

22 Climate and Catalyst Events and Their Intersection with Violent Extremism

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Benningstad, N. C. G., Miles-Novelo, A., Kunst, J. R., Obaidi, M., & Anderson, C. A. (2025). Climate and Catalyst Events and Their Intersection with Violent Extremism. In M. Obaidi & J. Kunst (Eds.), *The Cambridge Handbook of the Psychology of Violent Extremism* (pp. 451–473). <https://doi.org/10.1017/9781009407892>

22.1 Introduction

In our increasingly interconnected world, a convergence of global challenges is shaping societies and intergroup relations. The current and future consequences of climate change extend far beyond mere changes to the physical environment. An increasing number of scientists, political representatives, and some in the general public are beginning to recognize climate change as a “threat multiplier” (Goodman & Baudu, 2023), a term that highlights the broader security implications of a changing climate. Namely, the effects of climatic and environmental changes interact with and exacerbate existing conflicts and tensions and provide fertile ground for violent extremism.

Ongoing changes in weather patterns and increasingly frequent climate shocks – such as heatwaves, droughts, wildfires, extreme precipitation, and floods – have the potential to disrupt access to essential resources (e.g., food, water, and shelter) and resources necessary to obtain education and work for vast populations worldwide. We have already seen how such resource depletions affect large numbers of people and how these effects can be exploited by extremist groups in areas affected by climatic and environmental degradation. One example is in the areas surrounding the Lake Chad Basin in Central Africa. The majority of the people living in the area depend on the lake and its natural resources for their livelihoods and food security (Okonkwo & Demoz, 2014). The areas surrounding the lake and the lake itself have for a long time been severely affected by climate change and resource depletion (Pham-Duc et al., 2020). In convergence with other underlying factors, such as historical, political, religious, and ethnic tensions, rapid climate change has given rise to one of the world’s most violent extremist groups – Boko Haram (Stuart, 2019). Situations like this can increase perceived (and actual) inequality and prompt significant population migrations, due to the destruction of livelihoods and resource tensions. Thus, the severe consequences of climate change can lead to demographic, social, and political instability, making areas experiencing climate change more susceptible to political conflicts (Pearson & Schuldt, 2018; von Uexkull & Buhaug, 2021).

However, the influence of climate change-based environmental degradation is not limited to regions directly experiencing its most severe manifestations. The mere recognition of climate change as a potential threat, concerns about an uncertain future, increased migration, and potential material losses can trigger defensive responses (e.g., Fritsche et al., 2012; Uhl et al., 2016; Uhl et al., 2018). Furthermore, politically far-right groups are increasingly portraying immigration as a danger to the receiving country's environment, thereby framing restrictive immigration policies, deportation, and repatriation as measures to safeguard the environment of the receiving country (Szenes, 2021; J. Turner & Bailey, 2022). Thus, climatic and environmental challenges can be exploited by both extreme groups such as Boko Haram and the far right, employing various tactics and threat perceptions. This realization prompts exploration of the relationships among climate change, the environment, and violent extremism, with the goal of understanding how changes in our natural environment can disrupt social order, foster inequality, and lead to conditions that are predictive of the emergence and endorsement of violent extremist ideologies. Violent behavior is rarely random. Most often, it is an outcome born out of the combination of individual and external circumstances intersecting at a given moment (Anderson & Bushman, 2002; Kruglanski et al., 2009). Similarly, the willingness of people to join groups that engage in violent extremism is not a random or isolated decision but rather the product of external factors interacting and intersecting with individual experiences (Borum, 2010).

Using well-supported theories of the factors known to increase the likelihood of violent extremism, this chapter examines how climate change and environmental disasters specifically can fuel dangerous extremist ideologies. Specifically, we examine how a certain subset of external influences – namely, climate change and environmental catalyst events – can foster beliefs and attitudes supportive of violent extremism, thereby increasing the execution of it (often perceived as the *only* remaining tool), as a means to regain access to necessary resources. We also highlight the intersectional nature of identity, material circumstances, and external agitators that come together to create the conditions in which violent extremism manifests. We hope this chapter encourages scholars, practitioners, and stakeholders to approach violent extremism from the perspective of multifaceted and complex ecological and social dynamics that shape its manifestation.

