national and local governments, as well as community-based associations of mangrove farmers, the community has participated in numerous projects aimed at climate change adaptation and peacebuilding (Conservation International, 2021). These projects include mangrove restoration, blue carbon sequestration, land restitution, economic compensation for loss or damage (indemnities), ecological tourism, and ecosystem-based adaptation. During interviews, **participants 3 and 7** expressed that these projects have proven effective in reducing the recurrence of conflicts and equipping communities to anticipate and mitigate the impacts of climate change.

> "[climate change adaptation organisations in the Bay] are using the carbon value generated through the conservation and restoration of the Cispatá mangroves to contribute to a long-term sustainable financing strategy for the region. For the 12,000 people who depend on the mangroves for food, firewood and livelihoods, the sale of carbon offsets is providing financial security as well as the initial funding needed to develop a sustainable ecotourism program and improve fishing practices in the region. Local wildlife is protected, and a healthier mangrove forest is providing — not to mention food security, water purification and better coastal protection against storm surges". **Participant 3. International Foundation, climate change adaptation.**

> "The [projects] for the victim population are the humanitarian and immediate aid routes and productive projects. There are other [projects] with the institution SENA (National Learning Service). These [projects] aim to economically stabilise the victim population. More than 80% of the beneficiaries are victim families, and these houses benefit them a lot because they now have a different way of life. Through these [projects], they have a better life, a different lifestyle, more in line with what it should be, which is to live in dignity". **Participant 7. Local government, peacebuilding.**

Based on the interviews and document analysis I found that climate change adaptation and peacebuilding organisations in the Bay were building capacities in separate or siloed projects. The specific capacities climate change adaptation organisations were building in their projects focused on all six identified domains of adaptive capacity, i.e., learning, organisation, assets, agency, flexibility, and socio-cognitive constructs. Peacebuilding organisations, on the other side, were building capacities in projects categorised into these components: social, economic, and environmental, governance and political, security, and truth and reconciliation. However, as I expected, these capacities being targeted often overlapped (see appendices to this thesis), which indicates that some efforts to build capacities to respond to climate change and

conflict may be duplicated in practice. I found six factors comprised major overlaps for climate change adaptation and peacebuilding: access to information, education, social networks, employment, environment, and healing (see Figure 9). There are also two glaring gaps: protection and/or safety and socio-cognitive constructs (see Figure 9). These overlaps and gaps are key to understanding how to more efficiently apply efforts to address shared challenges or goals and to increase collaboration between climate change adaptation and peacebuilding. They serve as a starting point from where policy integration may be achieved. I discuss these overlaps and gaps in greater detail in Section 4.5.1.

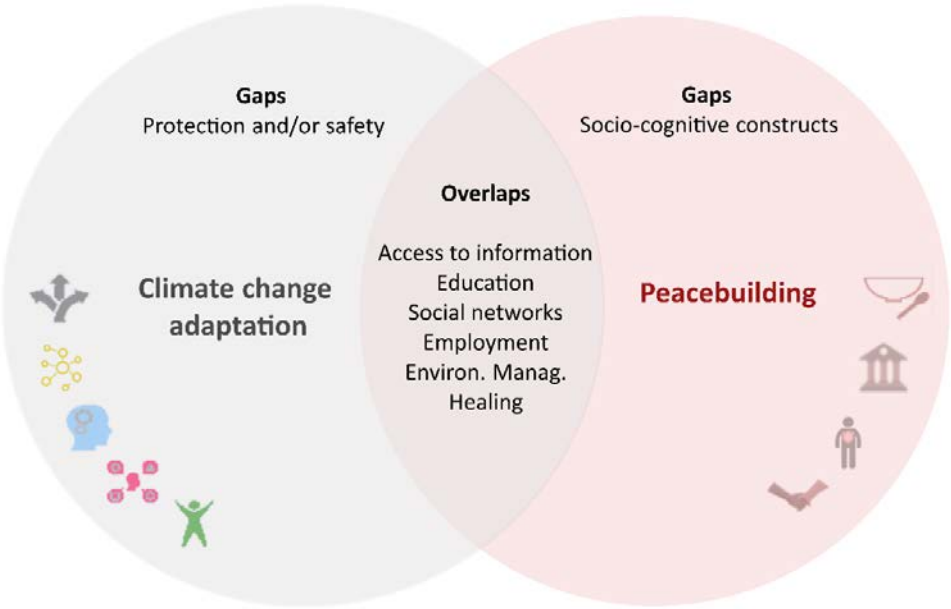

Figure 9. Key overlaps and gaps between climate change adaptation and peacebuilding projects in the case study. This diagram shows the relationships, or interactions, between the key capacities that climate change adaptation and peacebuilding projects are targeting in Cispatá Bay. In cases where a single project or action simultaneously enhances capacities for both climate change adaptation and peacebuilding, I identified this as an overlap. The gaps show the areas covered by one stream (i.e., climate change adaptation or peacebuilding), but not considered in the other. Note that only the dominant overlaps are shown here (see section 4.5.1). The other overlaps are illustrated in the appendices to this thesis.

4.5.1. Overlaps between climate change adaptation and peacebuilding in the Bay

The key capacities targeted in climate change adaptation projects that overlapped with different components of peacebuilding were access to information, education, and social networks (see Figure 10, A). The key capacities that peacebuilding projects targeted overlapped with climate change adaptation domains, such as employment, environment, and healing (see Figure 10, B). I describe these overlaps in greater detail in the following sections.

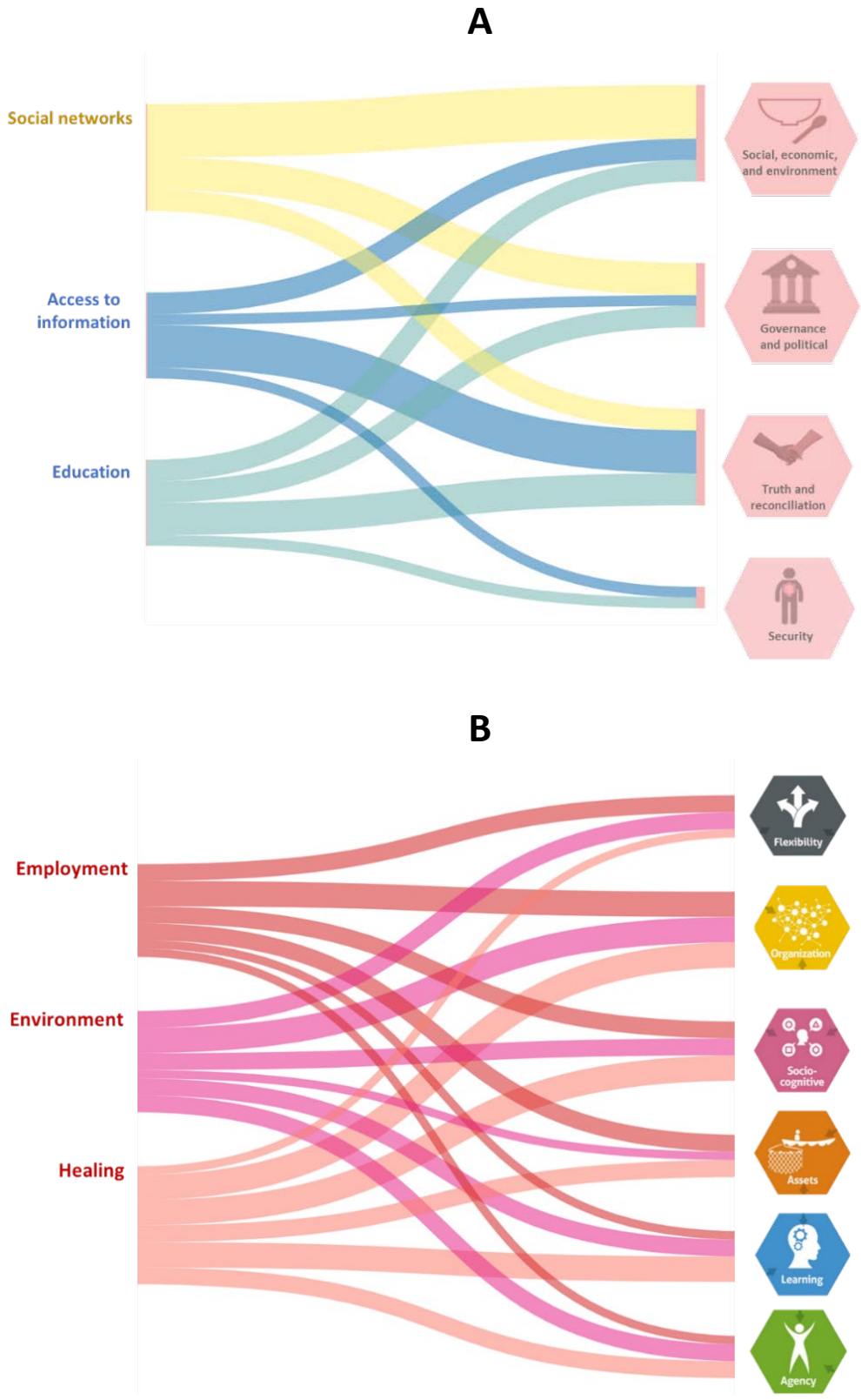

Figure 10. A graphical depiction of *how* key capacities being targeted in climate change adaptation projects overlap with components of peacebuilding (A), and how key capacities targeted in peacebuilding

overlap with climate change adaptation (B). This diagram uses a series of interconnected, flowing lines to show the relationships or overlaps between key capacities being targeted in climate change adaptation projects and components of peacebuilding. A) In this figure the coloured lines represent how key capacities in climate change adaptation (left side) overlap with peacebuilding components (right side). Yellow is used for social networks (in the domain of organisation), and blue and blue-green for access to information and education (in the domain of learning). B) In this figure, the coloured lines represent how key capacities targeted in peacebuilding components (left side) overlap with the domains for adaptive capacity to climate change (right side). Dark red and pink are used for employment and environment (in the social, economic, and environmental component), and light pink for healing (in the truth and reconciliation component). In both (A) and (B), the thickness of the line represents the number of overlaps (see appendices for information about the number of overlaps).

4.5.1.1. Access to information and education (Climate Change Adaptation CCA domain)

I found that climate change adaptation organisations implemented sectorised projects about access to information and education that overlapped with peacebuilding projects. These education projects focused on mangrove restoration, bird tourism, biodiversity, networks, and leadership. Mangrove farmers said that these education projects were important to create alternative and sustainable livelihoods (**participants 13 and 15**). They mentioned in the interview how people who were previously involved in crocodile *(Crocodylus acutus)* hunting and illegal logging started working in mangrove restoration and eco-tourism after the training projects. This outcome is important for peacebuilding as it provides employment and financial support to conflict-affected mangrove farmers.

> "Crocodiles were critically endangered in the area 15 years ago. However, the regional environmental authority, helped to create a local association that monitors the population, collects eggs and releases mature individuals back into the wild. Thanks to community efforts, hunters became crocodile custodians — resulting in the rehabilitation and release of nearly 10,000 crocodiles in the Cispatá Bay over the last 18 years. Today, local communities use the species for ecotourism activities only" **Participant 13. Community association, climate change adaptation.**

Organisations working on peacebuilding, on the other side, implemented education projects through 'Mobile Units for Conflict Victims' Assistance and Guidance'. These 'Mobile Units', implemented by a peacebuilding government institution, go to remote areas to provide information about transitional justice mechanisms, support systems, reparative measures, and land restitution. Representatives of peacebuilding institutions mentioned that because of the

'Mobile Units', many individuals in the Bay accessed information and education about human rights and legal procedures (**participants 6 and 7**).

Projects that provide information and education in remote areas are known to build a foundation for more participatory and inclusive learning processes (Lutz et al., 2014). These outcomes are important not only for peacebuilding but also for the learning domain of climate change adaptation. This is because the information provided by the peacebuilding organisations enabled individuals and communities in the Bay to establish new livelihoods or build networks (Fazey et al., 2007). The results suggest that helping communities adapt to climate change and respond to conflict involves supporting formal and informal education and providing technical and financial assets to access education. Inaccessibility, remoteness, and marginality may reduce coastal communities' ability to learn about climate change and peace and hinder adaptation and peacebuilding efforts. Therefore, climate change adaptation and peacebuilding organisations need to carefully consider coastal communities' context when implementing projects to adapt to climate change and reduce conflict.

4.5.1.2. Social networks (Climate Change Adaptation CCA domain)

Social relationships influence the way communities form bonds with each other and their access to "informal insurance and logistical support and capacity for collective action" (Okpara et al., 2017). In Cispatá Bay, Colombia, I found that climate change adaptation and peacebuilding organisations implemented sectorised projects to respond to climate change and conflict. Yet these projects overlapped. Climate change adaptation organisations implemented projects to organise the community and "enable cooperation, collective action, and knowledge sharing" (Cinner et al., 2018). These projects consisted of creating a group or board to build networks between the state and non-state organisations implementing the projects, such as institutions, foundations, and mangrove farmers. This group meets fortnightly, so the institutions show their progress, justify the use of funds or money, and the communities give their opinions. As a representative of an environmental authority said, "Everything is consulted with the communities" (**participant 8**). These networks within the community are central for cooperation, sharing resources and knowledge, and building synergies to implement the projects.

Peacebuilding organisations also implemented projects to organise the community and provide social support and access to knowledge and resources. These organisations established a *board* or group to build networks between the state and victims of violent conflict. The representative of a peacebuilding organisation mentioned that this board represents the victim

population in the Bay and defines the productive projects that the city council will implement. The representative said: “They are like a participation instance where they can monitor the different policies” (**participant 6**).

Projects to organise the community and network building enable individuals and communities to deal with change by providing social support, collaboration, and access to key resources (Adger, 2003; Kurtz & Elsamahi, 2023). In Cispatá Bay, Colombia I found that climate change adaptation and peacebuilding organisations established networks that provide cooperation and social support. However, these networks connect only the actors working in the same area (i.e., climate change adaptation or peacebuilding) (see Figure 12), and then climate change adaptation and peacebuilding organisations are still sectorised. Coordination and integration may be an option to enhance the effectiveness of climate adaptation and peacebuilding projects and avoid unnecessary use of resources by implementing sectorised projects (Abdi et al., 2023). I will discuss how to implement combined or clustered projects in section *4.6.2. Breaking the silos to integrate climate change adaptation and peacebuilding.*

4.5.1.3. Employment (Peacebuilding PB component)

I found that climate change adaptation and peacebuilding projects are both centred on creating employment and increasing livelihood diversification. Climate change adaptation organisations have implemented projects to generate income in mangrove restoration, nurseries, and ecological tourism. A representative of a climate change adaptation organisation said

> “There are hundreds of families living and working with the mangroves. The ‘*mangleros*’ [or mangrove farmers] are part of a network of local mangrove associations formed to conserve and protect the mangroves” **Participant 8**. **Environmental authority, climate change adaptation.**

Peacebuilding organisations have similarly implemented projects to generate income in agriculture and farming, which have increased flexibility associated with livelihoods. These projects are necessary for short-term stability, reintegration, economic growth, and sustainable peace (Schilling et al., 2020) – but having this sort of flexibility is also identified as critical for building adaptive capacity to climate change (Badjeck et al., 2010; Chavunduka & Bromley, 2011; Cinner et al., 2018) and thus is likely also contributing to reducing vulnerabilities to long-term environmental change.

4.5.1.4. Environmental management (Peacebuilding PB component)

Climate change adaptation projects often have a strong focus on managing and conserving the environment to reduce climate vulnerabilities (Berrang-Ford et al., 2011; Intergovernmental Panel on Climate Change, 2001; Mortreux & Barnett, 2017; Palutikof et al., 2014). This was certainly the case in the Bay, where projects focused on mangrove restoration and carbon sequestration for example have been implemented. However, peacebuilding organisations have also implemented major projects of governing, managing, and conserving natural resources and the environment to support durable peace in the region (Fondo Colombia en Paz, 2023; Martinez & Vergara Tamayo, 2016). There is a growing recognition in the environmental peacebuilding literature of the potential for environmental management to present opportunities for cooperation and peace (Swain & Øjendal, 2018). The sustainable management of natural resources has been shown to mitigate potential environmental sources of tension and disrupt a negative cycle whereby environmental degradation increases the vulnerability of communities to climate change and this vulnerability leads to conflicts and human insecurity (Dresse et al., 2019; Gilmore et al., 2018). Interviewees commented that there are environmental projects focused on payment for environmental services, agroforestry systems, community-based forest restoration, sustainable production projects (e.g., coffee, cocoa, sustainable livestock, beekeeping, aquaculture, bananas, lemons, and ecotourism), and ecosystem-based adaptation.

> "The IDB Sustainable Colombia credit supports the payment for environmental services and the generation of agroforestry systems, so what is being done there is to work with productive units, cooperatives, and community organisations that had some productive projects and the IDB gives them technical assistance so the idea or productive project becomes a business unit. At the same time they take care of the environment through the promotion of agroforestry systems, so you can develop an agricultural activity and at the same time protect the forest. For example, in one lot they combine banana and cocoa with palm trees, either African palm or palm for the açaí (*Euterpe oleracea*) and that gives it a forest characteristic, and there are others like sacha inchi nuts (*Plukenetia volubilis*), and they must have a theme of environmental care" **Participant 12**. **National government, peacebuilding.**

In the ecosystem-based adaptation projects, communities in the Bay use the carbon value generated through the conservation and restoration of mangroves to contribute to a long-term sustainable financing strategy. Such projects are implemented by networks of climate change organisations and are leading to synergies between climate change and peacebuilding based on the use of natural resources and ecosystems for adaptation and peace. Sustainable

resource management practices that prioritise equitable access to natural resources and minimise resource-driven conflicts constitute the basis for building solidarity and trust to both prevent conflict and adapt to climate change (Abdi et al., 2023; Barnett, 2019)

4.5.1.5. *Healing (Peacebuilding PB component)*

In conflict-affected areas, the recovery process and healing of individuals and groups exposed to prolonged and complex violence is an important element in building peace and resilience (Alamdari et al., 2022). This process may support or facilitate climate change adaptation efforts. For example, including community trauma-healing components in a peacebuilding project in Uganda, has positively impacted participants' sense of agency, trust in governing authorities, and social support – all common components of climate change adaptation (Kurtz & Elsamahi, 2023). In Cispatá Bay, Colombia, peacebuilding organisations have prioritised reconciliation projects, psychological or psychosocial assistance, and emotional support for healing and wellbeing. These projects have also focused on developing occupational changes, education, and rebuilding infrastructure that leads to feelings of security and social support. Such capacities represent important conditions for adapting to climate change impacts. Occupational changes (from agriculture or fishing to eco-tourism) build flexibility and having this flexibility is a critical domain of building adaptive capacity to climate change (Cinner et al., 2018). Provision of access to information and education is central to building the learning domain for adaptive capacity (Badjeck et al., 2010; Yablon, 2015) and rebuilding infrastructure for assets (Brooks et al., 2005; Fenichel et al., 2016).

