



Weather Extremes, Disasters, and Collective Violence: Conditions, Mechanisms, and Disaster-Related Policies in Recent Research

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Abstract

Purpose of Review Summary of research on the consequences of extreme weather events, which manifest themselves as disasters, for collective violence as well as on policy measures to mitigate such negative effects.

Recent Findings A growing, but contested, majority of studies indicate a slight increase in the likelihood of the occurrence, escalation, and prolongation of collective violence in the wake of disasters. The identification of conditions and mechanisms, some of which increase the likelihood of violence and some of which have the opposite effect, helps us to understand the diversity of outcomes. This includes the consequences of political and humanitarian interventions prior to, during and after disasters, which can overlay local processes.

Summary Conditions and mechanisms shaping the link between disasters and collective violence provide opportunities for policy interventions that are already, or can be, taken to mitigate the consequences of extreme events, increasing or reducing the likelihood and level of collective violence.

Keywords Climate change · Extreme weather events · Disasters · Collective violence · Armed conflict · Humanitarian assistance · Development assistance · Migration

Introduction

Although assessments of the relationship between climate change and collective violence¹ are fraught with major methodological difficulties [1–6], research results remain in high demand, not least because of the considerable interest in this

aspect of climate change among policy-makers and the general public. Much of this interest derives from the question of whether, and if so, when, and under which conditions, more climate change will lead to more collective violence [4, 7]. However, the research community increasingly realizes that policy options beyond mitigation are shaping the consequences of climate change for collective violence, allowing for possibilities to prevent collective violence [8–16].

Extreme weather events (extreme events from here on) are one of the manifestations of climate change that are of interest for the study of peace and collective violence. Compared to slow-onset consequences of climate change, extreme events provide more contemporary, visible, and distinct phenomena to analyze. Even though far from all past and current extreme events can be linked to climate change, and climate change is only likely to lead to an increase of most, but not all, types of extreme events [17–19], their consequences for collective violence can shed light on what to expect from future climate change.

Much of the theory about the effects of extreme events on peace and collective violence relates to their potential to create physical damage, destroy livelihoods, affect human mobility, and lead to the death of people [20–23]. In other words, extreme events are considered to be important because they often create

¹ The term collective violence (sometimes, for semantic reasons, also violent conflict) is used here in order to cover, in addition to armed conflict as the most often researched form of organized use of violence for political purposes, also less intense forms of violence, such as communal violence and organized riots. For more discussion on the rationale, see [24]. Conflict denotes contention among groups which has not become violent on a major scale. As noted for individual cases below, most studies use more narrow concepts than collective violence, with armed conflict in the definition of the Uppsala Conflict Data Program (<http://ucdp.uu.se/>) as the most prominent.

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disasters, which are generally defined as disruptions of regular patterns of social life of major magnitude². It makes sense to include research on extreme events as well as on disasters for the purpose of collating recent research on this aspect of climate change. However, far from all disasters are weather-related, and even disasters that are seemingly weather-related, such as droughts, may owe their characteristics less to extreme weather than to other factors, such as the overexploitation of water resources. Furthermore, the study of other types of disasters, like earthquakes and tsunamis, can inform debates about the consequences of weather-related disasters. However, only recent research on the latter is discussed in this text (and disaster is used as shorthand for weather-related disasters from here on).

There has been considerable research on the links between extreme events, disasters, and collective violence in the past. As is the case for the study of the relationship between climate change and collective violence in general, consolidation of research work on extreme events and disasters continues to be problematic because of fundamental differences with respect to entry points, frameworks, and methodologies. This contribution starts off with a brief discussion of such epistemological and methodological issues before summarizing relevant recent research.