22.2 Terrorism and Violent Extremist Action: Environmental Origins and Risk Factors

A growing body of research suggests that climate shocks such as droughts, floods, and heatwaves, as well as general indicators of climate change like rising temperatures and changes in precipitation patterns, may influence the dynamics and prevalence of violent extremism (Craig et al., 2021; Pacillo et al.,

2022; Perliger & Liu, 2022; Price & Elu, 2017; Regan & Young, 2022). Extreme weather events strain the economy, create resource scarcity, and weaken state institutions; these are conditions that can create new and be exploited by existing extremist groups (Maconga, 2023; Regan & Young, 2022). For example, one experiment found that when participants were told that crime and unemployment rates were going up, people were more supportive of anti-immigration attitudes, demonstrating how realistic threats can lead to increases in extremist attitudes (Sinclair et al., 2022). Furthermore, the impact of climate variability can be particularly destabilizing in agricultural and politically fragile regions (Bagozzi et al., 2017; Guo et al., 2023). This section sheds light on how climatic and environmental stressors intersect with individual and societal dynamics which strengthen groups that justify violence for a range of ideological, religious, or political reasons. We examine this intersection within established frameworks of extremism and conflict, offering insights into the pathways that link climate and environmental events to violent extremism.

First, we examine how climate change and climate shocks can lead to lower living standards, which in turn might fuel a psychological need for personal significance (Kruglanski et al., 2022) and lower the perceived relative costs associated with engaging in violence (Vestby, 2019). These environmental stressors not only affect individual motivations but also provide extremist groups with opportunities to exploit these vulnerabilities to recruit those whose lives have been upturned (Nwokeoma & Chinedu, 2017). Next, we assess state capacity to counter violent extremism in the context of climate change, where economic strains on governments may limit their ability to respond effectively to the rise in extremism. We also address the challenges posed by climate-induced migration and displacement, including how they can create competition for resources and contribute to social tensions that can fuel extremism. We then explore perceptions of climate change as a threat and how these perceptions can rationalize violence as a defensive measure, potentially leading to conflict (e.g., Fritzsche et al., 2012). The discussion then turns to the concept of ecofascism, and how the possible consequences of climatic and environmental changes can drive individuals toward radical ideologies that blame particular groups for ecological decline (J. Turner & Bailey, 2022). In sum, the following sections explore multiple perspectives, with the primary of providing a general understanding of how environmental changes can interact with psychological and social factors to foster conditions conducive to extremist views and actions.

22.2.1 Feelings of Insignificance and Opportunity Costs

The far-reaching consequences of climate change can sow seeds of instability, poverty, insecurity, and livelihood loss. These conditions, individually and collectively, can challenge an individual's social identity and evoke a sense of worthlessness or loss of meaningful identity. In turn, this often triggers a basic psychological need for significance among affected individuals and groups

(Kruglanski et al., 2018). A search for individual and collective significance becomes a dominant goal, one that must be pursued regardless of the associated costs, even to the sacrifice of one's life. This situation enables a shift toward extreme beliefs, values, and behaviors that align with this need. Hence, the notion of personal significance within the context of climate shocks is closely associated with the concept of individual opportunity cost (what does an individual give up in order to gain something?).

As environmental pressures threaten livelihoods, the opportunity cost for individuals – the difference between the gains from actions aligned with the norms of the prevailing social system and those from nonnormative actions that contravene these norms, such as joining extremist groups – declines (Miguel et al., 2004; Salehyan & Hendrix, 2014). Indeed, although engaging in violent extremism entails a range of potentially adverse outcomes (e.g., physical injury, imprisonment, death, etc.), its potential gains (material and psychological) can outweigh these costs and drive individuals to participate in violent behaviors.

In times of great instability and insecurity, the perceived costs of violent extremism tend to decrease, whereas the perceived gains, including significance gains, increase. Thus, individuals often enlist in violent activities when nonviolent alternatives are scarce (Salehyan & Hendrix, 2014). Deteriorating climatic conditions can lead to objective deprivation, such as economic challenges, reduced job prospects, and more difficulty accessing education, thereby decreasing the individual costs associated with participating in violent extremism. In such situations, the need for personal significance becomes stronger; meanwhile, the reduced opportunity costs can make joining extremist groups more appealing. This relationship is further shown by empirical research suggesting that individuals are more likely to engage in political violence when their living conditions worsen due to environmental factors such as drought (Vestby, 2019). This supports the view that climate-induced hardships can fuel individual motivations for participation in violent movements within the right context.

