

Understanding the Connections Between Climate Change and Conflict: Contributions From Geography and Political Ecology

Daniel Abrahams¹  · Edward R. Carr^{2,3}

© Springer International Publishing AG 2017

Abstract

Purpose of Review The connections between climate change and conflict inherently raise questions related to space, scale, and nature-society relations, all themes central to modern geographic thought. The geographic and political ecological literature—and the literature informed by geography and political ecology—generally explores the relationship between climate change and conflict through case studies, employing a wide range of methods that enable understandings not accessible through exclusively large-n quantitative studies. As a result, this literature focuses on questions and challenges that are generally overlooked in the wider climate-conflict literature, including the importance of spatial and temporal scale and the ways in which vulnerability and resilience frame this relationship.

Recent Findings This literature uniquely challenges the dominant “threat multiplier” framing of climate change’s impact on climate, questioning this narrative’s unidirectional flow from climate vulnerability to conflict, exploring how climate change can create opportunities for peacebuilding as well as conflict, and identifying how climate adaptation activities can themselves become catalysts for conflict.

Summary While geographic and political ecological lenses on the relationship between climate change and conflict do not have all the answers needed to address the challenges and opportunities presented by this relationship, the framings these lenses offer are essential to building meaningful, actionable understandings going forward.

Keywords Climate change · Conflict · Political ecology · Geography · Qualitative · Environmental security

Introduction

The intellectual terrain of climate change’s impact on conflict is marked by varied disciplinary and institutional interests, methods of gathering and analyzing data, and starkly different opinions regarding what the data tells us. While the chapter on climate and security in the most recent IPCC report makes it clear that, in general, [1•• p. 758] “human security will be threatened as the climate changes”, it also argues that (p. 760) “Given the many and complex links between climate change and human security, uncertainties in the research on the biophysical dimensions of climate change, and the nature of the social science, highly confident statements about the influence of climate change on human security are not possible” [1••]. In short, the connection between climate change impacts and conflict outcomes is highly place and time-specific, and is the product of many different, intersecting factors. It is, then, an inherently geographic question, and one to which geography and allied disciplines have made substantial contributions in recent years.

In this article, we review the contributions of the literature emerging from geography and the closely-allied field of political ecology, including literature heavily influenced by lessons from these areas of inquiry, which further the

This article is part of the Topical Collection on *Climate Change and Conflicts*

✉ Daniel Abrahams
abrahad@email.sc.edu

¹ Department of Geography, University of South Carolina, Callcott Building, 709 Bull Street, Columbia, SC 29208, USA

² International Development, Community, and Environment Department (IDCE), Clark University, 950 Main Street, Worcester 01610, MA, USA

³ Humanitarian Response and Development Lab, George Perkins Marsh Institute, Clark University, Worcester, USA

understanding of the connections between climate change impacts and conflict. We focus on how this literature challenges the threat multiplier narrative, which remains prevalent, most evidently in policy communities. We begin with a brief situation of the question of climate change impacts and conflict in broader geographic questions surrounding the relationship between conflict and the environment. We then present our methods for this review, before turning to the literature to assess the methods used, and the broad themes and findings which emerge from, or have drawn upon, lessons from the geographic and political ecological literatures. We close with a brief discussion of gaps in this literature that point to future research directions.

Conflict and the Environment in Geography and Political Ecology

While geography is an integrative discipline, and therefore challenging to define in terms of unique methods, subject areas, or interests, it has been marked since its formal inception by strong interests in the relationship between people and the environment, and by the particularities of place that shape the human experience. It is not surprising then that geography has long taken an interest in particular cases of conflict that emerge around the human use of and experience with the environment [1–4]. This interest is most clearly expressed in the subfield of political ecology, which emerged from the fields of hazards and risk, integrating political economy and the environment perhaps most clearly in terms of the structural causes of famine and other disasters [5, 6], the conflict emerging around conservation efforts [7–11], and the challenges that emerge around agrarian change [12–14].

Political ecology is not the exclusive province of geography, as it emerged across a range of fields (including anthropology and rural sociology). However, in whatever disciplinary context it might be enacted, contemporary political ecological research draws heavily on geographic framings of scale and political economy, thus drawing the two fields into what might be represented as a heavily-overlapping Venn diagram. It is marked by a broad consideration of the ways in which various processes at different scales plays out in particular nature-society relationships, and emerged from a cultural ecological fascination with the ways people, communities, and societies adapt to their environments [15]. From this geographically-informed lens, climate change and its impacts on the environment is a natural fit for political ecology. It links global processes of change to impacts on the environment and people in particular places.

For this review, we focus on the literature comprised of place-based and critical policy studies that speak to our understandings of the connection between climate change and conflict. This literature is not all explicitly political ecological or

even geographic, but it draws heavily from the lessons of these bodies of thought—whether such influence is overtly acknowledged or not. More specifically, we examine how these studies are used to critique and further understand the discourses and contextualized realities of the climate-conflict nexus.

Methods

This review focuses on literature published after the most recent IPCC Assessment Report, the first to have a chapter dedicated to human security that reviewed current thought on the intersections between climate and conflict and climate and security [1••]. We used Google Scholar to identify literature exploring these connections as it provided the widest coverage of the social sciences and because some significant publications (or citations to important publications) are found in the gray literature, both of which are better covered in Google Scholar when compared with other scholarly databases (e.g., Web of Science). The gray literature, which is not necessarily peer-reviewed, has played an important role in shaping the discourses of climate-conflict. Furthermore, because it is used in advocacy and policy-making, it was important to integrate this work into the literature review to more fully demonstrate how the discourses of climate-conflict have developed.