The prime objective of this paper is to collate important insights from a broad spectrum of recent work on the relationship between extreme events and disasters and violent conflict. A particular emphasis is put on policy interventions with relevance to this relationship. The body of research surveyed for this contribution was selected by first identifying relevant key concepts, starting from a group of publications directly addressing the relationship between extreme events and disaster on the one hand and collective violence on the other, including types of extreme events, disasters, and violent conflict, as well as conditions and mechanisms (see below) proposed and tested in the relevant literature. In a second step, the key concepts were snowballed forward and backward in publication time in various academic literature search engines. This made it possible to consider further strands of related research, such as on social behavior after disasters, disaster risk reduction, and humanitarian and post-disaster assistance, in addition to merely focusing on literature directly addressing the relationship of interest.

The review conducted does not claim to be exhaustive, it rather attempts to organize insights from recent research by following relevant strands of literature. One of its limitations is that, with few exceptions, only English-language publications were included. Another is that longer-term effects of extreme events and disasters, which may be as important as short-term consequences, are difficult to separate from other processes over time,

and thus are rarely analyzed in the literature addressing disasters through the course of action described above. Furthermore, this paper cannot claim to cover the large body of literature on disaster risk reduction and management, which is relevant for the analysis of the consequences of extreme events for collective violence but does not directly address these. Finally, the focus of this contribution is on publications since 2014. Important earlier work, however, was also considered.

The relationship between extreme events, disasters and collective violence is highly complex, with many possible effects of weather extremes on the initiation, escalation, and termination of collective violence. Moreover, it is contingent on the historical and social specifics of individual cases. Unsurprisingly, sometimes several narratives have thus been proposed for a given case in academic work. A case in point is that of the often repeated but strongly disputed link between the 2007–2010 drought in parts of Syria (and Iraq) and the Syrian civil war [25–31]. Still, sorting relevant recent research into broad analytical categories can help us to better understand the relationship. As suggested by several authors [2, 4, 32, 33], this contribution distinguishes conditions and mechanisms. I understand conditions as elements of the context, in which changes occur in the form of mechanisms. Obviously, such a distinction between structure and process is a rather simplified understanding of reality, as they shape each other in the long run. However, for the study of short-term effects of extreme events, it is convenient for emphasizing the context at the time when they happen in contrast to the processes that occur afterwards. Disentangling the relationship into conditions and mechanisms also has the advantage to more systematically understand, beyond epistemological and methodological differences, how the consequences of extreme events are likely to differ from case to case, as well as over time, from the immediate period after the events to later periods.

Another advantage is that the identification of conditions and mechanisms indicates the variety of entry points for policy measures, both for the prevention, management, and termination of collective violence as well as its, intentional or unintentional, initiation or intensification. Approaches directly studying the relationship between climate change and collective violence can only legitimately argue for specific policies. This is particularly true for quantitative “black box” studies which by design investigate direct links between weather extremes and collective violence. They effectively imply that there are only two types of policy measures, namely mitigation to limit climate change and security policy to suppress or dampen violence. The broader view of conditions and mechanisms helps to better understand the importance of a host of other policies. As Ilan Kelman, who has worked on “disaster diplomacy” for many years [12–16, 34] has forcefully argued, disasters are politics. This is obviously true for the consequences of disasters, which are largely determined by preventative and protective measures as well as disaster management capacities and approaches. But political decisions, ranging from funding decisions to building regulations, also influence whether extreme

² While there are several, partly conflicting, ways to define disasters, as well as major difficulties in collecting relevant data, most of the quantitative research on disasters uses one of two global data sources, that focus on the extent of damage. These are EM-DAT, see <https://www.emdat.be>, and Munich Re, see <http://natcatservice.munichre.com/>. Qualitative research generally focuses on the occurrence of major events only.

events become disasters. In turn, this implies that the extent and effectiveness of actions in this expanding policy field are shaping the social and political consequences of extreme events.

