



# Terra incognita: the contribution of disaster risk reduction in unpacking the sustainability–peace nexus

Katie Peters<sup>1</sup>  · Laura E. R. Peters<sup>2,3</sup>

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## Abstract

The pursuit of sustainable development in the context of global environmental change requires enhanced capability to deal with changing hazard profiles, across scales and geographies. Humans attempt to manage human and natural systems interactions in ways that minimize disaster risks, and the political expression of this ambition is the Sendai Framework for Disaster Risk Reduction 2015–2030 (‘Sendai Framework’). These efforts lay the foundation for sustainable development, as since the onset of the Sendai Framework, the policy objective of disaster risk reduction has been explicitly linked to global progress on the Sustainable Development Goals. Separately, peace is a focal point of SDG 16, and widely regarded as foundational to attainment of all SDGs. Meanwhile in academic and policy arenas throughout the 2000s, evidence attests of the amplifying negative impact of climate-related disaster events on increasing violent conflict. What remains underexplored are questions of whether and how effective management of human and natural systems interaction, through disaster risk reduction, can contribute towards conditions of peace through peacebuilding. This paper explores how delivery of the Sendai Framework is necessary for sustainability, and potentially also for peace. In the context of the sustainability–peace nexus, the contribution of disaster risk reduction is terra incognita. This paper aims to deepen understanding of those under-researched tripartite links.

**Keywords** Disaster risk reduction · Sustainable development · Peacebuilding · Conflict prevention

## Introduction

International cooperation to pursue sustainable development has been inconsistent, but proactive efforts to take responsibility and respond to complex political, social, economic and

environmental change can be seen from global to local scales in geographies around the world. At a global scale, three domains—sustainable development, disaster risk reduction, and peacebuilding—have been connected in multitudinous ways in academic literatures and formal policy. Scholarship has shown that destructive human–environment interactions that lead to disasters and conflicts have the potential to undermine sustainable development trajectories (Virji et al. 2010) and the attainment of the United Nations Sustainable Development Goals (SDGs) (United Nations 2015) (Hope 2020; Nygard 2017; Scharlemann et al. 2020). Yet, these outcomes are not pre-determined. Effective disaster risk reduction and peacebuilding achieved through concerted human actions each has the potential to cultivate positive human–environment relationships that can support and catalyze sustainable development (Nygard 2017) from different angles.

Disaster risk reduction and peace are intrinsic to sustainable development and the SDGs. Disaster risk reduction relates directly to ten of the SDGs and indirectly to all 17 SDGs (UNISDR 2015). In parallel, the United Nations

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Handled by Ayyoob Sharifi, Hiroshima University IDEC Higashi Hiroshima, Japan.

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✉ Katie Peters  
k.peters@odi.org.uk

Laura E. R. Peters  
laura.peters@ucl.ac.uk

<sup>1</sup> Global Risks and Resilience Programme, Overseas Development Institute, 203 Blackfriars Road, London SE1 8NJ, UK

<sup>2</sup> Institute for Risk and Disaster Reduction, and Institute for Global Health, University College London, London WC1E 6BT, UK

<sup>3</sup> College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, Corvallis, OR 97330, USA

Secretary-General Ban Ki-moon stated that ‘peaceful and inclusive societies are both outcomes and enablers of sustainable development’ (Rodrigues 2020, p. 1). These connections can be observed not only generally but also through specific goals. For example, SDG 11 on ‘sustainable cities and communities’ depends on the effective management of hazard-related disaster risks (Dahiya and Das 2019; UNDRR 2019); patterns of vulnerability and exposure to hazards are shaped by urban risk governance practices. Relatedly, how cities are configured affects the pursuit of SDG 16 on ‘peace, justice and strong institutions’ (The World in 2050 2018, in Scharlemann et al. 2020). For example, cityscapes play a role in shaping power relations amidst transitions from armed conflict to peace, affecting things like proximity of populations to different actions, power structures, and resources (Sampaio 2019), and the urban environment can also affect patterns of violence, particularly in post-war cities (Elfverson 2019).

