

Natural Disasters and Political Violence: Assessing the Intersections

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1 Introduction

Disasters triggered by natural hazards, such as droughts, floods, earthquakes or storms, pose key challenges to human security and development. While societal vulnerability to disasters is declining at the global level due to better disaster management and increasing socio-economic development (Formetta and Feyen 2019), a rising number and intensity of disaster events keep progress in this area limited. As illustrated by Figure 1, the number of disasters shows large annual variations, but also a clear upwards trend in the past three decades. 2018 was the first year ever with more than 800 registered natural disaster events (Munich RE 2019). In 2017 and 2018 alone, such disasters caused 21,501 deaths (Guha-Sapir 2019) and economic losses of 523 billion US\$ (Munich RE 2019).

The increase in disaster events can be explained by various factors. Many disaster-prone areas are economically attractive and therefore, the number of assets located in these places tend to grow. Example include prospering cities along coasts and major rivers (where floods, tropical storms and tsunamis are more common) and high-yielding agricultural areas around volcanoes (Wisner et al. 2004). Population growth and rapid urbanization leave many people with few other choices than settling in hazardous places like flood plains or steep slopes that are avoided by longstanding or well-off residents (Ajibade and McBean 2014). And climate change is increasing the frequency and intensity of hydro-meteorological events (IPCC 2018). As these trends are

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likely to continue, disasters triggered by natural hazards will be an important global challenge for the foreseeable future.

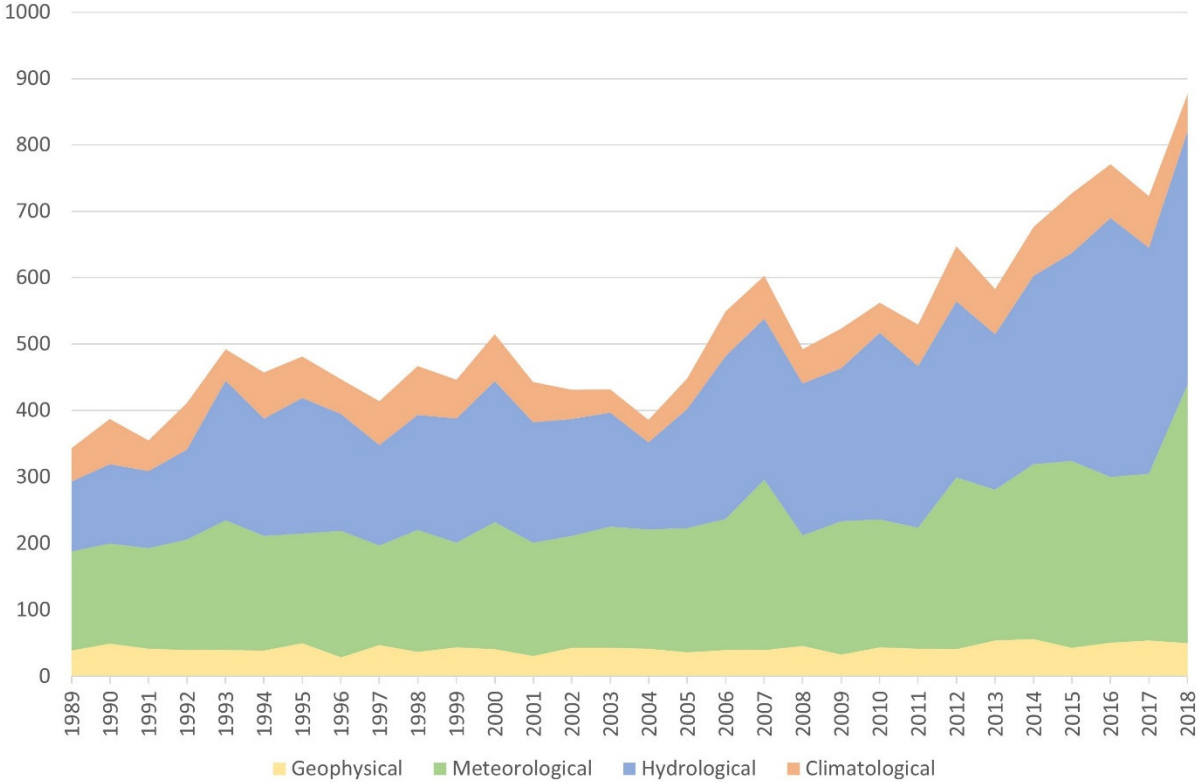


Figure 1: Occurrence of different types of natural disasters between 1989 and 2018. Data source: Munich RE (2019)

At the same time, political violence continues to threaten human security. In the past five years, armed conflicts have resulted in more than 45,000 battle-related deaths, as well as significant deterioration of health, education and economic infrastructure. Armed violence is hence considered to be "development in reverse" (Collier et al. 2003: 13). This is especially true for intrastate conflicts as violent interactions between states have been very limited after 1945. To make things worse, after an initial decline after the end of the Cold War, political violence is on the rise again. In the period 2015-2018, 50 or more intrastate armed conflicts involving states have been active each year. Only one other year (1991) crossed this threshold in the post-World

War II era (see Figure 2). The number of armed conflicts between non-state actors also reached an all-time peak in 2017 (83) and hardly declined in 2018 (76) (Pettersson et al. 2019).