Projects focused on recovery and healing are critical for climate change adaptation. If communities do not feel secure or have the emotional willingness or readiness to begin dialogues, this may constitute a competing concern that stalls or impedes any effective action against climate change, especially collective action (Mortreux & Barnett, 2017). In the climate change literature (Mortreux & Barnett, 2009, 2017) is recognised that in the midst of significant stressors, such as violent conflict, adapting to climate change is not a priority, then peacebuilding projects about psychological or psychosocial assistance are needed because reduces those concerns about conflict and reconciliation and enable communities to adapt to climate change.

4.5.2. Gaps in the intersection between climate change adaptation and peacebuilding projects in the Bay

While there is a growing recognition that climate change adaptation should consider histories of conflict and that peacebuilding should consider climate-related risks, several gaps persist. In the study of the Cispatá Bay in the Caribbean Sea, Colombia, I found there are major gaps around building capacities in regard to socio-cognitive constructs and protection and/or safety. Socio-cognitive constructs are concepts that individuals use to understand and interpret social interactions and circumstances. These constructs include beliefs, attitudes, perceptions, and cognitive processes that influence how people perceive and respond to social and ecological situations (Cinner & Barnes, 2019; Mortreux & Barnett, 2017). I found there are no peacebuilding projects specifically centred on socio-cognitive constructs to build capacities for peace although some of their projects (e.g., projects for healing) indirectly included such constructs. Climate change adaptation organisations, in turn, implemented specific projects focused on socio-cognitive constructs. Experience of ecosystem changes in the Bay by mangrove farmers for example influenced the topics and focus of the education projects implemented by climate change adaptation organisations in the Bay. Mangrove farmers said that years ago there were rice crops where the mangroves are: “In the past, some of the mangrove areas, were rice cultivation zones but the riverbend changed and now those areas are mangroves” (**participant 2**). Based on that knowledge and experience climate change adaptation organisations implemented projects to change the dependence on agriculture and work in restoration or mangrove nurseries.

Along with socio-cognitive constructs, protection, and/or safety which aim to prevent harm, reduce risks, and respond to emergencies or threats, were not discussed among respondents as key focuses in climate change adaptation projects. Peacebuilding organisations implemented projects about protection and/or safety though respondents said the projects were not adequate and efficient (**participants 1 and 12**).

With the need for an integrated approach that considers the interdependencies between climate change and peacebuilding (Hammill & Matthew, 2010; Matthew, 2014), there may be missed opportunities to better address these gaps and promote a more holistic and effective response to the complex relationship between climate change and conflict. These interdependencies raise fundamental questions about how to effectively integrate climate change adaptation and peacebuilding and account for the complexities in this relationship. Climate change adaptation may have substantial conflict effects, as recognised in the

"maladaptation" literature (Adger et al., 2013; Delina et al., 2023; Gemenne et al., 2014), and peacebuilding may increase vulnerabilities to climate change (Ide, 2020). When different stressors are considered in isolation, maladaptation is often observed "as measures to adapt to one stressor may be maladaptive to a different stressor" (Feola et al., 2015). Adaptation projects, such as building large infrastructure or the resettlement of communities, may disrupt livelihoods, displace populations, deteriorate valued cultural expressions and practices, and lead to conflict reoccurrence. Similarly, peacebuilding projects, such as prioritising the resettlement of refugees or displaced communities in protected forest areas most prone to flooding or mudslides, may increase communities' vulnerability to climate change (Matthew, 2014). Thus, if climate change projects are to avoid maladaptation, climate change impacts need to be considered within a broader context of multiple stressors (Delina et al., 2023; Froese & Schilling, 2019), and if peacebuilding projects are to reduce climate risks, need to include a climate change adaptation dimension (Matthew, 2014; Nicoson, 2017).

4.5.3. Difficulties implementing climate change adaptation in the context of violent conflict and peacebuilding projects in the context of climate change

Representatives of organisations and community-based groups that implement climate change adaptation and peacebuilding projects mentioned three major difficulties in the context of climate change and violent conflict: land and marine use planning, conflict dynamics, and place attachment. These difficulties undermine or create hardships for climate change and peacebuilding projects or unintended effects (i.e., boomerang effects, loops or backdraft).

4.5.3.1. Land and marine use planning

Interviewees emphasised that competing uses of land and marine ecosystems were major difficulties when it came to implementing both climate change adaptation and peacebuilding projects in the area. Although there are projects to protect coastal and marine ecosystems, mangroves continue to be cleared for cattle, shrimp farming, and agriculture because farmers move their fences further into the forest during the dry season. This is the case of the mangrove-land interface sites and beaches where mangroves are being replaced by coconut and rice crops. Though the Bay had adaptation and conservation projects in place, it did not have the financial resources and adequate planning processes to enforce its protection. These unplanned land and marine-use changes in the area are leading to both ecological and social impacts, such as the degradation of mangroves (which increases community vulnerability to

climate change) and conflict. To overcome these difficulties and find a balance between competing concerns (e.g., economic development and conservation), climate change organisations are developing dialogue and cooperation actions that are important to build capacities for peace simultaneously.

Land and marine use planning and the use of Marine Spatial Planning (MSP) may also represent an opportunity to reduce land and marine-use conflicts and build capacities for peace and resilience in coastal communities (Mendenhall et al., 2020). The establishment of a coastal zoning scheme to allocate areas for specific uses in MSP is a way to reduce conflicts between different areas (i.e., conservation and development) (Kay & Alder, 2005). This zoning scheme determines the types and levels of activities permitted, limits the types of projects and programs that can be implemented in the area, and defines the responsibilities of different organisations (Thia-Eng, 1993).

Integrated Coastal Management and MSP are used to reduce conflicts among coastal resource users (Tuda et al., 2014). The plans typically emphasise the integration and balance of ecological, economic, and social objectives in ecosystem planning (Cadoret, 2009), and thus can potentially provide an opportunity to integrate climate change adaptation and peacebuilding concerns simultaneously. However, zoning schemes may lead to other types of conflict as there may be different perceptions about the allocation of areas to specific uses, such as no-fishing zones (Kay & Alder, 2005). Then, coordinated and integrated management is fundamental to finding solutions to land and marine use problems, which requires a well-organised government structure and a well-defined set of objectives and projects (Kay & Alder, 2005).

4.5.3.2. Conflict dynamics

Armed conflict in Colombia is a phenomenon influenced by complex socio-political conditions. These include changes to national security policies, the influence of illicit drug groups, and limited state presence (Sosa, 2023). The signature of the peace agreement between one armed group and the government of Colombia in 2016 decreased the levels of violence and confrontations, but territorial control and illicit economies persist (Rodriguez Garavito et al., 2017). Colombia is thus recognised to have a “permanent conflict” or “latent conflict”, wherein even in the absence of direct violence, various tensions and injustices persist (Tamayo-Agudelo & Bell, 2019). I found evidence through the interviews that individuals and groups in the Bay normalise these tensions and injustices, perceiving them as an inherent part of their daily lives. Interviewees mentioned that armed groups see and control things in the area, even

in the absence of confrontation. For example, the representative of a community-based organisation stated “They know what we do and what not. They know what we have and the way we use it. But in our daily lives there is no conflict or displacement” (**participant 9**).

> “[…] You know that there are people here from organisations that at least we don't talk about it, so we are often afraid that we might do something and that we might have reprisals from these people, that they might want something from what we do, so under these circumstances, we have kept ourselves up, well, at the level”. **Participant 9**. **Community association, peacebuilding.**

These complex conflict dynamics have been disrupting the implementation and effectiveness of climate change adaptation and peacebuilding projects, as noted by the participants. Since the peace agreement, deforestation has increased in intensity for wood and to clear land for the cultivation of illegal crops and cattle farming. There are also illicit economies and informal extractive economies, such as illegal mining, that are exacerbated because of limited state capacity and that are causing environmental conflicts (Cantillo & Garza, 2022; Pérez-Rincón et al., 2022). The experience of countries such as Angola and Nicaragua shows that in the post-conflict period, environmental degradation increased, especially with logging and mining activities (Martinez & Vergara Tamayo, 2016).

Climate change adaptation and peacebuilding need to build synergies to withstand the impacts of past conflict and latent conflict. Cooperation (Giraldo-Suárez & Rodríguez, 2023), mediation (Leighton Barrett, 2017), traditional resolution mechanisms (e.g., peace meetings in Northern Kenya) (Schilling et al., 2014), dialogue and the negotiation of agreements concerning the management of shared natural resources can be key to finding solutions to complex conflict dynamics (Linke et al., 2015; Salehyan, 2008; Sultana et al., 2019). For example, in rural Kenya, inter-community dialogue is associated with lower levels of support for the use of violence in times of drought (Linke et al., 2015) and in the Nile Basin (which has historically faced water-related pressures), Mediators Beyond Borders (MBB) - a US organisation working in climate-related conflicts - found mediation may help communities to resolve water, land use, and agricultural disputes to de-escalate tensions and achieve equitable and enduring agreements (Leighton Barrett, 2017).

In Cispatá Bay, Colombia, climate change adaptation organisations are beginning to create spaces of dialogue and support informal conflict resolution mechanisms to de-escalate tensions and build resilience. A representative of an international foundation stated that they are starting dialogues with groups of cattle farmers to stop deforestation

> "We have to go slowly trying to convince them, without entering into conflict with them, but we have identified some of the farmers with whom we could start working and they could become an example for the rest" **Participant 3**. **International foundation, climate change adaptation.**

The experience of the organisations in the Bay shows that another way to find solutions to complex conflict dynamics is by increasing the presence of government institutions in the area and building networks with the community (e.g., joint management of climate responses or coordination of relief supplies) (Davy, 2004; Grady et al., 2023). Indeed, state presence and networks have facilitated cooperation to achieve shared goals and reduced intergroup conflict as noted by the state and non-state actors in the area. Communities living in Cispatá Bay mentioned that strong connections with government institutions helped people to deal with conflict by providing social support, as well as access to knowledge and resources (**participants 9, 10, 11, 14, and 15**). These connections are important for building trust and social cohesion, as well as a sense of physical security.

4.5.3.3. Place attachment

Place attachment recognises the cultural connection that individuals or communities have to a specific location or environment (Hidalgo & Hernández, 2001; Rollero & De Piccoli, 2010). This attachment is often rooted in the experiences, memories, and cultural significance associated with a particular area and can influence how people perceive and respond to changes (Clarke et al., 2018). While place attachment is recognised to inhibit the flexibility to relocate or make significant changes (Mortreux & Barnett, 2017), I found in the case study that place attachment may be a necessary condition, rather than an inhibiting factor, for the effective implementation of climate change adaptation and peacebuilding projects. Mangrove farmers and organisation representatives said that young people are leaving the Bay and that this lack of place attachment is a major challenge for implementing the projects because there is no participation and sustained action (**participants 2 and 8**). Even a high adaptive capacity may not translate into effective adaptation and peacebuilding if there is a lack of commitment to sustained action (Luers & Moser, 2006).

To overcome this, climate change adaptation organisations are developing an education project known as "mangrove legacy" to enhance place attachment. A representative of a research institute said

> "Many young people in the area, they no longer want to be there, they say, this is a very heavy job, very difficult, we shouldn't be here. So, we try, through education, to show them that it is

> important to stay in the territory" **Participant 2. Research institute, climate change adaptation.**

However, there are two limitations to these place-based projects: firstly, people in the community may leave due to the absence of economic opportunities even when feeling strongly attached to the place. As one mangrove worker explained in the interview, "In order to sustain the projects, it is necessary to improve the community's sources of income so that they do not have to leave" (**participant 15**). Climate change organisations could perhaps direct these legacy projects to enhance livelihood diversification, such as ecotourism or mangrove restoration.

Secondly, emotional and cultural attachment may prevent people from making changes, even if they are necessary to reduce impacts or prevent risks. The literature on disaster risk reduction shows that attachment can limit household preparedness for wildfires (Eriksen & Gill, 2010; Nelson et al., 2005; Ryan, 2010). For example, attachment to the forest and other landscape characteristics may prevent people from removing trees near their homes, even if they pose a significant risk in a wildfire (Mortreux & Barnett, 2017). Climate change adaptation and peacebuilding organisations need to consider these limitations to achieve shared goals, such as building resilience and peace.

4.6. Integrating climate change adaptation and peacebuilding

Integrating climate change adaptation and peacebuilding requires considering the overlaps and gaps between the two streams of projects. These intersections (i.e., overlaps and gaps) are important for moving away from silos toward synergistic actions to build capacities for both climate change adaptation and peacebuilding. In many conflict-affected communities, it is not sufficient to address climate change and conflict as two disconnected challenges. As it is clear in my analysis, climate change and violent conflict are inherently interconnected and mutually reinforcing, and there are cumulative and interactive climate change and conflict impacts.

To facilitate the integration of climate change adaptation and peacebuilding and contribute to designing "conflict-sensitive" and "climate-sensitive" projects, I developed a new framework for building capacities in climate and conflict-affected communities. Building on the existing frameworks described in Figure 9 and the results of my empirical analysis, I identified eight major elements that can help build (or undermine) both climate resilience and peace: Governance and institutions; Agency and social cognition; Employment and livelihood

diversification; Technical and financial assets; Learning; Healing; Security and judicial system, and social networks (see Figure 11). These elements constitute the main intersections between climate change adaptation and peacebuilding and a synergistic approach to integrate these areas into medium- and long-term policies and projects.

The elements may be adjusted over time to reflect the evolving realities and priorities. They are contextually sensitive, flexible, and structured to evolve based on the changing dynamics of fragile areas. The elements are not prescriptive and emphasise the importance of an area-owned participatory process to build capacities. This process includes (a.) analysing scenarios and vulnerabilities, (b.) implementing projects and/or actions to build capacities for the integrated elements, and (c.) reporting, monitoring, and reviewing the effectiveness of the projects and/or actions. This is significant to move beyond silos and bring in a wider contextual understanding of climate change impacts and violent conflict in conflict-affected communities.

Figure 11. A new framework to build synergistic capacities in climate change adaptation and peacebuilding projects targeting climate and conflict-affected communities.

4.6.1. Elements to build capacities for climate change adaptation and peacebuilding

4.6.1.1. Governance and Institutions

In fragile contexts, authorities and governing institutions commonly lack the necessary political determination and/or capability to provide basic needs for poverty reduction, development, security, and human rights protection (Sitati et al., 2021). In Colombia, for example, the lack of state presence in distant or peripheral areas contributed to the emergence of armed groups that have led to forced displacement, loss of income, and land dispossession (Piccone, 2019). Communities living in these peripheral areas (characterised by a historical lack of state presence) may be forced to join armed groups, cultivate coca leaves, and illegally exploit natural resources because of the lack of economic options (Martinez & Vergara Tamayo, 2016; Morales-Muñoz, 2022). Increasing centralisation of authorities has also led to a reduced capacity and autonomy of authorities at the local level to implement effective climate change adaptation and peacebuilding projects (Bencardino et al., 2019).

Building capacities for responsive, accountable, and inclusive institutions are needed for advancing both climate change adaptation and peacebuilding (Adano et al., 2012; Jones et al., 2017). These capacities encompass (a) organisational, institutional, and financial capacity to provide basic needs and (b) the ability to develop mutually constructive and reinforcing relations with communities (Rodriguez Garavito et al., 2017). Such capacities are key to understanding and improving the structures and processes for decision-making, formulating policies, and managing resources (e.g., land and marine use planning) at various levels (local, regional, national, or international) in the face of both climate change and conflict dynamics (Jones et al., 2017).

4.6.1.2. Agency and social cognition

Agency and social cognition are the processes to determine whether to change or not and the processes to perceive, interpret, remember, and apply information in a social context (Brown & Westaway, 2011). This element also captures individuals' and communities' perceptions about their ability to manage the conditions or situations that affect them (Bandura, 2006). For example, conflict-affected coastal communities with positive perceptions about the possibility of responding to difficult situations during violent conflict events are more likely to engage in peacebuilding projects (Barnes et al., 2003). Building capacities for agency and social cognition involves developing individuals' abilities to act autonomously, make informed decisions, and understand and navigate social contexts effectively.

4.6.1.3. Employment and livelihood diversification

Employment and livelihood diversification relate to the actions or processes for expanding and varying the sources of income and activities that individuals or communities use to sustain their livelihoods (Barnes et al., 2020; Kurtz & Elsamahi, 2023). This concept is often applied in the context of rural or developing areas where communities traditionally rely on a single primary source of income, such as agriculture or cattle (Egorova & Hendrix, 2014). For instance, in Lake Chad, depending solely on cattle as a source of income has been found to increase pastoralists' vulnerability to income fluctuations resulting from livestock devaluation, disease, and conflict associated with climate-related droughts (Okpara et al., 2017). Then, building capacities for employment and livelihood diversification involves a strategic and continuing process to change the dependence on a single livelihood activity (e.g., through livelihood diversification, income subsidies, and social safety net provision) to reduce vulnerability to economic, environmental, and social shocks in fragile contexts (Egorova & Hendrix, 2014; Salehyan & Hendrix, 2014).

4.6.1.4. Technical and financial assets

Technical and financial assets represent the monetary resources and technological instruments that individuals and communities have access to. Having access to the necessary resources can enable communities to adapt to rapid climate change *and* violent conflict impacts (Ayana et al., 2016; Burrows & Kinney, 2016). For instance, communities displaced by violent conflict may draw upon financial assets (savings or credit) to find a place to live or cover immediate needs, or if they are not able to fish due to a decrease in the abundance of target species because of extreme weather or warming waters, they may draw upon financial assets to buy industrial gear or freezers, enabling fishing in more distant locations (Cinner & Barnes, 2019). Besides, in conflict-affected communities, joining or supporting an armed group may present itself as a viable response to economic difficulties (von Uexkull et al., 2020). Then, building technical and financial capacity may enable communities and individuals to adapt to climate change and reduce the onset of violent conflict and even the cost of the opportunity to join armed groups. Yet, to effectively utilise the funds to provide technical and financial assets to communities, governments and organisations need to consider the broader social context. In the climate change-conflict literature it is found that efforts to build resilience to chronic food insecurity through the provision of assets (e.g., food aid) in conflict-affected communities (e.g., Rolpa in Nepal) inadvertently may undermine long-term resilience in creating dependency on crops (e.g., rice) in mountainous regions that lacked sufficient water to cultivate or when forcing

communities to move from cultivating a diverse range of crops to mono-cropping (e.g., in Rwanda) (Shimada, 2022; Vivekananda, 2014). Therefore, in designing climate change adaptation and peacebuilding projects to provide assets, the government and organisations need to consider socioeconomic and political conditions influencing the area where they will be implemented.

4.6.1.5. Learning

Learning is the ability to recognise change, determine the causes of change, and consider appropriate responses (Cinner & Barnes, 2019). Learning is not only about education or access to information, but it also includes the processes to understand complex interactions and problems. In fragile contexts, learning can help to build awareness of the interactions between climate change and violent conflict and to develop the abilities or capacities to adapt to climate change and respond to conflict at the same time. Learning is a dynamic and continuous process and occurs within various organisational, spatial, and temporal scales (Fazey et al., 2007). For example, in response to displacement, communities need to learn about other practices and livelihoods in other locations and sometimes learn new ways of making a living. Then, building capacities for learning may enable communities and individuals to frame cumulative and interactive problems to effectively adapt and respond to co-occurring shocks.