Assessments of SDG interactions have demonstrated that understanding the links between the SDGs are important for actualizing their attainment (see Folke et al. 2016; Rockström and Sukhdev 2016; Scharlemann et al. 2020). Such connections are often only partially conceptualized. The relationship between sustainable development and disaster risk reduction *or* sustainable development and peace, are assessed in parallel tracks. Current scholarship seldom makes explicit where and how the cross-cutting issues of disaster risk reduction and peacebuilding—including conflict prevention, resolution and transformation—intersect on the path toward sustainable development. Disasters, including those related to climate variability and change, have been connected to an increased risk and intensity of violence and armed conflict (Hsiang et al. 2013; Nel and Righarts 2008; Salehyan and Hendrix 2014), but the process (e.g., cooperative action) and outcomes (e.g., fewer disasters or ameliorated impacts) of disaster risk reduction have unknown impacts on peacebuilding and its aims. Without this understanding of how disaster risk reduction and peacebuilding do and do not align, global policy and practice miss potential opportunities to integrate and leverage these strategies to address the interwoven challenges facing sustainable development. This understanding is all the more pressing given that 6 years into the 2030 Sustainable Development Agenda, progress has been uneven, with advancements in some topical areas offset by deterioration in others, and inequalities have persisted between and within countries (United Nations 2020).

This article focuses on the underexplored relationship between disaster risk reduction and peace, and whether and how this nexus may contribute to the conditions and processes of sustainable development. The structure of this paper is as follows. First, definitions and concepts employed within this article related to sustainable development,

disaster risk reduction, and peace are explained. Next, the paper explores the tripartite relationship between disaster risk reduction and sustainable development, sustainable development and peace, and disaster risk reduction and peacebuilding. In arguing that greater synergy is required between scholarship and practice on this tripartite relationship, the paper concludes by proposing ‘prevention’ as a unifying concept from which to support sustainable development. As the only article in the Special Issue to place explicit emphasis on disaster risk reduction, this paper brings to bear the existing body of work on natural hazard-related disaster risk to the sustainability–peace nexus. Marking an important contribution to a nascent body of literature on the disaster–peace–sustainability nexus, the paper brings together disaster, sustainability and peace scholarship and paves the way for future empirical research to address the evidence gaps that are exposed.

## Definitions and concepts employed

Modern and formalized notions of sustainable development took root in the 1980s as concerns about global warming, the depletion of the ozone layer, and environmental degradation alongside global population growth and poverty began to mount. The United Nations General Assembly convened the World Commission on Environment and Development (WCED), also known as the Brundtland Commission, to propose long-term international strategies for economic development in ways that meet human needs while also sustaining and improving the environment on which we depend. The Brundtland Report, *Our Common Future* (WCED 1987, chapter 2 p. 41), provided the conceptual foundations and organizing principles for sustainable development “that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable development framed in this way seeks to balance economic growth with social desirability and ecological viability. Definitions of sustainable development have been refined and reshaped since then; for example, Magee et al. (2013) argued that sustainable development should be redefined as social sustainability, encompassing economic, ecological, political, and cultural conceptual categories, which carries different implications on tradeoffs between categories. The United Nations committed to sustainable development through the adoption of eight Millennium Development Goals (MDGs) 2000–2015, and in 2016, the MDGs were supplanted by seventeen ambitious Sustainable Development Goals 2015–2030 designed for globally inclusive engagement and cooperation. While the 2030 Agenda for Sustainable Development committed the international community to action related to people, planet, prosperity, peace, and partnership, the SDGs are not without limitations

and have been criticized for prioritizing socio-economic development without much progress made toward the environmental dimensions of sustainability (Zeng et al. 2020).

Since the 1970s, our collective understanding of natural hazard-related disasters (‘disasters’) has matured, and social scientists have largely settled on the conceptual understanding of disaster risk as the product of the relationship between a hazard, exposure to a hazard, vulnerability and capacity (or lack thereof) (Wisner et al. 2004). This is reflected in the International Science Council (ISC) and United Nations Office for Disaster Risk Reduction (UNDRR) Hazard Definition and Classification Review (2020) which defines a disaster as: “A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts” (ISC and UNDRR 2020, p. 54). In complement, disaster risk reduction is regarded as: “Preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development” (UNISDR 2017), with actions taken before, during, and after disasters. This terminology is largely adopted in disaster policy formulation, demonstrating a broad consensus across academic scholarship and policy discourse.

