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Climate Change and Armed Conflict Dynamics: Pathways of Escalation and De-Escalation

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Abstract

The relationship between climate change and armed conflict has attracted growing scholarly and policy attention. While early research focused primarily on whether climate change increases the onset of new conflicts, a more nuanced understanding has emerged in recent years, recognizing that climate change and its associated disasters can both escalate and de-escalate ongoing armed conflicts. This study examines the conditions under which climate change contributes to conflict escalation or de-escalation, and traces the causal pathways linking climatic stressors to changes in conflict dynamics. Drawing on recent empirical research and illustrative case studies from Syria, Uganda, Pakistan, Somalia, and Aceh (Indonesia), the analysis demonstrates that the impact of climate on conflict is highly context-dependent, shaped by pre-existing vulnerability, the balance of power between warring parties, ethnic fractionalization, state capacity, and the nature of the climate event itself. The study highlights the importance of moving beyond deterministic narratives and embracing a more conditional, pathway-oriented approach to understanding climate-conflict linkages.

Keywords: climate change, armed conflict, escalation, de-escalation, disaster diplomacy, causal pathways

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1. Introduction

The question of whether climate change fuels armed conflict has become one of the most debated issues in both peace research and climate policy. Political leaders, including former U.S. President Barack Obama and senior UN officials, have argued that droughts, floods, and other climate-related disasters increase the likelihood of violent conflict (Ide, 2023). At the same time, a substantial body of research has challenged such claims, arguing that the evidence for a direct climate-conflict link remains inconclusive (Buhaug, 2010). A landmark expert elicitation study published in *Nature* found broad agreement among leading scholars that climate has affected organized armed conflict within countries, but that other drivers, such as low socioeconomic development and weak state capacity, are substantially more influential (Mach et al., 2019). The experts estimated that between 3% and 20% of conflict risk over the past century was influenced by climate variability.

In recent years, the field has matured considerably. Rather than asking simply whether climate change causes conflict, researchers have increasingly turned to more refined questions: Under

what conditions does climate change escalate ongoing conflicts? Can climate-related disasters also reduce fighting? What are the causal mechanisms through which climate affects conflict dynamics? This shift reflects a growing recognition that the climate-conflict relationship is neither universal nor unidirectional (von Uexkull & Buhaug, 2021). A comprehensive meta-analysis of 55 studies found that deviations from moderate temperatures and precipitation patterns systematically increase conflict risk, with each one standard deviation increase in temperature raising intergroup conflict risk by approximately 11.3% (Burke et al., 2015). However, the mechanisms underlying this statistical relationship remain contested and context-dependent.

This study addresses these questions by examining the diverse effects of climate change on the escalation and de-escalation of armed conflicts, tracing the causal pathways through which these effects materialize, and illustrating these processes through empirical case studies. The analysis aims to offer a balanced and integrative account that moves beyond simplistic deterministic narratives without dismissing the genuine security implications of a warming planet.

2. Climate Change and Conflict Escalation

2.1. Under What Conditions Does Climate Change Escalate Conflict?

The empirical evidence suggests that climate-related events do not automatically escalate armed conflicts. Rather, escalation tends to occur under specific structural and situational conditions. Ide (2023), in the most comprehensive study of disasters and conflict dynamics to date, examined 21 cases of climate-related disasters striking active conflict zones across Africa, Asia, and the Middle East. The findings revealed that 29% of these conflicts escalated following a disaster, 33% de-escalated, and 38% showed no significant change. This distribution alone challenges the assumption that climate disasters uniformly intensify violence.

Several conditions have been identified as conducive to climate-related conflict escalation. First, high pre-existing vulnerability plays a central role. Countries characterized by high poverty rates, heavy economic dependence on agriculture, and limited economic diversification are far more susceptible to disaster-related conflict intensification (Ide, 2023). In wealthier and more diversified economies, climate-related disasters rarely lead to significant changes in conflict dynamics, because societies possess greater adaptive capacity to absorb environmental shocks without translating them into political violence.