22.2.2 Environmental Change and State Capacity to Counter Violent Extremism

The impact of climate change is not limited to individuals and their immediate in-groups; it also extends to governmental states. Increasing environmental pressures, especially those arising from climate shocks, can have cascading effects on governments, leading to economic downturns. Such economic hardships often translate into weaker military forces and insufficient infrastructure, which in turn create obstacles for economically disadvantaged governments in effectively suppressing violent groups (Jones et al., 2017). The individual opportunity cost that we have discussed, and state capacity arguments can be seen as complementing each other (Miguel et al., 2004). Weak state capacity to suppress violent extremism can further lower the individual's cost of engaging in violent extremism. Similarly, economic shocks to governments also reduce their capacity to ameliorate resource shortages. Thus, when climate shocks induce

adverse economic effects, they can facilitate the recruitment efforts of extremist groups. Indeed, these economic and governance dynamics influence the attractiveness of extremist groups. Many such groups capitalize on their ability to provide social services and essential goods, for instance in times during and after climate-induced disasters (Asal et al., 2022; Masera & Yousaf, 2022). The citizens' evaluation of the state's capability (or willingness) to meet their needs, relative to an extremist group's capability, plays a crucial role. When citizens perceive that violent extremist groups can better cater to their needs, support for them tends to increase. Notably, community service provision by extremist organizations serves a dual purpose – it not only fills the void left by the government but also serves as a challenge to the state's authority. Through this provision, extremist groups advertise their capacity to govern, presenting an alternative narrative of governance (Asal et al., 2022).

There is ongoing debate regarding the motives behind such community service activities of extremist groups, with differing perspectives on whether they stem primarily from legitimacy-building efforts, ideology-driven motivations, or recruitment intentions (Alakoc et al., 2023; Asal et al., 2022). Nonetheless, it is evident that some organizations strategically use these efforts to expand their network and influence. For instance, the study by Masera and Yousaf (2022) highlights how the devastating floods of 2010 in Pakistan, which received an insufficient response from the government, led to an observable increase in support for the Taliban in the regions affected by the floods. These effects were most pronounced in areas where the Taliban was likely to have provided assistance and where the state's efforts fell short. This example accentuates the intricate interplay between state response and the attractiveness of extremist groups in the context of climate-induced disasters.

22.2.3 Climate-Induced Migration and Displacements

Another risk factor that increases the opportunity for, and development of, terrorism occurs from climate-induced migration and displacement. For example, time series analyses have demonstrated that countries with higher rates of internally displaced persons (IDPs) also have higher rates of suicide terrorism (Choi & Piazza, 2016). Another analysis found that countries with refugee flows had a higher likelihood of experiencing transnational terrorist attacks (Milton et al., 2013). However, it should be noted that it is not refugees themselves who are to blame, but rather the conditions, both material and social, that they face. As Milton et al. (2013) suggest, the solution is not to keep refugees away but to improve the material conditions of their relocation and social attitudes toward them as a means of discouraging the development of extremist reactionary violence.

Additionally, it is known that as the climate crisis continues to escalate, displacement will become more frequent and severe. Estimates of the potential number of people permanently displaced due to rising sea levels by 2100 are in the hundreds of millions (Geisler & Currens, 2017; McMichael et al., 2020).

This concern of severe ecological displacement, combined with anti-immigration attitudes and poor material conditions for refugees, yields conditions ripe for escalating intergroup conflict and radicalization. Even the way that migration, immigration, and extremism are discussed can fuel additional resentment and reactionary violence. Telford (2023) demonstrated through a case analysis of a UN Security Council Debate how the rhetoric and political framework underlying the connection of climate displacement and terrorism plays into racialized stereotypes and dehumanization. Harmful attitudes held by institutions of power can directly create resentment and anger that fuels eventual extremist ideology and violence. It is imperative to prioritize and center the experiences of those who suffer these outcomes and to seek humanitarian and holistic solutions to help the populations who need it.