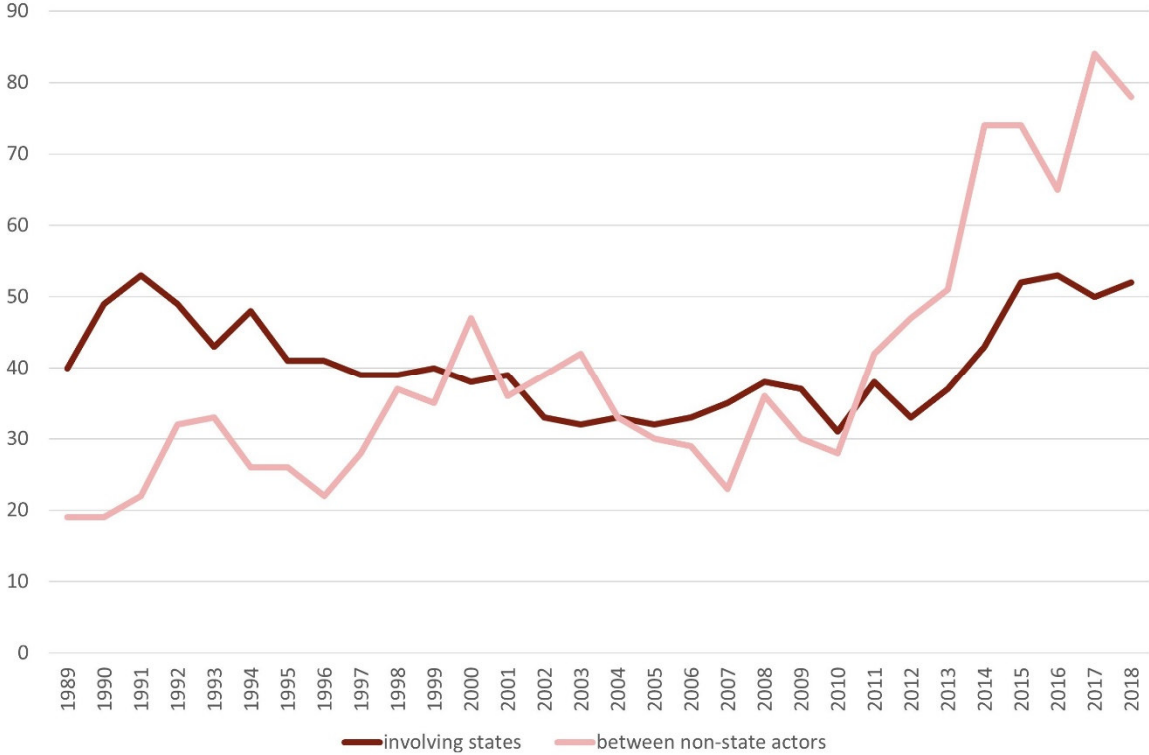


Figure 2: Number of armed conflicts per year

The future occurrence of armed violence is hard to predict (Cederman and Weidmann 2017). But given the continuing intensity of the conflicts in the Central African Republic, India, Pakistan, the Philippines, South Sudan and Syria, among others, levels of violence are likely to remain high. Political violence within states is hence another important, contemporary global challenge. Both political violence and disasters triggered by natural hazards pose risks to achieving several Sustainable Development Goals (SDGs), including no poverty (SDG1), zero hunger (SDG2), good health and well-being (SDG3), quality education (SDG4), gender equality (SDG5), decent work and economic growth (SDG8), reducing inequality (SDG10), and peace, justice and strong institutions (SDG16), among others.

However, there are increasing concerns that political violence can increase vulnerability to disasters, and that disasters can raise the risk of violence, therefore potentially fuelling a vicious circle. Concerns within the United Nations system about the security implications of climate-related disasters are widespread (Peters 2018). Several researchers also claim that a severe drought in north-eastern Syria between 2007 and 2009 contributed to the civil war onset in 2011 (Ide 2018). At the same time, scholars and practitioners increasingly highlight the relevance of considering political violence and conflict sensitivity in disaster risk reduction (DRR) (Harrowell and Özerdem 2019; Peters et al. 2019).

These concerns are not unwarranted. A brief comparison reveals that of the 30 countries with the most battle-related deaths between 1989 and 2018, 20 also had very high numbers (>1,000) of disaster-related fatalities. Similarly, 22 of the 30 countries with the highest natural disaster impacts (in terms of deaths) also show intense political violence (>500 deaths) in this time period (Guha-Sapir 2019; Pettersson et al. 2019). One reason for this is certainly existing contextual factors that increase the risk of both political violence and disasters, such as low levels of economic development, weak statehood and an erosion of traditional institutions (Dixon 2009; Wisner et al. 2004).

Yet, there is a large body of research analysing the mutual interlinkages between disasters triggered by natural hazards and political violence. The purpose of this report is to review the literatures on disasters and violence, to summarise key findings, and to identify important knowledge gaps that need to be addressed by future research. Before doing so, the definitions and methods used are briefly explained.

2 Methods

2.1 Definitions

Natural disasters can be understood as complex emergencies that result when destructive natural hazards strike vulnerable social systems. For such a disaster to occur, two factors thus need to coincide: A significantly strong natural hazard (e.g., a drought, flood, storm, earthquake, tsunami, landslide or volcanic eruption) and social system that is vulnerable to the hazard (e.g., because early warning systems, sound building codes, sufficient food reserves or

alternative settlement options are lacking) (Cohen and Werker 2008). Such vulnerability is often caused by unequal wealth and power structures that are reproduced in everyday life. The poor, for instance, often cannot afford hazard-resistant accommodation or relocation to safer areas (Wisner et al. 2004). For the sake of simplicity, this report refers to these disasters as natural disasters although they have root causes that are both natural and social.

Political violence is defined here as the use of direct, physical violence against human beings or property that is used to gain control over territory or government power. Political violence involves at least one organised party. It includes interstate and civil wars, but may also refer to riots, terrorist attacks, and clashes between different social groups (Gleditsch et al. 2002; Raleigh et al. 2010). As environmental change in general and disasters in particular are unlikely to cause interstate wars (Mach et al. 2019; Streich and Mislán 2014), this report will focus on political violence within states.

2.2 Sampling and analysis

In order to create the core sample for the literature review, a formal search strategy was used. As a first step, I compiled a list of research areas relevant to the topic. For each of those areas, I determined three journals that are highly influential and well-known for addressing environmental security issues, described in Table 1.