Second, ethnic fractionalization significantly amplifies the escalatory potential of climate-related disasters. Schleussner et al. (2016) demonstrated that approximately 23% of armed conflict outbreaks in ethnically highly fractionalized countries coincided with climate-related disasters such as heatwaves and droughts during the period 1980 to 2010. Although the authors found no evidence that disasters directly trigger conflicts, they concluded that the disruptive nature of climate events interacts with pre-existing ethnic fault lines to enhance the risk of armed conflict. Ethnic divisions appear to function as predetermined conflict lines along which climate-induced tensions erupt.

Third, the nature of the climate event matters. Slow-onset disasters such as prolonged droughts tend to produce more enduring economic disruptions and population displacements than sudden-onset events like floods, and they have been more consistently associated with conflict escalation (Burke et al., 2015). Rapid-onset events, while devastating, sometimes constrain conflict parties' fighting capacity in ways that actually reduce violence, as will be discussed below.

2.2. Causal Pathways of Escalation

The literature identifies several interconnected pathways through which climate change can escalate armed conflicts. It is important to emphasize that these pathways are indirect: climate change does not cause conflict in isolation but rather amplifies or activates pre-existing risk factors through intermediate mechanisms.

Economic shocks and livelihood disruption. Climate-related events can devastate agricultural production and pastoral livelihoods, particularly in economies highly dependent on rain-fed agriculture. When climate shocks reduce household income and erode food security, they increase social grievances and lower the opportunity costs of joining armed groups (Burke et al., 2015; von Uexkull & Buhaug, 2021). The loss of livelihoods provides both the motivation (grievances) and the availability of recruits (individuals with little economic alternative) that armed organizations can exploit.

Resource competition. Climate change can intensify competition over scarce natural resources, including water, arable land, and pasture. This pathway is particularly relevant in contexts where different livelihood groups, such as agriculturalists and pastoralists, compete over diminishing resources (Mach et al., 2019). When resource scarcity coincides with weak governance and pre-existing intergroup tensions, the likelihood of violent confrontation increases.

Power differentials and strategic exploitation. A central mechanism identified by Ide (2023) is the power differential pathway. Climate-related disasters can shift the relative balance of power between conflict parties. When a disaster weakens one side (typically the government, which must divert resources to relief efforts) while leaving the other side (typically rebels) relatively unaffected, or when the disaster actually provides opportunities for insurgent recruitment and resource acquisition, armed conflict tends to escalate. In these cases, conflict parties act opportunistically, exploiting the disruption caused by the disaster to advance their military objectives.

Migration and demographic pressure. Climate-induced displacement and migration can place additional strain on host communities and urban centres, potentially intensifying competition for resources and exacerbating social tensions. While the evidence linking climate-related migration directly to armed conflict remains limited and contested (von Uexkull & Buhaug, 2021), the IPCC has noted with high confidence that food price spikes, water insecurity, and loss of livelihoods serve as mechanisms through which climate variability is associated with more prolonged conflict (IPCC, 2022).

Erosion of state legitimacy. When governments fail to respond effectively to climate-related disasters, popular grievances against the state can intensify, providing fertile ground for anti-government mobilisation. Perceived incompetence or neglect in disaster response can erode the social contract between the state and its citizens, making populations more susceptible to recruitment by opposition forces (Ide, 2023).

2.3. Case Studies of Escalation

2.3.1 Syria: Drought, Displacement, and Civil War

The Syrian case has become perhaps the most widely discussed example of the climate-conflict nexus. Between 2006 and 2010, Syria experienced its most severe drought in the instrumental record, which caused widespread crop failure, massive livestock mortality, and the displacement of approximately 1.5 million farming families to urban centres (Kelley et al., 2015). Kelley et al. (2015) demonstrated that anthropogenic climate change had made a three-year drought of this severity two to three times more likely, linking long-term drying trends in the Fertile Crescent to rising greenhouse gas concentrations.