22.2.4 Collective Threats

22.2.4.1 Defensive Reactions

In considering the broader impacts of climate change on extremist ideologies, it is crucial to consider the presentation and discourse surrounding this topic. The way we discuss the threat of climate change can unintentionally fuel resentment which in turn can contribute to the rise of extremist ideologies. Collective threats such as climate change, and information about such threats, can trigger defensive mechanisms that might appear disconnected from the actual problem (Stollberg & Jonas, 2021). The threat of climate change poses challenges that can be difficult to solve directly, and to alleviate the anxiety and regain a sense of control, people might turn to palliative actions. Palliation, in this context, refers to defensive responses that do not resolve the underlying threat but rather reduce the distress and anxiety it generates (Proulx & Inzlicht, 2012) due to loss of meaning, belonging, and control (Jonas et al., 2014). By defending their in-groups, worldviews, values, and ideals, people can find temporary relief from the anxiety and uncertainty associated with the climate crisis without addressing the real underlying cause. Indeed, reminders of the negative consequences of climate change led to increased authoritarian attitudes and derogation of threatening groups in previous research (Fritche et al., 2012). Experimental studies have also demonstrated that climate change threat can lead to increased palliative ethnocentrism based on group salience and membership (Uhl et al., 2016). Furthermore, these palliative responses might even be preferred over individual behavior directed at the actual problem, such as pro-environmental behaviors (Uhl et al., 2018). The effects of climate change threat-cues have also been found to be associated with modern racism, moderated by support of social hierarchy (Uenal et al., 2021). These unintended consequences of threat perceptions related to climate change can be an indirect cause for extremist attitudes and behaviors later on. Considering these findings, it is important to integrate this knowledge into climate change communication, adapting it to specific audiences in order to prevent the exacerbation of intergroup tensions.

22.2.4.2 Ecofascism

While some resort to palliative responses, others incorporate the acknowledgment and perception of environmental change as a significant threat into their extreme-right political ideologies. A relatively small but distinct strain of fascism, known as ecofascism, places environmental conservation, ethnonationalism, and racial purity at its ideological center (Campion, 2023; Zimmerman, 1995). Ecofascist thought is characterized by concerns about how overpopulation and immigration are dangers to both the local and global environment (Macklin, 2022). Immigration and multiculturalism are framed as a “mass invasion,” “foreign species,” and “polluting” and are blamed for environmental challenges (Campion, 2023; Szenes, 2021). Ecofascists assert a superior connection with the environment, giving them the right to exclude immigrants and other groups to restore the natural order and stability of the ecosystem. Thus, the solutions offered for environmental protection range from restrictive immigration policies to deportation, to outright genocidal population reduction programs (Richards et al., 2022; Szenes, 2021; J. Turner & Bailey, 2022).

This shows how environmental degradation can give rise to narratives that sanction extremist beliefs and actions and further how extremist narratives gain traction that assign blame to out-groups due to perceived or real deprivation, symbolic threat (to a group's values, culture, and way of life), and realistic threat (to a group's power, well-being, or material welfare) perceptions (Obaidi et al., 2021). These perceptions can become an important driver of violent extremism as our climate and the sociocultural environment change further (Kunst & Obaidi, 2020; Obaidi et al., 2021; Ozer et al., 2023). The consequence for violent extremism becomes evident in the recent rise in ecofascism, underscored by the 2019 terrorist attacks in Christchurch, New Zealand and El Paso, USA. In their manifestos, both the Christchurch and El Paso attackers displayed ecofascist ideologies, notably with Brenton Tarrant announcing his ecofascist stance in “The Great Replacement” (Campion, 2023; Hughes et al., 2022).

22.3 The Climate Change–Violence Model

Social scientists have always been inherently interested in the external environment's influence on human behavior (James, 1890; Kruglanski & Stroebe, 2011). Humans have individual autonomy but are also influenced by their external environment and material circumstances. This understanding, born from the long-waged “nature versus nurture” debate, is most prominent when considering why any individual or group of people may engage in certain behaviors, particularly ones we may label as “extreme” (e.g., Fiske et al., 2004; Haney et al., 1973; Milgram, 1963).

One of the most studied environmental effects in social psychology has been how *heat* impacts people's aggressive behaviors, cognitions, and affect (Anderson, 2001; Lombroso, 1899/1911; Wilkowski et al., 2009). Being hot