4.6.1.6. Healing

Armed conflict has severe psychological and social impacts associated with trauma, loss, uprooting, and the disruption of ways of living (Tamayo-Agudelo & Bell, 2019), and climate change is altering material conditions in ways that affect human wellbeing (Adger et al., 2022; Fritsche et al., 2012; Hayward & Ayeb-Karlsson, 2021). Climate change adaptation literature recognises that climate change affects human well-being in three ways (Adger et al., 2022): first, changing the material conditions (i.e. infrastructure and ecosystems) in which communities live; second, impacting communities' aspirations, hopes, and fears by introducing significant and complex dynamics into the ecosystem that are beyond individuals' control; and third, altering economic and mental wellbeing when implementing policy responses to climate change (e.g., taxation or limited access to public services).

Mental health and well-being are influenced by a wide variety of interacting factors, including climate change. Recognising the impact of climate change on an individual's mental health implies the need for projects and policies that focus on creating conditions for human well-

being rather than just addressing severe distress symptoms (Adger et al., 2022). Here, healing includes psychological or psychosocial assistance in conflict settings and communities impacted by the disruption of ways of living by climate change. This assistance involves rebuilding social trust, facilitating the return or relocation of communities, providing social support, and securing truth and reconciliation. Healing is inevitably a long and culturally bound process. While political processes and strategies aimed at reconciliation are important in establishing the context for healing and ending cycles of violence, it is commonly an individual and subjective experience (Barnes et al., 2003). For example, conflict-affected communities may be part of national reconciliation processes but still feel that there is no commemoration of the past or forgiveness. Healing needs to be sought at the individual level yet dependent upon and interrelated with the social context (including climate change impacts); it needs to be part of wider reconstruction efforts.

4.6.1.7. Security and judicial system

Conflict-affected communities are vulnerable to inadequate law enforcement and justice administration capacity and to human rights violations. This situation is often exacerbated by a lack of public confidence in governing authorities and a lack of technical and financial capacity. The United Nations Security Council specifies that areas transitioning from violence to peace need to re-establish the prison system and investigate violations of human rights and humanitarian law, rebuild, reform, restructure the police and military system, and strengthen the judicial system (Office of the United Nations High Commissioner for Human Rights, 2006). This captures the key elements to build capacities for peace and reduce the levels of conflict in conflict-affected communities: reforming key institutions like the judiciary, police, and prison service, restoring and maintaining the rule of law, and public safety and public order (e.g., securing of borders and access to resources) (Scheffran et al., 2012). These elements may be important to build adaptive capacity to climate change as there is often weakened law enforcement and public order following extreme climate events.

4.6.1.8. Social networks

Formal and informal relationships between individuals, communities, or institutions can help to respond to change by providing social support, cooperation, and shared access to knowledge and resources (Burrows & Kinney, 2016; Okpara et al., 2017). Intergroup relationships in conflict-affected communities have been shown to increase feelings of physical security, intergroup perceptions, attitudes, and cooperation (Fritsche et al., 2012; Grady et al., 2023).

This implies that the ways in which communities organise may enable or inhibit adaptive responses to climate change and violent conflict (von Uexkull, 2014).

Social relationships are determined by trust and social cohesion and can help to secure access to resources, information, and technology that simultaneously facilitate adaptation to climate change and respond to conflict (Hellin et al., 2018). In conflict-affected communities, it has been found that some groups of fishermen are likely to cooperate and not engage in conflicts associated with shifts in fish stock distribution, by agreeing to share access to the fish or profits from landing within their fishing cooperatives (Burden & Rod, 2019; Schott et al., 2007). Governing authorities, community-based organisations, and individuals can build social relationships by creating opportunities for sustained interaction in different spaces (e.g., communal events, or planning and decision-making spaces) that can facilitate the implementation of effective climate change adaptation and peacebuilding projects. These spaces may be important to facilitate access to information on the immediate needs arising from climate change and conflict and increase the effectiveness of the projects or responses (Morales-Muñoz, 2022).

4.6.2. Breaking the silos to integrate climate change adaptation and peacebuilding

Climate change adaptation and peacebuilding projects are implemented in general by different governing authorities and institutions that function “as a set of independent, interacting actors” —a phenomenon known as polycentric governance (Morrison, 2017). I found that in the case of Cispatá Bay, these complex networks between governing authorities and other institutions organise their relationships with one another through ‘connectors’ (see Figure 12). The connectors are central within the network of others working in the same area or sector as them (i.e., climate change adaptation or peacebuilding), but in order to promote cross-sectoral coordination (Abdi et al., 2023), one of the climate change adaptation organisations created a *Local Coordination*. This *Local Coordination* concentrates the adaptation efforts to reach all people in need of assistance. In doing so, this *Local Coordination* serves as a boundary spanner (Long et al., 2013) that brings together diverse climate change adaptation and peacebuilding projects in the Bay (Barnett, 2019; Eklöw & Krampe, 2019).

In the interviews, participants said that this *Local Coordination* has enabled victim populations to access climate change projects, such as mangrove restoration and nurseries, showing to

be significant in the efforts to build capacities for livelihood diversification (a climate change adaptation domain) and employment (a peacebuilding component) (**participants 5, 9 and 10**).

> "Here we are working with an association that has been working for years around here, near San Antero, Vida Manglar. They plant mangroves, they reforest mangroves, so since I was not here last year, I was away for 7 months, now that I came from Medellin, I joined the group and I am working, we are attending the training, and from the association there are several families that are attending, they are giving us inductions, now we have 30 hectares to reforest. Here in Paso Nuevo there are 5 in Tinajones 20 and so on we are looking for them in different regions that need reforestation". **Participant 10**. **Community association, peacebuilding.**

Social networks between climate change adaptation and peacebuilding organisations represent an avenue to increase cooperation and synergies which could potentially be further enhanced by establishing a coordination centre that acts as a boundary spanner. A boundary spanner could facilitate communication, collaboration, and knowledge sharing between different organisations breaking the 'silos' to integrate climate change adaptation and peacebuilding. In the Arctic region, it has been shown that the power of social networks, "their normative commitments, and the knowledge that informs them, helps to explain the absence of violent interstate conflict in the region" (Crawford, 2021). In situations of fragility and conflict, local actions and projects need coordination and support to respond to combined and overlapping problems. I propose that the establishment of a network of overlapping local, regional, and national organisations and coordination centres could break down the silos towards integrated implementation of climate change adaptation and peacebuilding projects, but we need further research providing insights into project management.

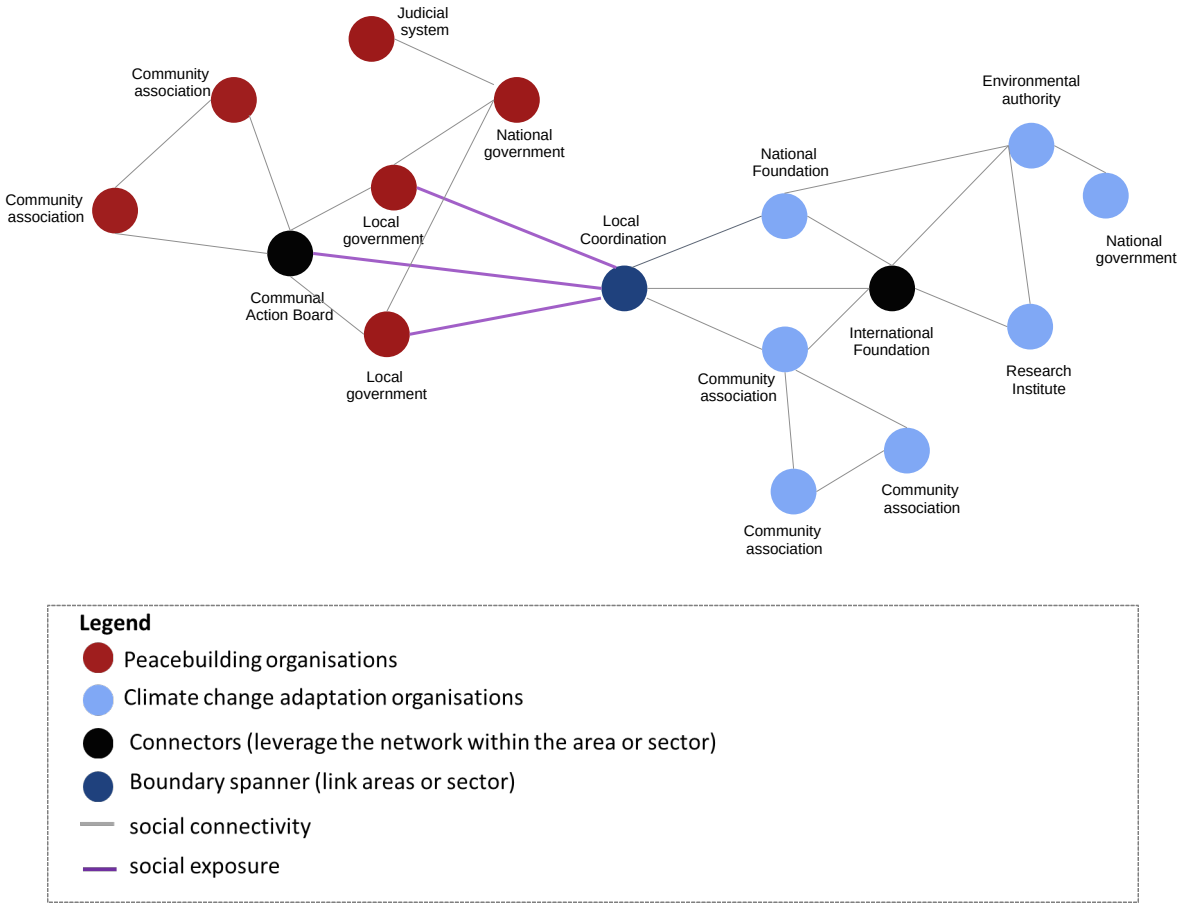

Figure 12. Climate change adaptation and peacebuilding social networks in the case study. The sociogram represents the independent relationships between climate change adaptation organisations (nodes in blue) and peacebuilding organisations (nodes in red) in the case study. These organisations (nodes) function as a set of separate, interacting actors. There are two "connectors" (nodes in black) that leverage the network and there is one *Local Coordination* that crosses organisational boundaries, i.e., a 'boundary spanner', that is in a position to mediate interactions between climate change adaptation and peacebuilding (node in dark blue). The grey lines in the figure represent the social connectivity, or ties, within the network, and the purple ones the exposure to other networks. The boundary spanner is central in the network to facilitate communication, collaboration, and knowledge sharing between climate change adaptation and peacebuilding and could potentially be established in other situations.

4.7. Implications for practice: projects and responses in climate and conflict-affected communities

The study of the climate and conflict-affected coastal community of Cispatá Bay in the Caribbean Sea, Colombia highlighted important overlaps and gaps between climate change

adaptation and peacebuilding. These overlaps and gaps cannot be addressed in an isolated manner due to the cumulative and interactive climate change and conflict impacts. To facilitate the integration of climate change adaptation and peacebuilding I identified eight major elements that can help build resilience and peace. However, advancing the research climate-conflict relations research agenda requires determining what types of projects and responses need to be implemented, and how, to effectively prevent violent conflict and build resilience (Gilmore et al., 2018). A study by the United Nations Development Programme (UNDP) in 2021 emphasized that much of the climate-security literature focuses on causality and "does not yield operationally relevant recommendations for tackling climate-related security risks" (United Nations Development Programme (UNDP), 2021) in terms of project design, monitoring, and evaluation, or other operational components (Gaston et al., 2023). Collaboration among local communities, governments, non-governmental organisations (NGOs), and international institutions is also important for the success of these projects and responses. To better prepare for and adequately respond to the increasingly complex contexts of climate change and conflict, it is necessary to identify which projects and responses will potentially be effective using a comprehensive and context-specific approach that considers the unique challenges of each community.

4.8. Conclusions

Climate change adaptation and peacebuilding are processes aimed at bringing about changes (e.g., in social, economic, environmental, and institutional contexts) to build resilience and support communities' ability to respond to impacts. Given this characteristic, it is perhaps not surprising that climate change adaptation and peacebuilding overlap in many of their goals and activities. In practice, however, I show that efforts to build capacities to adapt to climate change and address the roots of conflict are often duplicated, which may result in missed opportunities to increase the effectiveness of climate change and peacebuilding projects. Using a case study and two data collection methods, I found six major areas of overlap between climate change adaptation and peacebuilding: access to information, education, social networks, employment, environment, and healing. There are also two gaps: protection and/or safety and socio-cognitive constructs that may undermine climate change adaptation and peacebuilding projects.

Drawing on the overlaps and gaps, I developed a new framework centred on building synergistic capacities in climate and conflict-affected communities. I identified eight major

elements that can help build both climate resilience and peace: Governance and institutions; Agency and social cognition; Employment and livelihoods diversification; Technical and financial assets; Learning; Healing; Security and judicial system and social networks. Together, these elements provide a path forward for translating conceptualisations of the climate-conflict relationship into policy and planning. Doing so effectively has the potential to enhance resilience and promote peace in communities impacted by both climate and conflict.

Conclusions

Conclusions

Climate security, or the ways in which climate change may lead to violent conflict or exacerbate risks of violence, has become a political and academic priority since the IPCC's 4th Assessment Report in 2007 and the first special session of the UN Security Council (Intergovernmental Panel on Climate Change, 2007; United Nations Security Council, 2007). The report and the special session constituted a starting point for understanding the field of climate security. In the beginning, this endeavour primarily focused on establishing a direct causal relationship between climate and conflict (Buhaug, 2016; Ide et al., 2023; von Uexkull & Buhaug, 2021). However, establishing a direct causal relationship between climate change and conflict has proven difficult over time, and climate change is currently understood as having an indirect or mediate impact on conflict (Abrahams & Carr, 2017; Buhaug & von Uexkull, 2021).

Climate change interacts with a range of other variables, including socioeconomic and political conditions, armed groups dynamics, limited state capacity, poverty, inequality, and migration to possibly cause conflict (Buhaug et al., 2022). For example, weather changes in a given area may contribute to resource scarcity (such as water and arable land) which can put pressure on livelihoods, create food insecurity and tensions or competition over vital resources. However, this is caused along with other factors such as weakened state capacity, environmental degradation, and inequalities in the distribution of natural resources. Climate change is then an indirect cause or "contributing factor" that deepens existing vulnerabilities and drivers of conflict (Abrahams, 2020).This definition of climate change indicates that climate change impacts may be more severe in already vulnerable, or conflict affected communities. There are studies arguing that climate change is disproportionally impacting conflict-affected areas (Malamud, 2020; Rüttinger et al., 2015; Sitati et al., 2021; Smith & Vivekananda, 2007; Vivekananda, 2014). Those with already limited adaptive capacity -due to poverty, inequality, or social and economic marginalisation- may be least able to withstand the impacts of climate change (Martinez & Vergara Tamayo, 2016). The UN Security Council has also increasingly recognised the relationship between climate change and security, and the importance of peacebuilding projects and special political missions in conflict-affected areas (Nicoson, 2017).

In this thesis I found that literature about climate change impacts in conflict-affected areas is still limited. The climate security literature is dominated by studies focused on whether climate change causes conflict in a direct way. There remains a lack of understanding of the indirect or contextual ways in which climate change interacts with violent conflict in conflict-affected

communities, and how these cumulative impacts may negatively affect projects to build adaptive capacities (e.g., climate adaptation) in the face of violent conflict.

To understand how to effectively respond to climate change and conflict, and design and implement projects I found that is necessary to use integrated responses. Many of the strategies implemented in peacebuilding processes may also be relevant for building adaptive capacity and resilience to climate change. For example, peacebuilding can contribute to natural resource restoration, environmental management, and climate change adaptation by eliminating or reducing ways in which environmental stress induced by climate change might contribute to conflict reoccurrence (Matthew, 2014; Nicoson, 2017). However, peacebuilding and climate change adaptation are separated in practice. Peacebuilding projects typically do not have a meaningful climate dimension and are therefore not built to withstand the impacts of climate change. Likewise, climate change adaptation projects do not typically have a conflict risk dimension, and thus are not built to respond to the consequences of violent conflict. If designed and implemented without considering these dimensions and the broader socioeconomic and political conditions of the region, peacebuilding and climate change adaptation projects may create unintended consequences, or backdrafts (also known as “maladaptation” or “boomerang effects”) (Barnett & O'Neill, 2010; Ide, 2020; Juhola et al., 2016; Schipper, 2020)

In this thesis I found that although separated, peacebuilding and climate change adaptation overlap, and these overlaps may be used to increase synergies and avoid unintended consequences or backdrafts. The same project may contribute to peacebuilding or climate change adaptation. For example, a project to restore mangroves may generate employment to build peace and prevent conflict or may form part of a climate change adaptation project. In this thesis, I found six major overlaps between the focus of peacebuilding and climate change adaptation projects: access to information, education, social networks, employment, environment, and healing. I also found two glaring gaps: protection and/or safety and socio-cognitive constructs which may undermine or create hardships for climate change adaptation and peacebuilding.

Drawing on these overlaps and gaps I developed a new framework to integrate peacebuilding and climate change adaptation. The eight elements of the framework that can help build resilience and peace are: Governance and institutions; Agency and social cognition; Employment and livelihood diversification; Technical and financial assets; Learning; Healing; Security and judicial system and social networks. These elements offer a potential roadmap

for translating conceptualisations of the climate-conflict relationship into policy and planning. Doing so effectively has the potential to enhance resilience and promote peace in communities impacted by both climate and conflict.

Climate change-induced impacts on human security in communities affected by both climate and conflict are substantial. These impacts are forcing communities to displace, whether internally or across borders, resulting in potential resource-related conflicts. To address these challenges, climate change adaptation and peacebuilding must implement comprehensive projects to build adaptive capacities in synergy. Otherwise, climate change adaptation and peacebuilding may not be effective – and may potentially undermine each other - in coping with the cumulative and interactive impacts of climate change and conflict.

