# 1 Introduction

## Looming Climate Instability?

That anthropogenic climate change is one of the foremost twenty-first-century global security challenges is a view now firmly, if rather superficially, ensconced within Western liberal public and policy discourse. National security strategies have depicted it as 'an urgent and growing threat' and possibly 'the greatest challenge' there is to global stability, potentially presaging a 'breakdown of the rules-based international system' and a 're-emergence of major inter-state conflict'. Foreign ministers have labelled it 'perhaps the twenty-first century's biggest foreign policy challenge' and 'the world's most fearsome weapon of mass destruction' and claimed that 'the threat that a changing climate presents to . . . international peace and security cannot be underestimated'. Climate change ministers have argued that 'we need to be ready for a world where climate instability drives political instability' and that a 'world where climate change goes unchallenged will be a Hobbesian world, where life for far more people is "nasty, brutish, and short"'. The United States Congress and Pentagon have both described climate change as a threat to US national security. Successive United Nations (UN) Secretary Generals have called climate change 'the defining threat of our time' and 'the pre-eminent geopolitical and economic issue of the twenty-first century'. Activist movements from Extinction Rebellion (XR) to Greenpeace have characterised it as 'an unprecedented global emergency' that puts us 'in a life or death situation of our own making' and as 'the world's biggest threat . . . ranked close to weapons of mass destruction in terms of potential impact' (indeed, one of the co-founders of XR has claimed that climate change is already 'turning whole regions of the world into death zones' and that a climate change–induced 'global holocaust . . . is already underway'). And figures from Barack Obama to Russell Brand, among many others, have suggested that climate change is a bigger threat than terrorism.[1]

[1] The White House, *National Security Strategy 2015* (2015), 12; UK Cabinet Office, *The National Security Strategy of the United Kingdom: Security in an Interdependent World* (2008),



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Indeed, such views have a conspicuously diverse array of proponents. Western militaries and defence planners, national security think tanks, intelligence agencies, UN and Bretton Woods organisations, state development agencies, humanitarian and development NGOs, environmental campaigners, mainstream liberal media, eco-socialist commentators and even authoritarian Southern governments: all have in one way or another, and for one reason or another, argued that climate change has sweeping implications for conflict and security. Climate change deniers have often ridiculed claims to this effect, along with more basic evidence on the extent and causes of global warming. Many non-Western and Southern governments, most notably China, India, Russia and Brazil, have also been sceptical, arguing, among other things, that the UN Security Council is not the appropriate venue for addressing the challenge of climate change. And various academics have also expressed doubts about the links between climate change, conflict and security, as detailed below. Yet for all this, the breadth of the contemporary Western public and policy consensus on the question of climate security is striking. On this issue, both the American military machine and its fiercest critics can in broad terms agree, as can neo-liberal economists and their anti-capitalist opponents. Climate security discourse is a space where John Kerry and Naomi Klein, Prince Charles and the Syrian state, George Monbiot and the World Bank, Friends of the Earth and the US Central Intelligence Agency all converge.[2]

18–19; W. Hague, 'The diplomacy of climate change', Speech to Council on Foreign Relations, New York (27/09/2010); S. Denyer, 'Kerry calls climate change a weapon of mass destruction, derides sceptics', *Washington Post* (16/02/2014); M. Wallström, Statement at the UN Security Council Debate on Climate-Related Security Risks (11/07/2018); E. Davey, Speech to a Climate and Resource Security Dialogue for the 21st Century conference, London (22/03/2012); C. Huhne, 'The geopolitics of climate change', Speech to Future Maritime Operations conference, Royal United Services Institute, London (07/07/2011); US Congress, *National Defense Authorisation Act for Fiscal Year 2018*, HR2810, Section 335; Department of Defense, *Report on Effects of a Changing Climate to the Department of Defense* (2019), 2; A. Guterres, 'Remarks at the High-Level Event at COP 23' (15/11/2017); B. Ki-moon, 'Opening remarks to UN Climate Change Summit Plenary' (22/09/2009); Extinction Rebellion, 'The Emergency', https://rebellion.earth/the-truth/the-emergency/; K. Naidoo, 'Nature does not negotiate: climate catastrophe is with us now!', Greenpeace (08/12/2014); C. Baynes, 'Extinction Rebellion founder told he is not welcome in movement after Holocaust comments', *Independent* (21/11/2019); 'Obama: The Vox conversation, part two', *Vox.com* (09/02/2015); R. Leber, 'Obama is right: climate change kills more people than terrorism', *New Republic* (11/02/2015); R. Brand, 'ISIS versus climate change – which kills more?', *The Trews* (05/03/2015), https://www.youtube.com/watch?v=Zrr5BvrAo-Y.

[2] T. R. Bromund, 'Climate change is not a national security threat', The Heritage Foundation (04/06/2015); P. J. Michaels and C. A. Preble, 'Does climate change actually fuel terrorism?', The Cato Institute (18/11/2015); UN Security Council, *6587th Meeting* (S/PV.6587) (20/07/2011), 7–9, 12–13, 18–20; UN Security Council, *8451st Meeting* (S/PV.8451) (25/01/2019), 15–17, 42–3, 61–2; Denyer, 'Kerry calls climate change

For proponents of this climate security orthodoxy, the implications of climate change for global security are abundantly clear: that through its impacts on both short-term environmental shocks and long-term trends, climate change will exacerbate resource pressures and scarcities and in turn feed increased resource competition, economic and social vulnerability, migration and displacement, and civil and political conflict at multiple sites and scales – all aided and abetted by existing patterns of poverty and fragility. The central concern of climate security discourse, in other words, is with climate-induced resource scarcity crises and their consequences, which are typically envisaged as taking place in, and as emanating from, the developing world. The 2010 US National Security Strategy, for example, characterised the changes likely to be 'wrought by a warming planet' as 'new conflicts over refugees and resources; new suffering from drought and famine; catastrophic natural disasters; and the degradation of land across the globe'. UK Foreign Secretary Margaret Beckett introduced the first ever UN Security Council debate on the subject by asserting that an 'unstable climate will exacerbate some of the core drivers of conflict, such as migratory pressures and competition for resources'. 'What makes wars start?' she asked, before answering: '[f]ights over water. Changing patterns of rainfall. Fights over food production, land use.' And during a follow-up Security Council meeting, UN Secretary General Ban Ki-moon couched the issue as follows:

> We must make no mistake. The facts are clear. Climate change is real and it is accelerating in a dangerous manner. It not only exacerbates threats to international peace and security, it is a threat to international peace and security ... Competition between communities and countries for scarce resources, especially water, is increasing, exacerbating old security dilemmas and creating new ones. Environmental refugees are reshaping the human geography of the planet, a trend that will only increase as deserts advance, forests are felled and sea-levels rise. Mega-crises may well become the new normal. Those are all threats to human security, as well as to international peace and security.[3]

a weapon of mass destruction'; J. Box and N. Klein, 'Why a climate deal is the best hope for peace', *New Yorker* (18/11/2015); R. Mills, 'Charles: Syria's war linked to climate change', *Sky News* (23/11/2015); ICG, *Popular Protest in North Africa and the Middle East (VI): The Syrian People's Slow-Motion Revolution* (2011), 23; G. Monbiot, 'How fossil fuel burning nearly wiped out life on Earth – 250m years ago', *Guardian* (27/05/2015); World Bank, *Turn Down the Heat: Confronting the New Climate Normal* (2014); C. Bennett, 'Failure to act on climate change means an even bigger refugee crisis', *Guardian* (07/09/2015); D. R. Coates, *Worldwide Threat Assessment of the US Intelligence Community*, Statement to Senate Select Committee on Intelligence (29/01/2019), 23.

[3] The White House, *National Security Strategy 2010* (2010), 47; UN Security Council, *5663rd Meeting* (S/PV.5663) (17/04/2007); P. Reynolds, 'Security Council takes on global warming', *BBC News* (18/04/2007); UN Security Council, *6587th Meeting*, 2.

In all of these formulations and many others besides, it is *resource scarcities* and their socio-economic, especially migration, consequences which are viewed as the key 'intervening variables' between global climate change and worsening instability.

