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Introduction

The atmospheric concentration of carbon dioxide, the main greenhouse gas, has reached levels not seen for 800,000 years.[1] Over the next 100 years, concentrations could reach levels not observed on earth for 200 million years.[2] While the future is uncertain, we appear to be on track for temperature increases of at least 2 degrees Celsius (3.6°F) above preindustrial levels. Eighteen of the nineteen warmest years on record have occurred since 2000.[3] While there are historical analogues from ancient history of the planet, we are entering into uncharted territory for our species in the modern era.

We have already begun to observe striking changes in temperature and rainfall patterns around the world that have profound implications for human societies. These general trends have been punctuated by extreme weather events, such as hurricanes Harvey and Maria that buffeted the United States in 2017, bushfires like those that burned extensive parts of Australia in 2020, extreme temperatures spikes like those regularly observed in the Middle East and South Asia, and prolonged and severe periods of drought that led cities like Chennai, Cape Town, and São Paulo to nearly run out of water.

What does climate change mean, then, for security? Answers to this question hinge on what we think constitute security threats. Are we simply worried about the risks of violent conflict or are we interested in broader threats to human well-being? We also need to have an appreciation of whose security we are talking about. Are we talking about violent threats to peace and security between or within countries or the broader well-being of individuals or communities within particular countries?

[1] CBS News 2014. [2] Foster, Royer, and Lunt 2017. [3] Samenow 2019.

This book takes a somewhat expansive understanding of security threats: They include but are not limited to violent conflict. Humanitarian emergencies that pose a risk to large-scale loss of life are also included. I seek to explain why climate change leads to negative security outcomes in some places and not others.

In brief, climate change is most likely to trigger conflict and humanitarian emergencies in countries that have: (1) *weak state capacity*, (2) *exclusive political institutions*, and (3) *foreign assistance that is blocked or delivered unevenly*. Where state capacity reflects a government's ability to prepare for climate shocks and help people in times of need, inclusive political institutions capture its willingness to help all or merely some of its citizens. International assistance can partially compensate for weak state capacity. Countries that have stronger state capacity, more political inclusion, and which can tap international assistance to help them are less likely to experience violence or humanitarian emergencies.

Not every climate hazard leads to equally bad outcomes. In other words, not every storm is a natural disaster. While some swift-onset climate hazards such as cyclones pose direct and immediate short-term threats because they occur quickly, other slow-onset hazards such as droughts develop over longer periods of time. Whether or not these events lead to large-scale loss of life is thus even more dependent on the preparedness of the country in question and the nature of the domestic response.

Populations buffeted by natural hazards are not passive. They respond to such hazards by drawing down savings, making use of emergency reserves, seeking family help and community resources, and even moving from inhospitable areas to ones that may offer better chances of survival. They also make claims upon institutions in a position to help them, including national, provincial, and local governments; aid agencies; faith groups; charities; and companies. If their pleas for assistance are not honored, this can lead to demands for redress through peaceful protest that can escalate into looting or more violent confrontation if initial requests are rebuffed. This timetable of escalation can be truncated if hazards arrive in the midst of ongoing conflict, where combatants are already organized, though these hazards may also affect their capacity to continue the fight. Thus, the range of security outcomes of concern range from large-scale loss of life due to exposure, famine, and thirst through to escalating violent conflicts from protests to small scale civil conflict to civil war.

The academic community has largely focused on a narrow set of questions related to whether climate change will lead to a variety of

kinds of civil conflict. The reasons for this circumscribed vision are largely methodological. Social scientists ask questions they can answer with the available evidence. Many are uncomfortable talking about the future as it quickly lends itself to prognostication rather than evidence-driven analysis.[4]

What this means is that social scientists generally look to the past to try to understand the implications for the future. Many use past evidence of droughts, temperature change, rainfall volatility, and other physical phenomena to assess whether they historically contributed to negative security outcomes such as armed conflict. To some extent, this book is no exception. Rather than trying to imagine what a world of more climate extremes – some of which have no modern equivalent – may mean for security, I too look to how states have responded in the recent past to climate-related extreme weather. Future extremes may be beyond what we have observed, but this analysis of the recent past gives us a historically and theoretically grounded account of how countries respond to climate threats.