I then accessed the journals' homepages and applied the following Boolean search term to identify potentially relevant papers: "disaster OR hazard AND conflict OR war OR violence".² I focused the search on the period between January 1 2007 and August 31 2019 as most empirical research on the topic has been published in 2007 or later (Xu et al. 2016). The abstracts of the yielded hits were read in order to determine whether the article really addresses intersections between natural disasters and political violence. This process yielded a core sample of 60 relevant articles.

I analysed these articles quantitatively to produce statistics, for instance on their main findings of geographical focus. Further, reading through them qualitatively allowed me to identify core insights, important points of contention, and existing research gaps.

² The search focused only on titles, keywords and abstracts to avoid a large number of irrelevant hits.

Field	Journals
Climate and environmental studies	Climatic Change Global Environmental Change Nature Climate Change
Disaster studies	Disasters International Journal of Disaster Risk Reduction Natural Hazards
Human geography	Geoforum Geopolitics Political Geography
Interdisciplinary research	Nature PNAS Science
International relations	International Organization International Security International Studies Quarterly
Peace and conflict studies	Journal of Conflict Resolution Journal of Peace Research World Development

Table 1: Research areas and journals relevant for the core sample of this study

References in the 60 articles as well as the author’s own knowledge of the field provided further information on relevant studies, including such that have been published prior to 2007 or that did not appear in peer-reviewed journals (such as books or reports). While gained through a less formal process (and hence being fuzzier) than the core sample, this additional literature was important to include to ensure that the report does not miss relevant insights or strands of discussion. The extended sample is thus particularly helpful for the qualitative analysis of the literature.

3 Existing research on natural disasters and political violence

3.1 Geographical coverage

45 of the 60 studies in the core sample focus on one or more countries, with the remaining 15 being either theoretical articles or conducting quantitative research with global samples. The 45 studies analyse 26 different countries, resulting in 54 “hits”³. Overall, research on natural disasters and political violence is strongly focused on Asia. 15 of the 26 countries covered in greater detail by studies from the core sample, and 43 of the resulting 54 hits, are located in Asia. South and Southeast Asia receive particular attention as all of the most studied countries are located in this part of the continent (see Figure 3): Sri Lanka (9), Indonesia (7), Philippines (6), Nepal and Pakistan (4 each), and India (3).

This research focus aligns with the concerns noted above about relevance and policy importance. Asia is the continent where disasters cause most economic damage and fatalities, and generally affect large populations (Guha-Sapir 2019; Munich RE 2019). Asia was also the continent with the largest number of armed conflicts in 2018 and high levels of political violence in the years before (Pettersson et al. 2019). In all of the most frequently studied countries mentioned above, large natural disasters struck shortly before the onset of or during an ongoing armed conflict.

Practical concerns are also likely to play a role in choosing research sites in Asia. We know that international research on human-environment interactions has a particular preference for English-speaking regions to avoid language barriers (Hendrix 2017), and English is widely spoken in South(-East) Asia. Large amounts of aid works flowing into Indonesia and Sri Lanka after the Indian Ocean tsunami (2004) and into Nepal after the 2015 earthquake opened further doors for international scholars (Harrowell and Özerdem 2019).

By contrast, Africa (5) and the Middle East (3) have few hits, and no country from these continents is studied by more than one article from the core sample. But at least for the Middle East and especially Africa, the pictures changes when taking the extended sample into account. There are many studies focussing on droughts and political violence in these regions, but they either do not use the terms hazard/disaster prominently or have been published in journals other than those

³ A hit is registered each time an individual country is included as a focus of analysis. Thus one paper may have several hits (if it looks at more than one country) and one country may have several hits (if it is the focus of more than one paper).

considered by the core sample. Examples can be found for Sub-Saharan Africa in general (Detges 2017; von Uexkull 2014), Kenya (Schilling et al. 2012), Nigeria (Nyong et al. 2006), Sudan (De Juan 2015) and Syria (Feitelson and Tubi 2017; Selby et al. 2017), among others.