There is far less consensus on how to define peace. The academic field of peace research emerged in the 1950s, though topics related to violence, conflict, and war have always taken prominence over investigations of peace (Gleditsch et al. 2014). Galtung (1964, p. 2) introduced concepts of negative and positive peace as the “absence of violence, absence of war” and the “integration of human society”, respectively. The continuum of peace—from negative to positive forms of peace—moves from the ‘absence of violent conflict’ to ‘symbolic rapprochement’ and ‘substantial integration’ as groups, communities, or countries become increasingly more integrated and their relations more peaceful (Ide 2019, p. 330). In this vein, and in line with Virji et al.’s (2020) framing of this Special Issue, peace is not just the absence of violent or armed conflict, but denotes societal conditions which “...depart from the binary and descriptive understanding of peace toward more comprehensive articulations of the quality of peace (Global Peace Index), the voices that define peace (Everyday Peace Indicators), the degree of peace and its variations among societies (Davenport et al. 2018), and specific characteristics of peace (Jarstad et al. 2019)” (Virji et al. 2020, n.p). While varied ontological and epistemological understandings of peace and conflict exist, the notion that conflict is an inherent part of social change is particularly useful in the context of sustainability. It recognizes that conflict can be pursued nonviolently, and constructive conflict can even be utilized

to build sustainable peace when managed nonviolently (Deutsch 1994; Kriesberg 2007). In this paper, we largely refer to conflict to denote destructive forms of conflict, such as local to intrastate conflict in the form of armed conflict, communal violence as well as violent protests and general political instability. DRR could be relevant for interstate violence but there has been less research and evidence to this effect thus far, though work on transboundary water conflict and cooperation (for example, Petersen-Perlman et al. 2017) and environmental peacebuilding (Ide 2019) may shed light on these connections.

Galtung’s (1975) concept of peacebuilding provides the intellectual basis to pursue sustainable peace by addressing the root causes of conflict, offering structural alternatives to violence, and supporting indigenous capacities for peace. The international system adopted peacebuilding as a UN tool with Boutros Boutros-Ghali’s Agenda for Peace in 1992, and the United Nations (2010, p. 5) defined it as follows: “Peacebuilding involves a range of measures targeted to reduce the risk of lapsing or relapsing into conflict by strengthening national capacities at all levels for conflict management, and to lay the foundations for sustainable peace and development”. Peacebuilding is often broadly used as an umbrella term for other terms like conflict prevention and crisis management (Barnett et al. 2007), and it encompasses interventions before, during, and after conflicts (similarly to the ethos of disaster risk reduction). In practice, peacebuilding is “a notoriously unbounded phenomenon that takes very different practical and visible forms in various environments” (Goetze 2017, p. 2).

Since the formalization of the United Nations in 1945, sustainable development, disaster risk reduction, and peacebuilding are all areas that the international community have been deeply involved in, owing to the United Nation’s central mission to maintain international peace and security. Each thematic area strongly connects to the United Nations system through specific agency mandates and frameworks, and the conceptual and definitional parameters of such terms have developed over time. Here, we intentionally focus on definitions and concepts as crafted through political discourses and enshrined in the 2015 global frameworks. This includes, for example, an understanding of sustainable development as it manifests through the global commitments of the SDGs (see Virji et al. 2020), and disasters as encompassed within the Sendai Framework for Disaster Risk Reduction 2015–2030 (‘Sendai Framework’) (UNDRR 2015).

## Dissecting the tripartite relationship

This section begins by exploring the relationship between disaster risk reduction and sustainable development, and the links between sustainable development and peace. We then

turn our attention to the neglected intersection of disaster risk reduction and peacebuilding.

## Disaster risk reduction and sustainable development

Disaster risk reduction has been linked with sustainability for almost half a century (see Peduzzi 2019) through the links between hazards as disrupters to development processes (Anderson 1985) and relatedly disasters as the result of development choices (Lewis 1980). Academic scholarship frequently argues that development which does not actively reduce or mitigate disaster risks is not sustainable (Kelman 2017; Schipper et al. 2016). Disaster risk management is one technical manifestation of the current understanding of how human and natural systems interact, and how humans attempt to manage these interactions in ways that enable sustainable development. Academic insight which debunks the notion that disasters are ‘natural’ and illuminates disasters as socially constructed (Hewitt 1983; O’Keefe et al. 1976; Wisner et al. 2004) has informed how disaster risks are actively managed through policy, legislative and programmatic interventions, and it is now considered part of the duty of government to protect citizens against known and preventable disaster risks.

Throughout the late 1980s and 1990s, international discourse increasingly brought together sustainable development and disaster risk reduction, and policy frameworks for sustainability and disaster risk reduction developed in parallel, with significant cross-over in both directions over time. Many national and local governments articulated ambitions on managing disaster risks as part of processes such as the United Nations Conference on Environment and Development (United Nations 1992) and the action agenda from the Rio Earth Summit, Agenda 21 (Wisner et al. 2004). Adopted by 178 governments, Agenda 21 outlined an action plan for environmental protection and marked an important policy commitment to sustainable development. Cross-linkages continued throughout the 2000s. The Johannesburg World Summit on Sustainable Development, also known as the 2002 Earth Summit, reinforced the idea that disaster impacts undermine sustainable development efforts (ISDR 2003; Wisner et al. 2004). In corroboration, the UN Commission on Sustainable Development 2006–2007 cycle focused on hazards, specifically drought and desertification (UN ECOSOC 2007).