The drought, combined with decades of poor governance and unsustainable agricultural policies, had what Kelley et al. (2015) termed a catalytic effect, contributing to the social unrest that preceded the Syrian uprising in 2011. Rural-to-urban migration overwhelmed already strained cities, exacerbating poverty, inequality, and discontent. It is crucial to note, however, that the drought was neither the sole nor the primary cause of the Syrian civil war. Pre-existing political repression, sectarian tensions, regional geopolitical dynamics, and government mismanagement of water and agricultural policy all played central roles. The case illustrates how climate change can act as a threat multiplier, amplifying pre-existing vulnerabilities along multiple pathways simultaneously, including livelihood destruction, mass displacement, and erosion of state legitimacy, without being the direct or singular cause of conflict.

2.3.2 Uganda: The Lord's Resistance Army and Drought

The drought that afflicted Uganda between 1999 and 2001 provides a more straightforward illustration of the power differential mechanism. During and after the drought, the Lord's Resistance Army (LRA) increasingly attacked civilians to enforce donations and raid food aid (Ide, 2023). The drought had reduced the supply of voluntary contributions and overall food availability, making coercive tactics more necessary for the rebel group's survival. Meanwhile, the government's resources were strained by relief efforts. The LRA's opportunistic exploitation of drought-induced vulnerability demonstrates how climate events can create strategic incentives for armed groups to escalate violence, particularly when the disaster differentially affects the warring parties.

2.3.3 Assam, India: Floods and Insurgent Recruitment

The 1998 floods in Assam, India, illustrate the grievance-based recruitment pathway. Following the devastating floods, the United Liberation Front of Assam (ULFA) was able to recruit a larger number of followers due to widespread anti-government grievances related to the government's perceived failure in flood relief, combined with the loss of livelihoods among affected populations (Ide, 2023). The floods generated a dual effect: they increased popular discontent with the state while simultaneously creating a pool of economically desperate individuals susceptible to recruitment by armed groups. This case underscores how climate-related disasters can simultaneously operate through multiple causal pathways, combining grievance amplification with enhanced recruitment opportunities.

3. Climate Change and Conflict De-Escalation

3.1. Under What Conditions Does Climate Change Reduce Conflict?

The possibility that climate-related disasters can reduce conflict intensity has received considerably less attention in both academic and policy discourse (Ide, 2023). Yet the empirical evidence suggests that de-escalation following climate events is at least as common as escalation. In Ide (2023)'s cross-case analysis, 33% of armed conflicts de-escalated after climate-related disasters, slightly exceeding the 29% that escalated. This finding challenges the dominant narrative that frames climate change exclusively as a conflict amplifier.

De-escalation tends to occur under conditions that are, in a sense, the mirror image of escalation conditions. The most consistent pattern is that when a climate-related disaster weakens both conflict parties simultaneously, or when one party is weakened but its opponent lacks the capability to exploit this vulnerability, armed conflict intensity declines (Ide, 2023). In such circumstances, the material and logistical constraints imposed by the disaster, including

destroyed infrastructure, reduced revenue streams, and impeded troop movements, outweigh any strategic incentives for escalation.

The disaster diplomacy literature further elaborates on the conditions favourable to de-escalation. Kelman (2012) proposed that disaster-related activities do not create entirely new diplomatic opportunities but can catalyse existing peace processes, provided that a pre-existing basis for reconciliation already exists. This could take the form of secret negotiations, cultural connections, or trade relationships. The catalytic effect of disasters operates primarily in the short term, over weeks and months, and without sustained political commitment, the window of opportunity typically closes (Kelman, 2012).

3.2. Causal Pathways of De-Escalation

Material and logistical constraints. Climate-related disasters can physically impede military operations. Flooded terrain, destroyed transportation networks, and the diversion of personnel and resources to relief efforts reduce the capacity of armed groups, both state and non-state, to sustain fighting. When these constraints affect all conflict parties, the aggregate capacity for violence declines (Ide, 2023).

Revenue and recruitment decline. Disasters can reduce the financial base and human resources available to armed groups. Populations stressed by disasters may be less willing or able to provide voluntary contributions, while forced extraction becomes more difficult when communities are dispersed or impoverished. Reduced inflows of volunteers and donations can compel conflict parties to scale down their military activities (Ide, 2023).