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Appendices

Appendix 1. List of studies reviewed and attributes

year	title	author	reference type	study type	language	location	subregion	region	method	document type	analysis type
2007	Climate change, human security and violent conflict	Barnett, J. Adger, W. N.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Human security and international insecurity	Frerks, G. Goldewijk, B. K.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Climate change and conflict	Nordås, R. Gleditsch, N. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2007	Climate change, environmental degradation and armed conflict	Raleigh, C. Urdal, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2007	Beyond disasters creating opportunities for peace	Renner, M. Chafe, Z. Mastny, L.	report	grey literature	english	Indonesia, Sri Lanka, India	Southeast Asia, South Asia	Asia	qualitative	empirical	descriptive
2007	Climate change-induced migration and violent conflict	Reuveny, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Sudan's 'tragic example': The role of climate change in conflict	Stedman, L.	report	grey literature	english	Sudan	East Africa	Africa	qualitative	empirical	causal
2007	Climate change 2007. Impacts, adaptation, and vulnerability.	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2007	A Climate of Conflict: The Links Between Climate Change, Peace and War	Smith, D. Vivekananda, J.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2008	Disaster risk reduction, climate change adaptation and human security	Karen O'Brien Linda Sygna Robin Leichenko W. Neil Adger Jon Barnett Tom Mitchell Lisa Schipper Thomas Tanner Coleen Vogel Colette Mortreux	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2008	Ecomigration and violent conflict: Case studies and public policy implications	Reuveny, R.	journal article	peer-reviewed	english	United States, Bangladesh	Northern America, South Asia	Americas, Asia	qualitative	conceptual	causal
2008	From climate change to conflict? No consensus yet	Salehyan, I.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2008	Blood and soil? Resource scarcity and internal armed conflict revisited	Theisen, O. M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2008	Why worry about climate change? A research agenda	Tol, R. S. J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2009	Climate change and armed conflict: Hot and cold wars	Lee, J. R.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate not to blame for African civil wars	Buhaug, Halvard	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2010	Resource scarcity, climate change, and the risk of violent conflict	Evans, Alex	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2010	Peacebuilding and Climate Change Adaptation	Hammill, Anne Matthew, Richard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2010	Global environmental change and human security	Matthew, Richard A.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Rethinking climate refugees and climate conflict: rhetoric, reality and the politics of policy discourse	Hartmann, B.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate change adaptation and peace	Tänzler, D. Maas, A. Carius, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate change and violent conflict in Europe over the last millennium	Tol, R. S. J. Wagner, S.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2010	Cambio climatico y seguridad regional. Un analisis de los enfoques originados en actores de recia influencia internacional que le atribuyen al cambio climatico, impactos a la seguridad nacional y regional	Necco Carlomagno, Gustavo V.	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Coping with Global Environmental Change, Disasters and Security: Threats, Challenges, Vulnerabilities and Risks	Mesjasz, Czeslaw Birkmann, Jörn Brauch, Hans G. Chourou, Béchir Dunay, Pál Spring, Úrsula Oswald	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Climate Shocks and Political Violence: Is Africa Unique?	Salehyan, Idean Hendrix, Cullen	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal

2011	Climate Wars? Assessing the Claim That Drought Breeds Conflict	Theisen, Ole Magnus Holtermann, Helge Buhaug, Halvard	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2011	Climate, carbon, civil war and flexible boundaries: Sudan's contested landscape	Chavunduka, C. Bromley, D. W.	journal article	peer-reviewed	english	Sudan	East Africa	Africa	qualitative	empirical	causal
2011	Towards an inter-disciplinary research agenda on climate change, water and security in Southern Europe and neighboring countries	Ludwig, R. Roson, R. Zografos, C. Kallis, G.	journal article	peer-reviewed	english	Europe	Europe	Europe	qualitative	literature review	causal
2011	Conflict and social vulnerability to climate change: Lessons from Gaza	Mason, M. Zeitoun, M. El Sheikh, R.	journal article	peer-reviewed	english	Israel	Western Asia	Asia	qualitative	empirical	descriptive
2011	Climate Change, Natural Resources, and Conflict: A Contribution to the Ecology of Warfare	McNeely, J. A.	book section	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Malnutrition and conflict in East Africa: The impacts of resource variability on human security	Rowhani, P. Degomme, O. Guha-Sapir, D. Lambin, E. F.	book section	peer-reviewed	english	Sudan, Ethiopia, Somalia	North East Africa, Eastern Africa	Africa	quantitative	empirical	causal
2011	Climate and conflicts: the security risks of global warming	Scheffran, J. Battaglini, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Three linked risks for development in the Pacific Islands: Climate change, disasters and conflict	Weir, T. Virani, Z.	journal article	peer-reviewed	english	Pacific Islands	Melanesia, Micronesia, Polynesia	Oceania	NA	conceptual	causal
2011	The future of the Arctic: Cauldron of conflict or zone of peace?	Young, O. R.	journal article	peer-reviewed	english	Arctic	Arctic	Arctic	qualitative	literature review	causal

2012	Climate shocks and political violence: beyond scarcity, beyond Africa	Hendrix, C. Salehyan, I.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2012	An ill wind? Climate change, migration, and health	McMichael, Celia Barnett, Jon McMichael, Anthony J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2012	Come rain or shine: An analysis of conflict and climate variability in East Africa	Raleigh, Clionadh Kniveton, Dominic	journal article	peer-reviewed	english	Uganda, Kenya, Ethiopia	East Africa, Eastern Africa	Africa	quantitative	empirical	causal
2012	Climate Change, Human Security and Violent Conflict Challenges for Societal Stability	Scheffran, Jürgen Brzoska, Michael Brauch, Hans Günter Link, Peter Michael Schilling, Janpeter	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2012	Climate Change and Violent Conflict	Scheffran, Jürgen Brzoska, Michael Kominek, Jasmin Link, P. Michael Schilling, Janpeter	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Climate change, violent conflict and local institutions in kenya's drylands	Adano, W. R. Dietz, T. Witsenburg, K. Zaal, F.	journal article	peer-reviewed	english	Kenya, Ethiopia	East Africa, Eastern Africa	Africa	qualitative	empirical	causal
2012	Does climate change drive land-use conflicts in the sahel?	Benjaminsen, T. A. Alinon, K. Buhaug, H. Buseth, J. T.	journal article	peer-reviewed	english	Mali	West Africa	Africa	mixed methods	empirical	causal
2012	Climate-related natural disasters, economic growth, and armed civil conflict	Bergholt, D. Lujala, P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	African range wars: Climate, conflict, and property right	Butler, C. K. Gates, S.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	quantitative	empirical	causal
2012	Climate triggers: Rainfall anomalies,	Fjelde, H. von Uexkull, N.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal

	vulnerability and communal conflict in Sub-Saharan Africa										
2012	Global warming is breeding social conflict: The subtle impact of climate change threat on authoritarian tendencies	Fritsche, I. Cohrs, J. C. Kessler, T. Bauer, J.	journal article	peer-reviewed	english	United Kingdom, Germany	Northern Europe	Europe	quantitative	empirical	causal
2012	Whither the weather? climate change and conflict	Gleditsch, N. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Climate variability, economic growth, and civil conflict	Koubi, V. Bernauer, T. Kalbhenn, A. Spilker, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	Disentangling the climate-conflict nexus: Empirical and theoretical assessment of vulnerabilities and pathways	Scheffran, J. Brzoska, M. Kominek, J. Link, P. M. Schilling, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Don't blame the weather! climate-related natural disasters and civil conflict	Slettebak, R. T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	Climate clashes? weather variability, land pressure, and organized violence in Kenya, 1989-2004	Theisen, O. M.	journal article	peer-reviewed	english	Kenya	East Africa	Africa	quantitative	empirical	causal
2013	Quantifying the Influence of Climate on Human Conflict	Hsiang, Solomon M. Burke, Marshall Miguel, Edward	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2013	Climate Change and Conflict: Avoiding Small Talk about the Weather	Meierding, Emily	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2013	Institutional perceptions, adaptive capacity and climate change response in a post-conflict country: a case study from Central African Republic	Brown, H. C. P. Smit, B. Somorin, O. A. Sonwa, D. J. Ngana, F.	journal article	peer-reviewed	english	Central African Republic	Middle Africa	Africa	qualitative	empirical	descriptive
2013	Positive correlation between the North Atlantic Oscillation and violent conflicts in Europe	Lee, H. F. Zhang, D. D. Brecke, P. Fei, J.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2013	Climate Change, Natural Disasters, and Post-Disaster Unrest in India	Slettebak, R. T.	journal article	peer-reviewed	english	India	South Asia	Asia	quantitative	empirical	causal
2013	Is climate change a driver of armed conflict?	Theisen, O. M. Gleditsch, N. P. Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	Human Security	Adger, W. N. Juan M. Pulhin Jon Barnett Geoffrey D. Dabelko Grete K. Hovelsrud Marc Levy Úrsula Oswald Spring Coleen H. Vogel Helen Adams Jennifer Hodbod Stuart Kent Marcela Tarazona	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Concealing agreements over climate–conflict results	Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	One effect to rule them all? A comment on climate and conflict	Buhaug, H. Nordkvelle, J. Bernauer, T. Böhmelt, T. Brzoska, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

		Busby, J. W. Ciccone, A. Fjelde, H. Gartzke, E. Gleditsch, N. P. Goldstone, J. A. Hegre, H. Holtermann, H. Koubi, V. Link, J. S. A. Link, P. M. Lujala, P. O'Loughlin, J. Raleigh, C. Scheffran, J. Schilling, J. Smith, T. G. Theisen, O. M. Tol, R. S. J. Urdal, H. von Uexkull, N.									
2014	Can natural disasters precipitate peace?	Egorova, Aleksandra Hendrix, C.	report	grey literature	english	Indonesia, Sri Lanka	Southeast Asia, South Asia	Asia	qualitative	empirical	causal
2014	Climate and security: evidence, emerging risks, and a new agenda	Gemenne, François Barnett, Jon Adger, W. Neil Dabelko, Geoffrey D.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	Summary for policymakers	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Climate change and conflict: Making sense of disparate findings	Salehyan, Idean	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	On raids and relations: Climate change and pastoral conflict in Northern Kenya	Schilling, Janpeter Akuno, Moses Scheffran, Jürgen Weinzierl, Thomas	book section	peer-reviewed	english	Kenya	East Africa	Africa	mixed methods	empirical	causal
2014	Genocidal risk and climate change:	Exenberger, A. Pondorfer, A.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal

	Africa in the twenty-first century										
2014	Conflicting messages? The IPCC on conflict and human security	Gleditsch, N. P. Nordås, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	Climate, conflict, and social stability: What does the evidence say?	Hsiang, S. M. Burke, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	On climate, conflict and cumulation: suggestions for integrative cumulation of knowledge in the research on climate change and violent conflict	Ide, T. Scheffran, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	On exposure, vulnerability and violence: Spatial distribution of risk factors for climate change and violent conflict across Kenya and Uganda	Ide, T. Schilling, J. Link, J. S. A. Scheffran, J. Ngaruiya, G. Weinzierl, T.	journal article	peer-reviewed	english	Kenya, Uganda	East Africa	Africa	mixed methods	empirical	causal
2014	Hydro-climatic change, conflict and security	Kallis, G. Zografos, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Violent conflicts and natural disasters: the growing case for cross-disciplinary dialogue	King, Elisabeth Mutter, John C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	empirical	causal
2014	Temperature seasonality and violent conflict: The inconsistencies of a warming planet	Landis, S. T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2014	Integrating climate change into peacebuilding	Matthew, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	NA	conceptual	descriptive

						Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2014	Climate shocks and political violence	Salehyan, I. Hendrix, C. S.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2014	Conflicts and security risks of climate change in the mediterranean region	Scheffran, J. Brauch, H. G.	book section	peer-reviewed	english	Mediterranean	Africa, Europe	Africa, Europe	NA	conceptual	causal
2014	Violent climate or climate of violence? Concepts and relations with focus on Kenya and Sudan	Scheffran, J. Ide, T. Schilling, J.	journal article	peer-reviewed	english	Kenya, Sudan	East Africa	Africa	NA	conceptual	causal
2014	Beyond scarcity: Rethinking water, climate change and conflict in the Sudans	Selby, J. Hoffmann, C.	journal article	peer-reviewed	english	Sudan	East Africa	Africa	qualitative	empirical	causal
2014	Understanding Resilience in Climate Change and Conflict Affected Regions of Nepal	Vivekananda, J. Schilling, J. Smith, D.	journal article	peer-reviewed	english	Nepal	South Asia	Asia	qualitative	empirical	descriptive
2014	Climate resilience in fragile and conflict-affected societies: Concepts and approaches	Vivekananda, J. Schilling, J. Smith, D.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	descriptive
2014	Rice or riots: On food production and conflict severity across India	Wischnath, G. Buhaug, H.	journal article	peer-reviewed	english	India	South Asia	Asia	quantitative	empirical	descriptive
2014	On climate variability and civil war in Asia	Wischnath, G. Buhaug, H.	journal article	peer-reviewed	english	Asia	Asia	Asia	quantitative	empirical	causal
2014	Potential effects of climate change on global security	Wuebbles, D. J. Chitkara, A. Matheny, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2015	A new climate for peace: Taking action on climate and fragility risks	Lukas Rüttinger Dan Smith Gerald Stang Dennis Tänzler	report	grey literature	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	NA	conceptual	descriptive

		Janani Vivekananda Oli Brown Alexander Carius Geoff Dabelko Roger-Mark De Souza Shreya Mitra Katharina Nett Meaghan Parker Benjamin Pohl				Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2015	Climate-conflict research: Some reflections on the way forward	Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2015	Climate variability, food production shocks, and violent conflict in Sub-Saharan Africa	Buhaug, H. Benaminsen, T. A. Sjaastad, E. Magnus Theisen, O.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2015	Colombian agriculture under multiple exposures: a review and research agenda	Feola, G. Agudelo Vanegas, L. A. Contesse Bamón, B. P.	journal article	peer-reviewed	english	Colombia	South America	Americas	qualitative	literature review	descriptive
2015	Rainfall variability and violence in rural Kenya: Investigating the effects of drought and the role of local institutions with survey data	Linke, A. M. O'Loughlin, J. McCabe, J. T. Tir, J. Witmer, F. D. W.	journal article	peer-reviewed	english	Kenya	East Africa	Africa	quantitative	empirical	causal
2015	The devil is in the details: An investigation of the relationships between conflict, food price and climate across Africa	Raleigh, C. Choi, H. J. Kniveton, D.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2016	Climate Change and Conflict: Taking Stock	Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2016	The Climate-Conflict Nexus: Pathways,	Ide, Tobias Michael Link, P.	book section	peer-reviewed	english	Kenya, Nile Basin, Israel	East Africa, Western Asia	Africa, Asia	qualitative	literature review	causal

	Regional Links, and Case Studies	Scheffran, Jürgen Schilling, Janpeter									
2016	Armed-conflict risks enhanced by climate-related disasters in ethnically fractionalized countries	Schleussner, Carl-Friedrich Donges, Jonathan F. Donner, Reik V. Schellnhuber, Hans Joachim	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2016	A coming anarchy? Pathways from climate change to violent conflict in East Africa	van Baalen, S. Mobjörk, M.	report	grey literature	english	Africa, Europe	Africa, Europe	Africa, Europe	NA	conceptual	causal
2016	Examining the relationship between environmental factors and conflict in pastoralist areas of East Africa	Ayana, E. K. Ceccato, P. Fisher, J. R. B. DeFries, R.	journal article	peer-reviewed	english	Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Tanzania, Uganda	Northern Africa, Eastern Africa, East Africa, Middle Africa	Africa	quantitative	empirical	causal
2016	Exploring the Climate Change, Migration and Conflict Nexus	Burrows, K. Kinney, P. L.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2016	Forecasting civil conflict along the shared socioeconomic pathways	Hegre, H. Buhaug, H. Calvin, K. V. Nordkvelle, J. Waldhoff, S. T. Gilmore, E.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2016	Downscaling and disaggregating NAO-conflict nexus in pre-industrial Europe	Lee, H. F. Zhang, D. D. Pei, Q. Fei, J.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2016	Conflict and cooperation in the water-security nexus: a global comparative analysis of river basins under climate change	Link, P. M. Scheffran, J. Ide, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal

2016	Conflicto armado, posconflicto con las FARC-EP y medio ambiente en Colombia. Una mirada coyuntural del departamento de Putumayo	Martinez, Jennifer Natalia Vergara Tamayo, Carlos Andres	journal article	peer-reviewed	spanish	Colombia	South America	Americas	qualitative	conceptual	descriptive
2017	Understanding the Connections Between Climate Change and Conflict: Contributions From Geography and Political Ecology	Abrahams, Daniel Carr, Edward R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	descriptive
2017	A comment on “climate change and the Syrian civil war revisited”	Hendrix, Cullen S.	journal article	peer-reviewed	english	Syria	Western Asia	Asia	NA	conceptual	causal
2017	La paz ambiental. Retos y propuestas para el posacuerdo	Rodriguez Garavito, Cesar Rodriguez Franco, Diana Duran Crane, Helena	book	peer-reviewed	spanish	Colombia	South America	Americas	NA	conceptual	descriptive
2017	A main driver or an intermediate variable? Climate change, water and security in the Middle East	Feitelson, E. Tubi, A.	journal article	peer-reviewed	english	Euphrates, Jordan river	Western Asia	Asia	NA	conceptual	causal
2017	Introduction to Special Issue: Disciplinary Perspectives on Climate Change and Conflict	Gilmore, E. A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Food scarcity and state vulnerability: Unpacking the link between climate variability and violent unrest	Jones, B. T. Mattiacci, E. Braumoeller, B. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2017	Climate Change, the Economy, and Conflict	Koubi, V.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	qualitative	literature review	causal

						Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2017	Towards socially just adaptive climate governance: the transformative potential of conflict	Nursey-Bray, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Using a novel climate-water conflict vulnerability index to capture double exposures in Lake Chad	Okpara, U. T. Stringer, L. C. Dougill, A. J.	journal article	peer-reviewed	english	Republic of Chad	Middle Africa	Africa	mixed methods	empirical	descriptive
2007	Violent conflict and disaster risk reduction including climate change adaptation	Olson, R. S. Gawronski, V. T.	book section	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2017	Climate Change and Cross-State Islamist Terrorism in Nigeria	Price, G. N. Elu, J. U.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	quantitative	empirical	causal
2017	Climate wars? A Systematic review of empirical analyses on the links between climate change and violent conflict	Sakaguchi, K. Varughese, A. Auld, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Climate change impacts in Sub-Saharan Africa: from physical changes to their social repercussions	Serdeczny, O. Adams, S. Baarsch, F. Coumou, D. Robinson, A. Hare, W. Schaeffer, M. Perrette, M. Reinhardt, J.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	qualitative	empirical	causal
2017	Adaptation or conflict? Responses to climate change in water management in Bangladesh	Sultana, P. Thompson, P. M.	journal article	peer-reviewed	english	Bangladesh	South Asia	Asia	qualitative	empirical	descriptive
2017	Subnational violent conflict forecasts for Sub-Saharan Africa, 2015-65, using climate-sensitive models	Witmer, F. D. W. Linke, A. M. O'Loughlin, J. Gettelman, A. Laing, A.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal

2017	Cambio climatico y seguridad. El calentamiento global es un claro factor de inestabilidad y los fenomenos adversos son un reto para la seguridad nacional	Hidalgo García, Maria del Mar	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2017	La influencia del cambio climático en la seguridad	Hidalgo García, Maria del Mar	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2018	Taking Stock: the Field of Climate and Security	Busby, Joshua	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Bridging Research and Policy on Climate Change and Conflict	Gilmore, Elisabeth A. Herzer Risi, Lauren Tennant, Elizabeth Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Sampling bias in climate-conflict research	Adams, C. Ide, T. Barnett, J. Detges, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2018	From disaster to devastation: drought as war in northern Uganda	Branch, A.	journal article	peer-reviewed	english	Uganda	East Afriac	Africa	qualitative	empirical	causal
2018	Human and Environmental Security in the Era of Global Risks: Perspectives from Africa, Asia and the Pacific Islands	Bukari, K. N. Sow, P. Scheffran, J.	book section	peer-reviewed	english	Ghana	West Africa	Africa	quantitative	empirical	causal
2018	In harm's way: Climate security vulnerability in Asia	Busby, J. Smith, T. G. Krishnan, N. Wight, C. Vallejo-Gutierrez, S.	journal article	peer-reviewed	english	South Asia, Southeast Asia	South Asia, Southeast Asia	Asia	quantitative	empirical	causal