Conversely, disaster-related policy processes and resulting policy documents have frequently linked disaster risk reduction and sustainable development. For example, the language of sustainable development permeated high level initiatives such as the International Decade for Disaster Reduction (Wisner et al. 2004), and the Yokohama Strategy

and Plan of Action for a Safer World (United Nations 1994). As the first international strategy for disaster risk reduction, it is noteworthy that the Yokohama Strategy included the affirmation that “Disaster prevention, mitigation, preparedness and relief are four elements which contribute to and gain from the implementation of sustainable development policies. These elements, along with environmental protection and sustainable development, are closely interrelated” (United Nations 1994 p. 4). The link between reducing disaster impacts and attainment of sustainable development continued, including in the Hyogo Framework for Disaster Risk Reduction 2005–2015 (UNISDR 2005).

By 2015, the international policy discourse provided reciprocal acknowledgment of the links between disaster risk reduction and sustainable development outcomes, with the SDG targets 11.5<sup>1</sup> and 11.b<sup>2</sup> relating directly to reduced disaster losses and implementation of the Sendai Framework respectively (United Nations 2015). Wright et al. (2020) provide a visualization of the links between the Sendai Framework targets and the Sustainable Development Goals. Their figure shows the formalized linkages, as articulated in the reporting processes i.e. progress on specific Sendai Framework targets contribute to the monitoring and attainment of specific linked SDGs. Negotiated framework connections, such as these, reflect the normative position that disaster resilience is understood to be necessary for the successful pursuit of sustainable development trajectories, and more specifically attainment of the SDGs (Hay and Mimura 2010; Schipper and Pelling 2006).

As shown through the formalized linkages, progress on disaster risk reduction has a direct bearing on specific SDGs. Disaster risk reduction, for example, contributes to the necessary conditions for SDG 2 to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture” (United Nations 2015, p. 14). This translates into linked ambitions. For example, part of the World Food Programme’s mandate is to “prevent, mitigate, and prepare for disasters” to safeguard food security. Disasters significantly impact food security through “economic and physical access to food, availability and stability of supplies,

<sup>1</sup> Sustainable Development Goal Target 11.5 reads “By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations”.

<sup>2</sup> Sustainable Development Goal Target 11.b aims to “By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels”.



and utilization” (De Haen and Hemrich 2007, p. 37). Disasters can threaten crop diversity particularly at the local smallholder level, while disaster risk reduction can help to make traditional agricultural practices more resilient and contribute towards disaster mitigation through protection of crops and corresponding effects on nutrition (FAO 2014). In contexts such as Mali, South Sudan and Syria, prolonged droughts can undermine food production and consumption, disrupt economic activity, and lead to protracted crisis (Brück and d’Errico 2019). In Western Kenya, climate variability and change undermine food security, while seasonal climate forecasting can help mitigate food insecurity by enabling more informed decision making (Rarieya and Fortun 2010). The relationship between disasters and food security is complex, and food insecurity and malnutrition can also lead to environmentally unsustainable survival solutions, which in turn can increase disaster risks (Rukandema and Gürkan 2003).

## Sustainable development and peace

Peace is increasingly recognized as a necessary foundation for sustainability, although until recently, academic attention on sustainability has overlooked concepts surrounding peace and conflict (Fisher and Rucki 2017). The 2030 Agenda for Sustainable Development (p. 2) articulated the gravity of peace: “There can be no sustainable development without peace and no peace without sustainable development”. Narrowing in on specific SDGs can provide insights into how peacebuilding—a technical manifestation of a process to reduce violent conflict and pursue peaceful outcomes—provides the basis for sustainable development. Indeed, while disaster risk reduction is needed to make progress on SDG 2 to end hunger, peace is also required. Conflicts in disparate geographies, regardless of the actors involved and their motivations for fighting, are a known driving factor behind food insecurity (Bouzar 2016; FAO et al. 2020). In the case of Boko Haram in Nigeria, increased attacks reduced output and productivity (Adelaja and George 2019), while the Syrian conflict contributed to a reduction in Syria’s agricultural productivity (Jaafar et al., 2015) and threatened to permanently destroy the country’s food systems (Zurayk 2013). The relationship between conflict and food insecurity is complex and features multiple feedbacks (Hendrix and Brinkman 2013), and empirical evidence indicates that food insecurity and malnutrition also contribute to violent conflict (Holleman et al. 2017). For example, rising food costs that deepened food insecurity may have catalyzed existing social–political unrest leading to the Arab Spring in 2011, and the outcomes of the protests in different countries may be partially explained by how well governments responded in terms of providing food security to their