There is, on one level, very good reason for these concerns. Global average temperatures are already more than 1°C above pre-industrial levels (and temperatures over land around 1.5°C higher). The level of atmospheric carbon dioxide ($CO_2$) is not just rising but doing so at an ever-accelerating rate (during the 1960s, atmospheric $CO_2$ was rising at below 0.8 parts per million (ppm) annually; by the 1990s, this growth rate had become 1.5 ppm; by May 2019, the atmospheric $CO_2$ level was 3.5 ppm higher than twelve months previously). Global greenhouse gas emissions will continue rising through to at least 2030 even if all countries' 2015 Paris Agreement commitments are fully implemented. And, of course, they are not being. As a result, our Anthropocene planet is currently on track to have warmed by 1.5°C sometime during the 2030s or 2040s and by 2°C – the internationally accepted target for avoiding 'dangerous climate change' – not long after that. It is projected that, even with full implementation of the Paris Agreement, the Earth will have warmed by between 2.6 and 3.2°C by 2100. Unless worldwide mitigation policies and implementation efforts are significantly expanded, the warming will be greater still. And, in some regions, average temperature rises are likely to be even higher than these global figures suggest.[4]

Climate change of this magnitude and velocity will undoubtedly have wide-ranging environmental, economic, political and humanitarian consequences. Global heating will transform regional climates and ecosystems. Heat death risks will soar. Precipitation may shift considerably, with some regions becoming hotter and drier, others hotter and wetter. Most forms of extreme weather event will become both more frequent and more extreme. Sea levels will rise – albeit unlikely by more than one metre this century, and with sea levels not fully stabilising for several

[4] IPCC, *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems* (2019), 44; US National Oceanic and Atmospheric Administration, Earth Systems Research Laboratory, 'Trends in atmospheric carbon dioxide', www.esrl.noaa.gov/gmd/ccgg/trends/data.html; Scripps Institution of Oceanography, 'Carbon dioxide levels hit record peak in May', Keeling Curve blog (04/06/2019); J. G. J. Olivier et al., Trends in Global $CO_2$ and Total Greenhouse Gas Emissions: 2017 Report (PBL Netherlands Environmental Assessment Agency, 2017); International Energy Agency, *Global Energy and $CO_2$ Status Report 2017* (2018); IPCC, *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways*, Summary for Policymakers (2018), 4; J. Rogelj et al., 'Paris agreement climate proposals need a boost to keep warming well below 2°C', *Nature*, 534 (2016), 631–9.

millennia.[5] And population distribution and food production patterns will inevitably be hugely affected and will have to change. It is frankly inconceivable, given all of this, that climate change will not have significant ramifications for patterns of conflict, insecurity and instability. And in these respects it is neither surprising nor particularly troubling that there is such a wide liberal public and policy consensus on the question of climate security.

In other respects, however, the value of climate security discourse is far from clear. The precise *meanings* of climate security claims are, to start with, often inconstant or ambiguous. Sometimes their reference points are 'national' or 'global' security, while at other times their focus is the likely impacts of climate change on 'human security' or even 'ecological security' – which are different matters altogether. Sometimes climate impacts are discussed in determinist and mono-causal terms, while elsewhere climate change is portrayed as but one 'contributory factor' to conflict among numerous others – with the question of how many others (tens? hundreds? thousands?) usually being left open and unaddressed. The *assumptions* underpinning climate security thinking are often questionable, including those about the nature of human–environment relations and about the causes of conflict, instability and insecurity. Moreover, the *purposes* – the aims and agendas – guiding climate security discourse also warrant interrogation. The framing of climate change as a security challenge – its discursive 'securitisation' – has no doubt been motivated above all by a desire to highlight the urgency of the climate change challenge, and through that to help push the issue up assorted social, political and international policy agendas. But other agendas have also often been in play: military interests in identifying new rationales for intervention; economic interests associated with new 'crisis response' technologies; donor and NGO preferences for depoliticised framings of socio-ecological crises; and more. To adapt Robert Cox's pithy phrase, climate security discourse is 'always for someone and for some purpose' – and not all of these purposes are benign. What's more, even allowing for the best of intentions, there remain questions about the *impacts* of climate security discourse on efforts to reduce greenhouse gas emissions. A good case can be made that, far from supporting mitigation efforts, the language of climate 'threats', 'chaos', 'emergency' and 'catastrophe' feeds feelings of helplessness and fatalism and may even provide an excuse for inaction.[6]

[5] C. Mora et al., 'Global risk of deadly heat', *Nature Climate Change*, 7 (2017), 501–6; P. U. Clark et al., 'Consequences of twenty-first century policy for multi-millennial climate and sea-level change', *Nature Climate Change*, 6 (2016), 360–9.

[6] M. McDonald, 'Discourses of climate security', *Political Geography*, 33 (2013), 42–51; R. Cox, 'Social forces, states and world orders: beyond international relations theory',

Most important, the scholarly *evidence* on the links between climate change and security is weak and divided, and when it departs from dominant policy framings is routinely ignored. For the most part, scientific research has played a formative if far from straightforward role in pushing forward national and international action on climate change. Within climate security discourse, by contrast, it has been defence planners and their scenario reports which have been most influential. Thus, the first major climate security study, commissioned by the Pentagon's leading futurologist, contained very little evidence but nonetheless envisaged large-scale military confrontations over natural resources, a 'flood of refugees' arriving in the United States from the Caribbean (by 2012!) and civil war in China plus the 'near collapse' of the European Union (EU) (by 2025). Likewise, the single most influential report on the subject, a 2007 study authored by a dozen retired three- and four-star US generals and admirals, concluded that climate change will act as a 'threat multiplier for instability in some of the most volatile regions of the world' – though, once again, with only the barest of evidence bases.[7] Only in the wake of these early military-led reports has a significant body of actual research on the subject been conducted. While any discourse always has multiple origins, climate security discourse has clearly been led and shaped more by policy and defence actors, most prominently the US military establishment and its offshoots, than by any weight of scientific evidence.

On the evidence itself, researchers are deeply, and often bitterly, divided – in a manner that cuts across epistemologies and methods. Some quantitative studies have identified striking historical relationships between the climate, weather and conflict, and from that developed projections about the potential conflict and security impacts of climate change. A widely read 2009 study by Marshall Burke and colleagues, for example, identified strong correlations between temperature variations and battle deaths in Africa, and on this basis predicted that by 2030, an additional 393,000 lives may be lost each year across Africa because of global warming. Another more recent study, by Anouch Missirian and Wolfram Schlenker, has claimed to find associations between asylum applications received by the EU and weather fluctuations in source countries, and on this basis suggested that by the end of the century these

*Millennium*, 10:2 (1981), 128; K. M. Norgaard, *Living in Denial: Climate Change, Emotions, and Everyday Life* (MIT Press, 2011).

[7] P. Schwartz and D. Randall, *An Abrupt Climate Change Scenario and Its Implications for United States National Security* (California Institute of Technology, 2003), 17; Center for Naval Analysis Military Advisory Board, *National Security and the Threat of Climate Change* (2007), 44–5.

applications may have increased by as much as 188 per cent. Both studies, however, have been sharply critiqued, including by fellow quantitative researchers.[8] More broadly, while most quantitative studies do identify some manner of connection between specific environmental and conflict variables, a large minority do not, and among those that do, the findings are consistently contradictory. Of recent studies on the impacts of rainfall variability in Africa, for example, some find *low* rainfall to be associated with increased conflict but others *high* rainfall; still others find high rainfall to be associated with *reduced* conflict; at least one study finds that droughts aid democratic transitions; others conclude that precipitation extremes, of either sign, are associated with increased conflict; and numerous studies have found no meaningful correlations, either in Africa specifically or beyond. Just as striking, even review essays on quantitative scholarship on climate security have not been able to come to common conclusions about the extent of agreement on the subject.[9]

Moreover, qualitative researchers have, if anything, been even more split. Some have agreed with and perhaps even gone beyond the policy orthodoxy, with one leading genocide studies scholar concluding that climate change will probably be 'the biggest trigger of genocide in the twenty-first century' and many others foreseeing 'climate wars' and 'climate chaos'. And yet, on the other hand, many qualitative researchers have been profoundly sceptical and critical of climate security thinking. Case study analyses have repeatedly disputed claims about particular conflicts – the civil wars in Darfur and Syria, for example – and the role of climate change therein. Likewise, discourse analyses of climate security narratives have consistently argued, on a range of

[8] M. Burke et al., 'Warming increases the risk of civil war in Africa', *Proceedings of the National Academy of Sciences*, 106:49 (2009), 20670–4; A. Missirian and W. Schlenker, 'Asylum applications respond to temperature fluctuations', *Science*, 358:6370 (22/12/2017), 1610–14; H. Buhaug, 'Climate not to blame for African civil wars', *Proceedings of the National Academy of Sciences*, 107:38 (2010), 16477–8; A. Bojanowski, 'Asyl-studie entsetzt wissenschaftler', *Der Spiegel* (22/12/2017).

[9] J. Selby, 'Positivist climate conflict research: a critique', *Geopolitics*, 19:4 (2014), 829–56 provides further detail on these disparate findings. See also I. Salehyan, 'From climate change to conflict? No consensus yet', *Journal of Peace Research*, 45:3 (2008), 315–26; J. Scheffran et al., 'Disentangling the climate–conflict nexus: empirical and theoretical assessment of vulnerabilities and pathways', *Review of European Studies*, 4:5 (2012); O. M. Theisen et al., 'Is climate change a driver of armed conflict?', *Climatic Change*, 117:3 (2013), 613–25; S. M. Hsiang and M. Burke, 'Climate, conflict, and social stability: what does the evidence say?', *Climatic Change*, 123:1 (2013), 39–55; I. Salehyan, 'Climate change and conflict: making sense of disparate findings', *Political Geography*, 14 (2014), 1–5; M. Burke et al., 'Climate and conflict', *Annual Review of Economics*, 7 (2015), 577–617; H. Buhaug, 'Climate–conflict research: some reflections on the way forward', *Wiley Interdisciplinary Reviews: Climate Change*, 6:3 (2015), 269–75; J. Busby, 'Taking stock: the field of climate and security', *Current Climate Change Reports*, 4 (2018), 338–46.

historical, evidential and normative grounds, against attempts to link climate change and security.[10]