Table 1 shows the search terms and total results. In some cases, we excluded terms that were irrelevant to the search but made the results difficult to navigate.¹ Articles were then examined for their relevance to the question of how the geographic and political ecological literature approaches the connection between climate and conflict. All relevant publications were then organized by theme.

There are references to articles before the period defined above. That is for the following reasons: (1) in some cases, the work we were reviewing cited these articles; (2) the articles are grounding, foundational, or otherwise central to the points we make in this review; (3) we felt it important to demonstrate how understandings of a topic have evolved over time.

Geographic Approaches to Studying the Climate-Conflict Connection

As boundary (sub)disciplines or fields of thought, geography and political ecology utilize multiple methods to examine the role of climate change in causing, perpetuating, or even

¹ For example, “job security” and “food security” when searching for climate change and security greatly increased total documents to point of being unnavigable.

Table 1 Search terms and total results

Search terms (title only)	Total articles
“Climate change” and security	297
“Climate change” and conflict	126
“Climate security” or “climate-security”	96
“Climate conflict” or “climate-conflict”	91
Conflict and adaptation and climate	12
Security and adaptation and climate	12
Resilience and conflict and climate	8
“Drought and conflict”	7
“Weather and conflict”	6
Resilience and security and climate	5
“Global warming” and conflict or security	4
Resilience and climate and climate “peace building” or peacebuilding	1
Adaptation and climate and “peace building” or peacebuilding	0

alleviating conflict. This diversity of methods is a core strength of geography as an integrative discipline. Geographical and geographically-informed examinations of the link between climate change and conflict have employed a range of methodological tools including mapping climate-conflict vulnerability [e.g., 16, 17], the remote sensing of land use change as it relates to climate-conflict [e.g., 17], quantifying climate-conflict risk in particular places [e.g., 18–20], qualitative case studies [e.g., 21], critical studies examining the narratives and realities of the nexus [e.g., 22], and discourse analysis examining how policy approaches develop and are understood across spatial and temporal scales [e.g., 23]. For this study, we examine the following²:

- Case studies that capture the place-specific interactions of climate change, climate variability, and conflict with a wider political economy [e.g., 21, 24–28].
- Efforts aimed at the development and testing of conceptual models and spatial and temporal aspects of the climate-conflict nexus [e.g., 29–34].
- Critical analysis of policy and discourses related to the nexus, including examinations of the nexus in the context of policy formulation, power dynamics, and securitization [e.g., 35–43].
- Review studies that amalgamate findings in order to find points of consensus regarding the connection between

climate change and conflict/security and identify critical research gaps for the field [e.g., 29, 32, 33, 44]

Case Studies: Developing and Refining Theory

In the wider climate-conflict field, after large-N quantitative studies, the most common way to examine this relationship is through qualitative case studies [45•]. Studies rooted in a particular place and time, or examining a particular organization or policy, are important not only for understanding how climate change interacts with conflict in specific contexts, but also for grounding, contextualizing, and testing theories present in quantitative studies and theoretical arguments. For simplicity, we broadly describe this work as case studies. Ide (2017), describes different research methods used to examine the link between climate change and conflict, and provides a typology of qualitative research that includes the following [45•]:

- Tracing how the mechanisms linking climate change or variability to conflict interact in a particular place or time [e.g., 34, 46, 47].
- Ethnographic studies of communities affected by climate change and conflict [e.g., 21, 26, 27•].
- Research that contextualizes climate change and conflict dynamics into a broader political economy [e.g., 48–50].

These studies employ a range of data collection methods, largely embodied in qualitative case studies (i.e., interviews, direct observation, and surveys), but also incorporate tools from related areas including GISciences, remote sensing, and data collection and analysis focused on atmospheric sciences and biophysical processes. Qualitative case studies, which ground the intersection of social, political, economic, and biophysical processes in particular places, provide the highly granular, contextual data necessary to understand the processes through which climate change impacts are—or are not—translated into conflict. Moreover, these case studies elucidate the various ways different populations experience the joint challenges of climate change and conflict. For example, Chandra et al. (2017) demonstrate how different genders experience conflict-related vulnerabilities related to climate variability and change in Mindanao, Philippines [21]. While both women and men smallholder farmers faced increased vulnerability as a result of climate change *and* conflict, the impacts of extreme climate events had more severe impacts on women, including loss of land rights and forced migration [21]. Ide et al. (2014) exemplify a more mixed method approach, using both qualitative and quantitative methods to map climate-conflict links in Kenya and Uganda [51]. Using a spatial lens on the question of climate-conflict connections, the authors

² While we do not review studies that employ mapping or remote sensing as primary methodologies, we do consider that work in the broader context of the review.

were able to determine where joint effects of climate change and conflict are most likely to occur.

Discourses, Policy Analysis, and Securitization

The geographic approach to discourse analysis is greatly influenced by post-structuralism and Foucauldian theory [52–55] and largely focuses on how power and policy reflect and refract understandings of place and the relationship between people and the environment. Discourse analysis generally rests on the critical analysis of existing documentation and literature, but can also employ key informant interviews and direct observation. Much of the literature examining the discourses of climate-conflict is a direct response to positivist studies purporting a more direct relationship between climate change and conflict [e.g., 39].