This book, however, does something a little different from much of the existing literature, which has narrowly defined security in terms of violent conflict. A handful of case studies have sought to surface the connections between climate change and specific conflicts, mostly notably the civil conflict in Darfur, Sudan,[5] and the Syrian civil war,[6] both of which have been offered as examples of conflicts where climate processes have been an important conflict accelerant or multiplier. While some of this work has been careful in its claims, the cases tend to suffer from the same problems of the earlier environmental security literature of the 1990s: single case studies of climate–conflict links in the absence of paired cases to identify the scope conditions for when climate processes lead to conflict – and when they do not. Moreover, as noted above, most of the climate security work has focused on different kinds of conflict as the primary security outcome of interest. I see humanitarian emergencies and the risk of large-scale loss of life as security outcomes of concern in their own right.

This book seeks to address key deficiencies in that earlier scholarship on environmental and climate security. By exploring paired cases of comparable physical exposure that have different social and political effects, I seek to identify the conditions under which climate hazards

[4] Gleditsch 1998, 394. [5] Faris 2007, 2009; Ki-moon 2007.
[6] Werrell and Femia 2013; Kelley et al. 2015; Gleick 2014; Fountain 2015.

lead to negative security outcomes.[7] In the process, I try to provide more insight into the causal mechanisms that have been neglected or unsatisfyingly addressed in the newer, largely quantitative literature on climate security. I am also more inclusive in the scope of security outcomes of interest, moving beyond studies of violent conflict to include humanitarian emergencies.

Chapters 4, 5, and 6 take paired cases in different regions – Africa, the Middle East, and Asia – to demonstrate the promise and challenges of case-based analysis in this space. Chapter 4 explores why, in the 2010s, Somalia had a famine after drought but its neighbor Ethiopia did not. The chapter also takes advantage of within-case variation in Ethiopia to show why Ethiopia had a famine in the 1980s but not in the 2010s. Chapter 5 examines why, in the 2000s, Syria had a civil war in the wake of a serious drought but neighboring Lebanon did not. Chapter 6 investigates why a 2008 cyclone led to the deaths of 140,000 people in Myanmar while regional neighbors Bangladesh and India have experienced relatively few deaths following exposure to severe cyclones since 2000. This chapter also assesses how Bangladesh and India have reduced cyclone mortality over time.

To better understand what I do differently in this book, we need to understand something of the intellectual history of the field. Since wars between states are rare and became rarer in the latter half of the twentieth century, most of the academic discussion has focused on civil wars and other lower-level violence and social conflict within states, though there has been a fair amount of work dedicated to competition and cooperation over transnational river basins. An older literature from the 1990s began to assess the relationship between environmental change and security largely through case studies. While this was important scholarship, it was difficult to generalize from the limited set of cases to the wider world. Moreover, much of the foundational work in this space consisted of single case studies that traced the path from some environmental harm to violent conflict. As Marc Levy noted, this approach had its limits: "The more logical research strategy under the circumstances would be to compare societies facing similar environmental problems but exhibiting different levels of violent conflict. That would permit some precision in identifying the conditions under which environmental degradation generates violent conflict and when it does not."[8]

[7] This echoes a call in Koubi (2019) for more micro-level case studies. [8] Levy 1995, 57.

In the 2000s, with the arrival of better, more fine-grained data on climate hazards and violence, a second generation of scholarship on environmental security emerged, much of it quantitative, to test the statistical relationships between climate factors and conflict outcomes. This newer literature makes more generalizable claims across many cases. However, it has also struggled to pin down precise causal mechanisms between diverse climate phenomena (too little rain, too much rain, unpredictable rain, high temperatures) and different forms of conflict. Moreover, the emphasis on conflict has come at a cost to other legitimate security concerns that worry policymakers, such as humanitarian emergencies.