Epistemological and Methodological Issues

Recent research with relevance for the analysis of the relationship between extreme events, disasters and collective violence continues to be marked by substantial diversity with respect to several important characteristics:

- Research continues to selectively employ one of a variety of quantitative and qualitative methods. Detailed assessments are presented in several recent reviews [5, 20, 35–48]. However, system-oriented studies, as suggested, among others, by Scheffran and colleagues [49, 50] and Lewis and Lenton [51], have become more frequent, as has research linking qualitative and quantitative methods [3, 32, 35, 52–56].
- There continues to be a fairly sharp division between studies addressing extreme events, which dominate in quantitative research, and studies of the consequences of disasters, which are both conducted using qualitative and quantitative methods. In quantitative work, this division is marked by the use of different data sources. In argumentation, however, most work on extreme events is supposed to be about disasters. Particularly in the comparatively extensive literature on short-term large precipitation anomalies—both floods and droughts—authors regularly argue in terms of losses of livelihoods and major disruptions of social life, thus in terms of disasters, even though they rarely show them to actually occur. With regard to strategies in quantitative research, there are advantages and disadvantages to both concepts, and the related data sources. Weather data allow researchers to define their own criteria for what they consider extreme events, for instance with respect to precipitation anomalies and their physical consequences. However, such extremes may or may not have the consequences for livelihoods and social life that authors regularly assume. Disasters, on the other hand, per definition have such consequences and disaster data allow researchers to scale the consequences. But disasters are defined by their consequences, potentially leading to issues with endogeneity. The degree of damage (or even the threshold of a disaster) is, to a considerable extent shaped by economic conditions and human agency, ranging from human settlement patterns to disaster management, with collective violence being one potential factor [15, 36]. In addition, researchers need to be cautious about equating disasters, even those linked to weather-related phenomena, with extreme events, since disasters, as

recorded in standard databases, may already occur at comparatively small deviations from the normal.

- A frequent assumption in the literature on extreme events and on disasters is about differences between more or less instant shocks and extremes that develop over some time [57]. Droughts and extreme periods of heat and cold³, for instance, are seen as developing over comparatively long periods of time (months) while floods and storms are assumed to arrive at short notice. Such a distinction, however, ignores that extreme weather events often occur repeatedly or even regularly in many locations. Long-term shifts may find their primary expression in the frequency and intensity of extreme events [22, 54, 58, 59]. Furthermore, slower events, such as droughts, may have tipping points with respect to social consequences. The timing of individual floods and storms may seem erratic, but their occurrence over longer time scales is fairly predictable. This cannot only lead to problems in quantitative research, which assumes the independence of extreme events, it also calls into question the idea that storms and floods are more of a shock to livelihoods and social life than droughts or heat spells, because they come unexpectedly. Studies using disaster data often focus on results for all types of disasters, sometimes selecting only events with major damage on the assumption that these are more likely to have social and economic consequences relevant enough to potentially be related to collective violence [57, 60].
- Types and stages of collective violence differ. Quantitative research has continued to include studies on the initiation of armed conflict within a national territory afflicted by one or more extreme event, even though researchers increasingly use data sources on other forms of violence and geo-coded violence events, as well as detailed data only available for small regions. In addition, there have been a few studies looking into the prolongation and termination of armed conflict and the possible relationship with extreme weather events [23, 61–64]. Qualitative research, on the other hand, has been more concerned with low-level violence, particularly riots and violent crime. However, the dynamics of particular armed conflicts have also been studied as have been specific regions [4, 52, 65, 66].

Recent Important Research Results

Even though results of pertinent research continue to be published at fairly high rates, consolidation of knowledge has remained shaky. However, recent studies tend to confirm

³ IPCC lists extreme periods of heat and cold, storms, heavy rainfall, and abnormal dry periods as climate extremes. Weather-related disaster types, for instance in the EM_DAT database, are heat and cold waves, storms, floods, droughts, and wildfires.

results of earlier research. Based on the reviews of literature cited above and my reading of recent research, my main conclusions on the relationship between extreme events, disasters, and collective violence include the following:

- There is solid evidence for single weather events as well as disasters to be involved in the initiation as well as intensification, de-intensification, prolongation, and termination of collective violence. However, disasters do not cause these consequences by themselves, but rather, in different ways, amplify pre-existing conflict dynamics.
- Large-N research continues to come to conflicting results. Overall, there is a growing majority of studies, which find extreme events as well as disasters to weakly increase the likelihood of collective violence. Some studies find major effects, others fail to find a statistically significant relationship [43].
- The increased likelihood of the initiation of collective violence seems to be primarily driven by droughts in ethnically divided societies. For other forms of disasters, as well as droughts in societies not marked by ethnic conflict, research has not come to clear results. Droughts have been shown in individual cases to be the spark that ignites violence in an existing conflict. They also add to an existent list of grievance that contain other factors, such as repression of demonstrations, pushing conflict into violence [54]. However, in some cases of collective violence, such as the war in Syria from 2011, the contribution of extreme dry weather is disputed [25–31].
- For more intense forms of collective violence, such as armed conflict, there are differences between different phases. Both extreme events and disasters seem to have more pronounced consequences for their escalation and prolongation than their initiation and termination.
- Lower-level violence, particularly food riots, is more likely to be related to climate extremes than armed conflict. In addition to local shortages, price increases driven by external events are a factor. One such case with often presumed links to climate extremes is the increase in grain prices following heatwaves and wildfires in the Global North prior to the Arab Spring in 2011 (see below).
- Research has not generally confirmed that larger disasters are more likely than smaller disasters to be linked to collective violence. In fact, recent quantitative studies of disasters fail to find that results are different for minor and major events [32, 67], and in qualitative research, corrosive effects for society have been shown even for small disasters [68].
- Disasters can provide opportunities for de-intensification and termination of collective violence, when conditions are “ripe” for such processes, for instance through trust building at the local level or the way in which assistance is provided [23, 66, 69].

Conditions and Mechanisms Shaping Post-Event Processes

Despite some common trends, results from recent research continue to be puzzling, for instance with respect to the limited evidence in quantitative work between minor and major disasters. Furthermore, even though more studies are concluding that extreme events and disasters increase the likelihood of collective violence, this effect seems to be less important than is often portrayed in the policy literature.

Earlier surveys and assessments of the relevant literature have pointed to the embeddedness of extreme events into historically grown, dynamic social relations as one obvious reason for the lack of strong results in large-N research. In addition, as will be argued more strongly in this assessment than has been done in most previous work, the study of the consequences of climate events is modified by the effect of policy measures that are taken to limit the likelihood and consequences of disasters.

Research traditions differ about the importance of complexity and historical contingency, and the best way to deal with them. This remains very much the case in the literature on the relationship between extreme events and collective violence, despite calls to combine methods. Macro-quantitative research needs to simplify, and the usual way is to identify and test structural conditions that are deemed to be suitable to both capture the outcome of historical developments as well as to suggest important dynamic changes. One example is the level of income, which is often not only seen as an indicator of vulnerability but also of the likelihood of post-disaster competition over livelihood resources [70]. However, there is a growing recognition that the research agenda needs to move beyond assuming post-disaster dynamics and to at least probabilistically identify what is happening, for instance with respect to responses to sinking income levels. The identification of post-disaster dynamics, and the way in which they influence actors has long been the focus of qualitative research. Many such mechanisms have been proposed in the relevant literature and only a selection can be briefly discussed here. What unites them is their focus on process rather than structure, in particular the interaction between dynamic changes and actors reacting to them [53]. Both in turn are related to initial conditions, which calls for an integrative, systemic analysis of conditions and mechanisms. For the time being, most studies on the relationship between extreme events or disasters and collective violence continue to focus on either conditions or on mechanisms, with most of the quantitative literature implying that conditions drive conflict processes, while case studies are often primarily interested in mechanisms.

While collective violence is shaped by a multitude of factors, some have been shown to be of particular importance. These are also generally guiding the work on the relationship between climate extremes or disasters and collective violence.