With its heavy focus on discourses of nature and society, geography has provided tools and lessons that subtly shape a growing literature that not only draws attention to the inherent risks of securitizing climate change, but also problematizes the overly determinative discourses that purport a stronger relationship between climate change and conflict than is evident in the data. This includes:

- Critical examinations of the climate-conflict nexus that call into question the validity of the connection purported in select large-N quantitative studies or instances in which the relationship was overstated in specific contexts [22, 36, 37, 39, 56, 57]
- The progression of knowledge and understanding of the nexus as well as the evolution of the discourse [58–64, 42, 43]
- How different organizations perceive and seek to address the climate-conflict nexus [23, 65, 66] as well as how the discourses of climate change translate into policy [23, 64]
- The climate-conflict nexus as it relates to securitization and/or neoliberalism [23, 37, 50, 56, 64]. The securitization literature is largely focused on the risks of depoliticizing conflict through narratives that ignore the root causes of conflict [22, 37], further enforcing existing power structures through environmentally driven governmentality [37, 67], and/or reinforcing states' disproportionate focus on activities that reinforce existing power structures [68].

Below, we describe key contributions from the contemporary geographic and political ecological literature (including literatures informed by one or both), with particular attention to that portion of the literature centered on qualitative case studies. This body of work, largely informed by theory and methods typical of political ecology, points to a need to expand current perspectives on the

connection between climate change and conflict beyond an unlinear model tracing climate change to conflict or insecurity.

Geographic Contributions to Understandings of Climate-Conflict Relationships

The most common framing of the climate-conflict nexus, particularly within policy communities, is that of climate change as a threat multiplier [32, 61, 69–71]. This framing suggests that climate change will not cause conflict, but it can exacerbate the risks or worsen the impacts of conflict. This discourse was popularized by a 2007 report issued by the Center for Naval Analysis (CNA) [71], and has persisted, despite CNA more recently reframing climate change as a conflict catalyst that accelerates instability [70].

The Arab Spring, is a commonly referenced, though contested [72], example of the role of climate change as a threat multiplier [e.g., 47, 73, 74]. In the instance of the Arab Spring, scholars are careful to describe climate change impacts as factors that hastened or exacerbated, but did not cause, the uprisings across the Middle East and North Africa, as well as in conflict events that followed [47, 74–76]. Similarly, the largely gray literature associated with the policy and implementation community reflects the framing of climate change as a threat multiplier [29, 77].

The threat multiplier framing, while helpful in moving away from causal and explicitly deterministic arguments to allow space for place- and time-specific understandings of the relationship between climate and conflict, is imperfect. When first developed, it was predominantly understood in security and defense terms, as the idea was put forth primarily for those purposes. Yet, as the discourse has evolved, a range of other actors are now engaging with the nexus [58], including many non-security-oriented communities such as development, humanitarian, environmental, and diplomatic actors. Many of the findings of the geographic and political ecological literature on climate and conflict nuance, build on, or critique this threat multiplier framing.

Scale and the Understanding of Climate Change and Conflict

Geographic literature that examines the climate-conflict nexus builds upon a broader disciplinary history of conceptual, critical, and applied examinations of scale. The temporal and spatial scale at which one examines the relationship between climate change and conflict is a critical determinant of how the problem is framed and understood, and how efforts to address the link are conceptualized [31,

48, 61, 78, 79]. Varied understandings and different framings of temporal and spatial scale are often cited as reasons why the climate-conflict nexus remains so contentious [1, 18, 20, 31, 48, 61, 78, 80]. For instance, the impacts of climate change in one place might drive conflict in another. As argued by Saleyhan (2014, p.2) [78]:

“Aggregate statistics on food and water availability at the national level in a country as large as say, India, may mask local-level variation; rainfall statistics for India may not accurately reflect water availability in conflict-prone Assam state. Yet, if there are reasons to believe that rural people affected by drought or other natural disasters will take their protests to the capital, migrate to urban areas, or join highly-mobile rebel organizations, then there is no reason to believe that local-level climatic variables will correlate with conflict in that same locality.”

The Arab Spring again offers a contextual example of the complications of scale in the context of the threat multiplier discourse. Though no scholars argue that the Arab Spring was caused by climate change, many argue that it was affected by the impacts of a changing climate [47, 73, 74, 76, 81]. One of those arguments is that climate change-linked drought in Russia devastated wheat harvests, which generated grain shortages that reverberated through an increasingly interconnected global food system, resulting in an increase in global wheat prices [76]. The price of bread increased substantially—in some places upwards of 300%—sparking so-called “bread riots” which injected significant momentum into the then-nascent Arab Spring [76]. In this case, the distance between the “multiplier” and the conflict outcome highlights the challenge of where to adapt to the threat multiplier effects of climate change.

The geographic literature also suggests that temporal scale is an important determinant of how the nexus is understood and potentially acted upon. Climate change and climate variability are often conflated in the broader climate change discussion [18] and in the climate-conflict literature. The difference is not always made explicit. As further explained by Seter (2016, p. 2) [18]:

“Climate change says something about changes in mean climate at a location over long periods, whereas climate variability describes short-term changes in climate (such as standard deviations, the occurrence of extremes, etc.) (IPCC, 2007, pp. 871–872). An effect of climate variability (anomalously warm or dry periods) on conflict levels cannot automatically be translated into the

conclusion that climate change (a warmer planet) will lead to more conflict”.