citizenry (Soffiantini 2020). Loss of agricultural productivity and food insecurity may increase the severity of existing armed conflicts in India through decreased opportunity costs for rebellion, increased recruitment opportunities, and increased social grievances (Wischnath and Buhaug 2014). Effective peacebuilding may help to prevent or mitigate food insecurity in conflict-affected contexts (Messer and Cohen 2007), and efforts made toward improving food security and nutrition have the potential to contribute towards peace (Holleman et al. 2017). Similar relationships between peace and sustainability are demonstrated through other SDGs, including SDG 3 on good health and wellbeing (Wesley et al. 2016) and SDG 4 on quality education (Bakhshi et al. 2018).

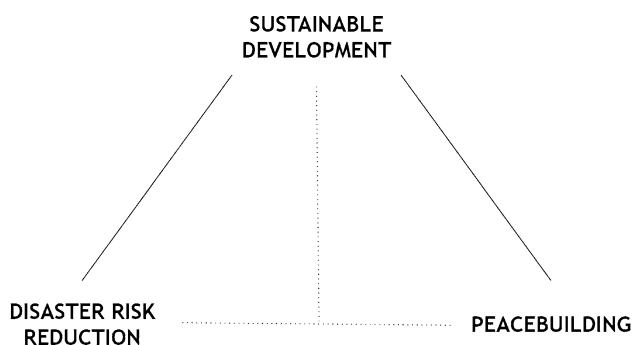
As the primary peace goal, SDG 16 was established to “Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” (United Nations 2015). Cementing peace as a standalone goal represented one of the ‘transformative shifts’ of the sustainable development agenda (United Nations 2013, p. 7), though its inclusion was highly contested in the Open Working Group (OWG) discussions (SaferWorld 2014, p. 2) and remains controversial. The centrality of the rule of law in the articulation of SDG 16 is also often criticized for taking a narrow view of the concept of peace, reducing it to actionable, arguably technocratic interpretations aligned to the effectiveness of formal legal and regulatory frameworks (McIntosh 2019). Moreover, despite being colloquially referred to as the ‘peace’ SDG, it bears little resemblance to academic interpretations of peace which are far more nuanced (see Jarstad et al. 2019; Richmond 2008), and Fisher and Rucki (2017) argue that the SDGs beyond SDG 16 have not robustly addressed themes closely related to peace, including sustainable human development and sustainable environmental governance.

## The missing link

This section explores how scholarship has centered on disasters, particularly those related to climate variability and change and violent conflict, to the neglect of considerations of peace. As visualized in Fig. 1, this leaves underexplored the link between disaster risk reduction and peacebuilding, and its contribution to sustainability. We propose prevention as a principle through which to address this gap.

## Disaster risk reduction and peacebuilding

In understanding vulnerability and exposure as socially determined, conceptual space has opened to allow researchers to consider the role that conditions of violence and



**Fig. 1** The links between sustainable development, disaster risk reduction and peacebuilding

conflict play in the construction of disaster vulnerability (Wisner et al., 2004), and thus also in disaster risk (Barnett and Adger 2007; Siddiqi 2018; Peters 2018, 2021). Disasters yield disproportionate impacts in conflict-affected contexts (Marktanner et al. 2015; Peters and Budimir 2016), which points to a potentially greater need for effective disaster risk management in such contexts. Despite this, Peters et al. (2019a) argue that mainstream disaster risk reduction implicitly positions peace and socio-economic-political security as necessary conditions for disaster risk reduction, and the subsequent lack of policy guidance for conflict-affected contexts obstructs the advancement of disaster risk reduction where peace is not found. Not only are the heightened disaster risks in conflict-affected contexts left unabated, but also the potential for disaster risk reduction to contribute to negative and positive peace is unrealized.

One limitation is that the link from disaster risk reduction to peace, and to peacebuilding, has yet to be theoretically developed and empirically tested. Instead, scholarship has centered on the extent to which, and how, disasters related to climate conditions are causally linked to violent conflict (Adger et al 2014; Hsiang et al. 2013; Raleigh and Kniverton 2012; Salehyan 2014). Findings have been mixed owing to different empirical, temporal and spatial sites of study, definitions of conflict, and means of analysis (Ide et al. 2020; Peters et al. 2020; Salehyan 2014). Existing research typically defines the hazard event (primarily a high-impact, sudden-onset event) as an independent factor, and tends to focus on the post-disaster space as a site for violent or peaceful action. Less attention has been paid to the long-term processes of disaster risk and their relationship to dynamic conditions of conflict and peace (Peters and Kelman 2020).