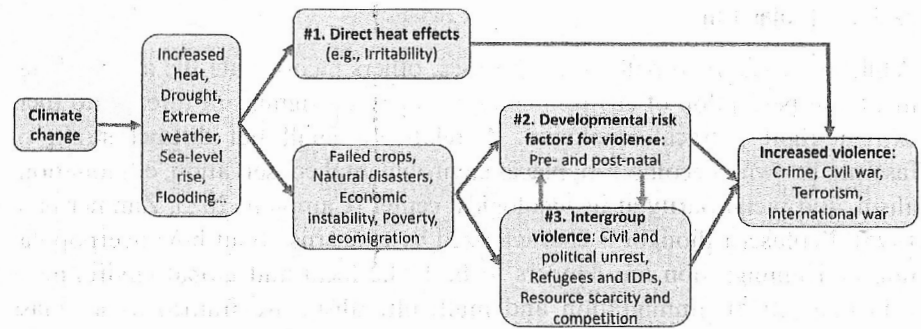


Figure 22.1 *The climate change–violence model with the risk-factor feedback loop highlighted (adapted from Miles-Novelo & Anderson, 2019)*

diverts resources from other bodily functions in an attempt to regulate our temperature (e.g., Yeganeh et al., 2018); this process, in turn, makes humans more reactive and more primed to view others' actions as hostile and threatening, increasing the chances that humans act aggressively and violently (Anderson et al., 2000). Accordingly, field studies have consistently linked violent crime, as well as intergroup violence, to environmental heat stress across countries (Miles-Novelo & Anderson, 2019, 2022). Furthermore, studies have investigated the underlying processes that link heat stress to increased aggressive affect, cognition, and behavior, which we will discuss later in the chapter (for classic examples, see Anderson et al., 2000; Vrij et al., 1994).

In 2019, Miles-Novelo and Anderson proposed a theoretical model to summarize research on climate change's impacts on aggression and violence, starting with the effect of heat on aggressive behavior and cognition (see Figure 22.1).¹ This model describes three pathways by which rapid global warming can increase human exposure to well-known risk factors for aggression and violence. It highlights “direct” and “indirect” mechanisms, identifies individual and group-level factors at play (Miles-Novelo & Anderson, 2022). The goal of this model is to: (1) demonstrate the multifaceted and intersectional nature by which the rapidly changing environment impacts human behavior; (2) identify the major known risk factors for violence by individuals, groups, and political entities – factors that are increasing in frequency and severity because of rapid global warming; and (3) propose proactive measures that can be implemented to mitigate these violence-enhancing risk factors.

It is important to note that there is a feedback loop between impaired developmental processes (Path #2) and intergroup relations (Path #3). We have added this to our model to help capture the cyclical and intersectional nature of how these paths interact with externalized violence. Often, the risk

¹ Based in part on Anderson and DeLisi (2011).

factors associated with developmental risks of violent behavior stem from experiencing or witnessing violence in the environment (Garbarino et al., 1991). Exposure to such violence and adverse conditions during childhood can lead to increased aggression and violent behavior (Betancourt et al., 2014; Boxer et al., 2013; Finkel et al., 2021). Furthermore, the adverse social and developmental impacts of violence can make affected communities less prepared to cope with climate-driven hazards (Buhaug & von Uexkull, 2021). This process, in turn, perpetuates and exacerbates the adverse conditions, creating environments that further encourage violence continuing the cycle, thus creating a “feedback loop.”

22.3.1 Path #1 – The Direct Effect

As we have mentioned, an early line of aggression research examined how heat directly increases aggressive behavior and cognition (e.g., Anderson, 2001). The main explanatory mechanism for the observed relationship between heat and aggression is due to “irritability.” When our bodies are out of equilibrium, we may respond in antisocial ways – such as being more reactive (less thoughtful) and hostile. This reaction is mainly due to the perceptions of threat that are instigated by our fight-or-flight instincts.

The parameters of the relationship between heat or heat-related stimuli and aggression have been studied through experimental studies (e.g., Anderson et al., 2000; Fay & Maner, 2014; Vrij et al., 1994; Wilkowski et al., 2009) and in cross-sectional studies on violence across hotter periods and regions of the planet (e.g., Anderson & Anderson, 1984; Anderson & DeLisi, 2011; Bushman et al., 2005a, 2005b; Mares & Moffett, 2015). Some experimental results have indicated that increased temperature increases aggressive behavior, hostile behaviors (e.g., Vrij et al., 1994), and perceptions of others as threatening, aggressive, and hostile (e.g., Anderson et al., 2000). Cross-sectional findings have also suggested that incidents of violence also increase in conjunction with the temperature. This pattern has been demonstrated by comparisons both within specific geographic regions (e.g., comparing crime rates during hotter and cooler periods in one geographic area; e.g., Bushman et al., 2005a, 2005b) and across different geographic climates (e.g., Anderson, 1989; Anderson et al., 1996). The direct relationship between temperature and violence has been found to be significant even when controlling for other known risk factors for violence (e.g., socioeconomic conditions, political stability, access to resources). Collective violence, such as riots, has also been demonstrated to be strongly correlated with environmental temperature (e.g., Carlsmith & Anderson, 1979; Gangopadhyay & Nilakantan, 2018).