The temporal scale at which one understands climate-conflict connections can implicate climate change, climate variability, and climate shocks, thus influencing academic findings as well as policy design and implementation. In examining the atmospheric shocks that link climate change to conflict, some onset over years (drought) and others can have rapid onset (e.g., floods, cyclones). Treating all shocks as similar drivers of conflict without a deep consideration of their different manifestations and impacts could obscure important stressor-specific linkages, while enabling problematic policies and programs that could themselves trigger conflict [18, 27, 32, 61, 78, 82]. Therefore, a careful consideration of how the different timescales of climate change impacts affect different scales of conflict is essential for fully understanding the mechanisms of climate-conflict generally, as well as in specific contexts [78]. This includes differentiating short-term shocks from long-term shifts and understanding the nuance of these impacts in the context of particular places.

Without a robust understanding of the ways in which human responses to the short-term expression of climate variability might be linked to human responses to the local impacts of longer-term changes in the global climate, studies that use climate variability as a proxy for climate change rest on assumptions that are without empirical verification. A number of studies offer insight by linking climate change, conflict, and the intermediary effects that largely define climate change [83]. By connecting climate variability to the factors that can affect conflict, this subset of literature can offer important insights into the mechanics by which climate change may or may not affect conflict, and thus the validity of the assumptions that drive some larger-scale investigations of the linkages between climate and conflict [e.g., 31, 84].

Resilience and Vulnerability

The framing of climate change as a threat multiplier often presents climate change outcomes as the product of exposure to environmental changes and/or events, sensitivity to those changes/events, and a community’s adaptive capacity [28, 85]. In that way, the political ecology of climate change and conflict closely mirrors the hazard-disaster frameworks for vulnerability [86]. That is, climate change and variability, or more accurately the rapid and slow onset shocks related to climate change and variability, can exacerbate or trigger conflict. This is framed most often as a function of high and direct reliance on primary production with limited adaptive capacity in the context of place and time [30, 62, 84]. This viewpoint is clearly embodied in a report commissioned by the G7, *A New Climate For Peace* [32]. The report noted the following compounding factors that link climate change with conflict:

(1) local resource competition, (2) livelihood insecurity and migration, (3) extreme weather and disasters, (4) volatile food prices and provision, (5) transboundary water management, (6) sea-level rise and coastal degradation, and (7) unintended effects of climate policies. Nearly all of these compounding factors assume reliance on primary production or limited adaptive capacity.

Both the academic and the gray literature offer resilience as a means of broadening the vulnerability lens beyond a focus on primary production to consider a wider range of drivers, outcomes, and relationships [69, 85, 87, 88]. While the resilience framework emerged from ecology and socio-ecological studies, its implementation in the context of climate and conflict clearly takes on the lessons of political ecology that stress a need to look beyond proximate environmental factors to larger issues of political economy when explaining the rise (or lack of a rise) of conflict in particular places. Even some scholars critical of claims about the connection between climate change and conflict see a focus on resilience as productive. For example, Boas and Rothe (2016) argue that resilience offers a reframing of the climate-security nexus in a way that allows for action, adding (p. 628):

Freed from the alarmist tone of climate conflict storylines, and acknowledging the complexity of socio-ecological drivers of insecurity, climate security discourse becomes something to which developing and emerging states, actors from the development field, and critical academics can again relate.

This wider lens on climate-conflict relationships can be employed to productive ends. USAID (2014) provides an example of how peacebuilding and resilience are interrelated. One of their partners, Mercy Corps, implemented conflict resolution mechanisms among pastoralists in Southern Ethiopia [69]. The freedom of movement that followed, and the associated access to pasture and water, led to increased adaptive capacity and higher rates of drought resilience when compared with other groups.

Resilience efforts, however, are not free of the challenges that accompany more targeted adaptation efforts. As described by Vivekananda and her co-authors [88] in their study of community resilience in the context of conflict, resilience-building efforts also drove unintended consequences, including negative impacts on the long-term sustainability of food security, alterations to labor markets, and conflict centered on the aid efforts themselves. Furthermore, resilience-based approaches in the context of climate change-affected conflict present a range of practical and conceptual challenges to implementation and academic communities. While resilience-centric programming seeks to bolster the ability of communities to deal

with the sorts of shocks and stressors that can exacerbate, trigger, or make communities more vulnerable to conflict, the inherent vagueness of the term can push interventions away from a broader political ecological framing of stressors into a focus on more immediate needs, thereby limiting the long-term impacts of resilience programming.

Conflict-Driven Vulnerability and Environmental Peacebuilding

While vulnerability and resilience perspectives introduce nuance into the vague threat multiplier framing, it is important to acknowledge that this relationship is not merely one where climate change drives conflict vulnerability. The increased vulnerability to climate shocks *as a result* of conflict is an important, but oft-ignored component of the climate-conflict nexus [59, 61, 69, 80, 82, 89]. While there remains considerable controversy over the mechanics of the climate-conflict nexus, there is little disagreement over the impacts of conflict on vulnerability to climate shocks [63]. Indeed, as noted in the IPCC chapter on Human Security, “conflict strongly influences vulnerability to climate change impacts” ([1••], p. 758). The negative impact of conflict on vulnerability manifests in negative impacts on long-term investment, infrastructure, and human suffering leading to communities’ with limited resilience to climatic shocks [89]. And while much of this link is intuitive, a deeper understanding is needed to understand how conflict can exacerbate climate change vulnerability and how these joint challenges can best be addressed.