Windows of opportunity for peace negotiations. Phases of reduced fighting intensity following disasters can create strategic moments for diplomatic intervention. Research suggests that conflict mediation tends to be more successful during periods of low conflict intensity (Ide, 2023). The mutual weakening of conflict parties can generate a condition similar to what conflict theorists term a mutually hurting stalemate, in which both sides recognise that continued fighting is costlier than negotiation. International attention drawn by the disaster can also increase pressure for peace talks.

Shared adversity and cooperation. Although less consistently observed, climate-related disasters can sometimes foster intergroup solidarity, as affected communities come together across conflict lines to address the shared threat. The environmental peacebuilding literature suggests that cooperative management of environmental challenges can, under certain conditions, contribute to conflict resolution and improved intergroup relations (Dresse et al., 2019).

3.3. Case Studies of De-Escalation

3.3.1 Pakistan: Floods and Insurgent Constraints

The 2010 floods in Pakistan, which submerged approximately 20% of the country's territory, provide a clear illustration of disaster-induced de-escalation. Both government forces and the Tehrik-i-Taliban Pakistan (TTP) were forced to divert substantial resources to disaster relief and were physically unable to move soldiers effectively through the flooded landscape (Ide, 2023). The TTP also experienced a reduced inflow of both volunteers and donations, whether voluntary or coerced, from the disaster-stricken population in northwestern Pakistan. As a result, conflict intensity declined in the months following the floods. A similar dynamic was observed during the 2022 floods in Balochistan, when insurgent groups faced comparable logistical and resource constraints that compelled a temporary reduction in fighting activities (Ide, 2023). These cases exemplify the material constraints pathway: when a disaster simultaneously degrades the operational capacity of multiple conflict parties, escalation becomes practically difficult

regardless of strategic incentives.

3.3.2 Somalia: Flooding and Mutual Weakening

The heavy flooding that hit Somalia in 1997 demonstrates the mutual weakening dynamic. Both major factions of the United Somali Congress (USC), the Mahdi and Aided factions, suffered severely from the floods (Ide, 2023). Their revenues declined as export agriculture in the south collapsed, while the costs of sustaining their fighters rose sharply due to higher food prices. Large flooded areas also undermined the logistics of both fighting parties. Consequently, both factions were compelled to scale down their military operations. The Somali case illustrates that when climate-related disasters symmetrically weaken all warring parties, the result is often a period of reduced violence, even in the absence of any political will to pursue peace.

3.3.3 Aceh, Indonesia: The Tsunami and Peace

The 2004 Indian Ocean tsunami's impact on the conflict in Aceh, Indonesia, represents the most extensively studied case of disaster-induced peacemaking. The tsunami killed at least 165,000 people in Aceh, devastating both government and Free Aceh Movement (GAM) forces. The catastrophic scale of the disaster constrained both parties' military capacity while generating immense international attention and humanitarian aid flows (Gaillard et al., 2008).

Crucially, however, the tsunami did not create the peace process from nothing. Three important pre-existing factors laid the groundwork: Indonesia's democratisation after the fall of the Suharto regime in 1998, parliamentary legislation in 2004 requiring the military to divest from business ventures, and prior (failed) negotiation attempts (Gaillard et al., 2008). The tsunami catalysed these pre-existing conditions, creating a window of opportunity that international mediators, led by former Finnish President Martti Ahtisaari, were able to exploit. A Memorandum of Understanding was signed in August 2005, and the peace has endured.

The Aceh case thus confirms the central insight of the disaster diplomacy framework: disasters can catalyse existing peace processes but do not create diplomatic opportunities where no prior basis for reconciliation exists (Kelman, 2012). This is further illustrated by the contrasting case of Sri Lanka, where the same tsunami failed to produce a lasting peace between the government and the Tamil Tigers, precisely because the pre-existing conditions for reconciliation were absent (Kelman, 2012).

4. Discussion

The analysis presented here reveals several important patterns and implications for understanding the climate-conflict nexus.