The treatment of climate security issues within the reports of the Intergovernmental Panel on Climate Change (IPCC) broadly reflects these disagreements and uncertainties. The IPCC's Third Assessment Report of 2001 conformed clearly to the popular and policy orthodoxy, foreseeing a 'destabilization of international order by environmental refugees' and the 'emergence of conflicts as a result of multiple climate change impacts' – even though little by way of supporting evidence was provided. The IPCC's 2007 report was rather different in tone but still suggested that, in Africa at least, 'climate change may become a contributing factor to conflicts in the future, particularly those concerning resource scarcity, for example, scarcity of water'. By contrast, the IPCC's Fifth Assessment Report of 2014 was both far more strongly evidence-based and much more equivocal, concluding that 'collectively the research does not conclude that there is a strong positive relationship between warming and armed conflict' and that '[c]onfident statements about the effects of future changes in climate on armed conflict are not possible'. While it is sometimes claimed that there now exists agreement that climate is a 'risk factor' in conflict, the measure of agreement is in truth exceedingly thin. Unlike within Western policy and media circles, among researchers there is at present no consensus on the question of climate security.[11]

[10] J. Zimmerer, 'Foreword', special issue on climate change, environmental violence and genocide, *International Journal of Human Rights*, 18:3 (2014), 263; G. Dyer, *Climate Wars: The Fight for Survival as the World Overheats* (Oneworld, 2008); J. Mazo, *Climate Conflict: How Global Warming Threatens Security and What to Do About It* (International Institute for Strategic Studies, 2010); H. Welzer, *Climate Wars: What People Will Be Killed for in the Twenty-First Century*, trans. P. Camiller (Polity, 2012); A. Alvarez, *Unstable Ground: Climate Change, Conflict and Genocide* (Rowman and Littlefield, 2017). Discourse critiques are discussed later in this chapter; the evidence on Darfur and Syria is interrogated in Chapter 3.

[11] J. B. Smith et al., 'Vulnerability to climate change and reasons for concern: a synthesis', in J. J. McCarthy et al. (eds.), *Climate Change 2001: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2001), 950; M. Boko et al., 'Africa', in M. L. Parry et al. (eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007), 443; W. N. Adger et al., 'Human security', in C. B. Field et al. (eds.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014), 772–3; R. Nordås and N. P. Gleditsch, 'Climate change and conflict', *Political Geography*, 26:6 (2007), 627–38; R. Nordås and N. P. Gleditsch, 'IPCC and the climate–conflict nexus', paper presented at the International Studies Association annual convention 2009; N. P. Gleditsch and R. Nordås, 'Conflicting messages? The IPCC on conflict and human security', *Political*

## Our Approach and Argument in Brief

This book is intended as a contribution to this simultaneously orthodoxy-dominated and scientifically contested intellectual and political terrain. It asks whether the public and policy climate security orthodoxy is well founded or is built instead on foundations of sand. It considers whether climate change– and resource scarcity–induced civil or inter-state conflicts are on the cards or not. It explores what sort of dynamics of conflict, instability and insecurity climate change and the responses to it might bequeath. And it reflects, in passing, on the diverse purposes, interests and agendas served by climate security discourse.

Our approach to these issues is qualitative and loosely comparative, focused on a specific aspect of the climate change challenge as well as on specific geopolitical spaces – and through that, seeking to tease out broader, more general conclusions. Our analysis focuses on water as a particularly crucial site of, and 'intervening variable' in, the claimed climate change–security relationship. It explores these water, climate change and security dynamics in relation to five contemporary 'divided environments': Israel–Palestine, Syria, Cyprus, Sudan–South Sudan and the Lake Chad region. It investigates not just the future but also the past and present links between climate, water and conflict within these five geographical spaces, and seeks to identify and explain similarities and differences across them. It is also theoretically informed, specifically by the tradition of political ecology and by what we label an 'international political ecology' approach to our subject matter, and takes periodic forays into theoretical debates on human–environment relations, conflict and security, international relations and the nature of our global capitalist order. Through all this, the book is intended to serve as a contribution not just to research on climate change and security but also to research on water politics and environmental security, and within the broad field of political ecology.

Our central argument, developed right through the book, is that the conflict and security implications of climate change are very different from those typically imagined within the climate security orthodoxy. Comparing across our five cases, we show that there exists no correlation between environmental resource scarcities on the one hand and water- and climate-related conflicts, vulnerabilities and insecurities on the other. Comparing across time, we show that in many respects the risks of climate, water and environmentally induced chaos are in historical decline and that this dynamic is unlikely to go into reverse in the

*Geography*, 43 (2014), 82–90; K. Mach et al., 'Climate as a risk factor for armed conflict', *Nature*, 571 (2019), 193–7.

foreseeable future, even under conditions of accelerating human-induced global warming. We demonstrate that while environment-related insecurities, vulnerabilities and conflicts are unfortunately all too real, these are much more determined by political and economic forces and power relations – by processes of state-building, war-making and development – than by environmentally defined resource scarcities, and that this is unlikely to change anytime soon either. We argue, by extension, that the conflict implications of climate change relate less to resource scarcities than to how climate change may transform, contribute to or legitimate new projects of state- and nation-building, development, appropriation and dispossession. We contend that the resource- and environment-centrism of most scholarship on climate security, and within some critical scholarship too, is both analytically and politically problematic. We argue for a very different, political ecology–informed approach to reflecting on the conflict and security implications of climate change – one which both recognises the irreducibly political character of contemporary environmental insecurities and views climate change, and the challenges it poses, as much more than a climatic or environmental problem. And lastly, as a theoretical contribution to political ecology, we stress the importance of international structures and relations within all these processes – adopting, illustrating and arguing for an 'international political ecology' approach to the study of environmental conflict, crisis and insecurity.

We are at risk of getting ahead of ourselves, however. For, before wading in too deep, we need first to explain and justify our approach, methods and premises. The remainder of this introductory chapter seeks to do just that. How, we need to ask, have others sought to investigate the conflict and security implications of climate change? What approaches have they adopted, and how have these approaches fared? What options are available to us? What methods are appropriate? Or, in short, how can we possibly know?

## Questions of Method

There can be few objects of analysis where this 'how can we know?' question – this question of method – is more daunting than in the case of the claimed links between climate change and security. For, with the exception of the possible direct connection between high temperatures and aggressive behaviour, any climate change effects on patterns of conflict and instability would only be indirect, mediated via impacts on assorted environmental conditions and socio-economic structures and dynamics. Indeed, there are innumerable possible causal pathways between climate change and security, many of which involve long chains

of intervening variables. These hypothetical causal chains would mostly be spatially extremely complex, typically connecting distant locales and operating at multiple scales. With the important exception of impacts from short-term environmental shocks like floods, they would also often be temporally complex, with gradual changes in climatic and environmental conditions potentially taking years, or even decades, to feed through into impacts on patterns of conflict. Questions inevitably arise at each step of claimed causal chains over the extent to which specific effects can be attributed to their hypothesised climate change–induced cause. For example, it has sometimes been suggested that droughts in Russia and China during 2010 were a central cause of the 2011 'Arab Spring', via their impacts on local wheat yields and, in turn, global wheat prices.[12] But this immediately suggests a whole cascade of questions: about whether the 2010 droughts were products of more than natural variability; about the extent to which the increased global wheat prices were caused by these droughts versus other factors (such as increased global biofuels production and the effects of investment strategies on international commodity markets); about whether and how global wheat prices translated into domestic wheat and bread prices within the Arab world; and about whether and how local food price rises contributed to the Tunisian, Egyptian and other uprisings, given their very many other causes. Establishing firm evidence of significant causal connections between climate change and instability is, in short, incredibly challenging.

Making matters more complicated still is the fact that climate security discourse is principally about the future, about threats and risks which are viewed as likely to deepen as the planet warms – but which, in the final analysis, are unknowable and unknown. Even on the direct climatic consequences of human carbon emissions the uncertainties are huge. For, while climate scientists have no doubt about the basic physics of the greenhouse effect, and thus little doubt about the future direction of global temperature changes, beyond this the uncertainties proliferate. In its Fifth Assessment Report, for example, the IPCC concluded that global mean surface temperatures would likely rise by between 0.3°C and 0.7°C during the period 2016–35 (relative to 1986–2005) – but 'likely' was defined here only as a probability of more than 66 per cent, and in any case the IPCC only had 'medium confidence' in this assessment (these uncertainties, it is worth noting, were less a function of different emissions scenarios than of the divergent assumptions embedded in different

[12] T. Sternberg, 'Chinese drought, bread and the Arab spring', *Applied Geography*, 34 (2012), 519–24.

climate models).[13] Moreover, on other issues – precipitation, drought incidence, other extreme weather events and more – the future uncertainties are still greater, as discussed in Chapters 2 and 3.

However, this is nothing when compared to the uncertainties which stalk any analysis of social or political futures. Political forecasts, in particular, often prove spectacularly wrong. Kenneth Waltz, the preeminent figure in late twentieth-century International Relations (IR), asked, in his major work of 1979, 'Who is likely to be around 100 years from now – the United States, the Soviet Union, France, Egypt, Thailand, and Uganda? Or Ford, IBM, Shell, Unilever, and Massey-Fergusson?', before answering, 'I would bet on the states, perhaps even on Uganda.' Along with Waltz, the entire discipline of IR failed to predict the end of the Cold War, just as Middle East area studies failed to foresee the Arab Spring, and most economists the global financial crash of 2007.[14] Indeed, political and conflict forecasting is such a hazardous business that most scholarly research on these subjects is historical and interpretive, not predictive. And if this applies to conflict generally, then it applies especially to the conflict and security implications of global climate change – given that, unlike the former, the latter is historically unprecedented.