The concern for conflict-generated vulnerability to climate change raises the issue of environmental peacebuilding. Political ecological studies [90, 91] and gray literature [77] examining the connections between climate change and conflict outcomes demonstrate that while climate change can, in fact, negatively affect conflict, it can also be harnessed for peacebuilding activities [59, 89, 91, 92]. These studies show that resource scarcity will not always drive risk and can, in fact, drive cooperation [59, 87, 90, 91, 93]. Yet, the potential of climate change as a factor in peacebuilding has not received much attention when compared with climate change’s role as a driver of conflict [50, 59, 87, 89–92, 94]. This is of particular salience when considering the spatial dynamics of the climate-conflict relationship. There is considerable geographical overlap between areas conducting ongoing peacebuilding activities and places vulnerable to the effects of climate change, including effects on conflict [95, 96]. This is evident in Asah’s examination of hydropolitics in the Lake Chad Basin (LCB) [50]. The LCB faces overlapping challenges of water scarcity, inter- and intra-state conflict, and unequal distribution of water, all of which necessitate interstate cooperation and threatens water security. Furthermore, power dynamics also affect these issues, with Nigeria having considerably more power to mobilize water use than other countries in the

basin [50]. As a result of this convergence, both peacebuilding and adaptation to the effects of climate change are closely intertwined [50]. This nuanced understanding of hydrogeopolitics is requisite for preventing conflict, aiding in sustainable water management, and facilitating cooperation and peacebuilding in the LCB [50].

As noted by Buhaug p. 336 [89] “robust scientific evidence indicates that peacebuilding is the most effective climate resilience strategy in war-torn regions. Without peace and stable, well-functioning political institutions it is hard to see how societies can address existing and future security challenges affected by climate change”. There are, however, inherent challenges to environmental peacebuilding in conflict-prone areas. As described by Matthew [97] in their work on Rwanda and Sierra Leone, while it would be beneficial to integrate climate change adaptation into UN peacebuilding missions, it will also be seen as an additional cost in a sector that puts a premium on quick benefits [91]. Thus, it will be treated as a low priority in the urgent need and quick impact mentality of peacebuilding [97].

Backdraft: The Conflict Impacts of Climate Change Adaptation

Further problematizing the idea of a unidirectional threat multiplier at the climate conflict nexus is the growing literature demonstrating that there are conflict risks related to adaptation efforts [26, 27, 77, 82]. This literature argues that such efforts, if not carefully considered, risk triggering conflict, principally through the unequal distribution of adaptation benefits [26, 27, 77, 82]. Demonstrating the complex spatiality of addressing climate-conflict connections, Milman and Arsano (2014), in their study of Gambella, Ethiopia, describe the challenges and possibly inherent contradictions in adaptation programs which, in aiming to decrease vulnerability for one group, simultaneously increase the vulnerability of another group, potentially leading to conflict [26]. Similarly, Snorek et al. (2014), using the example of agriculturalists and pastoralists in Niger, describes what they deem “divergent adaptation”, a situation where an adaptation to climate shocks by one group increases the vulnerability of another [27].

Conclusion: Geographically Deconstructing the Threat Multiplier

As is evident across multiple review articles, there are some points of consensus in the often-contentious climate-conflict literature. While not solely responsible for the following insights, the grounding of geography and political ecology has contributed significantly to these understandings:

- The relationship between climate change and conflict is not causal; it is widely acknowledged that climate change interacts with a host of other issues to produce conflict (or build peace).
- While the places most likely to be affected by climate change-affected conflict have preexisting tensions and are likely to have limited capacity to cope with climatic shifts, focusing heavily on places with a reliance on primary production and limited adaptive capacity overly-constrains our understanding of conflict outcomes.
- Conflict increases vulnerability to climate change.
- Adaptation efforts can trigger conflict.

The geographic and political ecological literature make it clear that more productive approaches to understanding the climate-conflict relationship emerge when we move beyond linear examinations of climate change’s impact on conflict [59, 80, 98]. Despite the demonstrated multi-directional nature of the relationship between climate change and conflict, much of the academic literature and the policy communities active on the issue continue to approach this relationship predominantly through the conflict risk lens embodied in the threat multiplier framing. While helpful for moving away from causal frames evident both in earlier environmental security discourses as well as some contemporary climate-security framings, the threat multiplier framing is unidirectional and tells us nothing about the scales, both temporally and spatially, on which climate change may interact with conflict.

We argue that this disconnect exists because current work on the relationship between climate and conflict largely ignores the question of *how* to address this relationship in a productive manner. As argued by Vivekananda, Schilling, & Smith (2014, p. 497) while highlighting the limitations of large-N studies, “The focus of the quantitative literature on identifying correlations and arguing causality between climate change and conflict has been of limited value for the peacebuilding community as it provides no answer to the question of how climatic changes and conflict might be related” [85]. This, we argue, is where the qualitative, highly granular spatial and temporal framings that have been the hallmark of geographic and political ecological work on the climate-conflict nexus can move the literature and practice forward. This type of scholarship provides explanations for the patterns of climate change and conflict identified in the broader literature and offers detailed framings of particular conflict events that point to sites for productive intervention through development, adaptation, or conflict mitigation programming. However, for these qualitative, granular findings to have wide impact and import, they will need to explore productive connections between case-based work and larger datasets that allow for their detailed findings to inform work in a wider set of contexts. Likewise, moving beyond

framings solely rooted in vulnerability, most notably climate change as a threat multiplier, and a direct engagement with climate change as a factor in peacebuilding, conflict as a factor in climate change vulnerability, and the potential risks of adaptation efforts will lead to more effective policy that seeks to address the relationships between climate change and conflict.

Compliance with Ethical Standards

Conflict of Interest The authors have no conflicts of interest to report.