Past conflict research also provides much guidance on conflict dynamics and mechanisms driving it, which is reflected in most of the recent research on weather extremes. There has been less attention to other relevant strands of research, such as disaster risk reduction activities and humanitarian assistance, even though recent work both on collective violence as well as on other consequences of disasters indicates the importance of policy interventions for the understanding of the relationship between disasters and collective violence.

Pre-disaster Conditions

Income, Resource Endowments, Types and Levels of Economic Activity

In line with the general literature on collective violence, livelihood conditions are generally identified as a crucial factor shaping the likelihood of the initiation and escalation of collective violence [71–73]. Recent research on droughts, and to a lesser extent floods, has demonstrated the importance of agriculture and pastoralism for incomes as structural conditions for collective violence [32, 58, 74, 75]. At the same time, some studies continue to probe the validity of broader measures, such as income per head or poverty levels [76, 77].

Ethnic Conflict and Exclusion

Recent work on extreme events and disasters also reflects the general acceptance of ethnic conflict, and particularly the exclusion of particular groups from political and economic participation, as a crucial conflict driver. For instance, von Uexkuell and others [58], while finding no general link between extreme drought events and armed conflict, detect a significant statistical correlation for such cases in which minority groups were excluded from political participation while being dependent on agriculture for income. The relationship was more pronounced for armed conflict intensity than for conflict onset, which the authors interpreted as supporting the proposition that conflicts magnify the consequences of disasters. A different methodological approach for attempting to correlate disasters and the onset of collective violence was taken by Schleussner and others [67]. They found that the outbreak of armed conflicts followed disasters more often than is to be statistically expected in cases in which there was a high degree of ethnic fractionalization within a country.

Institutional Setting

Beyond economic and ethno-political conditions, the state of social and political institutions is often found to be shaping the likelihood of collective violence. Various aspects of the strength and, more often, weaknesses of governments, but

also conflict resolution-related institutions have been demonstrated in recent research [10, 76, 78, 79].

Post-disaster Mechanisms

Destruction, Reduced Resource Availability, Worsening Livelihood Conditions

Disasters destroy lives and economic assets. Livelihood conditions tend to worsen, often through increased food prices. Most, but not all, research finds food prices to be related to increased likelihood of collective violence [80–88]. However, research on the economic consequences of disasters also points to recovery effects, which result in a wide range of long-term outcomes of disasters [71, 77]. One important factor is insurance coverage, another post-disaster assistance [89–91]. There is some evidence of a link between increased local competition over scarce resources and collective violence [32, 57, 58, 92], but this finding is not universal [60, 93–95]. One reason for the diversity of findings could be that shortages affect farmers/producers and consumers differently [85]. Furthermore, while shortage, for instance of fodder, will generally increase prices, it also has had the effect, for instance in Somalia, of lowering prices for livestock [96]. Disaster induced migration (see below), while often considered to be an adaptation to worsening livelihood conditions [97], generally also affects resource availability and distribution in host regions. The outcome, however, is not always increased resource competition, as national and international post-disaster assistance in some cases even leads to increases in resource availability [91]. Reduced resource availability may not only have local effects. Particularly, the heat waves and wildfires in Russia and China, but also in other food-growing countries, in the summer of 2010, which hiked global food prices in the following months, have stimulated research on “teleconnections” of the consequences of extreme events for collective violence [98, 99], for instance in countries of Northern Africa and the Middle East in 2011 [33, 100–102].

Grievances, Perceptions of Injustice

Objectively, measured change in resource availability is often seen as one relevant factor for the initiation, escalation, or de-escalation of collective violence. However, behavior may be shaped more by perceptions, for instance related to relative disaster losses, or the delivery of post-disaster assistance, than by actual availabilities [60]. Grievances are difficult to measure directly; however, a long tradition of sociological disaster research indicates that pre-disaster perceptions are fundamental [103, 104]. Disaster sociology has long maintained that behavior in disasters can be conflictive as well as cooperative [60, 69, 105]. Disasters provide “windows of opportunity” for trust building and reconciliation but also for reinforcement of

grievances [106]. People tend to interpret what is happening as confirming earlier judgements. While there are also cases of conflict transformation related to disasters, a rich tradition of research on “disaster diplomacy” has shown that disasters have sometimes accelerated ongoing processes of de-escalation of collective violence but have so far never initiated them [13–16]. The persistence of grievances may also be a contributing factor to the stronger effect of extreme events and disasters on armed conflict duration than on armed conflict onset.