Broadly speaking, these daunting epistemological challenges have been navigated by climate security researchers in one of five ways. One approach has simply been to ignore them in favour of unreflexively *environment-centric narratives* which read human history – past, present and future alike – as determined by environmental and climatic forces alone. Many of the early defence planning studies on climate security fall into this category, typically portraying the 'fates of societies and civilisations' as 'intimately connected to', and indeed universally shaped by, climate; and on this basis projecting or imagining a future of global warming–driven societal 'collapse'. But a surprising number of academic studies are in essence little different. Raphael Reuveny's finding that climate change–induced migration is likely to cause conflict and 'may foster a fertile atmosphere for global terrorism', for instance, is premised on little more than a list of historical episodes of 'environmental migrations', which is advanced without any analysis of the relative contributions of environmental and non-environmental factors to

[13] IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013), 20, 36, 956.

[14] K. Waltz, *Theory of International Politics* (Addison-Wesley, 1979), 95; R. N. Lebow and T. Risse-Kappen (eds.), *International Relations Theory and the End of the Cold War* (Columbia University Press, 1996); G. Gause III, 'Why Middle East Studies missed the Arab Spring: the myth of authoritarian stability', *Foreign Affairs*, 20 (2014); P. Krugman, 'How did economists get it so wrong?', *New York Times* (06/09/2009).

the migrations in question – a gaping analytical flaw which did not prevent publication in the first major peer-reviewed collection on the subject. Equally, Jürgen Zimmerer's recent assertions that 'environmental violence is among the main driving forces of collective violence', and that 'climate change will dramatically increase the likelihood of genocide' and probably be the 'biggest trigger of genocide in the twenty-first century' are simply that: ungrounded assertions, devoid of any analysis of the non-environmental causes of violence, or of the social, economic and political pathways through which genocide might be 'triggered' by climate change. We will consider such eco-determinist reasoning more fully in Chapter 2. But suffice to say for now that just as human history has not been wholly determined by environmental factors, so humankind's future cannot be 'reduced to climate' either.[15] Environment-centric narratives may proffer superficially powerful accounts of looming climate chaos, but they achieve this only through the most blatant and untenable reductionism – to the extent that they are of negligible scientific value, and little value either as guides to the future.

A related approach – which we label *methodological environment–centrism* – involves focusing on environmental pathways to conflict not as an ontological position, as in the above examples, but rather for reasons of method. The classic exemplar here is the 'process-tracing' approach to environmental security taken by Thomas Homer-Dixon, the pre-eminent theorist of the subject, which aims only to identify causal linkages between environmental and conflict variables, and explicitly repudiates the goal of explaining conflict, or particular conflicts, overall. Similar, though, is the approach taken by the Washington DC–based think tank the Center for Climate and Security (CCS), which focuses on identifying and highlighting climatic causes of conflict, while simultaneously acknowledging that there are always innumerable other 'contributory factors' at play. Now, this is perfectly reasonable, in so far as it goes. However, what it is important to recognise is that this approach provides no logical basis for drawing conclusions about the importance of climatic and environmental factors and pathways, relative to other political, economic and social causes of conflict – for knowing whether climate change is a 'significant factor' behind conflicts, or just one of a thousand or even a million others. Moreover, in practice there is regular slippage between the methodological and ontological variants of environment-centrism. Homer-Dixon,

[15] Mazo, *Climate Conflict*, 43; R. Reuveny, 'Climate change-induced migration and violent conflict', *Political Geography*, 26:6 (2007), 656–73; J. Zimmerer, 'Climate change, environmental violence and genocide', *International Journal of Human Rights*, 18:3 (2014), 265; Zimmerer, 'Foreword', 263; M. Hulme, 'Reducing the future to climate: a story of climate determinism and reductionism', *Osiris*, 26:1 (2011), 245–66.

for example, has argued that the frequency of violent conflicts 'will probably jump sharply ... as scarcities rapidly worsen' and that climate change will produce 'insurgencies, genocide, guerrilla attacks, gang warfare and global terrorism', even though his methodology provides no basis for these conclusions, and even though he insists on 'the impossibility of discriminating among the relative power of causes'. Equally, for all its claimed sensitivity to non-environmental factors, CCS regularly lurches into climate reductionism.[16] Although typically presented as departing from environmental determinism, this approach really does not deviate from it – and indeed provides no resources whatsoever, let alone a coherent analytical or methodological framework, for examining the likely significance of climate change within the overall landscape of twenty-first-century global politics.

A very different approach has been pursued within *large-N quantitative studies*: here the aim has been to test for statistical correlations between particular historical environmental and conflict variables, and on this basis to draw inferences about the conflict implications of global climate change specifically. A large body of such quantitative work has been produced over the last decade or so, as already indicated. Building upon a large and ever-expanding body of quantitative research on conflict, this research has undoubtedly brought methodological rigour to the study of climate security, especially when compared to the narrative approaches discussed above. And crucially, it does not 'reduce the future to climate', instead providing a method for exploring the difference that climatic variations make to patterns of economy, politics, society and conflict, without assuming that climatic or environmental variables are their sole or primary determinants.

However, this quantitative research programme has major shortcomings. First, many of the historical correlations identified within it are highly questionable, shaped as much by unreliable and frequently contradictory datasets, and by arbitrary or untenable modelling and data boundary assumptions, as by anything else. Consider the two quantitative

[16] T. Homer-Dixon 'Strategies for studying causation in complex ecological–political systems', *The Journal of Environment and Development*, 5:2 (1996), 132–48; C. Werrell and F. Femia, 'Let's not say climate change causes war. But let's not also ignore the real security risks', Center for Climate and Security blog (05/12/2015), https://climateandsecurity.org/2015/12/lets-not-say-climate-change-causes-war-but-lets-also-not-ignore-the-real-risks/; T. Homer-Dixon, 'Environmental scarcities and violent conflicts: evidence from cases', *International Security*, 19:1 (1994), 39; T. Homer-Dixon, 'Terror in the weather forecast', *New York Times* (27/04/2007); T. Homer-Dixon, 'Cause and effect', Making Sense of Sudan blog (02/08/2007), https://africanarguments.org/2007/08/cause-and-effect/; J. Selby et al., 'Climate change and the Syrian civil war revisited', *Political Geography*, 60 (2017), 232–44; J. Selby et al., 'Climate change and the Syrian civil war revisited: a rejoinder', *Political Geography*, 60 (2017), 253–5.

findings mentioned briefly at the beginning of this chapter. Burke and colleagues' prediction that climate change may cause 393,000 extra battle deaths in Africa by 2030 was rooted in a finding that, between 1981 and 2002, a 1°C temperature rise in Africa was associated with a 4.5 per cent increase in the incidence of civil war. Yet this claimed relationship only holds true for the 1981–2002 period, not post-2000, as the authors themselves acknowledged; and their 1981–2002 findings are highly dependent on just six historical conflicts, all of which were sparked by foreign interventions which could not have been caused by local temperature anomalies (discounting these specific conflicts makes their claimed temperature–civil war relationship all but disappear). Equally, the coming increase in asylum applications projected by Missirian and Schlenker is rooted in claimed associations between countries with an 'optimal temperature range for agriculture', defined as around 20°C, and asylum applications received by the EU between 2000 and 2014. However, this finding is disproportionately affected by a small number of states, most notably Iraq, where the suggested link between asylum applications and the climate is utterly coincidental (Iraqi applications rose between 2004 and 2007 and fell between 2010 and 2013, with temperatures following a similar pattern – but there is no reason to think that the former pattern was driven by the latter, rather than by the US-led invasion and its aftermath). Moreover, their statistical finding is essentially that most migration to the EU is from relatively hot countries – a fact which, though no doubt true, tells us nothing about the causes of this migration, or about whether and to what extent future temperature increases will lead it to increase. Altogether, this suggests that the correlations identified within quantitative climate conflict research are often little more than statistical artefacts.[17]

It is regularly suggested that more research – more fine-grained data and methods! – will ultimately bring greater clarity. But fifteen years of quantitative climate security scholarship have brought nothing of the sort, as we have seen. And conflict research as a whole arguably provides far fewer firm answers than is often thought or implied.[18] Given this and the data and modelling problems touched on above, as well as the huge

[17] Burke et al., 'Warming increases the risk of civil war'; M. Burke et al., 'Climate robustly linked to African civil war', *Proceedings of the National Academy of Sciences*, 107:51 (2010), E185; H. Buhaug et al., *Sensitivity Analysis of Climate Variability and Civil War* (PRIO, 2010); Missirian and Schlenker, 'Asylum applications', Fig. S5, Table S8; Bojanowski, 'Asyl-studie entsetzt wissenschaftler'; J. Selby and G. Daoust, *Rapid Evidence Assessment on the Impacts of Climate Change on Migration Patterns* (UK Foreign, Commonwealth and Development Office, 2021); Selby, 'Positivist climate conflict research'.

[18] Nordås and Gleditsch, 'Climate change and conflict'; Buhaug, 'Climate–conflict research'; H. Hegre and N. Sambanis, 'Sensitivity analysis of empirical results on civil

number of causal pathways through which environmental changes might conceivably affect economic, political and presumably conflict dynamics, it seems unlikely that a consensus will ever emerge on the correlates of climate and conflict, let alone a clear causality.