Peters and Kelman (2020) argue that part of the limitation stems from the lack of cross-fertilization of disaster, conflict and peace studies, with more work to be done to fully grasp the conceptual and theoretical underpinnings of conflict and peace, and violence and cooperation. With a deeper understanding of the various manifestations of violence (e.g.,

symbolic, cultural, structural, and direct violence types that play out at interpersonal to interstate scales) (Bourdieu 2001; Galtung 1969), and of peace (e.g., the cessation of hostilities through to social-political integration) (e.g., Galtung 1969; Ide 2019), it becomes apparent that any study of disaster risk must necessarily include consideration of conditions that do not conform to binary definitions of conflict or peace. Conditions of violence and peace have only rarely been explicitly included in the study of patterns of disaster vulnerability and of exposure (Wisner et al. 2004), and too often academic scholarship on disasters inadvertently or overtly neglects how conflict contributes to the social construction of disaster risks in favor of assessing only the impacts of disaster events on conflict and/or peace.

Thus, despite 50 years of the literature on the topic, we still know relatively little about the role of violent conflict in the construction of disaster risk (Peters 2019a, b) and the impact of disasters on the societal conditions of violent conflict (Siddiqi 2018). Relatedly, as this article makes clear, we know even less about the relationship between disaster risk reduction and peace or peacebuilding. As such, further empirical evidence is required. What exists at present are isolated attempts to document real-life operational examples of projects which acknowledge the relationships between disaster risk reduction and peacebuilding. For example Concern Haiti partnered with peace and reconciliation specialists Glenree to establish community peace committees in their areas of operation in Martissant, Port-au-Prince (Peters 2017). The committees sought to address issues of gang violence and endemic criminality which prevented traditional community-based approaches to disaster risk reduction. Adjoining the peacebuilding programme, activities to mitigate and control flood risk were subsequently undertaken, enabled through a reduction of violence (Peters 2017). Empirical evidence illustrating how disaster risk reduction may directly contribute to or facilitate peacebuilding is lacking, but there is sufficient reason to believe that the direct and indirect casual pathways between disaster risk reduction outcomes and peacebuilding warrant further attention. For example, the possibility for the lowered incidence of disasters to lower the risks of conflict—given that disaster events can lead to violent civil conflict in the short and medium term (Nel and Righarts 2008), as well as how cooperation to achieve disaster risk reduction outcomes could engender cooperation over a broader range of topics (Peters 2017).

Initial analytical attempts have been made to assess the potential contribution of disaster risk management actions as a tool for conflict prevention (see Stein and Walch 2017; Peters et al. 2019b). Articulating broad contributions that disaster risk management actions could play in enabling well recognized socio-economic, political–institutional and environmental conditions for conflict prevention is just the starting point. Further empirical work is required to understand

the contextual, spatial and temporal contributions of disaster risk management actors and actions in the midst of changing violent conflict dynamics to assess their relative contribution towards conflict cessation, prevention and conditions of peace. The entry points for peacebuilding vary at different points in the progression of conflict, so strategies appropriate under some conditions may be ineffective or even cause harm in active or post-conflict settings. Thus, what types of disaster risk reduction activities and outcomes are viable under different approaches to peacebuilding will vary. This distinction needs to be further explored through scholarship to offer thoughts on how disaster risk reduction approaches need to adapt to different conflict scenarios.

To advance scholarship on the intersection of disaster risk reduction and peace, it is necessary to be cognizant of, and seek to overcome, the limitations of current empirical research. First, much falls foul of the fascination with the disaster event itself, what Gaillard and Gomez (2015) coined the ‘gold rush’ of post-disaster data collection. As a result, patterns of peace and conflict that precede a disaster event, and shape disaster risk, may remain obscured in the quest to identify simple causality. Second, study is concentrated in a few locations around specific high-impact events, such as Aceh and Sri Lanka following the 2004 tsunami (Gaillard et al. 2008; Hyndman 2009; Klitzsch 2014; Kennedy et al. 2008). Places experiencing repeated or slow-onset disasters and everyday violence and peace may not attract the eye of researchers or funders. Third, there is little scholarly focus on preventative measures for linked disaster risk reduction and peacebuilding activities, and a lack of research perspectives which offer the potential to reveal whether disaster risk management policy and practice could or should be adapted to prevent violent conflict escalation and/or enhance peace outcomes. Such a line of enquiry would move away from idea of capitalizing on opportunities in the post-disaster space to pursue peace (see Kelman 2012 for a discussion of disaster diplomacy), to instead focus attention on the longer term process of cooperation that may contribute to a reduced risk of disasters and conflicts, as well as progress toward sustainable development.