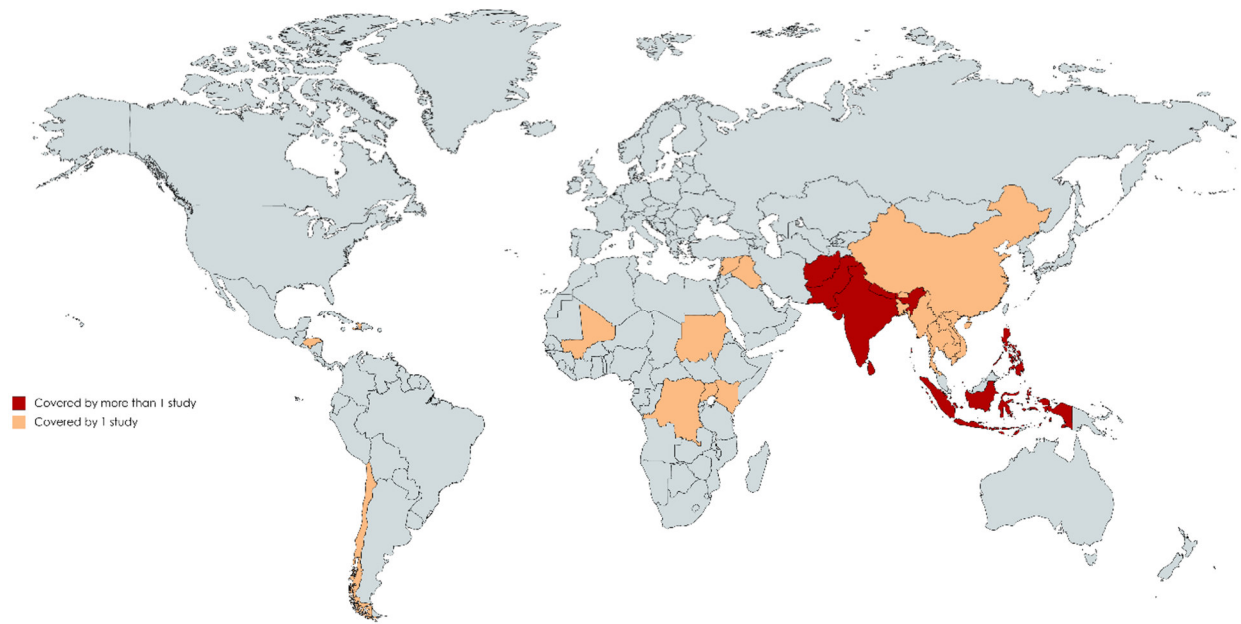


Figure 3: Countries analysed by studies from the core sample

Latin America also has only 3 hits, but here, the picture does not change when taking the extended sample into account. This is certainly surprising given that countries like Haiti (1), Venezuela (12), Honduras (19), Peru (26), Mexico (27) and Colombia (28) are high on the list of countries that suffered from disaster-related deaths in the 1989-2018 period, and many of them experienced tremendous political instability and violence as well. Adams et al. (2018) find that South America receives little attention in climate-conflict research, substantiating the findings of this report.

Europe, North America, Australia and New Zealand have no hits at all, which is not surprising given their low levels of political violence and high capability to cope with natural hazards. No study in the core (and very few in the extended) sample focus on the Pacific Islands. While these states are small and often of little geopolitical importance to major powers, their high vulnerability to floods and storms (especially in the face of sea-level rise) would justify further in-

depth analyses. The 2016 World Risk Report, for instances, put 4 Pacific Island countries on its list of countries most exposed to natural hazards globally (UNU-EHS 2016)

To briefly elaborate on the temporal aspect: The number of studies (in the core sample) fluctuates each year, mostly because of academic developments like the publication of special issues. However, as illustrated by Figure 4, there is a clear upward trend with studies on disaster-violence intersections receiving increasing attention since 2014.

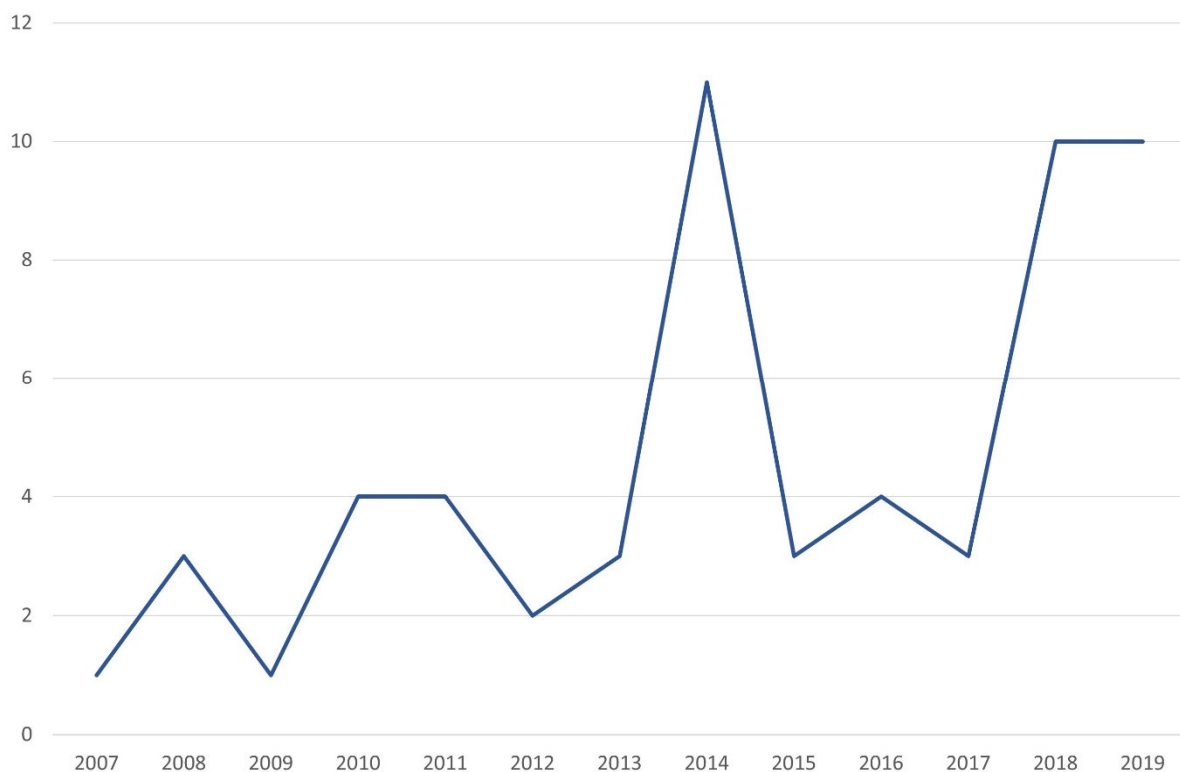


Figure 4: Publication years of the studies from the core sample

3.2 Impact of natural disasters on political violence

Natural disasters can impact political violence in two main ways. These are not mutually exclusive, and are often intertwined.

The first relates to grievances of the people affected by the disaster. People believing that the relevant authorities have not done enough to protect them from or support them after a disaster can quickly grow frustrated, especially if they face significant economic or personal losses (Cassar

et al. 2017). When ethnic, political and social groups perceive that other groups were privileged during disaster preparation, emergency relief, or the distribution of reconstruction funds, their grievances rise, and they are more likely to engage in political violence. Such violence is directed either against the authorities (for instance by joining a rebel group) or against the (supposedly) privileged groups, leading to communal violence (Nardulli et al. 2015). This argument works both for the onset and the intensification of political violence. Disasters can play a catalytic role here as they lay bare socio-political inequalities and fault lines (Pelling and Dill 2010), for instance when the government prioritises certain (politically crucial and loyal) groups. The literature reviewed for this report emphasises the importance of the (perceived) distribution of post-disaster relief and reconstruction efforts in this context (Brzoska 2018; Rahill et al. 2014).