Moreover, even if such a consensus did emerge it is doubtful how much this would tell us about the conflict implications of global anthropogenic climate change. The latter is a historically unprecedented development which, in addition to promising worldwide changes in temperature and rainfall patterns, poses profound challenges to contemporary modes of economic reproduction, social organisation and political power, requires a wide range of policy responses, and is already a subject of fierce political disagreement. Global climate change is a social–political as much as an environmental phenomenon. We therefore need to ask: does it really make sense to develop predictions about the conflict and security implications of this unprecedented human-induced global challenge through positivist-quantitative analyses of historical variations in the weather?[19] Our assessment is that it does not.

At the other end of the epistemological spectrum from this quantitative work, the approach taken with *discourse critiques* has been to express concern about – and often to completely reject – climate security narratives on the grounds of both the purposes and agendas assumed to be motivating them and their anticipated political implications and consequences. From a diverse range of theoretical starting points – constructivist, post-structuralist and post-colonial, above all – the common premise of these critiques has been that narratives are not merely attempts to represent reality, but are also interested in and productive of it. So viewed, climate chaos 'imaginaries' and 'securitisations' are troubling and potentially dangerous, whether because they reinforce colonial or Northern stereotypes, divert attention from, and culpability for, more directly human causes of conflict, or produce new rationales for resource expropriation, state policing or external military intervention.[20] Seen thus,

war onset', *Journal of Conflict Resolution*, 50:4 (2006), 508–35; N. Sambanis, 'What is a civil war? conceptual and empirical complexities of an operational definition', *Journal of Conflict Resolution* 48:6 (2004) 814–58; C. Cramer, 'Homo economicus goes to war: methodological individualism, rational choice and the political economy of war', *World Development*, 30:11 (2002), 1845–64.

[19] N. P. Gleditsch, 'Whither the weather? Climate change and conflict', *Journal of Peace Research*, 49:1 (2012), 7.

[20] M. J. Trombetta, 'Environmental security and climate change: analysing the discourse', *Cambridge Review of International Affairs*, 21:4 (2009), 585–602; B. Hartmann, 'Rethinking climate refugees and climate conflict: rhetoric, reality, and the politics of policy discourse', *Journal of International Development*, 22:2 (2010), 233–46; M. Carr, 'Slouching towards dystopia: the new military futurism', *Race and Class*, 51:3 (2010), 13–32; McDonald, 'Discourses of climate security'; E. Swyngedouw, 'Apocalypse now!

climate security narratives are not neutral representations but instruments of, or unwitting participants in, operations of power.

In our view, such perspectives have much to commend them, sharing what is best in quantitative analyses – above all, their anti-reductionism and, in their own way, methodological rigour – while also departing from them in important respects. Discourse critiques are in our view rightly suspicious of easy policy consensuses, as well as the commitment to prediction which characterises so much climate security talk. The focus on the ways in which discursive and policy responses to climate change may themselves contribute to or legitimise appropriation, interventions and violence is also, in our view, important – a useful counter to quantitative and environment-centric researchers' exclusive focus on climate impacts. Discourse critiques are not just critiques, but provide tools for analysing the causal and constitutive impacts of climate change–related representations and narratives on patterns of politics, conflict and insecurity – something which quantitative methods have no resources to do.

Yet for all this, there are undoubted limitations to such discourse-centrism. By understanding climate security primarily through the prism of discourse, discourse analyses effectively assign the environment and climate change only secondary roles in analysis. In Latourian terms, they fail to approach environment and society 'symmetrically', being comfortable exploring how the former is represented and constituted by the latter, but shying away from discussion of the reverse.[21] Moreover, the essentially critical orientation of discourse critiques means that, though they have much to say on the limitations of climate security talk, they offer only the most limited explanatory or predictive assessments. Discourse critiques ultimately provide few answers to the question of what role climate change might play in twenty-first-century world order and global security – other than to insist, however rightly, that any impacts will be mediated via discourse.

The above discussion suggests a series of methodological requirements: for a method that is sensitive to both the material and the discursive dimensions of climate security; that considers not just causal pathways between climate and instability, but also how these pathways intersect with other 'non-environmental' factors; that considers the

Fear and doomsday pleasures', *Capitalism Nature Socialism*, 24:1 (2013), 9–18; G. Bettini, 'Climate barbarians at the gate? A critique of apocalyptic narratives on "climate refugees"', *Geoforum*, 45 (2013), 63–72; B. Hartmann, 'Converging on disaster: climate security and the Malthusian anticipatory regime for Africa', *Geopolitics*, 19:4 (2014), 757–83; J. Warner and I. Boas, 'Securitization of climate change: how invoking global dangers for instrumental ends can backfire', *Environment and Planning C: Politics and Space*, 37:8 (2019), 1471–88.

[21] B. Latour, *We Have Never Been Modern* (Harvard University Press, 1993).

conflict and security implications of both global climatic and associated environmental changes, and the social and political responses to them; and that provides some sort of basis, however qualified, for both generalisation and prediction. Our premise is that the *political ecology* tradition can furnish just such a method.

## An International Political Ecology

Political ecology, in Piers Blaikie and Harold Brookfield's oft-used if schematic formulation, 'combines the concerns of ecology and a broadly defined political economy'. Its central thesis, it may be said, is that ecological transformations and crises are always political in both cause and consequence. Less schematically, however, political ecology combines these twin concerns not just by analysing their interactions – by treating 'politics' and 'ecology' as connected but essentially separate spheres – but by approaching them as a dialectical unity, wherein ecology is viewed as internal to society, and politics and power are simultaneously understood as internal to all major contemporary ecological transformations and crises. The underlying premise here is that the very distinction between non-human 'ecology' and the 'environment' on the one hand and human 'politics' on the other is – like the distinction between 'politics' and 'economics' – a modern epistemological construction which can obscure as much as it reveals. There of course exist countless natural environmental objects and processes which predate and have not been created by humans, from the natural course of the Amazon River to the atmospheric heat-trapping properties of $CO_2$. Yet 'nature' no longer exists as an asocial domain separate from human praxis; and, conversely, 'politics' is always rooted, however indirectly, in the exploitation, transformation, circulation and control of the fruits of the Earth. Political ecology, as we understand it, is thus not merely concerned with the political causes and consequences of environmental change, but is the study of the 'metabolic relations' – the patterned and uneven flows of commodities, capital, carbon, bodies, ideas, waste and more – through which both modern political life and our planet's socialised nature are constituted.[22]

While many different approaches to political ecology have been articulated ('regional', 'feminist', 'Third World', 'critical' and so on), taken as

[22] P. Blaikie and H. Brookfield (eds.), *Land Degradation and Society* (Routledge, 1987), 17; P. Warde et al., *The Environment: A History of the Idea* (John Hopkins University Press, 2018); E. M. Wood, 'The separation of the economic and the political in capitalism', *New Left Review*, 127 (1981), 66–95; K. Marx, *Capital: A Critique of Political Economy, Vol. I*, trans. B. Fowkes (Penguin, 1990 [1867]), 283.

a whole political ecology has principally been inspired by historical materialism, with important additional influences coming from Foucault, new materialism and post-colonialism.[23] Our approach in this book can be characterised in these terms too. Hence our analysis is materialist, focused on the extraction, destruction, transformation, distribution and appropriation of nature through human and mechanical labour, and on those social relations, including class, racial, gender and other hierarchies, which are the corollaries of these socio-ecological processes. Our approach is also historical, attentive to both general historical patterns, trends, ruptures and continuities – from legacies of colonialism to ever-rising greenhouse gas emissions – and the specific historical dynamics through which these processes have been articulated at particular times and in particular places. We view the contemporary global social order as, in essence, capitalist – that is, as a system of generalised market dependence where all are compelled to enter the market and where the demands of competition and profit-maximisation dictate relentless expansion, commodification, technological innovation and the unprecedented exploitation and degradation of nature. As per the Marxist tradition, we approach economic development as an inherently political, conflict-ridden and often violent process, involving complex admixtures of accumulation and dispossession, incorporation and marginalisation. We view the state both as a key agent of, and as a crucial arena for contestation over, these developmental and distributive processes. Along the lines of the discourse analyses discussed above, we analyse representations as inherently political – as both politically interested and politically consequential – especially through the support that they have historically lent to colonial and modern state power. And in keeping with most research in political ecology, our analysis is rooted in critical realist philosophical premises.[24]

Understood thus, what ultimately distinguishes political ecology from the other approaches discussed above is its anti-reductionism. Unlike environment-centrism, political ecology does not reduce the future to pressures emanating from environmental change. It takes nature and the environment seriously, including by emphasising the effectivity and power – or what actor network theorists term, however hyperbolically, the

[23] Blaikie and Brookfield, *Land Degradation*; D. Rocheleau et al. (eds.), *Feminist Political Ecology: Global Issues and Local Experiences* (Routledge, 1996); R. Bryant and S. Bailey, *Third World Political Ecology: An Introduction* (Routledge, 1997); T. Forsyth, *Critical Political Ecology: The Politics of Environmental Science* (Routledge, 2003).