References

Papers of particular interest, published recently, have been highlighted as:

- Of importance
- Of major importance

1. •• Adger WN, Pulhin J, Barnett J, Dabelko GD, Hovelsrud GK, Levy M, et al. Chapter 9: Human Security. *Clim. Chang. 2014 Impacts, Adapt. Vulnerability. Work. Gr. II Contrib. to Fifth Assess. Rep. Intergov. Panel Clim. Chang.* Cambridge: Cambridge University Press; 2014. **The chapter provides a clear articulations of the consensus that came from a rather contentious debate; it also demonstrates why contextual examinations of the nexus are necessary.**
2. Peluso NL, Watts M. *Violent environments.* Cornell University Press; 2001.
3. Peluso NL. A political ecology of violence and territory in West Kalimantan. *Asia Pac Viewp.* 2008;49:48–67.
4. Barnett J. *The meaning of environmental security: ecological politics and policy in the new security era.* London: Zed Books; 2001.
5. Watts M. *Silent violence: food, famine and peasantry in Northern Nigeria.* Berkeley: University of California Press; 1983.
6. Watts MJ, Bohle HJ. The space of vulnerability: the causal structure of hunger. *Prog Hum Geogr.* 1993;17:43–68.
7. Goldman MJ. *Strangers in their own land: Maasai and wildlife conservation in Northern Tanzania.* Conserv Soc. 2011;9:65–79.
8. King B. *Conservation geographies in Sub-Saharan Africa: the politics of national parks, community conservation and peace parks.* Geogr Compass. 2010;4:14–27.
9. Brockington D. *Fortress conservation: the preservation of the Mkomazi Game Reserve, Tanzania.* Bloomington: Indiana University Press; 2002.
10. Ramutsindela M. *Transfrontier conservation in Africa: at the confluence of capital, politics and nature.* Boston: CABI; 2007.
11. Schroeder RA. *Geographies of environmental intervention in Africa.* Prog Hum Geogr. 1999;23:359–78.
12. Bassett TJ. *The political ecology of peasant-herder conflicts in northern Ivory Coast.* Ann Assoc Am Geogr. 1998;88:453–72.
13. Peters PE, Kambewa D. *Whose security? Deepening social conflict over “customary” land in the shadow of land tenure reform in Malawi.* J Mod Afr Stud. 2007;45:447.
14. Carr ER. *Delivering development: globalization’s shoreline and the road to a sustainable future.* New York: Palgrave Macmillan; 2011.
15. Watts MJ. *Now and then: the origins of political ecology and the rebirth of adaptation as a form of thought.* In: Perreault T, Bridge G, Mccarthy J, editors. *Routledge handb. Polit. Ecol* London: Routledge; 2015. p. 19–50.
16. Busby JW, Smith TG, White KL, Strange SM. *Climate change and insecurity: mapping vulnerability in Africa.* Int Secur. 2013;37:132–72.
17. Uexkull N von Croicu M, Fjelde H. *Sustained drought, vulnerability and civil conflict in Sub-Saharan Africa.* Polit. Geogr. 2014.
18. Seter H. *Connecting climate variability and conflict: implications for empirical testing.* Polit Geogr. 2016;53:1–9.
19. van Weezel S. *Climate-conflict in Sub-Saharan Africa: examining predictive power.* Brows. Download This Pap. 2015.
20. Bell C, Keys PW. *Conditional relationships between drought and civil conflict in Sub-Saharan Africa.* Foreign Policy Anal. 2016;1–23.
21. Chandra A, McNamara KE, Dargusch P, Caspe AM, Dalabajan D. *Gendered vulnerabilities of smallholder farmers to climate change in conflict-prone areas: a case study from Mindanao, Philippines.* J Rural Stud. 2017;50:45–59.
22. Selby J, Hoffmann C. *Beyond scarcity: rethinking water, climate change and conflict in the Sudans.* Glob. Environ. Chang. 2014.
23. Hayes J, Knox-Hayes J. *Security in climate change discourse: analyzing the divergence between US and EU approaches to policy.* Glob. Environ. Polit. 2014.
24. Tubi A, Feitelson E. *Drought and cooperation in a conflict prone area: Bedouin herders and Jewish farmers in Israel’s northern Negev, 1957–1963.* Polit Geogr. 2016;51:30–42.
25. Gleick PH. *Water, drought, climate change, and conflict in Syria.* Weather Clim Soc. 2014;6:331–40.
26. Milman A, Arsano Y. *Climate adaptation and development: contradictions for human security in Gambella, Ethiopia.* Glob Environ Chang. 2014;29:349–59.
27. • Snorek J, Renaud FG, Kloos J. *Divergent adaptation to climate variability: a case study of pastoral and agricultural societies in Niger.* Glob Environ Chang Elsevier Ltd. 2014;29:371–86. **This article provides an excellent example of how to understand the contexts in which climate change can affect conflict, the nuanced role of adaptation efforts, and how multiple livelihoods and positionalities affect experiences. The authors demonstrate how social, economic, and political contexts of a place experience not just climate impacts, but associated adaptation efforts and how conflict interacts with all dynamics.**
28. Vivekananda J, Schilling J, Smith D. *Understanding resilience in climate change and conflict affected regions of Nepal.* Geopolitics. 2014.
29. Baalen S van Mobjörk M. *A coming anarchy?: Pathways from climate change to violent conflict in East Africa.* Stockholm; 2016.
30. Brzoska M, Fröhlich C. *Climate change, migration and violent conflict: vulnerabilities, pathways and adaptation strategies.* Migr Dev. 2016;5:190–210.
31. Devlin C, Hendrix CS. *Trends and triggers redux: climate change, rainfall, and interstate conflict.* Polit Geogr. 2014;43:27–39.
32. Rüttinger L, Smith D, Stang G, Tänzler D, Vivekananda J, Brown O, et al. *A new climate for peace.* Berlin; 2015.
33. Namasaka M. *Anthropocentric climate change and violent conflict: evidence review and policy recommendations.* J Earth Sci Clim Change. 2015;6.
34. Feitelson E, Tubi A. *A main driver or an intermediate variable? Climate change, water and security in the Middle East.* Glob. Environ. Chang. 2017.
35. Dunlap A, Fairhead J. *The militarisation and marketisation of nature: an alternative lens to “climate-conflict.”* Geopolitics. 2014.
36. Hartmann B. *Converging on disaster: climate security and the Malthusian anticipatory regime for Africa.* Geopolitics. 2014.
37. Mason M. *Climate insecurity in (post)conflict areas: the biopolitics of United Nations vulnerability assessments.* Geopolitics. 2014;19:806–28.