While this book is intended to contribute to these two generations of scholarship on environmental security, I also, in Chapter 7, back out and ask the more general question why countries such as the United States and those in Europe should care about the security consequences of climate change in other countries. Chapter 7 provides a theoretically informed account and discusses how the insights of this book may inform foreign policy and security practice going forward. Chapter 8 then reviews where I think the academic field of climate and security should be headed. In Chapter 9, I close with some final observations.

In what follows, I summarize the main arguments and the contributions of each chapter.

In Chapters 2 and 3, I develop a more theoretically driven account of what constitute threats to security and under what conditions climate change will lead to negative security outcomes, including but not limited to conflict.

In brief, the argument is that, historically, national security threats meant armed attacks by foreign countries. Of course, that failed to encompass security threats emanating from within countries like rebel movements. With problems like terrorism, we can appreciate that nonstate actors, not just state actors, can also cause security problems. What about harms that lack human agency like pandemics or climate change? Is there anything that makes them "security" problems and not simply very important problems?

The familiar (and still contested) claim is that some climate-related physical processes like droughts can, under certain circumstances, lead to conflict. Here, climate effects become causal factors in the breakdown of internal security within countries (with potential ramifications for other countries that might be affected by that situation). A more expansive way

of thinking about climate change as a security threat is in terms of the gravity of harms and how this compares to an armed external attack. Are the level of damages posed by climate change equivalent to what could be imposed by an armed attack by a foreign adversary? Pandemics and climate change can rise to the level of security problems if they become disasters, that is, if they cause such grave harms (in terms of loss of life and damage to the economy) that. If an adversary were to threaten such damages, a state would be willing to wage war to stop them (though use of force would hardly be effective to combat climate change or pandemics).

While the extent of the damage is one reason to consider humanitarian emergencies as security challenges, they also frequently require military mobilization to deliver emergency supplies, conduct search and rescue, and restore order. The diversion of military assets for humanitarian relief thus imposes opportunity costs and means those assets, at least temporarily, cannot be used for other purposes. For this and other reasons, we can consider climate change a security challenge, even in the absence of escalation to violent conflict. I expand on this logic in Chapter 2.

Under what conditions might such security consequences occur? I answer this question in Chapter 3. The first dimension that matters is *state capacity*. While the field has a variety of definitions of state capacity, I use the term here to reflect bureaucratic and administrative capacity,[9] or what Fukuyama describes as the ability to execute policy.[10] States need capacity to deliver services.

At the most basic level, a state must have sufficient capacity to protect itself from armed attacks, both those that are external and those that come from internal threats. A state too weak to protect itself from invasion will cease to exist, and a state without sufficient capacity will be subject to constant coup attempts from within. While states may retain coercive power to repress violence, they may not possess bureaucratic or administrative capacity to provide services to their populace.

In the face of climate hazards, states need to have some infrastructural power to respond, as they are expected to provide for the needs of their citizens. Even if leaders possess limited preoccupation with the fate of their citizens, climate hazards may ultimately lead to more far-reaching consequences that threaten regime survival by making it impossible for the state to retain the loyalty of its citizens or to repress violence. Those with weak institutions lack the organizational capacity to respond to

[9] Hendrix 2010. [10] Fukuyama 2013, 349.

climate-related hazards. While this is likely correlated with wealth, some polities may have capacity for functions related to emergency preparedness and response, despite being poor. Throughout this book, when I refer to state capacity, I am referencing capacity to deliver services and carry out policy rather than a state's repressive or coercive capacity, though these are related as a monopoly of force may be necessary to extend services over a wider swath of territory.