[24] A. Sayer, *Method in Social Science: A Realist Approach*, 2nd ed. (Routledge, 1992); E. M. Wood, *The Origin of Capitalism: A Longer View* (Verso, 2002); J. B. Foster et al., *The Ecological Rift: Capitalism's War on the Earth* (Monthly Review Press, 2010); A. Malm, *The Progress of This Storm: Nature and Society in a Warming World* (Verso, 2018).

'agency' – of such things as droughts, floods, groundwater depletion, mosquitoes and rising atmospheric carbon. But it locates all such environmental objects and developments in socio-historical context, exploring how they have been generated through specific histories and political economies, and insisting that, just as the past has not been shaped by ecological forces alone, so the future will not be either. Equally, by contrast with discourse analyses, political ecology does not reduce social relations to representation. It freely acknowledges the historical and likely future importance of specific (environmental and social) narratives in the making and remaking of polities and societies. But it nonetheless insists that 'social life is essentially practical', shaped by work, energy and material exchanges and capabilities, and that representations are only as influential as socio-political circumstances permit.[25] Moreover, unlike quantitative analyses, political ecology does not reduce social life to numerals, let alone to correlations or regressions. It makes frequent use of statistical evidence, as we also do in the chapters to follow in this book. But it nonetheless insists that quantitative models cannot capture the irreducible complexity, historicity or spatial specificity of environment–politics relations, and that a much more qualitative form of analysis is therefore required – including when reflecting on the future.

So understood, political ecology–informed research has already made a broad range of contributions to understanding the conflict and security implications of climate change. Political ecologists have provided close ethnographic studies of how communities manage and respond, including politically, in the face of climatic variability and vulnerability and environmental change. They have advanced direct critiques of supposedly textbook cases of climate-induced conflict. They have explored the already significant conflict and security impacts of government-led climate adaptation and mitigation strategies – of what in broader terms is often characterised as 'green grabbing' – including the global neo-liberal political and economic structures implicated in them. In a reversal of the standard focus of climate security research, they have also interrogated the role of security institutions – most notably the US military – in the making of both climate change and responses to it. Certain eco-Marxist scholars have sought to imagine, and advocate, a future in which revolutionary global political conflict and change, including perhaps the establishment of green dictatorships, becomes necessary to resolving the climate crisis (as well as providing a route to a more equal and less exploitative non-capitalist world order). At the boundary between the critical geopolitics and political ecology traditions, others have sought to

[25] K. Marx, 'Theses on Feuerbach', in *Early Writings*, ed. L. Colletti (Penguin, 1975), 422.

rethink the nature and meaning of 'security' under conditions of the Anthropocene. And beyond climate security specifically, political ecology–informed research has had a tremendous amount to say on the politics of natural resources, and on the patterns of insecurity, marginalisation and violence relating to them – much of which is directly relevant to thinking through the conflict and security implications of planetary heating.[26]

The present volume seeks to contribute to this existing body of political ecology research in two main ways. On the one hand, substantively, we seek simply to offer a holistic and multi-case study informed analysis of the security implications of climate change from a political ecology perspective – something which, for all the wealth of research on the subject, has not yet been attempted. But in addition, theoretically, we adopt and seek to suggest the broad contours of a new approach to political ecology, in which consideration of 'the international' is appropriately integrated into its core subject matter – what we conceive of as an 'international political ecology' approach to the study of socio-ecological crisis.

By way of explanation: political ecology as a field and approach is essentially an offshoot of research in human geography and anthropology; inevitably it thus reflects these two disciplines' priorities as well as oversights. Its hallmarks have long been an attentiveness to the local – as captured, for instance, in Piers Blaikie's characterisation of political ecology as inherently 'place-based' in focus and method – combined with a critical attitude towards the state, and an implicit dependency or world systems theory–informed understanding of how environmental crises and vulnerabilities are shaped by worldwide capitalist structures and imperatives. By contrast, an 'international political ecology', as we conceive it, should approach the international as a key constitutive feature of modern

[26] T. A. Benjaminsen et al., 'Does climate change drive land-use conflicts in the Sahel?', *Journal of Peace Research*, 49:1 (2012), 97–111; T. A. Benjaminsen and B. Ba, 'Why do pastoralists in Mali join jihadist groups? A political ecological explanation', *Journal of Peasant Studies*, 46:1 (2019), 1–20; H. Verhoeven, 'Climate change, conflict and development in Sudan: global neo-Malthusian narratives and local power struggles', *Development and Change*, 42:3 (2011), 679–707; J. Fairhead et al., 'Green grabbing: a new appropriation of nature', *Journal of Peasant Studies*, 39:2 (2012), 237–61; P. Bigger and B. D. Neimark, 'Weaponizing nature: the geopolitical ecology of the US Navy's biofuels program', *Political Geography*, 60 (2017), 13–22; O. Belcher et al., 'Hidden carbon costs of "everywhere war": logistics, geopolitical ecology, and the carbon bootprint of the US military', *Transactions of the Institute of British Geographers*, 45:1 (2020), 65–80; G. Mann and J. Wainwright, *Climate Leviathan: A Political Theory of Our Planetary Future* (Verso, 2018); S. Dalby, *Security and Environmental Change* (Polity, 2009); S. Dalby, *Anthropocene Geopolitics: Globalization, Security, Sustainability* (University of Ottawa Press, 2020); P. Le Billon, 'The political ecology of war: natural resources and armed conflicts', *Political Geography*, 20:5 (2001), 561–84; N. Peluso and M. Watts (eds.), *Violent Environments* (Cornell University Press, 2001).

world politics and, in turn, as a primary cause of environmental degradation and environment-related vulnerabilities. The idea of the 'international', here, points towards a number of things: to what Justin Rosenberg has theorised as the coexistence of a 'multiplicity' of interacting states and societies; to the importance of those borders and borderland spaces separating them; to the political and economic relations – of competition, emulation, alliance-building, colonisation, war-making and more – between them; to the specificity of different national economic, political and developmental capacities and trajectories; and, not least, to the constitutive impacts of international relations on 'internal' social processes.[27] Our premise is that these features of the international are, both individually and in combination, crucial to understanding contemporary patterns of environment-related conflict, security and insecurity.

To be clear, our proposition is not that the international is the scalar category above all others, or even the most important among them; global capitalist structures and globalising processes exist too, as do North–South hierarchies, local specificities and multiple, intersecting axes of division including along lines of race, gender, class, language, region and religion. Unlike within much IR theory, we do not wish to privilege the international – but instead, merely to bring it more fully back into the analytical mix. Likewise, we do not view the international as a trans-historical and asocial realm, but rather as a modern social and historical construct; we consider this true both of its general form – organised around the supposedly Westphalian principles of absolute sovereignty and inter-state anarchy – and of the particular states, or 'nation-states', which currently constitute it. We thus seek to explore the role of the international both historically and intersectionally, that is, with a view to how international divisions and hierarchies intersect with other axes of domination and subordination, and in recognition of their complex, cumulative impacts on both ecology and society.[28]

An international political ecology, we suggest, should attend both to the consequences of international relations for the environment and

[27] P. Blaikie, *The Political Economy of Soil Erosion in Developing Countries* (Longman, 1985), ch. 5; Blaikie and Brookfield, *Land Degradation*; Rocheleau et al., *Feminist Political Ecology*; R. Peet et al. (eds.), *Global Political Ecology* (Routledge, 2011); J. Rosenberg, 'Basic problems in the theory of uneven and combined development. Part II: unevenness and political multiplicity', *Cambridge Review of International Affairs*, 20:1 (2010), 165–89; J. Rosenberg, 'International Relations in the prison of political science', *International Relations*, 30:2 (2016), 127–53.

[28] B. Teschke, *The Myth of 1648: Class, Geopolitics and the Making of Modern International Relations* (Verso, 2003); K. Crenshaw, 'Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics', *University of Chicago Legal Forum*, 1 (1989), 139–67; F. Sultana, 'Political ecology 1: from margins to center', *Progress in Human Geography*, 45:1 (2021), 156–65.

environment-related insecurities – to the consequences of multiplicity, boundaries, competition, hierarchies, enmities, alliances and nationally specific development pathways – and, conversely, to the diverse ways in which the appropriation, transformation and circulation of nature and its resources is complicit in processes of nation-building and state-building and the constitution of geopolitical orders. It should seek to do this while recognising that the international is but one important scale or dimension of politics among others. Indeed, if anything, an international political ecology should valorise neither the 'international' nor 'politics' nor even 'ecology' but instead history, by exploring the historical transformations which have been visited on both politics and nature under conditions of capitalist modernity – and the implications of these historical transformations for thinking about the future. While a hard ask, it is such an approach that we seek to adopt in the pages to follow.

## Climate Change, Water and (In)Security

How, though, might these abstract formulations be translated into a realisable project? As already discussed, the question of the links between climate change and conflict and security poses acute methodological challenges, relating principally to the huge number of possible causal pathways between the two, and to the inherent unpredictability of many aspects of social and political life, particularly historically unprecedented ones. Moreover, whatever we might wish, a commitment to political ecology does not magic away these methodological challenges. Hence at minimum we require both a more limited and precise focus or object of analysis – since 'climate change and security' in general is way too fuzzy and unwieldy a topic – and a political ecology–appropriate method for studying the future.