For instance, typhoon Bhola hit Bangladesh (then East Pakistan) in 1970, leaving around 300,000 dead. The storm illustrated welfare and vulnerability gaps between the two parts of Pakistan as well as the absence of government attention and support in the affected area. The related grievances against the Pakistani government further fuelled the independence struggle (Drury and Olson 1998). Similarly, gaps between generous assistance for victims of the 2004 Indian Ocean tsunami and very limited support for survivors of the civil war, including former combatants, posed challenges to the peace process in Aceh, Indonesia (Waizenegger and Hyndman 2010).

Governments might also anticipate protests and political criticism in the aftermath of natural disasters, and hence increase repression. The police can, for example, break up demonstrations early on and arrest oppositional political leaders. When Islamic civil society groups quickly mobilised to deliver aid in the aftermath of the 1992 Cairo earthquake, while official efforts were late and little, the state reacted by freezing the groups' funds and instigating arrest campaigns. The goal behind this was to prevent state opponents from gaining political support in the post-disaster situation (Wood and Wright 2016). Repression can also be driven by commercial interest, for example when Sri Lankan authorities did not allow local fishermen to rebuild their coastal villages but allocated these areas to tourism development (Klein 2007: 385-405). Large-N studies confirm that state repression increases after natural disasters (Apodaca 2017; Wood and Wright 2016).

Slow-onset disasters like droughts can also lead to a shortage of important natural resources such as food, water and fertile soil. High food prices increase the risk of food riots directed, for instance, against local merchants or the government (Hendrix and Haggard 2015; Smith 2014). Several studies also show how droughts in northern Kenya accelerate competition over water resources between pastoralist groups and trigger cycles of post-disaster cattle raiding as groups want to re-stock cattle lost during the previous drought (Ember et al. 2012; Schilling et al. 2012). Finally, natural disasters might increase grievances via migration. Disaster events can displace people temporarily (for instance, when a family member moves to the nearest urban centre to gain additional income and hence reduce vulnerability), or permanently (when livelihoods become unsustainable due to disaster loss). Such migration is typically short-distance but can increase the risk of political violence. A classic example would be conflicts between the host community and the migrants, but migrants might also develop severe grievances in the absence of adequate government support (Brzoska and Fröhlich 2015).

The case of the Syrian civil war receives considerable attention in this context (see Ide 2018 for a summary). During the 2007-2009 period, the north-eastern, agricultural regions of the country faced a very severe drought. Government policies accelerated their vulnerability. A large number of people (lower estimates range around 332,000) decided to move to urban areas as their farms and cattle businesses were no longer sustainable. Lack of government support for the drought victims and insufficient public services for the growing urban population raised grievances among several groups that were then more willing to participate in anti-government protests and violence in 2011 (Ash and Obradovitch 2019).

These arguments are not undisputed, however. Several authors argue that political and economic grievances are much more important in fuelling political violence, with natural disasters having a rather minor effect (Kallis and Zografos 2014). This connects to the argument that vulnerability to disasters reflects pre-existing inequalities and tensions (Wisner et al. 2004). Selby et al. (2017) conclude that it was not the drought, but neoliberal and unsustainable policies that caused the agricultural crisis in north-eastern Syria, and that the rural-to-urban migrants neither initiated nor significantly participated in the 2011 protests. Similarly, cattle raids and water conflicts in

Kenya can also be attributed to intergroup political tensions, a history of government marginalisation, and the growing commercial relevance of the cattle business (Eaton 2008).

The literature on disaster diplomacy even argues that disasters provide opportunities for cooperation and trust building, hence decreasing the likelihood of political violence (Kelman 2012). Disaster sociology has long shown that the extraordinary threats disasters pose can lead to greater community coherence and cooperation, at least in the immediate aftermath of the event (Quarantelli and Dynes 1976). Supporting such claims, researchers find that natural disasters increase trust in communities, hence making local violent conflicts less likely (Dussailant and Guzmán 2010; Toya and Skidmore 2014).

When the 2004 Indian Ocean tsunami struck the civil war-ridden Indonesian province Aceh, national solidarity towards the region increased, large sums of aid flowed in, and the international community pressed both sides to settle their dispute. This catalysed already ongoing peace negotiations, resulting in a permanent settlement just ten months after the tsunami (Gaillard et al. 2008a). Similarly, in parts of Ethiopia and Kenya, droughts have been shown to trigger the activation of traditional conflict resolution and resource management institutions (Adano et al. 2012; Bogale and Korf 2007).

The second pathway connecting natural disasters and political violence focuses on the opportunity structures for violent behaviour. In other words, disaster can not only increase the motivation to engage in political violence (mostly in the form of grievances), but also the possibility to do so. In principal, this argument again applies to the onset as well as intensity of violence, but is much more applicable to high intensity conflicts between organised armed groups (e.g., in civil wars).

Such groups need to recruit people to fight for their cause, and convincing desperate (and possibly aggrieved) persons who have lost (parts of) their livelihoods is often easier (Barnett and Adger 2007). The 2010 floods in Pakistan and the associated massive loss of houses, savings and assets, for instance, improved conditions for radical Islamist movements to gain new members and supporters. This was especially so as the respective movements were relatively successful in providing disaster relief (Arai 2012; Siddiqi 2014).

This argument points to the relevance of state weakness. In the aftermath of severe storms, flood or earthquakes, access to certain regions might be limited, including for state forces. Rebel groups can use this as an advantage to gain further ground, but the resulting power vacuum also loosens restraints against communal violence. Such links also work remotely when the state draws troops and funds into a disaster-affected region, leaving other parts of the country (where money to appease grievances and state forces to prevent violence are missing) more vulnerable to violence. Supporting such considerations, Nardulli et al. (2015) find that rapid-onset disasters increase the risk of civil unrest, and that such an effect is stronger outside of the area where the disaster strikes.