Migration, Migratory Patterns

Migration has already been mentioned in the context of both resource shortage and grievances. In addition, it has been shown that droughts can affect migratory patterns with consequences for collective violence [4, 32, 54].

Our understanding of the factors behind and the consequences of migration is rather limited [107–109]. One important way forward are studies at the micro level. Koubi and others, for instance, have determined by surveys that migrants who suffered from slow-onset climate change are more likely to perceive armed conflict in their new location than those having experienced sudden, short-term environmental events [108].

Changes in the Balance of Forces, Recruitment, Mobilization

Disasters, at least in some cases, affect the capabilities of collective actors, potentially or already exerting violence [23, 57, 62]. Several mechanisms are relevant. One is the weakening of governments to control populations and potential insurgents. It is often argued that governments lose assets in disasters and need to reduce funding for police and military forces. Breakdowns of public security are quite frequent. However, there is also evidence that levels of repression are increasing after disasters [60, 110].

With respect to the capabilities of potential or actual anti-government rebels, several, partly contradictory, ideas have found support in the literature. Probably the one with the strongest support from the general study of armed conflict is that loss of resources and/or income improves the chances for armed groups to recruit followers. However, evidence has also been presented that droughts are marked by reduced levels of armed conflict. One argument for this finding is that major disasters reduce the capabilities of rebels to escalate violence [111]. Post-disaster assistance, on the other hand, may offer rebels the chance to appropriate external resources for their purposes, as is the case for development aid [74, 112].

Disasters in themselves also present an opportunity for violence entrepreneurs to mobilize support. Both governments and rebels have been shown to use grievances resulting from disasters or disaster management for such purposes. Disasters provide opportunities to frame negative consequences in terms of neglect by governments and harm done by opponents [32].

Institutional Decay, Institution Building

Beyond economics and grievances, disasters are often shocks to social and political institutions. Disasters erode public service delivery, trust in governmental and non-governmental institutions, but also open the chance to strengthen existing and create new institutions [10, 11, 16, 113–115]. Studies have shown disasters to lead to replacement of governments [116, 117] as well as increased political engagement [118]. Disasters contribute to the weakening as well as strengthening of a broad range of institutions, ranging from public services to social trust. The direction in which institutional change is occurring is generally determined by the context in which disasters occur, including the interests and powers of relevant actors. In this sense, disasters can be accelerators of already ongoing armed conflict transformations but also reinforce existing social and political power balances [13, 16, 63, 69, 103, 114, 119].

Disaster-Related Politics and Policies

Disasters are politics, in several ways. Disaster risks can be reduced or amplified, consequences of disasters can be minimized or increased, and disasters can contribute to changes in the balance of political and military power. All of this can affect the likelihood of the initiation and escalation of collective violence.

Activities to limit the incidence and socially negative consequences of disasters have received much international policy attention in recent years. Important catchwords are disaster risk reduction, sustainability, and resilience [14, 46, 114, 120, 121]. Furthermore, few large disasters nowadays go unreported by international media nor fail to trigger international attention and humanitarian assistance. Volumes of humanitarian assistance have grown considerably. There also is an international discussion of the legality and political consequences of military interventions to save lives where national governments are not admitting international humanitarian assistance in the wake of major disasters [33, 122–125].