On the first requirement our answer is water – or more precisely the complex, multi-directional relations between climate change, water and (in)security. There are two reasons why water serves as such an ideal focus for us. In the first place, no other environmental resource has been so regularly identified within climate security discourse as a likely factor – a potential 'intervening variable' – in climate change–related instability. The quotations cited at the beginning of the chapter from Barack Obama, Margaret Beckett and Ban Ki-moon are all illustrative of this, with their common emphases on how climate change–induced water shocks and scarcities will increase levels of competition, displacement and, in turn, social, political and violent conflict. Mass media coverage suggests likewise, focusing as it so often does on a simultaneously climate- and water-related phenomenon, drought. Moreover, academic research points in

a similar direction: IPCC assessment reports have focused on climate change–related 'water wars' more than any other issue, while within recent quantitative climate security research, impacts on and through rainfall have been one of two main focuses (the other being impacts on and through temperature variations). One retired US admiral even goes so far as to claim that 'from a national security perspective, climate change is all about the water'. While this is overstated, if global climate change is to become a 'threat multiplier' for instability then water will undoubtedly be central to this.[29]

Second – and turning to the second main methodological challenge noted above – water in many ways provides an ideal analogue for exploring the future conflict and security implications of climate change. Recall that quantitative-positivist methods are distinctly limited as a tool for understanding the conflict and security implications of global anthropogenic climate change, simply because the latter has never occurred before; there exists no database of prior instances of it that might provide a basis for inductive reasoning or prediction. Hence a predictively inclined student of climate security has no option but to reason by analogy – that is, to identify and analyse appropriate historical or contemporary analogues, and then to apply any findings about them to climate security specifically. Though rarely acknowledged, this is precisely what most quantitative climate conflict researchers do: they treat short-term weather variations as analogues for human-induced global warming and on this basis apply findings about the former to the latter. Likewise, if we, as authors, want to advance predictions, however qualified, about the future security implications of climate change, we have no option but to engage in historical, analogical reasoning. Hence the question which faces us is this: given that there are so many conceivable analogues for climate chaos – not just weather changes, but everything from weapons of mass destruction and international terrorism through to the end of the transatlantic slave trade – what should our analogue be?[30]

Our answer is water mainly because of the striking parallels that exist between the contemporary climate security orthodoxy and long-established narratives around water and conflict. Water has long been regarded within many liberal policy and academic circles as a likely contributor to instability and violence, just as climate change is today (we

[29] Nordås and Gleditsch, 'IPCC and the climate-conflict nexus'; Selby, 'Positivist climate conflict research', 832; D. Titley, 'Global warming a threat to national security', *Cognoscenti* (20/02/2013).

[30] Selby, 'Positivist climate conflict research', 840–5; W. Nuttall and D. Manz, 'A new energy security paradigm for the twenty-first century', *Technological Forecasting and Social Change*, 75:8 (2008), 1256–7.

detail this further in Chapter 2) . Indeed, 'water wars' have long been held as paradigmatic within environmental security thinking: river water is 'the renewable resource most likely to stimulate interstate war', claimed Homer-Dixon in his major work on the subject.[31] Many of the standard features of water security discourse – the language used, the theories deployed and the predictions made – now recur within contemporary climate security thinking. Many of the major proponents are also the same. In addition, water politics has been extensively investigated – probably more so than any other resource politics issue, and from a wide variety of different perspectives – thus furnishing us with a hefty weight of empirical and historical material for analysis and critique. For all these reasons, the politics of water provides an ideal analogue for, and study aid to, exploring the conflict and security implications of climate change.

Two final points need to be made about the thematic scope of the analysis to follow. First, our overall focus is the connections between climate change, water and *(in)security*, particularly but not limited to insecurities associated with *conflict*. We need to be clear about these terms. We use the term 'conflict' to denote both its political and violent forms, not restricting our analysis to armed conflict alone; we consider the term to apply to the full range of scales, from the international to the household, though in practice we concentrate mainly on large-scale inter-group conflicts for reasons set out below. As for 'insecurity', we use this as a loose umbrella for the diverse forms of suffering, pain, vulnerability, marginalisation, displacement, dispossession, denial of basic needs and violence, and/or risks to this effect, that are experienced or faced by individuals and collectivities; as we understand it, this includes everything from direct and immediate physical harms to what Johann Galtung called 'structural violence' and what Rob Nixon characterises as 'slow violence', acts of harm that can take years or decades to unfold. By the same token, we understand 'security' as referring, at least on one level, to freedom from such threats and harms, 'security' in this sense being a normative good and aspiration. Yet we also assume, to complicate matters, that actions taken in the name of security – against some particular threat or to protect some specific group of people – often create insecurities, whether for those outside the group being secured or indeed for those within it; and that 'security' and 'insecurity' are thus transitive phenomena, things which people do to each other. We thus attend to many different forms and causes of water-related conflict and insecurity. We analyse discourses and policies in pursuit of 'water security' and 'climate

[31] T. Homer-Dixon, *Environment, Scarcity and Violence* (Princeton University Press, 1999), 179.

security' with an eye to how they may themselves contribute to insecurities. And, above all, we approach this whole terrain as materialists, our central object of analysis being human suffering and conflict, rather than – as in constructivist critical security studies – security politics understood as arising from and centring on speech acts.[32]

Second, we seek to analyse climate change, water, conflict and (in)security alike in a holistic and symmetrical fashion. Thus we consider not only the conflict and security implications of climate change's environmental impacts, but also the conflict implications of adaptation and mitigation efforts; and we examine not just climate change's material impacts, but also those associated with discourse on it. Similarly, on water, while we do attend to the politics surrounding major named water resources, our overall approach is to explore its conflict and security implications right across the 'hydro-social cycle' – from rain, swamps and desert margins, right through to dams, pipelines, agro-industry, metering and sewage.[33] And we examine not only how water and climate change matter for conflict and security but also, conversely, how the latter – and more broadly politics – determine patterns of water- and climate-related degradation, distress and vulnerability. Our overall objective, in sum, is to investigate the relations between climate change, water and (in)security in their full multi-directional complexity, including by exploring the socio-ecological processes through which each is internally and dialectically constituted. Such an approach not only follows from the political ecology premises outlined above; in our view, it is also a *sine qua non* for developing a rounded assessment of the conflict and security implications of global climate change.

## Five Divided Environments

Our empirical strategy for exploring these complex relations between water, climate change and (in)security centres on particular political geographical spaces – each of which have long histories of both ethnonationalist violence and division, and conflict or insecurity relating to environmental resources. These spaces are 'divided environments' in two senses: each of them is politically and territorially divided; and their

[32] J. Galtung, 'Violence, peace, and peace research', *Journal of Peace Research*, 6:3 (1969), 167–91; R. Nixon, *Slow Violence and the Environmentalism of the Poor* (Harvard University Press, 2011); K. Booth, 'Security and emancipation', *Review of International Studies*, 17:4 (1991), 313–26; B. Buzan et al., *Security: A New Framework for Analysis* (Lynne Rienner, 1998).

[33] J. Linton and J. Budds, 'The hydrosocial cycle: defining and mobilizing a relational–dialectical approach to water', *Geoforum*, 57 (2014), 170–80.

'natural environments', most notably water, have been repeatedly contested and divided as well. The divided environments in question are Israel–Palestine, Syria, Cyprus, Sudan–South Sudan and the Lake Chad region.

These five cases have been selected with a view to both commonalities and differences. All five are sites of significant political conflict structured around rival ethno-national identities and militarised state projects. All five have experienced large-scale internal or inter-societal violence and at least one full-scale war – Israel–Palestine and Sudan have been sites of repeated wars; Syria, at the time of writing, is in the tenth year of its horrific conflict; and the Lake Chad crisis has lasted even longer – as well as forced displacement, internal colonisation and a range of human rights abuses. All five are territorially divided in one way or another, whether as a result of war (Israel–Palestine, Cyprus, Syria), de jure post-colonial partition (Sudan) or arbitrary boundary-drawing by colonial powers (Lake Chad). They are geographically connected in a giant arc from the Mediterranean shore of West Asia to northern Africa and the Sahel. Their contemporary politics still bears the scars of either British or French colonial rule. Much of their areas comprise arid or semi-arid drylands. And each of them is home to severe, though contrasting, water problems – some of which have been sources or sites of political discord, and many of which are predicted to worsen as the planet warms. Our cases touch on some of the rivers that feature most regularly in water wars discourse (the Euphrates, the Jordan and the Nile) as well as the three most oft-cited examples of supposed climate change-induced armed conflict (Darfur, Syria and Lake Chad). The commonalities between our cases cut across history, geography, hydrology and politics.

In other respects, however, it is the differences between these five divided environments that are the more striking. They are hugely different in scale: Cyprus may be the third largest island in the Mediterranean, but on a clear day its entire coastline can be scanned from Mount Olympus in the Troodos Mountains; by contrast, Sudan pre-2011 was roughly the size of western Europe, with a territory of almost 2.5 million $km^2$, 268 times that of Cyprus. Our cases are socio-economically diverse: Israel has a highly educated society and a high-tech dominated economy, ranked 22nd, just above Korea, in the most recent Human Development Index; while, for all their oil exports, South Sudan and Chad are ranked 186th and 187th respectively, near the foot of this global league. They vary enormously in state power and capacity – from Israel, with its nuclear arsenal and panoptic administrative and surveillance systems, to South Sudan, which was dubbed a 'failed state' on independence in 2011, only to regress from that beginning into on–off civil war. They vary in their

types of government – from the Republic of Cyprus' EU member parliamentary democracy, through to Israel's 'ethnic democracy' (or 'ethnocracy') and the military–authoritarian regimes of Damascus, N'Djamena and Khartoum.[34] They vary in the nature of their 'dividedness' – with the majority of our cases having once been unitary political territories but the Lake Chad region not, lying at the junction of Chad, Cameroon, Nigeria and Niger. They cross climatic and ecological zones – from the Mediterranean climates of Cyprus, western Syria and Israel–Palestine, through to the desert lands of the Negev, eastern Syria and the Sahara, to the Sahel and tropical savannah further south. And most important in the context of this book, our five cases are characterised by a great diversity of water politics and conflicts.