Natural disasters can also influence the relative strength of the rebel groups, both in positive and negative ways. In Sri Lanka, for example, regions that received more reconstruction funds after the 2004 tsunami also experienced higher levels of violence in the subsequent years, because (among other reasons) the LTTE rebels had incentives to conquer these regions and loot the money for their own war efforts (Kikuta 2019). In the Philippines, by contrast, tropical storms Bopha (2012) and Haiyan (2013) weakened rebel groups as their resource base, logistics and supply lines were affected, while the government expanded its territorial control by delivering (internationally boosted) assistance. This provided the government with opportunities (or incentives) to escalate the conflict (Walch 2018b).

But such opportunities can also act as constraints for political violence. Weakened governments and negatively affected rebel groups might, at least temporarily, reduce their fighting activities in order to recover from the disaster. According to an analysis by Kreutz (2012), for example, the likelihood of a ceasefire (but not of an peace agreement) increases after a natural disaster. Damaged infrastructure makes movement of troops harder while reduced agricultural production causes problems to supply food to them, hence at least temporarily limiting violence (Salehyan and Hendrix 2014). And in the aftermath of droughts or storms, people might be too busy with securing the livelihoods to engage in political violence (Adano et al. 2012; Venugopal and Yasir 2017). The weakening of the Free Aceh Movement by the tsunami in 2004, for example, increased its willingness to engage in peace negotiations with the government (Gaillard et al. 2008a).

So at first glance, the literature provides a rather mixed picture of disaster-violence links. There are plausible arguments and empirical evidence for such a link, but also convincing arguments and studies against it. Of the 32 studies in the core sample analysing the impact of natural disasters on political violence, 2 provide mixed evidence, 19 provide support for such a link, and 11 find no evidence for a disaster-violence nexus (however, 4 of those are primarily concerned with disaster diplomacy rather than with political violence onset or intensity). This is roughly in line with earlier assessments of the relevant literature (Ide et al. 2016; Xu et al. 2016).

However, a large number of recent and well-designed studies finds that natural disasters increase the risk of political violence, but only in the presence of certain context factors. These factors include dysfunctional or discriminatory institutions (Linke et al. 2018; Nardulli et al. 2015), inadequate and biased delivery of aid (Feitelson and Tubi 2017; Klitzsch 2014), the political exclusion of ethnic groups (Schleussner et al. 2016; von Uexkull et al. 2016), and high levels of agricultural dependence (Eastin 2018; von Uexkull 2014).

In other words, there is convergence in the literature that a disaster-violence link exists, but is conjunctural in nature, also leaving space for disaster diplomacy to occur in favourable settings. Further, the studies cited above largely agree that natural disasters are more likely to impact — for good or for bad — low-intensity political violence, such as communal unrest or riots, in contrast to, say, full-blown civil wars (see also Mach et al. 2019).

3.3 Impact of political violence on disaster vulnerability

There is broad consensus in the scholarly community about political violence having a significant and negative impact on vulnerability to disasters. In other words, natural hazards are more likely to turn into disasters and disasters tend to be more devastating in areas with recent or current political violence. All 17 studies in the core sample that deal with this question agree on the existence of a violence-disaster link, and this claim is not doubted in the extended sample either (see for example Wisner 2012). A quantitative analysis by Marktanner et al. (2015), for instance, finds that disaster deaths in armed conflict regions are 40% higher than in non-conflict areas, and that a legacy of armed violence hence accounts for around 14% of all disaster deaths. Walch (2018a: S240) therefore concludes: “armed conflicts increase people’s vulnerability and have

strong negative effects on all phases of disaster management, including mitigation, preparedness, response, and recovery.”

For the purpose of this review, I distinguish five different pathways through which political violence increases vulnerability to disasters.

First, political violence injures or even kills people and causes physical destruction of property and infrastructure, hence reducing capabilities to prepare for and respond to disasters. Land mines make agricultural areas inaccessible and hence impede food storage (Saba 2001). Widows and orphans are more vulnerable to disasters, *inter alia* because of fewer socio-economic prospects and prestige (Mkandawire 2018). Fighting activities can also destroy infrastructures crucial for disaster resilience such as roads or dams (Vivekananda et al. 2014). And insecurity and conflict undermine community trust and cooperation, thus undermining crucial resources for disaster risk reduction (Felletti and Paglieri 2019).

Political violence also affects the capability of people to leave at-risk areas in due time. When the 2004 Indian Ocean tsunami hit Aceh, evacuation was hindered by various conflict-related factors: Surviving victims of battles and torture had a hard time escaping fast enough, few functioning cars were available due to a lack of repair and fuel, and people were afraid to flee to certain hill areas perceived as rebel territory (Gaillard et al. 2008b).

One should keep in mind that especially in the case of high intensity political violence, the destruction of relevant infrastructure is not an unintended consequence, but a key strategy in the conflict. Scorched earth tactics have long been used by militaries to weaken opponents or expand territorial control, often with horrible consequences for food security and health care. During recent wars in Gaza, Iraq and Syria, water-related infrastructures have been a frequent target (Sowers et al. 2017), hence increasing vulnerability to droughts and floods.

Second, institutions for disaster risk reduction might be absent or inadequate due to political violence. This an important driver of poverty and shifts government priorities towards traditional security concerns (Collier et al. 2003). As Wisner (2017) illustrates for volcanic eruptions in the Democratic Republic of Congo (DRC), governments challenged in civil wars often lack the resources (including staff, equipment and training) for risk assessments, disaster-resilient planning, relief operations and reconstruction support. At times, the state may have no interest

in directing resources to politically inconvenient disaster-prone or disaster-affected areas (Siddiqi 2018). In post-tsunami Sri Lanka, for example, nationalist politicians opposed the participation of the LTTE rebels in the Post-Tsunami Operational Management Structure. At the same time, the rebels claimed that government-controlled areas were prioritised during aid delivery (Harrowell and Özerdem 2019).

In areas with high levels of political violence, either between communities or directed against the state, the military is often very present and plays a crucial role in disaster risk reduction. The contested Indian province of Kashmir is an example of this. Yet, militaries usually employ a technocratic, reactive and top-down approach, while good disaster risk reduction is participatory and focuses on the root causes of vulnerability (Field and Kelman 2018). Also, community trust in the military, as well as in contested governments, is often low in conflict regions. When cyclone Gorky hit Bangladesh in April 1991, one reason for the high death toll (>138,000) was that many people doubted the credibility of government warnings (Peters et al. 2019: 20).