First, the relationship between climate change and armed conflict dynamics is fundamentally conditional. There is no universal mechanism by which climate automatically escalates violence. The same type of climate event, a severe drought, a catastrophic flood, can produce escalation in one context, de-escalation in another, and no discernible effect in a third. The critical mediating factors include the level of pre-existing vulnerability, the balance of power between conflict parties, the degree of ethnic fractionalization, state capacity and legitimacy, and the presence or absence of pre-existing peace processes (Ide, 2023; Mach et al., 2019; Schleussner et al., 2016).

Second, the power differential mechanism emerges as a central organising concept. Whether a climate-related disaster escalates or de-escalates conflict depends substantially on how it affects the relative power and capacity of the warring parties (Ide, 2023). Asymmetric impacts, where one party is weakened while the other retains or gains capacity, tend to produce escalation as the

advantaged party exploits the disruption. Symmetric impacts, where all parties are constrained, tend to produce de-escalation. This insight integrates the apparently contradictory findings in the literature, explaining why climate events can produce such varied conflict outcomes.

Third, the temporal dimension is critical. The effects of climate-related disasters on conflict dynamics tend to be most pronounced in the short term, over months rather than years (Kelman, 2012). Both escalation and de-escalation following climate events are typically temporary, unless they interact with longer-term political processes. The Aceh case is exceptional precisely because the tsunami's short-term catalytic effect coincided with favourable longer-term political conditions that sustained the peace. In contrast, the temporary de-escalation observed in Pakistan and Somalia after major floods did not translate into lasting peace agreements.

Fourth, the de-escalation dimension of climate-conflict linkages deserves far greater attention from both researchers and policymakers. The finding that climate-related disasters de-escalate conflicts roughly as often as they escalate them (Ide, 2023) has significant implications for climate security policy. Rather than framing climate change exclusively as a threat multiplier, policymakers should also recognise the windows of opportunity that disasters can create for conflict resolution and peacebuilding. This requires proactive preparedness to seize moments of reduced fighting intensity for diplomatic interventions.

Fifth, the dominant focus on direct causal links between specific climate events and conflict outcomes may obscure more diffuse but equally important pathways. Climate change's contribution to long-term degradation of livelihoods, gradual resource depletion, and incremental erosion of state capacity may create conditions conducive to conflict escalation over timescales that are difficult to capture in event-based analyses (von Uexkull & Buhaug, 2021). The challenge for future research is to integrate these slow-onset dynamics with the more discrete disaster-conflict interactions that have dominated the empirical literature.

5. Conclusion

This study has examined how climate change affects the escalation and de-escalation of armed conflicts, tracing the causal pathways through which climate events influence conflict dynamics and illustrating these processes through multiple case studies. The central finding is that the climate-conflict relationship is neither deterministic nor unidirectional. Climate change can escalate armed conflicts through livelihood disruption, resource competition, power differentials, and erosion of state legitimacy, primarily in contexts of high pre-existing vulnerability and ethnic fractionalization (Ide, 2023; Schleussner et al., 2016). Equally, climate-related disasters can de-escalate conflicts by imposing material constraints on warring parties, reducing revenue and recruitment streams, and creating windows of opportunity for peace negotiations (Ide, 2023; Kelman, 2012).

The case studies examined here, from Syria and Uganda to Pakistan, Somalia, and Aceh, demonstrate the diversity of climate-conflict interactions. They illustrate that climate is best understood not as a root cause of conflict but as a threat multiplier that amplifies existing vulnerabilities and, under specific conditions, as a constraining factor that can create opportunities for peace. The power differential mechanism (Ide, 2023) provides a useful framework for understanding when and why climate events produce different conflict outcomes.

Looking forward, as climate change intensifies and its associated disasters become more frequent and severe, understanding these conditional relationships becomes increasingly important. Mach et al. (2019) estimated that under a scenario of 4 degrees Celsius of warming, the influence of climate on conflict risk would increase more than fivefold. Addressing this challenge requires policies that simultaneously reduce climate vulnerability, strengthen adaptive capacity, and

maintain readiness to exploit windows of opportunity for conflict resolution when they emerge. Ultimately, reducing disaster vulnerability and building resilient, equitable societies may be among the most effective strategies for preventing climate-related conflict escalation, while preparedness for disaster-induced peace windows may offer unexpected pathways to conflict resolution.

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