While state capacity determines whether states *can* respond to climate hazards, other factors shape whether they *will*. Following work by Colin Kahl, Daron Acemoglu and James Robinson, and Douglass North among others, the second dimension of relevance is *political inclusion*.[11] According to Acemoglu and Robinson, inclusive institutions are characterized by "power broadly distributed in society and [institutions that] constrain its arbitrary exercise."[12] If we think of state stability as being based on elite pacts between groups to share power and resolve differences through law and politics rather than by force, then political inclusion implies incorporation of all politically and militarily relevant subgroups in government decision-making and "fair" apportionment of resources and programs.[13]

As Cullen Hendrix notes, institutional inclusivity in practice includes federalism, efforts to devolve power regionally, an independent judiciary, and checks on executive power such as votes that require supermajorities and policies that give minorities voice opportunities.[14] These constraints on leaders and institutional practices to resolve conflicts are two reasons why inclusive institutions are less likely to suffer from top-down violent oppression or the emergence of conflicts that bubble up from dissatisfied groups.[15]

Polities with exclusive political institutions are likely to respond to climate-related hazards with measures largely limited to the political base of the regime such as coethnics or the leader's home region.[16] This leaves less favored regions with meager to no access to resources that would protect them from harm or enable them to respond to climate shocks, such as emergency provisions, food aid, water, shelter, medical attention, transport, and cash. On some level, this is consistent with

[11] Kahl 2006; Acemoglu and Robinson 2013; North, Wallis, and Weingast 2009. This approach also has some affinities with selectorate theory, where exclusive regimes have small selectorates that provide few public goods; Bueno de Mesquita et al. 2003.
[12] Acemoglu and Robinson 2013, 82.
[13] For similar thinking, see North, Wallis, and Weingast 2009. [14] Hendrix 2016, 3.
[15] Ibid. [16] Kahl 2006; Acemoglu and Robinson 2013.

Amartya Sen's observation, based on the Indian experience, that there has never been a famine in a functioning democracy.[17] However, as Chapter 3 details, while democratic governments are generally inclusive by design, other regimes may be inclusive without being democracies. All else being equal, my expectation is that states with more inclusive governments will be more willing to prepare for threats and to come to their citizens' aid in the wake of exposure to climate hazards.

While state capacity can limit the ability of governments to respond in the midst of a crisis, a third dimension – *international assistance* – can partially compensate for state weakness, both in the lead up to and in the aftermath of hazard exposure. While much of the literature on environment and security has sought to grapple with the role played by domestic institutions, the international connections have been understudied.[18] State responses are hugely important, but international assistance can help compensate for capacity constraints, by building capacity over time and by responding in emergency settings with food aid, humanitarian response, conflict mediation, peacekeepers, or other measures to address human suffering, restore order, or quell conflicts.[19] In studies of disaster risk reduction, there are fears that international aid might encourage moral hazard, where states rely on international aid rather than using their own resources to prepare for climate hazards. In work on sub-Saharan Africa, however, Bussell and her collaborators found these fears were overblown.[20]

In the study of aid and civil wars, moral hazard has been found to be more of a concern: Aid may extend civil wars as warring parties fear the end of conflict will see these resources dry up. Moreover, in that literature, aid flows can extend civil wars by providing lootable assets to one side of a conflict. Aid flows may pose a threat to rebel groups by providing the state with assets to strengthen its power. As a consequence, aid projects themselves may become targets if perceived as a threat to rebel authority.[21]

Here, I make a different argument. I emphasize, first, whether a country receives or permits external aid in the midst of an emergency. This matters more in countries with weak capacity, as they may lack the means to prepare for and independently respond to climate hazards. A second aspect is whether the external resources are distributed in a manner that

[17] Sen 1981. [18] Exceptions are work by Baechler 1999b, 1998.
[19] On the role of aid in conflict mitigation, see de Ree and Nillesen 2009; Findley 2018.
[20] Bussell 2014. [21] Findley 2018.

is broadly based on necessity or is captured by exclusive political institutions or sectarian forces that might be favored by the aid provider based on ideology, diaspora affinity groups, religion, formal alliances, etc.