38. Santelices Spikin A, Rojas Hernández J. Climate change in Latin America. Santelices Spikin A, Rojas Hernández J, editors. *Lat Am Perspect*. 2016;43:4–11.
39. Selby J. Positivist climate conflict research: a critique. *Geopolitics*. 2014;19:829–56.
40. Dalby S. Interpreting climate geopolitics: knowledge, power, and security by Simon Dalby. *Geopolitics*. 2017;21:236–41.
41. Dalby S. Rethinking geopolitics: climate security in the anthropocene. *Glob Policy*. 2014;5:1–9.
42. Dalby S. Climate change and the insecurity frame. In: O'lear, Shannon; Dalby S, editor. *Reframing Clim. Chang. Constr. Ecol. Geopolit.* Abingdon and New York: Routledge; 2016. p. 83–99.
43. Oels A. Resisting the Climate Security Discourse. In: O'lear, Shannon; Dalby S, editor. *Reframing Clim. Chang. Constr. Ecol. Abingdon and New York: Routledge*; 2015. p. 188–202.
44. Bretthauer JM. Climate change and resource conflict: the role of scarcity. 2016.
45. Ide T. Research methods for exploring the links between climate change and conflict. *Wiley Interdiscip. Rev. Clim. Chang*. 2017. **This article does an excellent job of breaking down the different ways academics try to understand the nexus, as well as summarizing the multiple means of examining the climate-conflict nexus.**
46. Swain A, Jägerskog A. Emerging security threats in the Middle East: the impact of climate change and globalization. 2016.
47. Gleick P. Water, drought, climate change, and conflict in Syria. *Weather. Clim. Soc*. 2014.
48. Ide T, Schilling J, Link J, Scheffran J, Ngaruiya G. On exposure, vulnerability and violence: spatial distribution of risk factors for climate change and violent conflict across Kenya and Uganda. *Political*. 2014.
49. Papaioannou KJ. Climate shocks and conflict: evidence from colonial Nigeria. *Polit Geogr*. 2016;50:33–47.
50. Asah ST. Transboundary hydro-politics and climate change rhetoric: an emerging hydro-security complex in the lake chad basin. *Wiley Interdiscip Rev Water*. 2015;2:37–45.
51. Ide T, Schilling J, Link JSA, Scheffran J, Ngaruiya G, Weinzierl T. On exposure, vulnerability and violence: spatial distribution of risk factors for climate change and violent conflict across Kenya and Uganda. *Polit Geogr*. 2014;43:68–81.
52. Dixon DP, Paul J, Ill J. For a supercalifragilisticexpialidocious scientific geography. *Ann Assoc Am Geogr*. 1996;86:767–79.
53. Pickles J. Development “deferred”: poststructuralism, postdevelopment, and the defense of critical modernism. *Econ Geogr*. 2001;77:383–8.
54. Carr ER, McCusker B. The co-production of land use and livelihoods change: implications for development interventions. *Geoforum*. 2009;40:568–79.
55. Peet R. *Modern geographical thought*. Oxford: Blackwell; 1998.
56. Dunlap A, Fairhead J. The militarisation and marketisation of nature: an alternative lens to “climate-conflict”. *Geopolitics*. 2014;19: 937–61.
57. Meirding E. Disconnecting climate change from conflict: a methodological proposal. In: O'lear, Shannon; Dalby S, editor. *Reframing Clim. Chang. Constr. Ecol. Geopolit.* Abingdon and New York: Routledge; 2016. p. 52–66.
58. Boas I, Rothe D. From conflict to resilience? Explaining recent changes in climate security discourse and practice. *Environ Politics*. 2016;25:613–32.
59. Gemenne F, Barnett J, Adger WN, Dabelko GD. Climate and security: evidence, emerging risks, and a new agenda. *Clim. Change*. 2014. p. 1–9.
60. McDonald M. Discourses of climate security. *Polit Geogr*. 2013;33: 42–51.
61. Lewis KH, Lenton TM. Knowledge problems in climate change and security research. 2015.
62. Ide T, Scheffran J. On climate, conflict and cumulation: suggestions for integrative cumulation of knowledge in the research on climate change and violent conflict. *Glob. Chang. Peace Secur*. 2014.
63. Okpara UT, Stringer LC, Dougill AJ. Perspectives on contextual vulnerability in discourses of climate conflict. *Earth Syst Dyn*. 2016;7:89–102.
64. Floyd R. Global climate security governance: a case of institutional and ideational fragmentation. *Confl Secur Dev*. 2015;15:119–46.
65. Scott SV. Implications of climate change for the UN Security Council: mapping the range of potential policy responses. *Int Aff*. 2015;91:1317–33.
66. Conca K, Thwaites J, Lee G. Bully Pulpit or Bull in a China Shop? Climate change and the UN Security Council. *Annu. Meet. Acad. Council. United Nations Syst*. 2016. p. 1.
67. von Lucke F. Linking climate change and security in Mexico: explorations into an attempted securitisation in the Global South. *J. Int. Relations Dev*. 2016.
68. Boas I. Climate migration and security: securitisation as a strategy in climate change politics. 2015.
69. USAID. Climate-resilient development a framework for understanding. 2014.
70. CNA. National security and the accelerating risks of climate change. Alexandria, VA; 2014.
71. CNA. National security and the threat of climate change. Alexandria, VA; 2007.
72. Selby J, Dahi O, Fröhlich C, Hulme M. Climate change and the Syrian civil war revisited: a rejoinder. *Polit Geogr*. 2017;60:253–5.
73. Fetzek S, Mazo J. Climate, scarcity and conflict. *Survival (Lond)*. 2014;56:143–70.
74. Kelley CP, Mohtadi S, Cane MA, Seager R, Kushnir Y. Climate change in the fertile crescent and implications of the recent Syrian drought. *Proc Natl Acad Sci*. 2015;112:3241–6.
75. Werrell CE, Femia F. *The Arab spring and climate change*. Washington, DC; 2013.
76. Sternberg T. Chinese drought, bread and the Arab Spring. *Appl Geogr Elsevier Ltd*. 2012;34:519–24.
77. Reiling K, Brady C. Climate change and conflict: an annex to the USAID climate-resilient development framework. 2015.
78. Salehyan I. Climate change and conflict: making sense of disparate findings. 2014.
79. Adger WNN, Pulhin JMJJM, Barnett J, Dabelko GDGD, Hovelsrud GKGK, Levy M, et al. Human security. *Clim. Chang. 2014 Impacts, Adapt. Vulnerability. Part A Glob. Sect. Asp. Contrib. Work. Gr. II to Fifth Assess. Rep. Intergov. Panel Clim. Chang.* Cambridge: Cambridge University Press; 2014.
80. Buhaug H. Climate-conflict research: some reflections on the way forward. *Wiley Interdiscip Rev Clim Chang*. 2015;6:269–75.
81. Beck A. Drought, dams, and survival: linking water to conflict and cooperation in Syria's civil war. *Int. Aff. Forum. Routledge*; 2014;1–12.
82. Dabelko GD, Herzer L, Schuyler N, Parker, Meaghan, Sticklor R. Backdraft: the conflict potential of climate change. Washington, DC; 2013. **This report, though not an academic article, provides an important template for how academics, and certainly geographers, can engage with practitioners in addressing the nexus. Furthermore, this report was central in advancing the point that adaptation efforts themselves can trigger conflict.**
83. Benjaminsen T, Alinon K, Buhaug H, Buseth JT. Does climate change drive land-use conflicts in the Sahel? *J Peace Res*. 2012;49:97–111.
84. Raleigh C, Choi HJ, Kniveton D. The devil is in the details: an investigation of the relationships between conflict, food price and climate across Africa. *Glob Environ Chang*. 2015;32:187–99.
85. Vivekananda J, Schilling J, Smith D. Climate resilience in fragile and conflict-affected societies: concepts and approaches. *Dev Pract*. 2014;24:487–501.