However, it is crucial to note that experiments on the effects of heat on actual aggressive behavior have faced methodological challenges and produced mixed results (Anderson et al., 2000). Some population-based studies appear to support temperature-behavior links more robustly than lab-based studies (Hsiang et al., 2013). Yet, a recent meta-analysis of lab and field studies did not find reliable effects of temperature for aggressive behavioral outcomes (Lynott et al.,

2023). It is worth noting that the meta-analysis did not account for the duration of heat exposure, indicating that further research might still uncover nuanced relationships between heat and aggression.

Highlighting the growing global importance of this direct effect, the planet just recorded the hottest summer in recorded history in what is likely the hottest year in recorded history as of writing this chapter (Esper et al., 2024). The direct consequences of heat could become overwhelming if there is a failure to design and promote preventative infrastructure to try and mitigate these effects (a point we return to in the implications section – see Section 22.5).

22.3.2 Path #2 – Indirect Developmental Impacts

Social scientists have considered a variety of individual-level and systemic-level risk factors that in intersection create the parameters for aggression and violent behaviors, as well as for belief and participation in violent extremism (e.g., Herrenkohl et al., 2000; Liu, 2004). For instance, a variety of developmental experiences predict later violent behavior. Poor pre- and post-natal nutrition, resource scarcity, family instability, forced migration, and exposure to violence all act as predictors for later violent behavior and participation in violent extremism (e.g., Barnett & Adger, 2007; Docherty et al., 2023; Liu et al., 2004; Neugebauer et al., 1999). When we think of how the climate crisis induces environmental changes and catalyst events, we find that many of these major risk factors are increasing in their prevalence in the global population. That is, because of the increasing natural disasters, warming weather, deforestation, and mass extinction of animals, we are exposing more human beings on the planet to more of these known risk factors for developing violence-prone behaviors by adolescence and early adulthood (Anderson & DeLisi, 2011; Miles-Novelo & Anderson, 2019, 2022), forming an indirect path. In short, this path describes how rapid climate change leads to an increase in the proportion of children who become violence-prone adults.

22.3.3 Path #3 – Risk Factors for Group Conflict

Many of the same risk factors that contribute to the development of violence-prone individuals are also significant risk factors for violence occurring between groups. For instance, when drought causes scarcity of food and water resources, it can destabilize the dynamics between groups (for instance, by increasing intergroup competition for resources), forming an indirect path between climate shocks and intergroup violence. Research indicates that the scarcity of agricultural resources, such as fertile land and water, is associated with increased conflict risk within countries. Studies incorporating climatic variables like temperature and rainfall further suggest that these factors significantly influence the link between resource scarcity and conflict (Vesco et al., 2020). Additionally, a country is also more likely to experience conflict over resources when nearby countries face similar shortages, as displacement due to conflict

can exacerbate food insecurity in both sending and receiving areas (Kemmering, 2022). Thus, the effects of climate shocks on intergroup violence in one region can rapidly spill over to another.

Additionally, mass migration is met with increased dehumanizing rhetoric from far-right groups and ideologies, which can also fuel dynamics ripe for the formation of extremist ideologies and groups (Dennison & Geddes, 2018; Einbinder, 2018; J. Turner & Bailey, 2022). Therefore, as outlined earlier, climate change can lead to mass migration that is often accompanied by increases in other risk factors for violence and extremism, such as increased negative stereotypes about outgroups (Fritsche et al., 2012).

22.4 Case Studies

In this section, we outline two case studies where an environmental catalyst event was followed by aggression, violence, and extremism. We highlight the risk factors discussed in the climate change–violence model and how those factors intersect in these historical examples.

22.4.1 Drought, Displacement, and Global Political Backlash – Syrian Civil War

The civil war in Syria began at the end of a multiyear period of extreme once-in-a-generation drought (Gleck, 2014). Simply put, this drought caused water, food, and other resource shortages in a region already in a vulnerable developmental position. The government failed to intervene effectively, and there were not enough resources and economic opportunities created for the massive number of internally displaced persons from the drought. This development, coupled with other political and social pressures, increased existing political and civil unrest, ultimately leading to civil war.