2018	Climate change, agricultural production and civil conflict: Evidence from the Philippines	Crost, B. Duquennois, C. Felter, J. H. Rees, D. I.	journal article	peer-reviewed	english	Philippines	Southeast Asia	Asia	quantitative	empirical	descriptive
2018	Increasing social-ecological resilience within small-scale agriculture in conflict-affected Guatemala	Hellin, J. Ratner, B. D. Meinzen-Dick, R. Lopez-Ridaura, S.	journal article	peer-reviewed	english	Guatemala	Central America	Americas	qualitative	empirical	descriptive
2018	Searching for climate-conflict links	Hendrix, C. S.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2018	Exploring the relationship between climate change and violent conflict	Koubi, V.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Farmer perceptions of conflict related to water in Zambia	Marcantonio, R. A. Attari, S. Z. Evans, T. P.	journal article	peer-reviewed	english	Zambia	Southern Africa	Africa	quantitative	empirical	causal
2018	Integrating climate adaptation, water governance and conflict management policies in lake riparian zones: Insights from African drylands	Okpara, U. T. Stringer, L. C. Dougill, A. J.	journal article	peer-reviewed	english	Lake Chad Basin	Middle Africa	Africa	qualitative	empirical	descriptive
2018	Environmental impacts and causes of conflict in the Horn of Africa: A review	Solomon, N. Birhane, E. Gordon, C. Haile, M. Taheri, F. Azadi, H. Scheffran, J.	journal article	peer-reviewed	english	Horn of Africa	Eastern Africa	Africa	mixed methods	literature review	descriptive
2018	Climate change and violent conflict in East Africa: Integrating qualitative and quantitative research to probe the mechanisms	van Baalen, S. Mobjörk, M.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	qualitative	literature review	causal

2018	Cambio climático y conflictividad socioambiental en América Latina y el Caribe	Stein, Alfredo	journal article	peer-reviewed	spanish	America Latina y el Caribe	Central America, South America, Caribbean	Americas	NA	conceptual	causal
2019	Global environmental change I: Climate resilient peace?	Barnett, Jon	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2019	Climate change, peacebuilding and sustaining peace	Krampe, F.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2019	Climate as a risk factor for armed conflict	Mach, Katharine J. Kraan, Caroline M. Adger, W. Neil Buhaug, Halvard Burke, Marshall Fearon, James D. Field, Christopher B. Hendrix, Cullen S. Maystadt, Jean-Francois O'Loughlin, John Roessler, Philip Scheffran, Jürgen Schultz, Kenneth A. von Uexkull, Nina	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2019	Climate, conflict and forced migration	Abel, G. J. Brottrager, M. Crespo Cuaresma, J. Muttarak, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2019	Temperature extremes, global warming, and armed conflict: new insights from high resolution data	Breckner, M. Sunde, U.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2019	The Nexus of Climate Change,	Froese, R. Schilling, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	qualitative	conceptual	causal

	Land Use, and Conflicts					Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2019	The influence of climate change on the escalating communal conflict between herdsmen and farmers: The case of the fulani ethnic group in Nigeria	Furini, G.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	mixed methods	empirical	descriptive
2019	Climate change, population pressure, and wars in European history	Lee, H. F. Zhang, D. D. Brecke, P. Pei, Q.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2019	Relationship between environmental degradation, resource scarcity, and civil conflicts in Somalia	Mohamed, A. A. Nageye, A. I.	journal article	peer-reviewed	english	Somalia	Eastern Africa	Africa	quantitative	empirical	causal
2019	Nexus between Climate Change, Displacement and Conflict: Afghanistan Case	Prívara, A. Prívarová, M.	journal article	peer-reviewed	english	Afghanistan	Sout Asia	Asia	qualitative	empirical	descriptive
2019	Transforming local natural resource conflicts to cooperation in a changing climate: Bangladesh and Nepal lessons	Sultana, P. Thompson, P. M. Paudel, N. S. Pariyar, M. Rahman, M.	journal article	peer-reviewed	english	Bangladesh, Nepal	Sout Asia	Asia	qualitative	empirical	descriptive
2019	On climate and conflict: Precipitation decline and communal conflict in Ethiopia and Kenya	van Weezel, S.	journal article	peer-reviewed	english	Ethiopia, Kenya	Eastern Africa, East Africa	Africa	quantitative	empirical	causal
2019	Climate variability and individual motivations for participating in political violence	Vestby, J.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	The dark side of environmental peacebuilding	Ide, Tobias	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	qualitative	conceptual	descriptive

						Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2020	Climate Change, Environment and Armed Conflicts in Nigeria	Ani, K. J. Uwizeyimana, D. E.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	qualitative	empirical	causal
2020	Climate change-induced human conflicts and economic costs in Pakistani Punjab	Bakhsh, K. Abbas, K. Hassan, S. Yasin, M. A. Ali, R. Ahmad, N. Chattha, M. W. A.	journal article	peer-reviewed	english	Pakistan	South Asia	Asia	quantitative	empirical	causal
2020	International conflict and cooperation over freshwater resources	Bernauer, T. Böhmelt, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2020	Pastoral Resource Conflict in the Context of Sudano–Sahelian Security Crises: A Critical Review of Research	Brottem, L. V.	journal article	peer-reviewed	english	Sudan, Sahel	Northern Africa, West Africa, East Africa	Africa	qualitative	empirical	causal
2020	Temperature anomalies affect violent conflicts in African and Middle Eastern warm regions	Helman, D. Zaitchik, B. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Climate has contrasting direct and indirect effects on armed conflicts	Helman, D. Zaitchik, B. F. Funk, C.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Multi-method evidence for when and how climate-related disasters contribute to armed conflict risk	Ide, T. Brzoska, M. Donges, J. F. Schleussner, C. F.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2020	Directions for Research on Climate and Conflicta	Mach, K. J. Adger, W. N. Buhaug, H. Burke, M. Fearon, J. D. Field, C. B. Hendrix, C. S. Kraan, C. M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal

		Maystadt, J. F. O'Loughlin, J. Roessler, P. Scheffran, J. Schultz, K. A. von Uexkull, N.									
2020	Climate Change and Violence in Post-Conflict Colombia	Malamud, Marina	journal article	peer-reviewed	english	Colombia	South America	Americas	qualitative	empirical	causal
2020	Climate change increases the risk of fisheries conflict	Mendenhall, E. Hendrix, C. Nyman, E. Roberts, P. M. Hoopes, J. R. Watson, J. R. Lam, V. W. Y. Sumaila, U. R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2020	Water scarcity, climate adaptation, and armed conflict: insights from Africa	Regan, P. M. Kim, H.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Climate change vulnerability, water resources and social implications in North Africa	Schilling, J. Hertig, E. Tramblay, Y. Scheffran, J.	journal article	peer-reviewed	english	Algeria, Egypt, Libya, Morocco, Tunisia	Northern Africa	Africa	qualitative	empirical	causal
2020	The relationship between climate change and political instability: the case of MENA countries	Sofuoglu, E. Ay, A.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Drought, Resilience, and Support for Violence: Household Survey Evidence from DR Congo	Uexkull, N. V. d'Errico, M. Jackson, J.	journal article	peer-reviewed	english	Democratic Republic of the Congo	Middle Africa	Africa	quantitative	empirical	causal
2020	Local warming and violent armed conflict in Africa	van Weezel, S.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Causality of climate, food production and conflict over the last two millennia in the Hexi Corridor, China	Yang, L. Feng, Q. Adamowski, J. F. Deo, R. C. Yin, Z. Wen, X. Tang, X. Wu, M.	journal article	peer-reviewed	english	China	East Asia	Asia	quantitative	empirical	causal

2020	El cambio climatico como amenaza para la paz y seguridad internacionales	Sehnert Cuartas, Martin	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2021	Gender in the Climate-Conflict Nexus: “Forgotten” Variables, Alternative Securities, and Hidden Power Dimensions	Ide, Tobias Ensor, Marisa O. Masson, Virginie Le Kozak, Susanne	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2021	Achieving peaceful climate change adaptation through transformative governance	Leonardsson, Hanna Kronsell, Annica Andersson, Erik Burman, Anders Blanes, Ruy Da Costa, Karen Hasselskog, Malin Stepanova, Olga Öjendal, Joakim	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2021	A co-designed heuristic guide for investigating the peace-sustainability nexus in the context of global change	Simangan, Dahlia Virji, Hassan Hendrix, Cullen Islam, Moinul Kaneko, Shinji Ma, Young-sam Mechler, Reinhard Pangotra, Prem Peters, Katie Sharifi, Ayyoob Shams, Shamsul Hadi	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Security implications of climate change: A decade of scientific progress	von Uexkull, Nina Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2021	Land is now the biggest gun: climate change and conflict in Karamoja, Uganda	Abrahams, D.	journal article	peer-reviewed	english	Uganda	East Africa	Africa	qualitative	empirical	descriptive

2021	Should they stay or should they go? Climate migrants and local conflicts	Bosetti, V. Cattaneo, C. Peri, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2021	Vicious Circles: Violence, Vulnerability, and Climate Change	Buhaug, Halvard von Uexkull, Nina	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	A Song of Neither Ice nor Fire: Temperature Extremes had No Impact on Violent Conflict Among European Societies During the 2nd Millennium CE	Carleton, W. C. Collard, M. Stewart, M. Groucutt, H. S.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2021	Explaining Arctic peace: a human heritage perspective	Crawford, B. K.	journal article	peer-reviewed	english	Arctic	Arctic	Arctic	qualitative	conceptual	causal
2021	Rethinking the climate–conflict nexus: A human–environmental–climate security approach	Daoudy, M.	journal article	peer-reviewed	english	Syria, Sudan, Morocco	Western Asia, Northern Africa	Asia, Africa	qualitative	empirical	causal
2021	Projecting armed conflict risk in Africa towards 2050 along the SSP-RCP scenarios: a machine learning approach	Hoch, J. M. de Bruin, S. P. Buhaug, H. Von Uexkull, N. van Beek, R. Wanders, N.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2021	Conflict and its relationship to climate variability in Sub-Saharan Africa	Mack, E. A. Bunting, E. Herndon, J. Marcantonio, R. A. Ross, A. Zimmer, A.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2021	Spatial pattern of climate change and farmer–herder conflict vulnerabilities in Nigeria	Madu, I. A. Nwankwo, C. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

2021	Towards climate resilient peace: an intersectional and degrowth approach	Nicoson, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Climate-induced stressors to peace: a review of recent literature	Sharifi, A. Simangan, D. Lee, C. Y. Reyes, S. R. Katramiz, T. Josol, J. C. Dos Muchangos, L. Virji, H. Kaneko, S. Tandog, T. K. Tandog, L. Islam, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	literature review	causal
2021	Climate change adaptation in conflict-affected countries: A systematic assessment of evidence	Sitati, A. Joe, E. Pentz, B. Grayson, C. Jaime, C. Gilmore, E. Galappaththi, E. Hudson, A. Alverio, G. N. Mach, K. J. van Aalst, M. Simpson, N. Schwerdtle, P. N. Templeman, S. Zommers, Z. Ajibade, I. Chalkasra, L. S. S. Umunay, P. Togola, I. Khouzam, A. Scarpa, G. de Perez, E. C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	descriptive
2021	The ‘boomerang effect’: insights for improved climate action	Swatuk, L. A. Thomas, B. K. Wirkus, L. Krampe, F. Batista da Silva, L. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive

2021	Climate variability, crop and conflict: Exploring the impacts of spatial concentration in agricultural production	Vesco, P. Kovacic, M. Mistry, M. Croicu, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2021	La construccion de la paz ambiental	Ide, Tobias	report	grey literature	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Subiendo la temperatura: el calentamiento de los océanos y su efecto en el conflicto armado en Filipinas	Castro Vargas, Sofía	report	grey literature	spanish	Philippines	Southeast Asia	Asia	quantitative	empirical	causal
2021	Cambio climático y conflictos	Escola de Cultura de Pau	report	grey literature	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2022	Local approaches to climate-sensitive peacebuilding: lessons from Afghanistan	Abdenur, Adriana E. Tripathi, Siddharth	journal article	peer-reviewed	english	Afghanistan	South Asia	Asia	qualitative	conceptual	descriptive
2022	Summary for Policymakers	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2022	Revision de la literatura sobre la seguridad climatica y la consolidacion de la paz ambiental: riesgos y oportunidades en la region Andina	Morales-Muñoz, H.	report	grey literature	spanish	Venezuela, Colombia, Ecuador,Perú, Bolivia, Chile, Argentina	South America	Americas	qualitative	literature review	causal
2022	Marco conceptual para medir las contribuciones de las intervenciones en agricultura para mitigar el cambio	Pérez Marulanda, Lisset Castro, Augusto	report	grey literature	spanish	Colombia	South America	Americas	mixed methods	conceptual	descriptive

	climático y construir paz										
2022	The human dimensions of the climate risk and armed conflict nexus: a review article	Augsten, L. Gagné, K. Su, Y.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2022	Drought, Local Public Goods, and Inter-communal Conflicts: Testing the Mediating Effects of Public Service Provisions	Cao, X. Theodora-Ismene, G. Shortland, A. Urdal, H.	journal article	peer-reviewed	english	Burkina Faso, Cameroon, Central African Republic, Ethiopia, Kenya, Mali, Niger, Nigeria, Senegal	West Africa, Middle Africa, East Africa	Africa	quantitative	empirical	causal
2022	Societal drought vulnerability and the Syrian climate-conflict nexus are better explained by agriculture than meteorology	Eklund, L. Theisen, O. M. Baumann, M. Forø Tollefsen, A. Kuemmerle, T. Østergaard Nielsen, J.	journal article	peer-reviewed	english	Syria	Western Asia	Asia	quantitative	empirical	causal
2022	Evaluating dual exposure by using climate-conflict vulnerability index on the coastal districts of Sindh, Pakistan	Fatima, N. Alamgir, A. Khan, M. A. Owais, M.	journal article	peer-reviewed	english	Pakistan	South Asia	Asia	quantitative	empirical	causal
2022	Low agricultural potential exacerbates the effect of temperature on civil conflicts	Goyette, J. Smaoui, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2022	Global climate, El Niño, and militarized fisheries disputes in the East and South China Seas	Hendrix, C. S. Glaser, S. M. Lambert, J. E. Roberts, P. M.	journal article	peer-reviewed	english	China	East Asia	Asia	quantitative	empirical	causal
2022	Is climate exacerbating the root causes of conflict in Mali? A climate security analysis through a	Pacillo, G. Kangogo, D. Madurga-Lopez, I. Villa, V. Belli, A. Läderach, P.	journal article	peer-reviewed	english	Mali	West Africa	Africa	quantitative	empirical	causal

	structural equation modeling approach										
2022	The impact of climate-change-related disasters on africa's economic growth, agriculture, and conflicts: Can humanitarian aid and food assistance offset the damage?	Shimada, G.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2022	El conflicto, el cambio climático y la reducción del espacio de movilidad en el Sahel Central	Morello, Giulio Rizk, Joelle	journal article	peer-reviewed	spanish	Sahel	West Africa, East Africa	Africa	qualitative	conceptual	descriptive
2023	Exploring the effects of climate change and government stability on internal conflicts: evidence from selected sub-Saharan African countries	Abdi, A. H. Mohamed, A. A. Sugow, M. O.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2023	Climate change and armed conflicts in Africa: temporal persistence, non-linear climate impact and geographical spillovers	Cappelli, F. Conigliani, C. Consoli, D. Costantini, V. Paglialunga, E.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Climate change, international migration, and interstate conflicts	Cattaneo, C. Foreman, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2023	Living with climate and state fragility in a "chaotic paradise:" securitizing livelihoods in the Philippines' Cotabato River Basin	Delina, L. L. Ludovice, N. P. P. Gaviola, J. Cagoco-Guiam, R.	journal article	peer-reviewed	english	Philippines	Southeast Asia	Asia	qualitative	empirical	descriptive
2023	Climate, Women, and Conflict: Rebel Groups' Armed	Ide, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	Africa, Asia, Europe, Americas,	mixed methods	empirical	causal

	Activities after Major Disasters					Oceania, and Antarctica	Oceania, and Antarctica	Oceania, and Antarctica			
2023	How can peacebuilding contribute to climate resilience? Evidence from the drylands of East and West Africa	Kurtz, J. Elsamahi, M.	journal article	peer-reviewed	english	East Africa, West Africa	East Africa, West Africa	Africa	NA	conceptual	descriptive
2023	Extreme weather impacts do not improve conflict predictions in Africa	Michelini, S. Šedová, B. Schewe, J. Frieler, K.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Conservancies, rainfall anomalies and communal violence: Subnational evidence from East Africa	Sánchez, A. Fernandez, A. González, J. B.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	quantitative	empirical	causal
2023	The need for willingness and opportunity: analyzing where and when environmental variability influences conflict in the Sahel	Schon, J. Koehnlein, B. Koren, O.	journal article	peer-reviewed	english	Sahel	West Africa, East Africa	Africa	quantitative	empirical	causal
2023	Climate change as the last trigger in a long-lasting conflict: the production of vulnerability in northern Guinea-Bissau, West Africa	Temudo, M. P. Cabral, A. I. R.	journal article	peer-reviewed	english	West Africa	West Africa	Africa	quantitative	empirical	causal
2023	Climate change vulnerability and conflicts in Africa: evidence from the migrations channel	Tsomb, E. I. B. T. Nsoga, M. H. I. N. Bitting, C. D.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Climate, flood, and attitudes toward violence: micro-level evidence from Karamoja, Uganda	von Uexkull, N. Loy, A. d'Errico, M.	journal article	peer-reviewed	english	Uganda	East Africa	Africa	quantitative	empirical	causal
2023	Quantifying the influence of climate variability on armed	Wang, Q. Hao, M. Helman, D. Ding, F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

	conflict in Africa, 2000–2015	Jiang, D. Xie, X. Chen, S. Ma, T.									
2023	Rethinking the link between climate and violent conflict over water	Warner, J. F.	journal article	peer-reviewed	english	Sudan, South Sudan	Northern Africa	Africa	qualitative	empirical	causal
2023	Colombia sostenible y en paz	Fondo Colombia en Paz	report	grey literature	spanish	Colombia	South America	Americas	NA	conceptual	descriptive
2023	Guia de orientacion. Clima, Paz y Seguridad en America Latina y el Caribe	Programa de las Naciones Unidas para el Desarrollo (PNUD)	report	grey literature	spanish	America Latina y el Caribe	Central America, South America, Caribbean	Americas	NA	conceptual	descriptive
2023	Cambio climático, inestabilidad y desplazamientos en el Sahel. Desafíos y respuesta por parte de la Unión Europea	Fernández Arribas, Gloria	report	grey literature	spanish	Sahel	Wet Africa, East Africa	Africa	NA	conceptual	causal

year	title	author	reference type	study type	language	location	subregion	region	method	document type	analysis type
2007	Climate change, human security and violent conflict	Barnett, J. Adger, W. N.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Human security and international insecurity	Frerks, G. Goldewijk, B. K.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Climate change and conflict	Nordås, R. Gleditsch, N. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2007	Climate change, environmental degradation and armed conflict	Raleigh, C. Urdal, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2007	Beyond disasters creating opportunities for peace	Renner, M. Chafe, Z. Mastny, L.	report	grey literature	english	Indonesia, Sri Lanka, India	Southeast Asia**, South Asia**	Asia	qualitative	empirical	descriptive
2007	Climate change-induced migration and violent conflict	Reuveny, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	Sudan's 'tragic example': The role of climate change in conflict	Stedman, L.	report	grey literature	english	Sudan	East Africa	Africa	qualitative	empirical	causal