The legacy of political violence may be visible for many years. In post-civil war countries, weak and at times fragmented state institutions often co-exist with a large number of NGOs. This leads to struggles about competences and legitimacy, for instance between state institutions and NGOs or between disaster and conflict professionals (Harrowell and Özerdem 2019; Jones et al. 2014). Lack of coordination, unclear responsibilities and duplication of disaster-related activities are related problems. Institutional fragmentation and a multitude of stakeholders involved nine years after the end of its civil war left Nepal still much more vulnerable to the 2015 earthquake than the neighbouring Indian state of Bihar (Jones et al. 2016).

Third, political violence shortens time-horizons as people are unwilling to commit to long-term planning in the context of high insecurity. Short-term thinking is hardly suited to build resilience to natural disasters. Donors, for instance, are unwilling to finance disaster mitigation and preparedness measures in unstable environments due to the high risk of investment (Marcelin 2015). In Afghanistan, insecurity about possible future displacements and survival needs during multiple rounds of political violence led to overgrazing and the cutting of fuelwood in mountainous areas, which resulted in a higher risk of landslides and droughts (Saba 2001). Similar strategies that prioritise intermediate security needs over long-term asset reconstruction have

been utilised by disaster victims in the (post-) conflict regions of Nepal (Vivekananda et al. 2014) and Pakistan (Kurosaki 2017).

Fourth, the presence of political violence limits access to the relevant areas for those providing disaster risk reduction. For NGOs and international agencies, access to conflict zones can be very dangerous. Between 2009 and 2018, at least 1,095 aid workers were intentionally targeted and killed, with some violence- and disaster-ridden countries being particularly dangerous, including Afghanistan, the DRC, Pakistan or South Sudan (Stoddard et al. 2019). Even state institutions might be unable to access rebel-controlled areas, for example to enforce earthquake-resilient building codes or provide emergency relief (Wisner 2017).

Further, it is not uncommon for states to limit access to disaster-prone or disaster-affected areas and populations as well. As discussed above, Egyptian and Turkish authorities used repressive policies against civil society organisations that assisted victims after the 1992 Cairo and the 1999 Marmara earthquakes, mostly due to concerns about a loss of legitimacy and a strengthening of the states' political opponents (Wood and Wright 2016). Before and in the aftermath of the 2004 Indian Ocean tsunami, the Indonesian government also severely limited access of international NGOs to rebel-controlled territories (Zeccola 2011).

Fifth (and finally), political violence causes displacement, which can increase vulnerability to natural disasters. Refugees often have to settle in at-risk areas as few alternative spaces are available for them, and in insufficient shelters. For example, due to these factors, the risk of catastrophic landslides in Lebanon has increased by 75% since the arrival of the first Syrian refugees (Pollock et al. 2019). A lack of social capital (including trust) when compared with long-established communities could also impede community cooperation in preparing for and responding to disasters.

Moreover, when displaced persons move to a region or environment they are not familiar with, they lack traditional disaster risk reduction knowledge (Jayawardana et al. 2019). During the civil war in Aceh, for instance, many people were displaced from inland to coastal areas. But as they had no experience living close to the ocean, displaced people lacked cultural memory or awareness of tsunami risks, and were hence unable to detect and interpret early warning signs. This partly explains the high death toll (~165,000) in Aceh. In the neighbouring island of Simeulue

which was also struck by the tsunami, by contrast, only 45 people died, mostly because an established disaster subculture enabled timely evacuation (Gaillard et al. 2008b).

Overall then, there is no doubt that political violence increases the vulnerability of individuals and communities to natural disasters. Generally speaking, this effect is stronger for high-intensity (e.g., civil war) than for low-intensity violence (e.g., communal riots). The latter causes less destruction (although it can have horrific impacts in specific locations), displaces fewer people, and puts less of a burden on state institutions and international NGOs. One should keep in mind, however, that low-intensity political violence is more widespread (see also Figure 2), and hence has a considerable cumulative effect on disaster vulnerability.

4 Knowledge gaps and research needs

This section identifies knowledge gaps on the intersections between natural disasters and political violence, thereby highlighting further research needs. It does so along the three categories used to structure the previous section: geographical coverage, impact of natural disasters on political violence, and impact of political violence on disaster vulnerability.

As shown above (see Figure 3), the literature mostly focuses on Asia, but also on Africa and the Middle East. This is not unwarranted given the high (yet spatially differentiated) vulnerability of these regions to both violence and disasters. However, other highly important regions remain understudied. In Latin America, for example, countries like Colombia, Guatemala, Haiti, Mexico and Peru experienced high levels of natural disasters loss and political violence in the past, yet the continent receives little attention in the literature. Especially with increased exploitation of the Amazon rainforest, melting glaciers in the Andes, and an intensification of hurricanes due to climate change, this is a crucial research gap. The Pacific Islands should receive further attention as well, especially given their high vulnerability to climate change and the presence of low-intensity political violence in the region (Weir and Virani 2011).

But within Asia there are discrepancies in scholarly attention and knowledge as well. While South and Southeast Asia are well studied, attention to Central Asia has been limited despite the presence of political violence and severe natural hazards in countries like Kyrgyzstan, Tajikistan

and Uzbekistan. Glacier melting due to climate change is predicted to worsen the situation in this region further (Pritchard 2017).

In addition, existing analyses predominately focus on specific types of disasters in certain world regions, such as droughts in Africa and the Middle East, earthquakes and the associated tsunamis in Asia (and especially in Aceh, Nepal and Sri Lanka), and typhoons in the Philippines. The prevalence of droughts in South Asia as well as recent cyclones Idai and Kenneth in southern Africa, among others, illustrate the urgent need to study different kinds of natural disasters within the same region. Slow-onset disasters, for example, leave time for preparation but put stress on livelihoods over extended periods of time, hence being possibly linked in different ways to political violence than fast-onset disasters (short-term events with little lead time).