In addition, the interaction of environmental and political drivers led to a mass migration of affected groups to other countries, particularly in Europe, at the same time that other refugee crises were taking place (Abel et al., 2019). This migration then fueled an increase in anti-immigrant rhetoric and political movements across the continent, leading to political events driven by these anti-immigrant attitudes, such as Brexit (Donovan & Redlawsk, 2018; Garret, 2019; Mădroane, 2021). Research has demonstrated the clear relationship between rising anti-immigrant rhetoric and increasing far-right influence (Einbinder, 2018; Krahé, 2020; Landmann et al., 2019), and subsequently, how mass migration is also tied to violent conflict (Plante et al., 2017). Studies have also found that increases in migration are correlated with increases in right-wing extremist attacks on the immigrants and preexisting minority groups (Dinas et al., 2019; McAlexander, 2020).

While it is an oversimplification to say the drought in Syria itself caused the civil war, the downstream (indirect) effects it caused exacerbated current and

underlying sociopolitical stressors. Furthermore, this is where we see the “feed-back loop” as noted in Figure 22.1 begins to take effect, as the civil war itself also increased and exacerbated the conditions for violent extremism to arise (Miles-Novelo & Anderson, 2019). Because of the civil war, groups such as ISIS were able to move in and gain power and continued escalating the conflict, which also spilled over into other countries such as Turkey (Parlar Dal, 2016). The case of the Syrian civil war illustrates how such events may have global consequences not only of material conflict but also of extremist attitudes and policies toward immigrant groups when these environmental catalyst events take place.

22.4.2 Resource Scarcity and Historical Cycles of Violence – Sahel

One region that has received particular attention is the Sahel region in Africa, which experiences significant climate variability due to its location between the desert in the north part of the continent and the savannahs to its south. This variability involves long-term trends of hot and dry, as well as wet and humid time frames (Biasutti, 2019). Throughout the course of history in this region, political opportunism has exploited climate shifts that sparked violence in oppressed and minoritized groups (Raleigh, 2010). Changes in rainfall patterns have led to a drier local climate with persistent dry spells as well as increased flood probabilities, making agricultural and pastoral planning unpredictable (Salack et al., 2016). This development has led to an increase in cases of pastoralist-farmer conflicts over water and land (Larémont, 2021), which jihadist groups have exploited for recruitment purposes (Benjaminsen & Ba, 2018).

While some researchers have challenged the validity of connecting conflicts in this region to the climate crisis (e.g., Benjaminsen & Svarstad, 2021), incorporating such contextual factors in analyses rather than presuming a direct and causal connection is important. As proposed in the climate change and violence model, an environmental catalyst event will itself not always cause violence, extremism, and conflict. Rather, a catalyst event often introduces compounding risk factors for those outcomes to occur. One reason conflict may emerge in regions such as the Sahel could be because of the previous risk factors that were already present, such as minimal government infrastructure and support for at-risk communities. For example, studies have found that conflict in the area can be attributed to weak policies regarding cropland encroachment (M. D. Turner, 2011) and food distribution (Bassett, 1988). Key in all these analyses was that resource and environmental changes did not drive conflict directly but rather were the catalysts to historical conditions that were already present. Instead of framing climate catalyst events as the “cause” for violence, viewing them as a tipping point may be more appropriate when other risk factors are present and salient.

Concerning the development of violent extremism, again, it becomes clear how the history and prevalence of these risk factors can contribute. Finkel et al. (2021) found that communities in the Sahel region that had already experienced

some form of conflict were more likely to be home to individuals who supported and participated in violent extremism. As material conditions in the region have been further challenged in recent years, extremist groups have begun to move in and present themselves as more stable alternatives to the deteriorating government policies and infrastructure, with many residents being willing and open to these groups as potential solutions to their immediate material challenges (Boutellis & Mahmoud, 2017; Orosz, 2022). A 2019 meta-analysis confirmed that increases in violent extremist ideology, membership, and action were caused by degradation to the safety and stability in the region, which included environmental conditions (Banunle & Apau, 2019).

22.5 Implications for Practitioners and Policymakers

The intersecting relationships between violent extremism, climate change, and catalyst events emerge from the presented body of research. The risk factors for violent tendencies, belief in extremist ideologies, and participation in violent extremism can emerge and be concentrated in the wake of environmental catalyst events such as natural disasters. As the climate crisis continues to increase in severity, these catalyst events will become more frequent and more severe, exposing more individuals, groups, and systems to these risk factors for violent extremism.