To the extent that some groups receive aid in a crisis and not others, we should expect to see groups with limited to no access to aid in such circumstances suffer, potentially die, and nurture that memory of deprivation as a source of grievance. By aid or assistance, I do not simply mean overseas development assistance (ODA). Emergency relief or humanitarian aid is often not counted by donors as ODA. Moreover, though aid can come in the form of money, other forms of assistance are important including in-kind contributions of material support and even weapons. If those external resources are provided or distributed in a one-sided manner, this can mean large-scale loss of life in the event of exposure to a climate hazard, with favored groups receiving assistance while others suffer. Alternatively, one-sided external support can also provide one group of actors with the resources to fight or serve as a source of grievance for others largely excluded from access to those resources. Aid that is allowed in and distributed in a broad-based manner will likely diminish the risk of humanitarian suffering and follow-on security consequences.

We should expect the worst security consequences to occur in settings with weak state capacity, exclusive political institutions, and no or one-sided provision of international assistance. We should expect the best security outcomes (that is limited death from exposure to climate hazards and limited conflict) to occur in polities with high capacity, inclusive political institutions, and broad-based provision of aid. In between, there are a number of other possibilities, which are elaborated in Chapter 3.

In Chapter 4, I examine the paired cases of Ethiopia and Somalia, comparing them to each other and comparing Ethiopia to itself over time. In 2011, Somalia suffered a devastating famine, in which more than 250,000 people were estimated to have died above normal rates of expected mortality. By contrast, Ethiopia, which faced a similar exposure in 2015, did not face a comparable famine. This was quite a different outcome from the mid-1980s when northern Ethiopia faced a drought that took the lives of 400,000 to 600,000 people. The suffering in Ethiopia became a cause célèbre with the 1985 Live Aid concert, Band Aid, and led to an outpouring of public demands for assistance. However, by 2015, the country was able to avoid large-scale loss of life when again faced with a severe drought.

What set these two countries apart? Between 1992 and 2016, Somalia languished without a functioning government. Meanwhile, Ethiopia had developed considerable government capacity since the 1980s and in the decades after the Ethiopian People's Revolutionary Democratic Front seized power from the socialist Derg government in 1991.

However, these differences in state capacity do not, on their own, fully explain the differences between the two countries. Somalia has faced numerous severe droughts since the 1980s; only two – 1992 and 2011 – resulted in famine. What explains the difference in outcomes? In 1992 and 2011, international assistance was not permitted into the country until late stages of the famine and after large numbers of people had died. In the other two episodes, in the mid-1990s and the mid-2000s, aid was allowed into the country and local groups were in a position to assist in modest self-governance, even in the absence of a functioning state. Chapter 4 focuses on the drought of the 2011–12 period in Somalia.

Despite arguably having an authoritarian government, Ethiopia has increased state capacity and been amenable to foreign aid and humanitarian assistance, which has helped to alleviate famine risk. In 2015, Ethiopia faced another extreme drought, and the government was up to the challenge, avoiding large scale-loss of life. However, on the heels of this famine, a protest among the Oromo, a large but marginalized ethnic group, suggested that Ethiopia's government had strong state capacity but lacked a fully inclusive government, potentially putting at risk the long-term stability of the country. Subsequent events since the Oromo came to power have unfortunately made the situation worse. Chapter 4 explores the 2015 drought in Ethiopia and compares the case both to Somalia in 2011–12 and to Ethiopia itself in the mid-1980s (see Table 1.1 for a summary comparison).

Chapter 5 explores a different set of paired cases, examining the multi-year drought in Syria that began in 2006 and a similar drought that Lebanon faced around the same time. The drought in Syria has been implicated in the emergence of protests and the subsequent civil war. I argue that Syria possessed some state capacity but mismanaged water policy in the lead up to the drought, which made its effects worse. Moreover, because the government is characterized by exclusive political institutions that rewarded groups most loyal to the Assad family (namely, the minority Alawite group), other less favored groups suffered considerably in the wake of the drought. The drought was especially severe in the northeast of the country in the provinces of Hassakeh, Raqqa, and Deir al-Zor, but also affected other areas. The government failed to adequately respond to those affected.