When it comes to the impact of natural disasters on political violence, research has made considerable progress in recent years by not only focussing on civil wars, but also lower-intensity violence such as communal conflict (O'Loughlin et al. 2014) or individuals' willingness to engage in violent behaviour (Detges 2017). However, most of the existing evidence is still derived from violent conflicts with 25 or more battle-related deaths. But low-intensity violence has a pervasive impact on human security, is a potential starting point for larger conflicts, and most likely to be affected by natural disasters — and should therefore be analysed in greater detail. Examples include the impacts of disasters on riots and unrests (Almer et al. 2017) or sexualised violence (Cutter 2015). Because such forms of violence are less visible and hard to explain by meso- and macro-level factors, such research would involve much more qualitative and field-based approaches. The use of social media data is also promising in this respect.

As highlighted by the literature on disaster diplomacy and also environmental peacebuilding (Ide 2019), there are numerous cases where communities cope with natural disasters peacefully, or where disasters even facilitate cooperation and cohesion. Understanding the factors which make such outcomes more likely, especially on the local level, is of crucial importance. Such knowledge can help policy makers, peacebuilders and disaster practitioners to facilitate peace in a future that will see more (intense) natural disasters. Also, while the literature has identified various mechanisms connecting disasters to political violence (see section 3.2), policy interventions

would benefit from a deeper knowledge about which mechanisms are more relevant (in which contexts and for which forms of political violence).

Relatedly, little is known about the role of natural disasters in peacebuilding efforts. While environmental issues are increasingly incorporated into national and international peacebuilding initiatives (Ide 2019), little research on the specific role of disaster-related mitigation, preparedness, response, and recovery is available in this context. For example, peacebuilders often address environmental issues in technocratic ways that focus on immediate solutions rather than tackling root causes (Aggestam and Sundell 2016). Is this the case for natural disasters as well, and if so, does this accelerate conflicts and fuel political violence, or is the depoliticization of disaster-related vulnerability helping to avoid tensions in violence-prone settings?

Finally, there is considerable room to close knowledge gaps regarding the impact of political violence on vulnerability to natural disasters as well. While the general link is hardly disputed, Siddiqui (2018: S161) argues that we only have a “relatively limited understanding of how disasters interact with, and unfold in, conflict-affected areas.”

For example, non-state armed groups frequently provide public services in the areas they control, such as security, education and health care (Wood 2010). Such groups will continue to exercise authority over disaster-prone areas in the future, but only very few studies on the role of armed rebels and militias in disaster risk reduction exist (Walch 2018a). The role of young people in this context is particularly interesting as they are not only most likely to engage in political violence, but also the largest segment of the population in many at risk-areas, and often most capable to provide emergency relief (Venugopal and Yasir 2017).

Similarly, in some situations, governments can be more willing to support disaster-affected groups in areas characterised by high level of political violence, even if this is politically inconvenient. The government of Indonesia, for example, eventually sent relief and allowed access for internationals to Aceh after the 2004 tsunami (Zeccola 2011). By contrast, Mali’s government has been reluctant to provide drought aid in areas controlled by its political opponents (Benjaminsen 2008), and Myanmar hardly authorised international assistance at all after cyclone Nargis (Özerdem 2010). Understanding the drivers of such diverse reactions and

how other governments, international organisations and NGOs deal with them is an important part of the future research agenda.

In line with this, an emerging research field is studying how disaster risk reduction actors incorporate political violence and conflict sensitivity into their operations (Harrowell and Özerdem 2019; Peters et al. 2019). But this research is still in an early stage, in particular because disaster risk reduction is conducted by actors at various levels (e.g., international conventions, national governments, local civil society groups), facing diverse forms of violence (Siddiqi 2018). Understanding and comparing various approaches (and their intersections) to detect best practices, shortcomings and biases is another research frontier.

5 Concluding summary

The number and intensity of natural disasters is on the rise, while political violence remains at a very high level. Both phenomena often occur in the same areas, undermining human security and development, and causing considerable development setbacks. This report assessed the state of knowledge on the intersections between natural disasters and political violence based on a systematic and extensive review of the existing scientific literature. By doing so, it also identified knowledge gaps to be addressed by future research.

While this position is not undisputed, most studies agree that natural disasters increase the risk of political violence, but only if certain contextual factors such as dysfunctional institutions, ethnic discrimination and agricultural dependence are present. The onset and extent of low-intensity violence (as compared to high-intensity armed conflict) are more likely to be shaped by disasters. Two mechanisms explain such a disaster-violence link: First, natural disasters intensify grievances, for instance due to resource competition, government repression or a (perceived) unequal distribution of vulnerability. Second, natural disasters increase the opportunities for political violence because they facilitate the recruitment of fighters, contribute to state weakness and/or shift the balance of forces between rival parties.

The scientific literature agrees that political violence increases vulnerability to natural disasters considerably. This is the case because political violence (1) causes deaths and injuries as well as the destruction of assets and infrastructure, (2) undermines institutions responsible for disaster

risk reduction, (3) shortens time horizons, (4) limits access to disaster-prone and disaster-affected areas, and (5) displaces people to unfamiliar environments.

These insights are mostly derived South and Southeast Asia, but also from Africa and the Middle East. By contrast, little is known about disaster-violence intersections in vulnerable regions in Latin America, the Pacific and Central Asia. This report identified further research gaps. Studies on the relevance of natural disasters for political violence would benefit from studying low-intensity violence, peaceful coping with natural disasters, and the role of disasters in peacebuilding practices. Research on violence-disaster vulnerability links could enhance existing knowledge on the role of armed groups in disaster risk reduction, the reactions of contested governments to natural disasters, and the approaches disaster risk reduction actors use to address political violence in their work. Moving research forward along these lines would support decision makers in addressing two key challenges of the 21st century.

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Appendix: Core sample of the literature review

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