Peters and Kelman (2020) thus point to the need for research beyond binary distinctions of peace and conflict and to consider destructive and constructive conflict, positive and negative peace, and different forms of violence (direct, structural, cultural)—and directly investigate the relationship between disaster risk reduction and peacebuilding, conflict resolution, and prevention. For example, if a transdisciplinary approach could be achieved, what new light would be shed on our understanding of the co-location of disasters and conflict, and more specifically the causal pathways between the potential for disaster risk reduction actors and actions to alter relations and conditions for peace, and conversely, for peacebuilding activities to advance disaster risk reduction

outcomes? To what extent could these mutual preventative actions contribute to sustainable development? Prevention may offer a key organizing principle toward establishing the relationship between disaster risk reduction and peace, and in turn, sustainable development.

## Prevention as a common approach to securing a sustainable future

Prevention of disasters and conflict has long been prioritized within the international system. As early as the 1970s, the United Nations General Assembly began to recognize the central role of prevention, planning, and mitigation in disaster management (see UNGA Resolution 2717 1970). This gained traction in the 1990s, designated as the International Decade for Natural Disaster Reduction. In concluding the decade, then United Nations Secretary-General Kofi Annan reaffirmed that “disaster prevention is a moral imperative, no less important than reducing the risks of war” (Annan 1999).

Likewise, the concept of conflict prevention has long been central in peace studies (Ackermann 2003; Ramsbotham et al. 2005; Woocher 2009). Burgeoning after the Cold War (Ackermann 2003), conflict prevention gained mainstream visibility in United Nations Secretary-General Boutros Boutros-Ghali’s 1992 Agenda for Peace (Boutros-Ghali 1992), and continued to grow in prominence in 2015 with the United Nations’ return to the basic principle of ‘prevention’ under United Nations Secretary-General Antonio Guterres (2017a, b). In an address to the United Nations Security Council in 2017, Guterres confirmed the vital role of conflict prevention by declaring, “Prevention is not merely a priority, but the priority” (Guterres 2017a).

Disaster and conflict prevention efforts help to secure the building blocks for immediate and long-term survival and flourishing of humans and their environments and which are necessary for sustainable development. While sustainable development does not focus on prevention, the reduction of risks prevents the pitfalls to sustainable development; disasters and conflicts that never happen do not destroy natural and built environments, livelihoods and lifelines to basic services, and human lives and wellbeing. The notion of sustainable development thus adopts a forward-looking lens to anticipate the needs of current and future generations. This is pertinent given the growing understanding of systemic risks (UNDRR 2019) and the desire to anticipate the needs of future generations and future risk profiles.

The links between disaster risk reduction and peace are just beginning to be drawn out in the policy arena, which historically viewed disaster and conflict as discrete phenomena. In the context of the United Nations 2030 Agenda for Sustainable Development and its broad-based prevention agenda, the prevention of disasters and conflict have

been largely treated separately, with different frameworks, institutions and sustainable development goals. Despite this separation, as Guterres has repeatedly stated, “The interconnected nature of today’s crises requires us to connect our own efforts for peace and security, sustainable development and human rights, not just in words, but in practice” (Guterres 2017a). UNISDR suggests that “disaster risk reduction promotes civility, civic mindedness and resilience, and therein lies a key element of its potential to boost understanding and contribute to sustainable peace” (Glasser 2016). Similarly, the OECD States of Fragility (2018) report suggests that “disaster risk reduction and disaster management initiatives offer opportunities, if done properly, to address climate-related fragility risks and build peace” (Vivekananda 2018, p. 62).

The notion of prevention could be a useful discursive entry point from which to strengthen interconnections between action on natural hazards and on peace. Empirical evidence indicates how often disasters and violent conflicts occur in the same location and as a result of similar vulnerabilities (Siddiqi et al. 2019; Wisner 2009; Wisner et al. 2004). Furthermore, academic research has shown that disasters have greater impacts in contexts affected by conflict, where higher vulnerability, reduced coping capacity and insufficient disaster risk reduction and disaster management practices are all likely conditions (Harris et al. 2013; Siddiqi 2018). Such disaster risk reduction actions may be undertaken not only by state and international actors but also by conflict-affected populations, including refugees, who have demonstrated their individual and collective capacities to take preventative actions (Zaman et al. 2020). What has yet to be explored is the extent to which these actions may also be connected with peacebuilding and sustainable development in such contexts.