Conflict prevention and peacebuilding have been one, albeit comparatively minor, objective of recent policies for disaster risk reduction and support to strengthen disaster resilience [8–11, 126–130]. Conflict-sensitivity is an issue of growing importance for climate change adaptation in general and including disaster risk reduction as well as disaster management and reconstruction [114, 126, 131–136]. There has also been optimism about the opportunities for leveraging disaster risk management with climate change adaptation measures [19, 46, 137].

Empirical work, however, demonstrates the ambivalence of pre- and post-disaster policies and politics. Humanitarian assistance, for instance, has in some cases helped to build trust and institutions, but has also had the opposite effect in other cases. It has served the already powerful, for instance via corruption [22]. External assistance has been used to facilitate

peacebuilding but has also helped—intentionally or unintentionally—to fund armed conflicts [74, 112].

Obviously, variations in local conditions are crucial to explaining such differences. However, there is also evidence that the way in which assistance is provided by local, national, and international actors is important. For instance, in many countries armed forces are leading disaster management activities [138], which can increase conflict but also help to change the image of an organization, which is otherwise seen as generally threatening.

Methodologically, policies and politics are another group of mechanisms, however involving a broader set of actors than is usually considered in studies of the relationship between extreme events, disasters, and collective violence [53]. Ignoring this element of post-disaster dynamics, however, is problematic. Some of the puzzling results reported above may have resulted from underestimating their importance. One example is the general lack of differences between small and large disasters as the latter are generally receiving more assistance and attention. Another is the weak finding on post-disaster resource scarcity—humanitarian assistance alleviates such scarcity in many cases.

Insisting on the importance of policies and politics for the relationship between extreme events, disasters, and collective violence has some implications for research. One is to explicitly consider the politics of those actors involved in shaping disaster-related politics, including assistance [133, 135, 139]. Another is that disasters may have long-term consequences beyond the immediate post-disaster effects. The distribution of post-disaster reconstruction benefits can become a source of contention and collective violence beyond the short-term conflict dynamics that disasters influence directly [47].

Conclusions

As many—though not all—types of extreme events are more likely to occur with climate change, the likelihood of the occurrence of collective violence will increase accordingly, albeit under some conditions and only in some locations. Judging from past experience, this will be mainly the consequence of the escalation and prolongation of armed conflict rather than the onset of armed conflict as well as increases in the incidence of communal and other less-organized forms of violence. However, there are also likely to be, albeit fewer, locations where the consequences of disasters will support processes of conflict management and de-escalation, either preventing conflicts from becoming violent or even ending collective violence.

Differences with respect to the consequences of extreme events and disasters mainly stem from relevant pre-disaster conditions on the one hand and the case-specific mixture of mechanisms that unfolds after their occurrence on the other. Extreme events and disasters are rarely triggers but more often accelerators of dynamics that are already developing [37, 58, 60, 61]. Even under conditions, most likely to produce collective violence,

namely in poor regions with large shares of agricultural production to provide incomes as well as ethnic exclusion, most disasters have no discernable effect on collective violence.

Contrary to common sense, the extent of the negative physical and economic consequences of disasters does not seem to be decisive for collective violence. Even small disasters can tip social and political relations as well as influence the levels of organized violence. At the same time, large disasters may receive more national and international attention, leading to reductions in local resource shortages, allowing for trust building among groups, reducing the attractiveness and resource bases of armed groups, and strengthening institutions for conflict prevention and resolution.

While quantitative research points to a net increase in collective violence in the wake of disasters, there is also growing evidence of options for shaping conflict process prior, during, and after disasters through policy measures of various types, such as disaster risk reduction and management as well as humanitarian assistance. Research presented above supports the goals of recent policy initiatives, which aim at linking measures in these fields with policies addressing conflict prevention and management but also warns about unintentional consequences. Disaster-related policies need to be planned and implemented consciously as they have not always de-escalated already existing conflicts. Demand for such policies will grow with climate change as does the demand for research identifying their limitations, pitfalls, and benefits.

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Compliance with Ethical Standards

Conflict of Interest Author states that there is no conflict of interest.

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