2007	Climate change 2007. Impacts, adaptation, and vulnerability.	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2007	A Climate of Conflict: The Links Between Climate Change, Peace and War	Smith, D. Vivekananda, J.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2008	Disaster risk reduction, climate change adaptation and human security	Karen O'Brien Linda Sygna Robin Leichenko W. Neil Adger Jon Barnett Tom Mitchell Lisa Schipper Thomas Tanner Coleen Vogel Colette Mortreux	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2008	Ecomigration and violent conflict: Case studies and public policy implications	Reuveny, R.	journal article	peer-reviewed	english	United States, Bangladesh	Northern America, South Asia	Americas, Asia	qualitative	conceptual	causal
2008	From climate change to conflict? No consensus yet	Salehyan, I.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2008	Blood and soil? Resource scarcity and internal armed conflict revisited	Theisen, O. M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2008	Why worry about climate change? A research agenda	Tol, R. S. J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2009	Climate change and armed conflict: Hot and cold wars	Lee, J. R.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate not to blame for African civil wars	Buhaug, Halvard	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2010	Resource scarcity, climate change, and the risk of violent conflict	Evans, Alex	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Peacebuilding and Climate Change Adaptation	Hammill, Anne Matthew, Richard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2010	Global environmental change and human security	Matthew, Richard A.	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Rethinking climate refugees and climate conflict: rhetoric, reality and the politics of policy discourse	Hartmann, B.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate change adaptation and peace	Tänzler, D. Maas, A. Carius, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2010	Climate change and violent conflict in Europe over the last millennium	Tol, R. S. J. Wagner, S.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal

2010	Cambio climatico y seguridad regional. Un analisis de los enfoques originados en actores de recia influencia internacional que le atribuyen al cambio climatico, impactos a la seguridad nacional y regional	Necco Carlomagno, Gustavo V.	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Coping with Global Environmental Change, Disasters and Security: Threats, Challenges, Vulnerabilities and Risks	Mesjasz, Czeslaw Birkmann, Jörn Brauch, Hans G. Chourou, Béchir Dunay, Pál Spring, Úrsula Oswald	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Climate Shocks and Political Violence: Is Africa Unique?	Salehyan, Idean Hendrix, Cullen	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2011	Climate Wars? Assessing the Claim That Drought Breeds Conflict	Theisen, Ole Magnus Holtermann, Helge Buhaug, Halvard	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2011	Climate, carbon, civil war and flexible boundaries: Sudan's contested landscape	Chavunduka, C. Bromley, D. W.	journal article	peer-reviewed	english	Sudan	East Africa	Africa	qualitative	empirical	causal
2011	Towards an inter-disciplinary research agenda on climate change, water and security in Southern Europe and neighboring countries	Ludwig, R. Roson, R. Zografos, C. Kallis, G.	journal article	peer-reviewed	english	Europe	Europe	Europe	qualitative	literature review	causal

2011	Conflict and social vulnerability to climate change: Lessons from Gaza	Mason, M. Zeitoun, M. El Sheikh, R.	journal article	peer-reviewed	english	Israel	Western Asia	Asia	qualitative	empirical	descriptive
2011	Climate Change, Natural Resources, and Conflict: A Contribution to the Ecology of Warfare	McNeely, J. A.	book section	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Malnutrition and conflict in East Africa: The impacts of resource variability on human security	Rowhani, P. Degomme, O. Guha-Sapir, D. Lambin, E. F.	book section	peer-reviewed	english	Sudan, Ethiopia, Somalia	North East Africa, Eastern Africa	Africa	quantitative	empirical	causal
2011	Climate and conflicts: the security risks of global warming	Scheffran, J. Battaglini, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2011	Three linked risks for development in the Pacific Islands: Climate change, disasters and conflict	Weir, T. Virani, Z.	journal article	peer-reviewed	english	Pacific Islands	Melanesia, Micronesia, Polynesia	Oceania	NA	conceptual	causal
2011	The future of the Arctic: Cauldron of conflict or zone of peace?	Young, O. R.	journal article	peer-reviewed	english	Arctic	Arctic	Arctic	qualitative	literature review	causal
2012	Climate shocks and political violence: beyond scarcity, beyond Africa	Hendrix, C. Salehyan, I.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2012	An ill wind? Climate change, migration, and health	McMichael, Celia Barnett, Jon McMichael, Anthony J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2012	Come rain or shine: An analysis of conflict and climate variability in East Africa	Raleigh, Clionadh Kniveton, Dominic	journal article	peer-reviewed	english	Uganda, Kenya, Ethiopia	East Africa, Eastern Africa	Africa	quantitative	empirical	causal
2012	Climate Change, Human Security and Violent Conflict Challenges for Societal Stability	Scheffran, Jürgen Brzoska, Michael Brauch, Hans Günter Link, Peter Michael Schilling, Janpeter	book	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2012	Climate Change and Violent Conflict	Scheffran, Jürgen Brzoska, Michael Kominek, Jasmin Link, P. Michael Schilling, Janpeter	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Climate change, violent conflict and local institutions in kenya's drylands	Adano, W. R. Dietz, T. Witsenburg, K. Zaal, F.	journal article	peer-reviewed	english	Kenya, Ethiopia	East Africa, Eastern Africa	Africa	qualitative	empirical	causal
2012	Does climate change drive land-use conflicts in the sahel?	Benjaminsen, T. A. Alinon, K. Buhaug, H. Buseth, J. T.	journal article	peer-reviewed	english	Mali	West Africa	Africa	mixed methods	empirical	causal
2012	Climate-related natural disasters, economic growth, and armed civil conflict	Bergholt, D. Lujala, P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	African range wars: Climate, conflict, and property right	Butler, C. K. Gates, S.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	quantitative	empirical	causal

2012	Climate triggers: Rainfall anomalies, vulnerability and communal conflict in Sub-Saharan Africa	Fjelde, H. von Uexkull, N.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2012	Global warming is breeding social conflict: The subtle impact of climate change threat on authoritarian tendencies	Fritsche, I. Cohrs, J. C. Kessler, T. Bauer, J.	journal article	peer-reviewed	english	United Kingdom, Germany	Northern Europe	Europe	quantitative	empirical	causal
2012	Whither the weather? climate change and conflict	Gleditsch, N. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Climate variability, economic growth, and civil conflict	Koubi, V. Bernauer, T. Kalbhenn, A. Spilker, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	Disentangling the climate-conflict nexus: Empirical and theoretical assessment of vulnerabilities and pathways	Scheffran, J. Brzoska, M. Kominek, J. Link, P. M. Schilling, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2012	Don't blame the weather! climate-related natural disasters and civil conflict	Slettebak, R. T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2012	Climate clashes? weather variability, land pressure, and organized violence in Kenya, 1989-2004	Theisen, O. M.	journal article	peer-reviewed	english	Kenya	East Africa	Africa	quantitative	empirical	causal

2013	Quantifying the Influence of Climate on Human Conflict	Hsiang, Solomon M. Burke, Marshall Miguel, Edward	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2013	Climate Change and Conflict: Avoiding Small Talk about the Weather	Meierding, Emily	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2013	Institutional perceptions, adaptive capacity and climate change response in a post-conflict country: a case study from Central African Republic	Brown, H. C. P. Smit, B. Somorin, O. A. Sonwa, D. J. Ngana, F.	journal article	peer-reviewed	english	Central African Republic	Middle Africa	Africa	qualitative	empirical	descriptive
2013	Positive correlation between the North Atlantic Oscillation and violent conflicts in Europe	Lee, H. F. Zhang, D. D. Brecke, P. Fei, J.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2013	Climate Change, Natural Disasters, and Post-Disaster Unrest in India	Slettebak, R. T.	journal article	peer-reviewed	english	India	South Asia	Asia	quantitative	empirical	causal
2013	Is climate change a driver of armed conflict?	Theisen, O. M. Gleditsch, N. P. Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal

2014	Human Security	Adger, W. N. Juan M. Pulhin Jon Barnett Geoffrey D. Dabelko Grete K. Hovelsrud Marc Levy Úrsula Oswald Spring Coleen H. Vogel Helen Adams Jennifer Hodbod Stuart Kent Marcela Tarazona	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Concealing agreements over climate–conflict results	Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2014	One effect to rule them all? A comment on climate and conflict	Buhaug, H. Nordkvelle, J. Bernauer, T. Böhmelt, T. Brzoska, M. Busby, J. W. Ciccone, A. Fjelde, H. Gartzke, E. Gleditsch, N. P. Goldstone, J. A. Hegre, H. Holtermann, H. Koubi, V. Link, J. S. A. Link, P. M. Lujala, P. O'Loughlin, J. Raleigh, C. Scheffran, J. Schilling, J. Smith, T. G. Theisen, O. M. Tol, R. S. J. Urdal, H. von Uexkull, N.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Can natural disasters precipitate peace?	Egorova, Aleksandra Hendrix, C.	report	grey literature	english	Indonesia, Sri Lanka	Southeast Asia, South Asia	Asia	qualitative	empirical	causal
2014	Climate and security: evidence, emerging risks, and a new agenda	Gemenne, François Barnett, Jon Adger, W. Neil Dabelko, Geoffrey D.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	Summary for policymakers	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2014	Climate change and conflict: Making sense of disparate findings	Salehyan, Idean	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	On raids and relations: Climate change and pastoral conflict in Northern Kenya	Schilling, Janpeter Akuno, Moses Scheffran, Jürgen Weinzierl, Thomas	book section	peer-reviewed	english	Kenya	East Africa	Africa	mixed methods	empirical	causal
2014	Genocidal risk and climate change: Africa in the twenty-first century	Exenberger, A. Pondorfer, A.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2014	Conflicting messages? The IPCC on conflict and human security	Gleditsch, N. P. Nordås, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	Climate, conflict, and social stability: What does the evidence say?	Hsiang, S. M. Burke, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2014	On climate, conflict and cumulation: suggestions for integrative cumulation of knowledge in the research on climate change and violent conflict	Ide, T. Scheffran, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal

2014	On exposure, vulnerability and violence: Spatial distribution of risk factors for climate change and violent conflict across Kenya and Uganda	Ide, T. Schilling, J. Link, J. S. A. Scheffran, J. Ngaruiya, G. Weinzierl, T.	journal article	peer-reviewed	english	Kenya, Uganda	East Africa	Africa	mixed methods	empirical	causal
2014	Hydro-climatic change, conflict and security	Kallis, G. Zografos, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2014	Violent conflicts and natural disasters: the growing case for cross-disciplinary dialogue	King, Elisabeth Mutter, John C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	empirical	causal
2014	Temperature seasonality and violent conflict: The inconsistencies of a warming planet	Landis, S. T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2014	Integrating climate change into peacebuilding	Matthew, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2014	Climate shocks and political violence	Salehyan, I. Hendrix, C. S.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2014	Conflicts and security risks of climate change in the mediterranean region	Scheffran, J. Brauch, H. G.	book section	peer-reviewed	english	Mediterranean	Africa, Europe	Africa, Europe	NA	conceptual	causal

2014	Violent climate or climate of violence? Concepts and relations with focus on Kenya and Sudan	Scheffran, J. Ide, T. Schilling, J.	journal article	peer-reviewed	english	Kenya, Sudan	East Africa	Africa	NA	conceptual	causal
2014	Beyond scarcity: Rethinking water, climate change and conflict in the Sudans	Selby, J. Hoffmann, C.	journal article	peer-reviewed	english	Sudan	East Africa	Africa	qualitative	empirical	causal
2014	Understanding Resilience in Climate Change and Conflict Affected Regions of Nepal	Vivekananda, J. Schilling, J. Smith, D.	journal article	peer-reviewed	english	Nepal	South Asia	Asia	qualitative	empirical	descriptive
2014	Climate resilience in fragile and conflict-affected societies: Concepts and approaches	Vivekananda, J. Schilling, J. Smith, D.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	descriptive
2014	Rice or riots: On food production and conflict severity across India	Wischnath, G. Buhaug, H.	journal article	peer-reviewed	english	India	South Asia	Asia	quantitative	empirical	descriptive
2014	On climate variability and civil war in Asia	Wischnath, G. Buhaug, H.	journal article	peer-reviewed	english	Asia	Asia	Asia	quantitative	empirical	causal
2014	Potential effects of climate change on global security	Wuebbles, D. J. Chitkara, A. Matheny, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2015	A new climate for peace: Taking action on climate and fragility risks	Lukas Rüttinger Dan Smith Gerald Stang Dennis Tänzler Janani Vivekananda Oli Brown Alexander Carius Geoff Dabelko Roger-Mark De Souza Shreya Mitra Katharina Nett Meaghan Parker Benjamin Pohl	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2015	Climate-conflict research: Some reflections on the way forward	Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2015	Climate variability, food production shocks, and violent conflict in Sub-Saharan Africa	Buhaug, H. Benaminsen, T. A. Sjaastad, E. Magnus Theisen, O.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2015	Colombian agriculture under multiple exposures: a review and research agenda	Feola, G. Agudelo Vanegas, L. A. Contesse Bamón, B. P.	journal article	peer-reviewed	english	Colombia	South America	Americas	qualitative	literature review	descriptive
2015	Rainfall variability and violence in rural Kenya: Investigating the effects of drought and the role of local institutions with survey data	Linke, A. M. O'Loughlin, J. McCabe, J. T. Tir, J. Witmer, F. D. W.	journal article	peer-reviewed	english	Kenya	East Africa	Africa	quantitative	empirical	causal

2015	The devil is in the details: An investigation of the relationships between conflict, food price and climate across Africa	Raleigh, C. Choi, H. J. Kniveton, D.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2016	Climate Change and Conflict: Taking Stock	Buhaug, H.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2016	The Climate-Conflict Nexus: Pathways, Regional Links, and Case Studies	Ide, Tobias Michael Link, P. Scheffran, Jürgen Schilling, Janpeter	book section	peer-reviewed	english	Kenya, Nile Basin, Israel	East Africa, Western Asia	Africa, Asia	qualitative	literature review	causal
2016	Armed-conflict risks enhanced by climate-related disasters in ethnically fractionalized countries	Schleussner, Carl-Friedrich Donges, Jonathan F. Donner, Reik V. Schellnhuber, Hans Joachim	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2016	A coming anarchy? Pathways from climate change to violent conflict in East Africa	van Baalen, S. Mobjörk, M.	report	grey literature	english	Africa, Europe	Africa, Europe	Africa, Europe	NA	conceptual	causal
2016	Examining the relationship between environmental factors and conflict in pastoralist areas of East Africa	Ayana, E. K. Ceccato, P. Fisher, J. R. B. DeFries, R.	journal article	peer-reviewed	english	Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Tanzania, Uganda	Northern Africa, Eastern Africa, East Africa, Middle Africa	Africa	quantitative	empirical	causal

2016	Exploring the Climate Change, Migration and Conflict Nexus	Burrows, K. Kinney, P. L.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2016	Forecasting civil conflict along the shared socioeconomic pathways	Hegre, H. Buhaug, H. Calvin, K. V. Nordkvelle, J. Waldhoff, S. T. Gilmore, E.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2016	Downscaling and disaggregating NAO-conflict nexus in pre-industrial Europe	Lee, H. F. Zhang, D. D. Pei, Q. Fei, J.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2016	Conflict and cooperation in the water-security nexus: a global comparative analysis of river basins under climate change	Link, P. M. Scheffran, J. Ide, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2016	Conflicto armado, posconflicto con las FARC-EP y medio ambiente en Colombia. Una mirada coyuntural del departamento de Putumayo	Martinez, Jennifer Natalia Vergara Tamayo, Carlos Andres	journal article	peer-reviewed	spanish	Colombia	South America	Americas	qualitative	conceptual	descriptive
2017	Understanding the Connections Between Climate Change and Conflict: Contributions From Geography and Political Ecology	Abrahams, Daniel Carr, Edward R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	descriptive

2017	A comment on “climate change and the Syrian civil war revisited”	Hendrix, Cullen S.	journal article	peer-reviewed	english	Syria	Western Asia	Asia	NA	conceptual	causal
2017	La paz ambiental. Retos y propuestas para el posacuerdo	Rodriguez Garavito, Cesar Rodriguez Franco, Diana Duran Crane, Helena	book	peer-reviewed	spanish	Colombia	South America	Americas	NA	conceptual	descriptive
2017	A main driver or an intermediate variable? Climate change, water and security in the Middle East	Feitelson, E. Tubi, A.	journal article	peer-reviewed	english	Euphrates, Jordan river	Western Asia	Asia	NA	conceptual	causal
2017	Introduction to Special Issue: Disciplinary Perspectives on Climate Change and Conflict	Gilmore, E. A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Food scarcity and state vulnerability: Unpacking the link between climate variability and violent unrest	Jones, B. T. Mattiacci, E. Braumoeller, B. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2017	Climate Change, the Economy, and Conflict	Koubi, V.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Towards socially just adaptive climate governance: the transformative potential of conflict	Nursey-Bray, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal

2017	Using a novel climate-water conflict vulnerability index to capture double exposures in Lake Chad	Okpara, U. T. Stringer, L. C. Dougill, A. J.	journal article	peer-reviewed	english	Republic of Chad	Middle Africa	Africa	mixed methods	empirical	descriptive
2007	Violent conflict and disaster risk reduction including climate change adaptation	Olson, R. S. Gawronski, V. T.	book section	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2017	Climate Change and Cross-State Islamist Terrorism in Nigeria	Price, G. N. Elu, J. U.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	quantitative	empirical	causal
2017	Climate wars? A Systematic review of empirical analyses on the links between climate change and violent conflict	Sakaguchi, K. Varughese, A. Auld, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2017	Climate change impacts in Sub-Saharan Africa: from physical changes to their social repercussions	Serdeczny, O. Adams, S. Baarsch, F. Coumou, D. Robinson, A. Hare, W. Schaeffer, M. Perrette, M. Reinhardt, J.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	qualitative	empirical	causal
2017	Adaptation or conflict? Responses to climate change in water management in Bangladesh	Sultana, P. Thompson, P. M.	journal article	peer-reviewed	english	Bangladesh	South Asia	Asia	qualitative	empirical	descriptive
2017	Subnational violent conflict forecasts for Sub-Saharan Africa, 2015-65, using climate-sensitive models	Witmer, F. D. W. Linke, A. M. O'Loughlin, J. Gettelman, A. Laing, A.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal

2017	Cambio climatico y seguridad. El calentamiento global es un claro factor de inestabilidad y los fenomenos adversos son un reto para la seguridad nacional	Hidalgo García, Maria del Mar	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2017	La influencia del cambio climático en la seguridad	Hidalgo García, Maria del Mar	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2018	Taking Stock: the Field of Climate and Security	Busby, Joshua	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Bridging Research and Policy on Climate Change and Conflict	Gilmore, Elisabeth A. Herzer Risi, Lauren Tennant, Elizabeth Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Sampling bias in climate-conflict research	Adams, C. Ide, T. Barnett, J. Detges, A.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2018	From disaster to devastation: drought as war in northern Uganda	Branch, A.	journal article	peer-reviewed	english	Uganda	East Afriac	Africa	qualitative	empirical	causal
2018	Human and Environmental Security in the Era of Global Risks: Perspectives from Africa, Asia and the Pacific Islands	Bukari, K. N. Sow, P. Scheffran, J.	book section	peer-reviewed	english	Ghana	West Africa	Africa	quantitative	empirical	causal

2018	In harm's way: Climate security vulnerability in Asia	Busby, J. Smith, T. G. Krishnan, N. Wight, C. Vallejo-Gutierrez, S.	journal article	peer-reviewed	english	South Asia, Southeast Asia	South Asia, Southeast Asia	Asia	quantitative	empirical	causal
2018	Climate change, agricultural production and civil conflict: Evidence from the Philippines	Crost, B. Duquennois, C. Felter, J. H. Rees, D. I.	journal article	peer-reviewed	english	Philippines	Southeast Asia	Asia	quantitative	empirical	descriptive
2018	Increasing social-ecological resilience within small-scale agriculture in conflict-affected Guatemala	Hellin, J. Ratner, B. D. Meinzen-Dick, R. Lopez-Ridaura, S.	journal article	peer-reviewed	english	Guatemala	Central America	Americas	qualitative	empirical	descriptive
2018	Searching for climate-conflict links	Hendrix, C. S.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2018	Exploring the relationship between climate change and violent conflict	Koubi, V.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2018	Farmer perceptions of conflict related to water in Zambia	Marcantonio, R. A. Attari, S. Z. Evans, T. P.	journal article	peer-reviewed	english	Zambia	Southern Africa	Africa	quantitative	empirical	causal
2018	Integrating climate adaptation, water governance and conflict management policies in lake riparian zones: Insights from African drylands	Okpara, U. T. Stringer, L. C. Dougill, A. J.	journal article	peer-reviewed	english	Lake Chad Basin	Middle Africa	Africa	qualitative	empirical	descriptive

2018	Environmental impacts and causes of conflict in the Horn of Africa: A review	Solomon, N. Birhane, E. Gordon, C. Haile, M. Taheri, F. Azadi, H. Scheffran, J.	journal article	peer-reviewed	english	Horn of Africa	Eastern Africa	Africa	mixed methods	literature review	descriptive
2018	Climate change and violent conflict in East Africa: Integrating qualitative and quantitative research to probe the mechanisms	van Baalen, S. Mobjörk, M.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	qualitative	literature review	causal
2018	Cambio climático y conflictividad socioambiental en América Latina y el Caribe	Stein, Alfredo	journal article	peer-reviewed	spanish	America Latina y el Caribe	Central America, South America, Caribbean	Americas	NA	conceptual	causal
2019	Global environmental change I: Climate resilient peace?	Barnett, Jon	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2019	Climate change, peacebuilding and sustaining peace	Krampe, F.	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive

2019	Climate as a risk factor for armed conflict	Mach, Katharine J. Kraan, Caroline M. Adger, W. Neil Buhaug, Halvard Burke, Marshall Fearon, James D. Field, Christopher B. Hendrix, Cullen S. Maystadt, Jean-Francois O'Loughlin, John Roessler, Philip Scheffran, Jürgen Schultz, Kenneth A. von Uexkull, Nina	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2019	Climate, conflict and forced migration	Abel, G. J. Brottrager, M. Crespo Cuaresma, J. Muttarak, R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2019	Temperature extremes, global warming, and armed conflict: new insights from high resolution data	Breckner, M. Sunde, U.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2019	The Nexus of Climate Change, Land Use, and Conflicts	Froese, R. Schilling, J.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal

2019	The influence of climate change on the escalating communal conflict between herdsmen and farmers: The case of the fulani ethnic group in Nigeria	Furini, G.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	mixed methods	empirical	descriptive
2019	Climate change, population pressure, and wars in European history	Lee, H. F. Zhang, D. D. Brecke, P. Pei, Q.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2019	Relationship between environmental degradation, resource scarcity, and civil conflicts in Somalia	Mohamed, A. A. Nageye, A. I.	journal article	peer-reviewed	english	Somalia	Eastern Africa	Africa	quantitative	empirical	causal
2019	Nexus between Climate Change, Displacement and Conflict: Afghanistan Case	Prívara, A. Prívarová, M.	journal article	peer-reviewed	english	Afghanistan	Sout Asia	Asia	qualitative	empirical	descriptive
2019	Transforming local natural resource conflicts to cooperation in a changing climate: Bangladesh and Nepal lessons	Sultana, P. Thompson, P. M. Paudel, N. S. Pariyar, M. Rahman, M.	journal article	peer-reviewed	english	Bangladesh, Nepal	Sout Asia	Asia	qualitative	empirical	descriptive
2019	On climate and conflict: Precipitation decline and communal conflict in Ethiopia and Kenya	van Weezel, S.	journal article	peer-reviewed	english	Ethiopia, Kenya	Eastern Africa, East Africa	Africa	quantitative	empirical	causal

2019	Climate variability and individual motivations for participating in political violence	Vestby, J.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	The dark side of environmental peacebuilding	Ide, Tobias	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	descriptive
2020	Climate Change, Environment and Armed Conflicts in Nigeria	Ani, K. J. Uwizeyimana, D. E.	journal article	peer-reviewed	english	Nigeria	West Africa	Africa	qualitative	empirical	causal
2020	Climate change-induced human conflicts and economic costs in Pakistani Punjab	Bakhsh, K. Abbas, K. Hassan, S. Yasin, M. A. Ali, R. Ahmad, N. Chattha, M. W. A.	journal article	peer-reviewed	english	Pakistan	South Asia	Asia	quantitative	empirical	causal
2020	International conflict and cooperation over freshwater resources	Bernauer, T. Böhmelt, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	literature review	causal
2020	Pastoral Resource Conflict in the Context of Sudano–Sahelian Security Crises: A Critical Review of Research	Brottem, L. V.	journal article	peer-reviewed	english	Sudan, Sahel	Northern Africa, West Africa, East Africa	Africa	qualitative	empirical	causal
2020	Temperature anomalies affect violent conflicts in African and Middle Eastern warm regions	Helman, D. Zaitchik, B. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

2020	Climate has contrasting direct and indirect effects on armed conflicts	Helman, D. Zaitchik, B. F. Funk, C.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Multi-method evidence for when and how climate-related disasters contribute to armed conflict risk	Ide, T. Brzoska, M. Donges, J. F. Schleussner, C. F.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2020	Directions for Research on Climate and Conflicta	Mach, K. J. Adger, W. N. Buhaug, H. Burke, M. Fearon, J. D. Field, C. B. Hendrix, C. S. Kraan, C. M. Maystadt, J. F. O'Loughlin, J. Roessler, P. Scheffran, J. Schultz, K. A. von Uexkull, N.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2020	Climate Change and Violence in Post-Conflict Colombia	Malamud, Marina	journal article	peer-reviewed	english	Colombia	South America	Americas	qualitative	empirical	causal
2020	Climate change increases the risk of fisheries conflict	Mendenhall, E. Hendrix, C. Nyman, E. Roberts, P. M. Hoopes, J. R. Watson, J. R. Lam, V. W. Y. Sumaila, U. R.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	conceptual	causal
2020	Water scarcity, climate adaptation, and armed conflict: insights from Africa	Regan, P. M. Kim, H.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

2020	Climate change vulnerability, water resources and social implications in North Africa	Schilling, J. Hertig, E. Tramblay, Y. Scheffran, J.	journal article	peer-reviewed	english	Algeria, Egypt, Libya, Morocco, Tunisia	Northern Africa	Africa	qualitative	empirical	causal
2020	The relationship between climate change and political instability: the case of MENA countries	Sofuoglu, E. Ay, A.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Drought, Resilience, and Support for Violence: Household Survey Evidence from DR Congo	Uexkull, N. V. d'Errico, M. Jackson, J.	journal article	peer-reviewed	english	Democratic Republic of the Congo	Middle Africa	Africa	quantitative	empirical	causal
2020	Local warming and violent armed conflict in Africa	van Weezel, S.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2020	Causality of climate, food production and conflict over the last two millennia in the Hexi Corridor, China	Yang, L. Feng, Q. Adamowski, J. F. Deo, R. C. Yin, Z. Wen, X. Tang, X. Wu, M.	journal article	peer-reviewed	english	China	East Asia	Asia	quantitative	empirical	causal
2020	El cambio climatico como amenaza para la paz y seguridad internacionales	Sehnert Cuartas, Martin	journal article	peer-reviewed	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2021	Gender in the Climate-Conflict Nexus: "Forgotten" Variables, Alternative Securities, and Hidden Power Dimensions	Ide, Tobias Ensor, Marisa O. Masson, Virginie Le Kozak, Susanne	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal

2021	Achieving peaceful climate change adaptation through transformative governance	Leonardsson, Hanna Kronsell, Annica Andersson, Erik Burman, Anders Blanes, Ruy Da Costa, Karen Hasselskog, Malin Stepanova, Olga Öjendal, Joakim	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2021	A co-designed heuristic guide for investigating the peace-sustainability nexus in the context of global change	Simangan, Dahlia Virji, Hassan Hendrix, Cullen Islam, Moinul Kaneko, Shinji Ma, Young-sam Mechler, Reinhard Pangotra, Prem Peters, Katie Sharifi, Ayyoob Shams, Shamsul Hadi	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Security implications of climate change: A decade of scientific progress	von Uexkull, Nina Buhaug, Halvard	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2021	Land is now the biggest gun: climate change and conflict in Karamoja, Uganda	Abrahams, D.	journal article	peer-reviewed	english	Uganda	East Africa	Africa	qualitative	empirical	descriptive
2021	Should they stay or should they go? Climate migrants and local conflicts	Bosetti, V. Cattaneo, C. Peri, G.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal

2021	Vicious Circles: Violence, Vulnerability, and Climate Change	Buhaug, Halvard von Uexkull, Nina	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	A Song of Neither Ice nor Fire: Temperature Extremes had No Impact on Violent Conflict Among European Societies During the 2nd Millennium CE	Carleton, W. C. Collard, M. Stewart, M. Groucutt, H. S.	journal article	peer-reviewed	english	Europe	Europe	Europe	quantitative	empirical	causal
2021	Explaining Arctic peace: a human heritage perspective	Crawford, B. K.	journal article	peer-reviewed	english	Arctic	Arctic	Arctic	qualitative	conceptual	causal
2021	Rethinking the climate–conflict nexus: A human–environmental–climate security approach	Daoudy, M.	journal article	peer-reviewed	english	Syria, Sudan, Morocco	Western Asia, Northern Africa	Asia, Africa	qualitative	empirical	causal
2021	Projecting armed conflict risk in Africa towards 2050 along the SSP-RCP scenarios: a machine learning approach	Hoch, J. M. de Bruin, S. P. Buhaug, H. Von Uexkull, N. van Beek, R. Wanders, N.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2021	Conflict and its relationship to climate variability in Sub-Saharan Africa	Mack, E. A. Bunting, E. Herndon, J. Marcantonio, R. A. Ross, A. Zimmer, A.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

2021	Spatial pattern of climate change and farmer–herder conflict vulnerabilities in Nigeria	Madu, I. A. Nwankwo, C. F.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2021	Towards climate resilient peace: an intersectional and degrowth approach	Nicoson, C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Climate-induced stressors to peace: a review of recent literature	Sharifi, A. Simangan, D. Lee, C. Y. Reyes, S. R. Katramiz, T. Josol, J. C. Dos Muchangos, L. Virji, H. Kaneko, S. Tandog, T. K. Tandog, L. Islam, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	literature review	causal

2021	Climate change adaptation in conflict-affected countries: A systematic assessment of evidence	Sitati, A. Joe, E. Pentz, B. Grayson, C. Jaime, C. Gilmore, E. Galappaththi, E. Hudson, A. Alverio, G. N. Mach, K. J. van Aalst, M. Simpson, N. Schwerdtle, P. N. Templeman, S. Zommers, Z. Ajibade, I. Chalkasra, L. S. S. Umunay, P. Togola, I. Khouzam, A. Scarpa, G. de Perez, E. C.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	descriptive
2021	The 'boomerang effect': insights for improved climate action	Swatuk, L. A. Thomas, B. K. Wirkus, L. Krampe, F. Batista da Silva, L. P.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive
2021	Climate variability, crop and conflict: Exploring the impacts of spatial concentration in agricultural production	Vesco, P. Kovacic, M. Mistry, M. Croicu, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2021	La construccion de la paz ambiental	Ide, Tobias	report	grey literature	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	descriptive

2021	Subiendo la temperatura: el calentamiento de los océanos y su efecto en el conflicto armado en Filipinas	Castro Vargas, Sofía	report	grey literature	spanish	Philippines	Southeast Asia	Asia	quantitative	empirical	causal
2021	Cambio climático y conflictos	Escola de Cultura de Pau	report	grey literature	spanish	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	NA	conceptual	causal
2022	Local approaches to climate-sensitive peacebuilding: lessons from Afghanistan	Abdenur, Adriana E. Tripathi, Siddharth	journal article	peer-reviewed	english	Afghanistan	South Asia	Asia	qualitative	conceptual	descriptive
2022	Summary for Policymakers	Intergovernmental Panel on Climate Change	report	grey literature	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2022	Revision de la literatura sobre la seguridad climatica y la consolidacion de la paz ambiental: riesgos y oportunidades en la region Andina	Morales-Muñoz, H.	report	grey literature	spanish	Venezuela, Colombia, Ecuador,Perú, Bolivia, Chile, Argentina	South America	Americas	qualitative	literature review	causal
2022	Marco conceptual para medir las contribuciones de las intervenciones en agricultura para mitigar el cambio climático y construir paz	Pérez Marulanda, Lisset Castro, Augusto	report	grey literature	spanish	Colombia	South America	Americas	mixed methods	conceptual	descriptive

2022	The human dimensions of the climate risk and armed conflict nexus: a review article	Augsten, L. Gagné, K. Su, Y.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	qualitative	literature review	causal
2022	Drought, Local Public Goods, and Inter-communal Conflicts: Testing the Mediating Effects of Public Service Provisions	Cao, X. Theodora-Ismene, G. Shortland, A. Urdal, H.	journal article	peer-reviewed	english	Burkina Faso, Cameroon, Central African Republic, Ethiopia, Kenya, Mali, Niger, Nigeria, Senegal	West Africa, Middle Africa, East Africa	Africa	quantitative	empirical	causal
2022	Societal drought vulnerability and the Syrian climate-conflict nexus are better explained by agriculture than meteorology	Eklund, L. Theisen, O. M. Baumann, M. Forø Tollefsen, A. Kuemmerle, T. Østergaard Nielsen, J.	journal article	peer-reviewed	english	Syria	Western Asia	Asia	quantitative	empirical	causal
2022	Evaluating dual exposure by using climate-conflict vulnerability index on the coastal districts of Sindh, Pakistan	Fatima, N. Alamgir, A. Khan, M. A. Owais, M.	journal article	peer-reviewed	english	Pakistan	South Asia	Asia	quantitative	empirical	causal
2022	Low agricultural potential exacerbates the effect of temperature on civil conflicts	Goyette, J. Smaoui, M.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2022	Global climate, El Niño, and militarized fisheries disputes in the East and South China Seas	Hendrix, C. S. Glaser, S. M. Lambert, J. E. Roberts, P. M.	journal article	peer-reviewed	english	China	East Asia	Asia	quantitative	empirical	causal

2022	Is climate exacerbating the root causes of conflict in Mali? A climate security analysis through a structural equation modeling approach	Pacillo, G. Kangogo, D. Madurga-Lopez, I. Villa, V. Belli, A. Läderach, P.	journal article	peer-reviewed	english	Mali	West Africa	Africa	quantitative	empirical	causal
2022	The impact of climate-change-related disasters on africa's economic growth, agriculture, and conflicts: Can humanitarian aid and food assistance offset the damage?	Shimada, G.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2022	El conflicto, el cambio climático y la reducción del espacio de movilidad en el Sahel Central	Morello, Giulio Rizk, Joelle	journal article	peer-reviewed	spanish	Sahel	West Africa, East Africa	Africa	qualitative	conceptual	descriptive
2023	Exploring the effects of climate change and government stability on internal conflicts: evidence from selected sub-Saharan African countries	Abdi, A. H. Mohamed, A. A. Sugow, M. O.	journal article	peer-reviewed	english	Sub-Saharan Africa	Sub-Saharan Africa	Africa	quantitative	empirical	causal
2023	Climate change and armed conflicts in Africa: temporal persistence, non-linear climate impact and geographical spillovers	Cappelli, F. Conigliani, C. Consoli, D. Costantini, V. Paglialunga, E.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal

2023	Climate change, international migration, and interstate conflicts	Cattaneo, C. Foreman, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	quantitative	empirical	causal
2023	Living with climate and state fragility in a “chaotic paradise:” securitizing livelihoods in the Philippines’ Cotabato River Basin	Delina, L. L. Ludovice, N. P. P. Gaviola, J. Cagoco-Guiam, R.	journal article	peer-reviewed	english	Philippines	Southeast Asia	Asia	qualitative	empirical	descriptive
2023	Climate, Women, and Conflict: Rebel Groups' Armed Activities after Major Disasters	Ide, T.	journal article	peer-reviewed	english	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	Africa, Asia, Europe, Americas, Oceania, and Antarctica	mixed methods	empirical	causal
2023	How can peacebuilding contribute to climate resilience? Evidence from the drylands of East and West Africa	Kurtz, J. Elsamahi, M.	journal article	peer-reviewed	english	East Africa, West Africa	East Africa, West Africa	Africa	NA	conceptual	descriptive
2023	Extreme weather impacts do not improve conflict predictions in Africa	Michelini, S. Šedová, B. Schewe, J. Frieler, K.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Conservancies, rainfall anomalies and communal violence: Subnational evidence from East Africa	Sánchez, A. Fernandez, A. González, J. B.	journal article	peer-reviewed	english	East Africa	East Africa	Africa	quantitative	empirical	causal

2023	The need for willingness and opportunity: analyzing where and when environmental variability influences conflict in the Sahel	Schon, J. Koehnlein, B. Koren, O.	journal article	peer-reviewed	english	Sahel	West Africa, East Africa	Africa	quantitative	empirical	causal
2023	Climate change as the last trigger in a long-lasting conflict: the production of vulnerability in northern Guinea-Bissau, West Africa	Temudo, M. P. Cabral, A. I. R.	journal article	peer-reviewed	english	West Africa	West Africa	Africa	quantitative	empirical	causal
2023	Climate change vulnerability and conflicts in Africa: evidence from the migrations channel	Tsomb, E. I. B. T. Nsoga, M. H. I. N. Bitting, C. D.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Climate, flood, and attitudes toward violence: micro-level evidence from Karamoja, Uganda	von Uexkull, N. Loy, A. d'Errico, M.	journal article	peer-reviewed	english	Uganda	East Africa	Africa	quantitative	empirical	causal
2023	Quantifying the influence of climate variability on armed conflict in Africa, 2000–2015	Wang, Q. Hao, M. Helman, D. Ding, F. Jiang, D. Xie, X. Chen, S. Ma, T.	journal article	peer-reviewed	english	Africa	Africa	Africa	quantitative	empirical	causal
2023	Rethinking the link between climate and violent conflict over water	Warner, J. F.	journal article	peer-reviewed	english	Sudan, South Sudan	Northern Africa	Africa	qualitative	empirical	causal
2023	Colombia sostenible y en paz	Fondo Colombia en Paz	report	grey literature	spanish	Colombia	South America	Americas	NA	conceptual	descriptive

2023	Guia de orientacion. Clima, Paz y Seguridad en America Latina y el Caribe	Programa de las Naciones Unidas para el Desarrollo (PNUD)	report	grey literature	spanish	America Latina y el Caribe	Central America, South America, Caribbean	Americas	NA	conceptual	descriptive
2023	Cambio climático, inestabilidad y desplazamientos en el Sahel. Desafíos y respuesta por parte de la Unión Europea	Fernández Arribas, Gloria	report	grey literature	spanish	Sahel	Wet Africa, East Africa	Africa	NA	conceptual	causal

Appendix 2. Interview Questionnaire

Before Interview:

- Make sure the recording device is working.
- Record audio consent (unless written consent is provided)

Introduction:

Thank you for agreeing to do this interview, I appreciate your time. My name is Luisa F. Bedoya Taborda. I am a Master of Philosophy student at James Cook University, Australia. This interview is for a study about climate change adaptation and peacebuilding in the coastal community of Cispatá Bay. Through these interviews, I intend to build an understanding of the implementation process of climate change adaptation and peacebuilding projects in the coastal community of Cispatá Bay. I am also interested in hearing about the difficulties presented during the implementation of the projects because of the context of violent conflict and climate change. I will ask about your organisation's projects and actions but invite you to speak as an individual rather than on behalf of your organization.