The change in political leadership of UNDRR to Ms. Mami Mizutori Special Representative of the UN Secretary General for Disaster Risk Reduction, has brought a willingness to engage more explicitly with the additional challenges that issues of conflict present to attaining disaster risk reduction outcomes; as articulated in the Sendai Framework, national disaster risk reduction strategies, and the SDGs. And, for the first time, the United Nations Global Assessment Report on Disaster Risk Reduction 2019 (UNDRR 2019) explicitly addressed societal conditions of fragile and complex risk contexts. Furthermore, the International Science Council and United Nations Office for Disaster Risk Reduction (UNDRR) Hazard Definition & Classification Review (ISC and UNDRR 2020) includes reference to international and non-international armed conflict, and violence, within the hazard list. This represents some movement toward partial integration. With renewed political emphasis on the intersection of physical, social, political and economic threats, shocks and stresses, and the systemic nature

of risk, the empirical evidence base for when, how and why disaster risk reduction ambitions could also contribute to peace has never been more pertinent.

Finally, to take 2020 as an example, the COVID-19 pandemic is a disaster of a magnitude that few foresaw. While the ongoing challenges are many, the pandemic may also offer a unique opportunity to begin global discourse on the potential benefits of integrating disaster risk reduction and peacebuilding. The pandemic has caused significant setbacks to the progress made in pursuit of the SDGs (Barbier and Burgess 2020), and early empirical evidence revealed that ineffective management of the virus has undermined conditions of peace—although the specific conflictual outcomes are highly varied and still in flux (Mehrl and Thurner 2020). In some cases, evidence points to impacts of the virus and government responses to the biological hazard as instigating or escalating violent protests particularly in urban areas (Mosello et al. 2020). At the same time, the prevalence and impacts of the pandemic are becoming integral to research on sustainable development (Hörisch 2021). It is estimated that two thirds of the SDGs will remain unmet by the deadline of 2030, with Goal 16 “partially threatened” (Naidoo and Fischer 2020), owing in part to the divergence of funding and prioritization of the health sector (Mukarram 2020). As a biological hazard under the remit of the Sendai Framework (UNISDR 2015), the prevalence of COVID-19 further demonstrates the need to better understand the complex linkages between management of hazards and attainment of sustainable development (Djalante et al. 2020), as well as peace. As countries eventually transition into recovery from COVID-19, it will remain urgent to address systemic barriers to sustainable development, as well as to investigate and pursue new pathways to advance progress in linked global ambitions on sustainable development, disaster risk reduction and peace.

## Conclusion

The pursuit of sustainable development requires action on both disaster risk reduction and on peace. Such links have been articulated in scholarship and formalized in policy through the SDGs and Sendai Framework. More recently, academic evidence attests of the negative impact of climate-related disaster events on violent conflict. This raises questions as to whether and how effective management of human and natural systems interaction through disaster risk reduction, can contribute towards peacebuilding and linked concepts of conflict prevention. This line of enquiry exposes the under-researched tripartite link between disaster risk reduction and peacebuilding as a contribution towards sustainable development, and to sustainable peace.



The maturity of the policy discourse on disaster risk is such that the Sendai Framework articulates that its overarching goal is to tackle “underlying disaster risk drivers” (UNISDR 2015, p. 10) to prevent rather than just respond to disasters. Many of these disaster risk drivers are also known to give rise to conflict. Further empirical scholarship is needed to explore whether addressing such risks and linked vulnerabilities can also provide avenues to support conditions of peace and processes of peacebuilding; and in turn, how the relationship between disaster risk reduction and peace may contribute toward sustainable development.

The contribution of disaster risk reduction to peacebuilding is terra incognita. We argue that several potential pathways link disaster risk reduction with peace from a theoretical perspective and propose prevention as a useful principle through which to explore the links in the policy arena. The potential for the Sendai Framework to bolster peacebuilding has not been explored empirically, and thus further research is required to deepen our collective understanding of this relationship. Emergent empirical examples as in the case of Martissant, Port-au-Prince reveal causal pathways between peacebuilding and disaster risk reduction do exist. Grounded contextual evidence and analysis are required which detail the nuances of disaster risk, conflict, and peace, and in doing so contribute towards a growing knowledge base about whether and how effective management of human and natural systems interaction, through disaster risk reduction, can contribute to conditions of peace. Such a line of enquiry would provide useful grounding for future preparations for the successor to the SDGs in 2030 and beyond.

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