86. Wisner B, Blaikie P, Cannon T, Davis I. At risk: natural hazards , people ' s vulnerability and disasters. Framework. 2003.
87. Crawford A, Dazé A, Hammill A, Parry J-E, Zamudio AN. Promoting climate-resilient peacebuilding in fragile states. Winnipeg: Int. Inst. Sustain. Dev; 2015.
88. Vivekananda J, Schilling J, Smith D. Understanding resilience in climate change and conflict affected regions of Nepal. *Geopolitics*. 2014;19:911–36.
89. Buhaug H. Climate change and conflict: taking stock. *Peace Econ. Peace Sci. Public Policy*. 2016.
90. Krampe F. Climate change mitigation, peacebuilding, and resilience. *Carnegie ethics online*. 2014.
91. Matthew R. Integrating climate change into peacebuilding. *Clim Chang*. 2014;123:83–93.
92. Link PM, Scheffran J, Ide T. Conflict and cooperation in the water-security nexus: a global comparative analysis of river basins under climate change. *Wiley Interdiscip Rev Water*. 2016;3:495–515.
93. Dinar S, Katz D, Stefano L De, Blankespoor B. Climate change, conflict, and cooperation: global analysis of the effectiveness of international river treaties in addressing water variability. *Polit. Geogr*. 2015.
94. Egorova A, Hendrix CS. Climate shocks, hydrometeorological disasters and conflict duration. *du.edu*.
95. Busby JW, Smith TG, Krishnan N, et al. *Polit Geogr*. 2014;43:51–67.
96. Busby JW, Cook KHK, Vizy EEK, Smith TGT, Bekalo M. Identifying hot spots of security vulnerability associated with climate change in Africa. *Clim Chang*. 2014;124:717–31.
97. Matthew R. Integrating climate change into peacebuilding. *Clim. Change*. 2014;
98. Ide T, Link P, Scheffran J, Schilling J. The climate-conflict Nexus: pathways, regional links, and case studies. *Handb. Sustain*. 2016.