This interview will take 45 minutes or less. Before we start, let you know that we will keep your identity confidential throughout this study. Your responses will not be shared with any other participants —I will be the only one to handle the interviews, with oversight from my advisors. In addition, your name will not be used in written reports or academic journal articles; we will only refer to general groups of actors (e.g., supervisors). I want to record the interview if it is right with you. This ensures that your views are accurately recorded and lets me focus on our conversation. Is that good with you?

QUESTIONS: KEY INFORMANTS GUIDE

Semi-structured interviews | Twelve individual videoconference interviews

- **6 key informants participating in climate change projects**
- **6 key informants participating in peacebuilding projects**

Purpose: Identify the capacities conflict-affected coastal communities need to address the simultaneous impacts of climate change and violent conflict.

Participant information (5m): Let's start with your background.

1. What is your current role or position, and what are your duties?
    a. How long have you been with this organisation?

PART ONE: Climate change adaptation and peacebuilding projects (10m)

• I would like to learn more about the climate change adaptation/ peacebuilding project implemented in the coastal community by the institution/foundation/organisation you are working with.

2. What are the objectives or **goals** of the climate change adaptation/peacebuilding project implemented by the institution/foundation/ organization where you work?
3. What are the most significant **projects** your institution/ foundation/organisation has implemented to achieve these goals?
4. What are the most significant **actions or activities** your institution/ foundation/organisation has been implementing as a part of these projects?

PART TWO: Evaluating project effectiveness (10m)

• I would like to learn more about the effectiveness of the climate change adaptation/ peacebuilding project implemented in the coastal community.

5. Do you think the project has been successful so far in achieving its goals?
    a. **If yes,** what is most critical to enabling your project to meet its goals?
    b. **If no or goals are only partly met**, what are the most critical barriers or obstacles preventing your project from meeting its goals?

PART THREE: Difficulties because of the context of violent conflict and climate change (10m)

• I would like to learn more about the difficulties in implementing the climate change adaptation/peacebuilding project, given the context of violent conflict/ climate change.

6a. **For climate projects:** Has violent conflict impacted your ability to implement the project?

    a. If yes, has that impacted your ability to achieve the project goals?

6b. **For peacebuilding projects:** Has climate change impacted your ability to implement the project?

    a. If yes, has that impacted your ability to achieve the project goals?

PART FOUR: Identifying gaps in climate change adaptation and peacebuilding projects (10m)

7. What would have helped the project achieve its goals more successfully?

PART FIVE: Conclusion (5m)

8. Are there documents that describe the project we have been discussing and its activities and implementation (e.g., reports, papers, articles)? How do I access these?
9. Are there other important organisations you think I should speak to that may take a different approach or express different views about this topic?
10. Would you like to share anything on the topic we didn't cover?

Appendix 3. Key informants and descriptions

Key Informant Code	Description
1	Civil judge specialised in land restitution in a Circuit Court in Colombia. Judicial System
2	Research and information for marine and coastal management — Marine and Coastal Research Institute José Benito Vives de Andréis (INVEMAR) in Colombia. Research Institute
3	Blue Carbon — Conservation International. International Foundation
4	Omacha Foundation. National Foundation
5	Local Coordinator of the Vida Manglar project. Local Coordination
6	San Antero City Council in Córdoba, Colombia. Local Government
7	San Bernardo del Viento City Council in Córdoba, Colombia. Local Government
8	Regional Autonomous Corporation of the Sinú and San Jorge Valleys (CVS) in Córdoba, Colombia. Environmental Authority
9	Victims' organisation: Cultivando paz y bienestar (Cultivating peace and well-being) in San Bernardo del Viento, Córdoba, Colombia. Community Association
10	Victims' organisation: Asovipaz in San Bernardo del Viento, Córdoba, Colombia. Community Association
11	Communal Action Board (JAC in Spanish) in Paso Nuevo, San Bernardo del Viento, Córdoba, Colombia. Communal Action Board
12	Fund Colombia in Peace. National government
13	Local expert for San Bernardo del Viento of the Vida Manglar project in Córdoba, Colombia, and member of a Mangrove Association. Community Association
14	Mangrove farmer and member of a Mangrove Association in Córdoba, Colombia. Community association
15	Mangrove farmer and member of a Mangrove Association in Córdoba, Colombia. Community Association
16	Climate Change and Risk Management — Ministry of Environment and Sustainable Development in Colombia National Government

Appendix 4. Key informants and attributes

	Area	Position	Institutions	Institution's Area of Influence	Experience in the area (years)	Social connectivity	Network Exposure
1	Peacebuilding	Top-level	Judicial System	National	10	Yes	Yes
2	Climate Change Adaptation	Top-level	Research Institute	National	25	Yes	No
3	Climate Change Adaptation	Top-level	International Foundation	International	17	Yes	No
4	Climate Change Adaptation	Top-level	National Foundation	International	33	Yes	No
5	Climate Change Adaptation	Middle level	Local coordinator	National	5	Yes	Yes
6	Peacebuilding	Middle level	Local government	National	10	Yes	No
7	Peacebuilding	Middle level	Local government	National	10	Yes	Yes
8	Climate Change Adaptation	Middle level	Environmental Authority	National	30	Yes	Yes
9	Peacebuilding	Top-level	Community Association	National	10	Yes	No
10	Peacebuilding	Top-level	Community Association	National	8	Yes	Yes
11	Peacebuilding	Chairman	Communal Action Board	National	30	Yes	Yes
12	Peacebuilding	Top-level	National Government	National	12	Yes	Yes
13	Climate Change Adaptation	Low-level	Community Association	National	10	Yes	No
14	Climate Change Adaptation	Mangrove farmer	Community Association	National	10	Yes	No
15	Climate Change Adaptation	Mangrove farmer	Community Association	National	10	Yes	No

16	Climate Change Adaptation	Middle level	National government	National	6	Yes	No

Appendix 5. Overlaps between climate change adaptation domains and peacebuilding components

CCA domains	CCA indicators	overlaps	PB indicators	PB components
Learning	access to information	⟷	healing	Truth and reconciliation
Learning	access to information	⟷	return and relocation	Truth and reconciliation
Learning	access to information	⟷	memory	Truth and reconciliation
Learning	access to information	⟷	justice system	Security
Learning	access to information	⟷	institutions	Governance and political
Learning	access to information	⟷	environmental	Social, economic, and environmental
Learning	access to information	⟷	employment	Social, economic, and environmental
Learning	access to information	⟷	dispute resolution	Truth and reconciliation
Learning	experimental processes	⟷	environmental	Social, economic, and environmental
Learning	experimental processes	⟷	employment	Social, economic, and environmental
Learning	experimental processes	⟷	memory	Truth and reconciliation
Learning	experimental processes	⟷	healing	Truth and reconciliation
Learning	experimental processes	⟷	participatory processes	Governance and political
Learning	beliefs	⟷	environmental	Social, economic, and environmental
Learning	beliefs	⟷	employment	Social, economic, and environmental
Learning	memory	⟷	memory	Truth and reconciliation
Learning	memory	⟷	healing	Truth and reconciliation
Learning	memory	⟷	environmental	Social, economic, and environmental
Learning	education	⟷	environmental	Social, economic, and environmental
Learning	education	⟷	dispute resolution	Truth and reconciliation
Learning	education	⟷	healing	Truth and reconciliation
Learning	education	⟷	participatory processes	Governance and political
Learning	education	⟷	employment	Social, economic, and environmental
Learning	education	⟷	justice system	Security
Learning	education	⟷	memory	Truth and reconciliation
Learning	education	⟷	institutions	Governance and political

Organisation	institutions	⟷	institutions	Governance and political
Organisation	institutions	⟷	employment	Social, economic, and environmental
Organisation	institutions	⟷	anti-corruption	Governance and political
Organisation	institutions	⟷	participatory processes	Governance and political
Organisation	institutions	⟷	healing	Truth and reconciliation
Organisation	social networks	⟷	employment	Social, economic, and environmental
Organisation	social networks	⟷	participatory processes	Governance and political
Organisation	social networks	⟷	institutions g	Governance and political
Organisation	social networks	⟷	environmental	Social, economic, and environmental
Organisation	social networks	⟷	healing	Truth and reconciliation
Organisation	social networks	⟷	anti-corruption	Governance and political
Organisation	social networks	⟷	technical and financial	Social, economic, and environmental
Organisation	social networks	⟷	public services	Social, economic, and environmental
Organisation	social networks	⟷	infrastructure	Social, economic, and environmental
Organisation	social networks	⟷	dispute resolution	Truth and reconciliation
Assets	financial	⟷	technical and financial	Social, economic, and environmental
Assets	financial	⟷	employment	Social, economic, and environmental
Assets	financial	⟷	environmental	Social, economic, and environmental
Assets	financial	⟷	healing	Truth and reconciliation
Assets	financial	⟷	memory	Truth and reconciliation
Assets	financial	⟷	dispute resolution	Truth and reconciliation
Assets	technology	⟷	technical and financial	Social, economic, and environmental
Assets	social investments	⟷	infrastructure	Social, economic, and environmental
Assets	social investments	⟷	public services	Social, economic, and environmental
Assets	social investments	⟷	technical and financial	Social, economic, and environmental
Assets	social investments	⟷	healing	Truth and reconciliation
Assets	social investments	⟷	employment	Social, economic, and environmental
Assets	social investments	⟷	memory	Truth and reconciliation
Assets	social investments	⟷	return and relocation	Truth and reconciliation

Agency	active in decision-making	⟷	participatory processes	Governance and political
Agency	active in decision-making	⟷	anti-corruption	Governance and political
Agency	active in decision-making	⟷	institutions	Governance and political
Agency	active in decision-making	⟷	healing	Truth and reconciliation
Agency	active in decision-making	⟷	environmental	Social, economic, and environmental
Agency	active in decision-making	⟷	infrastructure	Social, economic, and environmental
Agency	self-efficacy	⟷	participatory processes	Governance and political
Agency	self-efficacy	⟷	institutions	Governance and political
Agency	self-efficacy	⟷	environmental	Social, economic, and environmental
Agency	self-efficacy	⟷	healing	Truth and reconciliation
Agency	self-efficacy	⟷	employment	Social, economic, and environmental
Agency	self-efficacy	⟷	security	Security
Agency	self-efficacy	⟷	dispute resolution	Truth and reconciliation
Flexibility	livelihoods diversification	⟷	environmental	Social, economic, and environmental
Flexibility	livelihoods diversification	⟷	employment	Social, economic, and environmental
Flexibility	livelihoods diversification	⟷	participatory processes	Governance and political
Flexibility	livelihoods diversification	⟷	healing	Truth and reconciliation
Flexibility	livelihoods diversification	⟷	institutions	Governance and political
Flexibility	livelihoods diversification	⟷	technical and financial	Social, economic, and environmental
Flexibility	diverse practices	⟷	environmental	Social, economic, and environmental
Flexibility	diverse practices	⟷	employment	Social, economic, and environmental
Flexibility	diverse practices	⟷	technical and financial	Social, economic, and environmental
Flexibility	diverse practices	⟷	institutions	Governance and political
Socio-cognitive constructs	personal experience	⟷	healing	Truth and reconciliation
Socio-cognitive constructs	cognitive biases	⟷	healing	Truth and reconciliation

Appendix 6. Overlaps between peacebuilding components and climate change adaptation domains

PB components	PB indicators	overlaps	CCA indicators	CCA domains
Social, economic, and environmental	infrastructure	⟷	social investments	Assets
Social, economic, and environmental	infrastructure	⟷	social networks	Organisation
Social, economic, and environmental	infrastructure	⟷	active in decision-making	Agency
Social, economic, and environmental	public services	⟷	social investments	Assets
Social, economic, and environmental	public services	⟷	social networks	Organisation
Social, economic, and environmental	employment	⟷	diverse practices	Flexibility
Social, economic, and environmental	employment	⟷	institutions	Organisation
Social, economic, and environmental	employment	⟷	social networks	Organisation
Social, economic, and environmental	employment	⟷	experimental processes	Learning
Social, economic, and environmental	employment	⟷	beliefs	Learning
Social, economic, and environmental	employment	⟷	education	Learning
Social, economic, and environmental	employment	⟷	networks	Learning
Social, economic, and environmental	employment	⟷	self-efficacy	Agency
Social, economic, and environmental	employment	⟷	financial	Assets
Social, economic, and environmental	employment	⟷	social investments	Assets
Social, economic, and environmental	employment	⟷	livelihoods diversification	Flexibility
Social, economic, and environmental	technical and financial	⟷	livelihoods diversification	Flexibility
Social, economic, and environmental	technical and financial	⟷	diverse practices	Assets
Social, economic, and environmental	technical and financial	⟷	social networks	Organisation

1

Social, economic, and environmental	technical and financial	⟷	networks	Learning
Social, economic, and environmental	technical and financial	⟷	financial	Assets
Social, economic, and environmental	technical and financial	⟷	technology	Assets
Social, economic, and environmental	technical and financial	⟷	memory	Learning
Social, economic, and environmental	technical and financial	⟷	social investments	Assets
Social, economic, and environmental	environmental	⟷	diverse practices	Assets
Social, economic, and environmental	environmental	⟷	social networks	Organisation
Social, economic, and environmental	environmental	⟷	experimental processes	Learning
Social, economic, and environmental	environmental	⟷	beliefs	Learning
Social, economic, and environmental	environmental	⟷	memory	Learning
Social, economic, and environmental	environmental	⟷	education	Learning
Social, economic, and environmental	environmental	⟷	networks	Learning
Social, economic, and environmental	environmental	⟷	active in decision-making	Agency
Social, economic, and environmental	environmental	⟷	self-efficacy	Agency
Social, economic, and environmental	environmental	⟷	financial	Assets
Social, economic, and environmental	environmental	⟷	institutions	Organisation
Social, economic, and environmental	environmental	⟷	livelihoods diversification	Flexibility
Governance and political	institutions	⟷	livelihoods diversification	Flexibility
Governance and political	institutions	⟷	diverse practices	Flexibility
Governance and political	institutions	⟷	institutions	Organisation
Governance and political	institutions	⟷	social networks	Organisation
Governance and political	institutions	⟷	access to information	Learning
Governance and political	institutions	⟷	education	Learning
Governance and political	institutions	⟷	networks	Learning
Governance and political	institutions	⟷	active in decision-making	Agency
Governance and political	institutions	⟷	self-efficacy	Agency
Governance and political	participatory processes	⟷	social networks	Organisation
Governance and political	participatory processes	⟷	experimental processes	Learning
Governance and political	participatory processes	⟷	education	Learning

Governance and political	participatory processes	⟷	networks	Learning
Governance and political	participatory processes	⟷	active in decision-making	Agency
Governance and political	participatory processes	⟷	self-efficacy	Agency
Governance and political	participatory processes	⟷	institutions	Organisation
Governance and political	participatory processes	⟷	livelihoods diversification	Flexibility
Governance and political	anti-corruption	⟷	social networks	Organisation
Governance and political	anti-corruption	⟷	active in decision-making	Agency
Governance and political	anti-corruption	⟷	networks	Learning
Governance and political	anti-corruption	⟷	institutions	Organisation
Truth and reconciliation	dispute resolution	⟷	education	Learning
Truth and reconciliation	dispute resolution	⟷	self-efficacy	Agency
Truth and reconciliation	dispute resolution	⟷	financial	Assets
Truth and reconciliation	dispute resolution	⟷	social networks	Organisation
Truth and reconciliation	dispute resolution	⟷	institutions	Organisation
Truth and reconciliation	dispute resolution	⟷	access to information	Learning
Truth and reconciliation	memory	⟷	education	Learning
Truth and reconciliation	memory	⟷	networks	Learning
Truth and reconciliation	memory	⟷	financial	Assets
Truth and reconciliation	memory	⟷	social investments	Assets
Truth and reconciliation	memory	⟷	access to information	Learning
Truth and reconciliation	memory	⟷	experimental processes	Learning
Truth and reconciliation	memory	⟷	memory	Learning
Truth and reconciliation	healing	⟷	memory	Learning
Truth and reconciliation	healing	⟷	education	Learning
Truth and reconciliation	healing	⟷	networks	Learning
Truth and reconciliation	healing	⟷	personal experience	Socio-cognitive constructs
Truth and reconciliation	healing	⟷	cognitive biases	Socio-cognitive constructs
Truth and reconciliation	healing	⟷	active in decision-making	Agency
Truth and reconciliation	healing	⟷	self-efficacy	Agency

Truth and reconciliation	healing	⟷	financial	Socio-cognitive constructs
Truth and reconciliation	healing	⟷	social investments	Assets
Truth and reconciliation	healing	⟷	livelihoods diversification	Flexibility
Truth and reconciliation	healing	⟷	institutions	Organisation
Truth and reconciliation	healing	⟷	social networks	Organisation
Truth and reconciliation	healing	⟷	access to information	Learning
Truth and reconciliation	healing	⟷	experimental processes	Learning
Truth and reconciliation	return and relocation	⟷	social investments	Assets
Truth and reconciliation	return and relocation	⟷	access to information	Learning
Truth and reconciliation	justice system	⟷	access to information	Learning
Truth and reconciliation	justice system	⟷	education	Learning