The value of exploring such diverse cases lies partly in providing a basis for generalisation, as per John Stuart Mill's 'method of difference'.[35] That said, this book is comparative only in the loosest of senses: it is organised thematically rather than around case studies, and the individual thematic chapters typically discuss only some of the cases in any detail (either because the theme in question does not speak particularly to the case, or thanks to a surfeit of empirical material). As such, while our analysis includes detailed and original readings of particular aspects of Israeli–Palestinian, Syrian, Cypriot, Sudanese and Lake Chad water and climate politics, it is not, and does not seek to be, comprehensive in its treatment of these cases.

There are, we acknowledge, possible shortcomings to this empirical strategy and selection of cases. For one, a focus on conflict-ridden and violent contexts rather than peaceful ones has sometimes been criticised by climate security researchers as involving a dependent variable sampling bias, wherein the links between climate and instability are systematically overstated out of inattentiveness to the 'vastly more ubiquitous and continuing condition of peace'.[36] Similarly, some may wonder whether a focus on large-scale ethno-national divisions is appropriate given that, as even mainstream environmental security discourse recognises, environment-related conflicts are often highly localised and do not necessary follow national political identities or state boundaries. Neither of these points is, in our view, without merit. Yet there are also definite

[34] UNDP, *Human Development Report 2019* (2019); D. Howden, 'A failed state before it's born? Inside the capital of the world's next nation', *Independent* (07/01/2011); S. Smooha, 'Minority status in an ethnic democracy: the status of the Arab minority in Israel', *Ethnic and Racial Studies*, 13:3 (1990), 389–413; O. Yiftachel, *Ethnocracy: Land and Identity Politics in Israel/Palestine* (University of Pennsylvania Press, 2006).

[35] J. S. Mill, *A System of Logic* (Longmans, Green, Reader, and Dyer, 1872), book 3, ch. 8.

[36] C. Adams et al., 'Sampling bias in climate–conflict research', *Nature Climate Change*, 8 (2018), 200.

advantages to focusing on national-level conflicts. Mainstream public and policy narratives on climate and water security focus mostly on just such cases – on the role of water in Nile basin politics, on the contribution of drought to civil war onset in Syria or Lake Chad – making it crucial that at least some critical academic analysis does likewise. Equally, sampling bias is only really problematic if it results in exaggeration (or underestimation) of climate–conflict linkages: if it does not do this, and still less where findings contradict climate chaos narratives, then the problem disappears. Moreover, while it is absolutely right that many environmental and other conflicts are highly localised, they are typically also to a significant degree shaped by country-specific national-level – and international – political and economic dynamics. Most importantly, although state-defined spaces provide us with our five cases, our analysis operates across scales, and thus discusses many locally specific incidents and dynamics and many axes of division beyond those revolving around ethno-national identities or the nation-state.

More positively, our title *Divided Environments* is also intended as a nod towards Nancy Peluso and Michael Watts' important collection *Violent Environments* – and to indicate our debt to its critical and political ecology–informed engagement with mainstream environmental security narratives. All too often, studies of the environment and security place their primary emphases on the ways in which politics and conflict are determined, or are soon going to become determined, by environmental limits and forces. We wish to insist, by contrast, that it is historically configured human agency in the division – and also the exploitation, transformation, destruction, appropriation, distribution and commodification – of environmental spaces and resources that lies at the core of the environmental insecurity problematique. The poem and extracts which preface this book are chosen because they point in this direction. More typical for works on environmental conflict would be to quote from Percy Shelley's 'Ozymandias', and to invoke its imagined, romanticised and frankly Orientalist portrayal of 'bare' and 'lifeless' ruins in the desert where 'nothing beside remains' as a metaphor for eco-led political collapse.[37] We turn instead to Abdelrahman Munif's *Cities of Salt* for its exploration of how places, people and water are transformed and of the displacement, bewilderment, exploitation, resentments and violence that so often ensue on frontiers of capitalist extractivism. We invoke W. H. Auden's 'Partition', for its part, given its focus on the role of the political – on the centrality of

[37] Peluso and Watts, *Violent Environments*; J. Diamond, *Collapse: How Societies Chose to Fail or Succeed* (Viking, 2005), vii; B. Fagan, *The Great Warming: Climate Change and the Rise and Fall of Civilizations* (Bloomsbury, 2008), ix; M. Reisner, *Cadillac Desert: The American West and Its Disappearing Water*, rev. ed. (Penguin, 1986).

political structures, decisions and agency – in the drawing of boundaries and the dividing of environments, and in 'settling the fate of millions'. We turn to Munif and Auden together because they are both concerned with coloniality, the one presenting a subaltern reading of the United States' quest for world oil, the other an elite-centred if melancholic take on Britain's departure from India. We invoke them, moreover, because they both end with gunshot, albeit in different registers. Whereas Auden's colonial administrator is merely afraid of being shot, anticipating threats to his life and walling himself off for his own protection, for the Bedouin of Munif's thinly disguised Saudi Arabia the word 'Fire!' and the ensuing carnage are actualities, the culmination of long-term processes of displacement, dispossession and development. Between Auden and Munif, the analysis that follows is in many respects an exploration of these two faces of violence and (in)security. There exists, as we show, an enormous gulf between Northern and elite fears of anticipated 'security threats', and the historical, present-day and likely future realities of marginalisation, exploitation, domination and conflict – or, in short, 'insecurity' – across the global periphery. And this, we hold, applies to the questions of climate and water security just as it does to most other areas.

## Organisation of the Book

In sum, this book operates on three levels. On a first, it is concerned with the implications of global anthropogenic climate change for twenty-first-century world politics and its landscape of conflict and insecurity: this is our primary research puzzle and question. On a second, it is about the past and present of the relations between water and (in)security, it being the study of these relations which dominates the pages to follow and which furnishes us with our evidence base for reflecting on climate change and the future. And third, it is intended as a contribution to research in political ecology – both substantively, in providing a political ecology–informed multi-case interpretation of some of the most pressing resource security challenges worldwide; and theoretically, in calling for and illustrating an 'international political ecology' approach to understanding them.

The analysis is structured, as already mentioned, around themes rather than our five cases. Each of the eight substantive chapters explores one such theme – a particular aspect, or site, of the water–conflict problematique. Each combines general theoretical discussion with case study–informed insights and comparison. Each also focuses first and foremost on the past and present, only in conclusion turning systematically to the future, and future climate change. Each of the chapters follow this

structure and hence can be read, if need be, as stand-alone explorations of a theme.

Hopefully, however, this book will not principally be read in this way – for it is also structured as a single unfolding argument which starts by developing a series of critiques, and from there turns to exposition. Thus the next two and a bit chapters are essentially critiques of water and climate security orthodoxies; the focus here is on questions of geography and demography (Chapter 2) and climatic variability (Chapter 3) – and in both of them on the language of scarcity, on Malthusian or 'eco-determinist' reasoning, on claims that water scarcity and climate change are already contributing to large-scale violence and on showing that such claims are thin, routinely overstated and ethico-politically problematic. Thereafter, by contrast, the book turns to exposition, developing a series of arguments about the past and present relations between water, conflict and insecurity, and their likely future relations under conditions of accelerating climate change. We start this reconstruction by considering questions of identity and alterity (Chapter 4). We then explore processes of material transformation, expropriation and marginalisation across space, first in relation to core processes of hydraulic development and state-building (Chapter 5), and next in relation to territorial frontiers (Chapter 6). In two chapters that are also conceived as a pair, we then turn to the impacts of war (Chapter 7) and peace (Chapter 8) on water and climate-related transformations and insecurities. And in the final substantive chapter, we consider how international circulations of food, energy and capital underpin patterns of water and climate security (Chapter 9).

Across the chapters, we explore not just the impacts of water on conflict and security, but simultaneously the reverse causality: namely, how water resources and water-related inequalities, vulnerabilities and conflicts have been caused and configured by political strategies, violence, divisions and hierarchies. What we show throughout is that, both historically and still today, the political ecology of water – that is, the patterns of production, transformation, consumption, distribution, degradation, scarcity, insecurity and conflict relating to it – has been shaped much more by political and political–economic forces, structures and divides, than vice versa. Moreover, water, we show, is becoming less, not more, economically and politically important. Viewed thus, water as a resource is in our view unlikely to become a significant cause of or contributor to conflict and insecurity, even in an era of accelerating climate change. This does not mean, we insist, that the whole issue is inflated and overblown. We do not doubt the existence of profound water security challenges. We do not question the reality of human-induced global heating, or the urgent need

to tackle it. We consider it close to certain that both water issues and climate change will, in future, have profound and wide-ranging consequences for conflict and security. What we do believe, however, is that these consequences will be rather different from how they are usually imagined. This book seeks to make this case.