For practitioners, scholars, and policymakers, it is imperative to use this research to understand the multifaceted and complex social dynamics at play due to the climate crisis. In particular, the groups who will be most affected are often already the most vulnerable. That is, those who already experience poverty, instability, migration/displacement, malnutrition, and other risk factors are the most likely to experience violence as an outcome of an environmental catalyst event, such as a drought, hurricane, or flood. For instance, recent research has shown that refugee camps are some of the most vulnerable areas to extreme weather events such as increased heat and rainfall (Fransen et al., 2023), exposing those who have already faced the most negative consequences of catalyst events to situations where they are likely to continue to experience these risk factors. Only by incorporating this framework into proactive policies, can governmental bodies help mitigate the potential violence that climate shocks can induce.

For instance, helping push governmental messaging that does not “other” migrant groups and displaced people can be helpful in reducing negative attitudes toward them, and could potentially help mitigate increases in right-wing violence targeted toward those groups. Additionally, making sure refugee groups have stable and sufficient housing, food, and economic opportunities, as well as taking publicly visible steps to reduce harm and distress in those communities can help reduce the recruitment effort of extremist groups.

Also, it has been mentioned that countries at risk are often already unstable politically, are facing resource shortages, and are presently experiencing violent conflict. Intergovernmental cooperation, messaging, and resource sharing can help bolster institutions and reduce the harm of resource scarcity in these areas, mitigating the potential of violent extremism to develop.

Before offering some potential solutions relevant to the paths of the climate change–violence model, we want to preface by denoting that these consequences and factors are holistic and intersectional. Only by understanding how human behavior is shaped by and interacts with our natural environment and our constructed social environments can we effectively address and prevent violent extremism linked to the climate crisis.

For the direct path, the effect of rising temperature on aggressive behavior and cognition, the simple answer is to keep people out of the heat. While that seems like a reasonably straightforward answer, the challenges of our rapidly changing climate will displace millions, if not billions, from their homes and make large chunks of our planet functionally uninhabitable. Even more parts of the planet will be unlivable without access to air conditioning, but air conditioning requires access to electricity, and something needs to generate that electricity – which is currently predominately sourced by fossil fuels. To shield humans from excessive heat, we need to have the infrastructure and policy accommodations for mass migration and to transition away from fossil fuel use to more sustainable energy sources. There is no way to directly address this problem without also addressing the underlying dynamics of the climate crisis (i.e., consuming fossil fuels), requiring policymakers to take a holistic approach.

Another solution comes in the wake of policies about the climate crisis: the use of trees in urban landscapes. Recently, fascinating work has shown the inequitable distribution of tree cover in urbanized areas (Jay et al., 2022; McDonald et al., 2021). More wealthy neighborhoods, towns, and cities have more tree cover than poorer ones. This inequality is another way low-SES communities disproportionately feel the effects of the climate crisis. Our infrastructure design directly exposes them to more heat and sunlight, directly impacting behavioral and cognitive functioning. Trees are not only an effective source of carbon capture (Kiran & Kinnary, 2011), but increasing tree cover in neighborhoods has also been found to decrease rates of violence and medical emergencies due to reduced heat exposure (Kondo et al., 2017; Lee & Brown, 2022). When building new infrastructure, this knowledge should be utilized to help inform and motivate urban designers and policymakers to ensure that adequate tree coverage is available to reduce the harm of increasing heat.

For the indirect paths, we suggest that strong social programming and proactive disaster policies and infrastructure are some of the best available means to mitigate the potential risk factors for conflict and extremist violence. On a small scale, decreasing harmful rhetoric and policies toward climate migrants and internally displaced people will help lower the odds of conflict and animosity (Bettini, 2013; Saleem & Anderson, 2013). On a big scale, ensuring economic stability and opportunities is important to provide people experiencing climate crises with alternatives to extreme violence to improve their personal and their group's life circumstances. Inequality, particularly socio-political and group-based inequalities (Franc & Pavlović, 2021; Østby, 2013), has been linked to radicalization and extremism. Therefore, policies that encourage economic development, access to education, stable housing and food, and reduced socio-political inequality are good ways to proactively mitigate the risk factors that arise from the climate crisis. Additionally, having proactive and equitable disaster response and relief policies can help reduce the feelings of systemic prejudice and perceptions of unequal outcomes that can result in the aftermath of catalyst events, thereby decreasing the risk of the development of violent extremist beliefs and actions.

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